



EUROPEAN
COMMISSION

Brussels, 29.1.2014
SWD(2014) 30 final

PART 3/3

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

ANNEXES 5 - 14

Accompanying the document

Proposal for a Regulation of the European Parliament and of the Council

**on structural measures improving the resilience of EU Credit Institutions
and**

**the Proposal for a Regulation of the European Parliament and of the Council
on reporting and transparency of securities financing transactions**

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JRC SCIENTIFIC AND POLICY REPORTS

**Annex A5 : Analysis of Possible Incentives
towards Trading Activities
implied by the Structure of Banks's Minimum
Capital Requirements**

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2013

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JRC88529

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EXECUTIVE SUMMARY

This report focuses on the analysis of structure of banks' Minimum Capital Requirements (MCRs) within the EU. In particular, the aim is to investigate the possibility of the current regulatory framework making *trading activities* more attractive than traditional *deposit taking bank* activities (e.g. loans and credits), and more generally its implications for the adequacy of MCRs on the two activities.

Possible incentive toward trading activities and the effectiveness of MCRs are assessed by looking at a measure of returns per unit of MCR in each line of activity.

As publicly available data in the annual reports and in commercial databases only report the overall amount of MCRs but do not report their attribution to different activities, the estimate of the MCRs referring to each activity line are obtained via an econometric panel analysis.

The MCRs and income attributable to each of the two activity lines are estimated under various regulatory scenarios and the net income per unit of regulatory capital generated by the two activities over the period 2006-2011 are analysed.

Based on available data, and subject to the caveat that the division of assets and of risk weighted assets between trading and deposit taking activities is subject to a degree of uncertainty, results of this analysis show:

- ✓ Possible existence of an incentive towards trading activities
 - Current regulation appears to provide incentives to banks to prefer trading activities to deposit taking activities due to differences in returns on minimum capital requirements on the two activities.
 - Results indicate that even moving to Basel III MCRs could still not eliminate this effect.
- ✓ MCR adequacy
 - Based on the definition of trading activities adopted, estimated MCRs for trading activities under current rules do not seem to allow absorbing net losses stemming from trading in crisis periods (2008), while estimated MCRs for deposit taking activities appear to allow covering net losses stemming from them more fully
 - The analysis confirms that the introduction of Basel 2.5¹ rules in 2011 at least partially achieved the goal of substantially increasing the MCRs for some activities.

¹ In 2011 the Basel Committee on Banking Supervision supplemented the trading book framework with an incremental risk capital charge, which includes default risk as well as migration risk, for unsecuritised credit products. <http://www.bis.org/publ/bcbs158.htm>

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1. INTRODUCTION AND BACKGROUND

The European Commission is putting forward a proposal to reform the structure of the EU banking sector which could result in separation of trading activities from deposit taking activities.² This analysis is being developed as part of the background material of the Impact Assessment for this legislative initiative.

In particular, the present note aims at assessing the presence of an implicit incentive toward trading activities embedded in current regulations³ by estimating the difference in the returns per unit of Minimum Capital Requirements (MCR) or of Regulatory Capital for trading and deposit taking activities.

Since banks are not obliged to publish the allocation of their MCRs between these activities,⁴ the estimation of the average amount of MCRs associated to categories of assets and liabilities in the balance sheet of banks is obtained via a three step procedure: first, an estimation of the average risk weights associated to different categories of assets and liabilities is performed via a panel data analysis.⁵ Second, assets and liabilities in the balance sheet are allocated to the two activities; finally, the MCRs and Regulatory Capitals for each line of activity are obtained based on the allocation of assets and liabilities and the estimated average risk weights, under the current regulatory framework and a set of counterfactual scenarios (e.g. Basel III ...).

Income for each line of activity is estimated by allocating income statement items to each of the two activities and by using, where necessary, a set of proportionality assumptions.

Finally, returns on capital requirements are obtained as the ratio of income to MCRs for each line of activity under each regulatory scenario in order to assess the possible presence of an incentive towards trading activities.⁶

As one the objectives of the analysis is to provide background material for the structural reform, results are presented separately for a sub-sample of 29 banks which might be

² http://ec.europa.eu/internal_market/bank/docs/high-level_expert_group/report_en.pdf

³ See e.g. remarks from Wayne Bayres – Secretary General of the Basel Committee in Banking Supervision “Regulatory reforms – incentives matter” to the Bank of Portugal conference on the 24 October 2012.

⁴ There is clearly not a one to one correspondence between commercial/trading activities and declared split of RWAs between credit and market risk. Not only market risk can also be originated by activities considered as commercial banking (i.e. assets held at fair value) and credit risk can also be generated by trading activities, but there seem to be no clear-cut definition of commercial banking activities and trading activities in the literature or in policy practice

⁵ The analysis is conducted on a sample of 255 banks located in the EU and across years 2006 to 2011. Data are sourced from the SNL commercial database <http://www.snl.com>. See next section for details.

⁶ The measurement of aggregate profits is subject to a high degree of uncertainty, (see e.g. “Measuring and analysing profit developments in the Euro area” http://www.ecb.europa.eu/pub/pdf/other/pp63-73_mb200401en.pdf - ECB). We are here however not interested in exact measures in absolute terms as we are more concerned with measuring levels of income per unit of capital in order to measure incentivations effects.

candidates for structural separation (see next section and Annex A8 for details) and for the rest of the sample used for the analysis of risk weights and MCRs.

The remaining of the report is structured as follows: Section 2 describes the dataset used in the analysis; Section 3 illustrates the results of the panel analysis used to estimate the average risk weight of different balance sheet items; Section 4 describes the assumptions used to split the balance sheet and the income statement between trading and deposit taking activities and the regulatory scenarios used to calculate the MCRs referred to each activity; Section 5 presents the results of the analysis of the relationship between income and MCRs for the two lines for banks in the sample of banks potentially subject to structural reform and Section 6 concludes. Several technical annexes provide details on: the panel regression specification (Appendix A); the way income is assigned to trading and deposit taking activities (Appendix B) and the dataset (Appendix C). Appendix D presents the returns per unit of MCRs for the full sample of banks. Appendix E reports the assumptions made for the Basel 3 scenario and in particular details the corrections applied to RWAs and Regulatory Capital. Appendix F presents a comparison of estimated returns per unit of capital with balance sheet figures as well as a decomposition of the differences.

2. THE DATASETS FOR THE PANEL REGRESSION AND FOR THE PRESENTATION OF RESULTS

The dataset for the panel analysis used to allocate RWAs between trading and deposit taking activities includes 255⁷ banks located in the EU27 area having total assets available for 2011.⁸ Their total assets as of end 2011 are 34'645 bn EUR for EU27⁹ (77% of the EU27 banking sector¹⁰).

Results in the main text are presented for an “candidates sample” formed of 29 banks which are possible candidates for separation.^{11,12} The “candidates sample” also includes Norwegian DNB bank, with 274 bn EUR of total assets. All results are calculated for the “candidates sample” and for the rest of the EU27 sample used for the regression.¹³

⁷ These 255 banks are available in the SNL database (<http://www.snl.com>), have a total assets data point available in 2011 and are located in EU27 countries. 183 banks are effectively used to estimate the preferred model. The reduction of the sample is only due to missing data.

⁸ The exercise was repeated also on a sample including all EEA EFTA countries (i.e. plus Norway, Iceland, Lichtenstein) EU27 and all EFTA countries (i.e. EEA EFTA plus Switzerland). Results were substantially unvaried. See the following section for additional details.

⁹ At the time of the first drafting of this report Croatia still had to join the EU, bringing membership to 28 states. The current analysis refers to the 27 members of the EU as of January 2012. 14 financial institutions are available in SNL for Croatia; all of them are small-sized: their respective total assets are under 30 bn EUR. Some of these banks are local subsidiary of European financial institutions (Raiffeisenbank Austria for example). None of these would have been proposed as candidates for structural reform.

¹⁰ <http://www.ecb.int/stats/money/consolidated/html/index.en.html> contains EU consolidated banking data for 2011 divided between Domestic credit institutions, with a sum of total assets of 35'901 bn EUR, and Foreign-controlled subsidiaries and branches, with a sum of total assets of 8'916 bn EUR.

¹¹ In their report “Trading activities and bank structural separation: possible definitions and calibration of exemption thresholds” Commission Services have proposed different definitions in order to identify institutions conducting different trading activities, such as market making and proprietary trading. The sample analysed in this report is selected based on definition 3, focusing on market and counterparty risk, see page 10 of the cited report for a more in-depth discussion. Although the sample of selected banks varies according to the definitions used for selection purposes, definitions 2, 3 and 4 of that report would all involve the same allocation of trading assets and liabilities for selected banks, so that a single analysis can be considered to cover all these three cases.

¹² It should be noted that two banks from the candidates' sample are identified as outliers when calculating results, and they are thus dropped from the sample effectively used in section 5.

¹³ It should be noted that income statement data are less populated than balance sheet data used in the panel regression, thus the sample used for the calculation and presentation of results might differ from the sample used in the regression analysis.

Table 1: Distribution of the banks of the whole sample based on their average total assets over the 2006-2011 period. 500 bn EUR roughly corresponds to the 75th percentile of the total assets in the sample of banks considered by the European Banking Authority in its capital exercise.¹⁴ 30 bn EUR is the size above which banks will be supervised directly by the SSM.

Banks' Buckets	Banks' size (Total Assets)	Average size of a bank in the bucket (average over years) – bn Eur	Number of banks in the sample	Percentage of banks in the sample	Total Assets in the sample (average over years) – bn Eur	Share of total assets in the sample (average over years)
Small	Up to 30 bn EUR	9.8	152	59%	1'477	4%
Medium	30 to 500 bn EUR	128.9	85	33%	10'959	32%
Large	Over 500 bn EUR	1'233.8	18	7%	22'209	64%
Total		135.8	255	100%	34'645	100%

Source: SNL database and JRC estimates

NOTE: Large-size banks are located in seven countries: DE, FR, GB, IT, NL ES and SE.

¹⁴ <http://www.eba.europa.eu/capitalexercise/2011-EU-Capital-Exercise.aspx>

3. INVESTIGATING THE RELATIONSHIP BETWEEN BALANCE SHEET COMPOSITION AND MCRs: ESTIMATION OF RISK WEIGHTS VIA PANEL DATA ANALYSIS

Data on the allocation of MCRs by types of activities are not published by banks in the majority of cases.¹⁵ We therefore need to establish a relationship between the nominal values of asset and liabilities attributable to different activities and the corresponding MCRs in order to proceed.

Since data on MCRs are not publicly available, while data on Risk Weighted Assets (RWAs) are, and since MCRs are mandated in regulation to be a fixed percentage of RWAs, we concentrate our attention on the latter quantity. Given (i) an allocation of nominal assets and liabilities to different activities, (ii) an average ratio of RWAs to nominal values for different balance sheet items and (iii) a fixed ratio of MCRs to RWAs; we will then be able to estimate MCRs for each line of activity.

In order to obtain the average ratio of RWAs to nominal amounts (i.e. the average risk weights or “RWA density” as termed in related literature¹⁶) for different balance sheet items a regression panel analysis is performed. Technical details of the analysis are illustrated in Appendix A, while only results which are used in the rest of this report are presented here.

Table 2 shows the results of the preferred regression model to predict RWAs based on nominal balance sheet data.¹⁷ The values of the coefficients correspond to the equivalent weights of the various classes of assets to be used for the purposes of calculating total RWAs.¹⁸

The following classes of assets and liabilities available in SNL are included in the preferred model:¹⁹

1. Net loans to banks (LB)
2. Net loans to customers (NCL)
3. Activities held at amortized cost excluding loans (AMZ)
4. Securities held to maturity (HTM)
5. Available for sale assets excluding loans (AFS)

¹⁵ Only an extremely limited number of banks publish RWAs/MCRs for the banking and trading books. However, the definition of banking and trading book might not coincide with the definitions of trading and commercial banking activities here investigated.

¹⁶ See e.g. S. Avramova and Le lesle, V., (2012), “Revisiting Risk-Weighted Assets: Why Do RWAs Differ Across Countries and What Can Be Done About It?”, IMF working papers, WP/12/90, International Monetary Fund, Washington (DC).

¹⁷ See Appendix A for more details on the econometric analysis development.

¹⁸ In fact, predicted RWAs based on these coefficients are re-normalized to sum to total RWAs declared by banks (i.e. estimated RWAs are in fact used to attribute to each activity line a share of RWAs as declared by banks). A series of corrections based on expected effects of changes of rules and definitions when moving to Basel III or alternative regulatory scenarios are also considered in the final allocation. See Annex F for details.

¹⁹ Alternative breakdowns were also tested, in particular other liability side items and net values of assets and liabilities. See (Reference to be inserted) for additional details of categories’ definitions.

6. Assets held at fair value excluding loans (FV)
7. Securities held for trading excluding derivatives (volume in asset and liability sides) $(TSA+TSL)/2$
8. Derivatives held for trading (volume in asset and liability sides) $(DA+DL)/2$
9. Derivatives held for hedging purposes (volume in asset and liability sides) (DH).

Results show that net loans to customers (1), activities at amortized cost (3) and assets held at fair value (6) explain most of the RWAs (and hence of the MCRs).

Results are controlled for time effects and for individual bank effects, making use of robust estimation methods. The effects of the introduction of Basel 2.5 regulation were also tested by introducing time dummies for the period before 2011. The only significant change which can be detected based on available data is an increase in the coefficient for available for sale assets.

Table 2: Resulting coefficients as estimated under current regulation (Basel 2 till 2010, Basel 2.5 in 2011) for the panel analysis linking RWAs to balance sheet composition. All EU27 countries.²⁰

	LB	NCL	AMZ	HTM	AFS
	Net loans to banks	Net loans to customers	Assets held at amortized cost	Sec. held to maturity	AFS assets ²¹
	(1)	(2)	(3)	(4)	(5)
RWA coefficient	.18	.52	.31	.25 ²²	.39
t-statistic ²³	1.44	8.04***	2.98***	0.28	2.75***

Source: SNL database and JRC estimates

	FV	(TSA+TSL) / 2	(DA+DL) / 2	DHV
continue	Assets held at fair value	Sec. held for trading	Derivatives held for trading	Derivatives held for hedging purposes
	(6)	(7)	(8)	(9)
RWA coefficient	.23	.198	.048	-1.95
t-statistic	1.06	1.86**	2.75***	-3.64***

Note: 183 units²⁴, 923 observations. St. Errors adjusted for 183 clusters.

²⁰ The exercise was also repeated including all European Economic Area countries: all coefficients remain identical except for the coefficient on Securities Held to Maturity, which halves and becomes even less significant.

²¹ This variable has a coefficient of 0.20 before the introduction of Basel 2.5 regulation changes in 2011.

²² This coefficient is basically indistinguishable from zero, given its extremely low statistical significance.

²³ The stars denote statistical confidence according to the usual 10%/5%/1% scale

²⁴ The number of cases used in the regression is lower than the full sample due to the fact that not all variables are available for all banks in the sample and all years.

4. DETERMINING THE ASSETS AND INCOME ITEMS TO BE ASSIGNED TO EACH ACTIVITY LINE

4.1 BALANCE SHEET SPLIT BETWEEN ACTIVITY LINES AND DETERMINATION OF THE MCRs

Having obtained the average weight or density of each balance sheet item, in order to obtain the MCRs corresponding to deposit taking and trading activities, it is necessary to (i) attribute each element of the balance sheet to one of the two lines of activity, (ii) predict the RWAs of each activity based on the weights above and then (iii) estimate the MCRs based on a regulatory scenario.²⁵

The first step to estimate the MCRs is therefore to classify balance sheet items as belonging to one activity line or the other. As there is no clear-cut definition for these two lines of activities either in literature or in current regulatory practice, we propose the following methodology:

- 1) securities held for trading and derivatives held for trading, (i.e. classes (7) and (8) in Table 2) are classified as trading activities;
- 2) classes (1) to (6) are classified as commercial activities²⁶
- 3) class (4) coefficient is not significant so this class is not considered (i.e. the coefficient is set to zero);
- 4) derivatives held for hedging purposes (class (9)) are allocated between the two lines of activities proportionally to total RWAs computed based on classes (1) to (8).

Based on this allocation, predicted RWAs are calculated for each year and for each bank according to the coefficients obtained in the econometric model.

Predicted RWAs are not however directly used in the rest of the analyses. Instead, predicted RWAs for each of the activities are re-normalized to sum to the RWAs as reported in the balance sheet.²⁷

These predicted and re-normalized RWAs reflect an allocation of RWAs between activities under Basel 2 and Basel 2.5 rules. The ratio of predicted RWAs for Deposit Taking Banking activities to total predicted RWAs is hereafter termed $\beta^{\text{Basel II}}$. The value $(1 - \beta^{\text{Basel II}})$ instead represents the ratio of predicted RWAs for the trading activity.

In addition to this re-normalization, RWAs can also be corrected to obtain counterfactual scenarios reproducing the impacts of introducing Basel III rules, which allows to better understand whether Basel III could contribute to shift any incentive towards trading activities which might be found under current regulation. These correction factors are obtained from

²⁵ Different regulatory scenarios will imply different corrections to the predicted RWAs and the final value of the MCRs. See Annex A5 for details.

²⁶ During preparation of the report, an alternative assumption related to the alternate allocation of assets held at fair value or AFS was also considered. Intermediate calculations referring to additional definitions considering this element are available upon request.

²⁷ This is done by calculating the share of predicted RWAs of each activity on total predicted RWAs and multiplying it by total RWAs reported in the balance sheet.

the Basel III Quantitative Impact Study exercise conducted by EBA (see Appendix E for details).²⁸

MCRs are obtained based on these normalized RWAs by multiplying them by the Capital Adequacy Ratio appropriate for each regulatory scenario (e.g. 8% for Basel II and 10.5% for Basel III).

Finally, as the definition of eligible capital will also be changing under Basel III, also MCRs can be corrected under some regulatory scenarios, to reflect that current rules admit as capital a set of instruments which will not be recognized as eligible capital under future regulation. In this way a uniform baseline is assured to compare incentives and capital adequacy across regulatory regimes. Also these correction factors are obtained from the EBA Basel III Quantitative Impact Study (see Appendix E for details).²⁹

An overview of the regulatory scenario used in the rest of the analysis are presented in the following tables:

²⁸ The European Banking Authority conducted a Quantitative Impact Study (QIS) to estimate the impact of new requirements to raise quality and level of capital base. Results presented in Annex A5 that shows that the RWAs would increase. For the purposes of this document, as precise data on fulfillment of criteria 2 and 3 are not available, group 1 banks are those with a capital in excess of 3bn. The increase in RWAs is calculated separately for trading activities and for commercial banking activities. This methodology for the correction of RWAs is consistent with the treatment of RWAs applied in the JRC cost benefit analysis via the SYMBOL model. QIS corrections by country as available in 2011 are used a factor of correction of RWA independently of the years (i.e. the same correction is applied from 2006 to 2011).

²⁹ While RWAs are increased in Basel III scenarios, MCRs are decreased in Basel II scenarios, to represent the fact that part of what is declared and allowed as capital will not be considered as such under the more stringent future rules.

Table 3: Scenarios for assessing the effectiveness of minimum capital requirement allocating the minimum capital requirement to deposit taking or trading activity. α , $\beta^{\text{basel II}}$ and $\beta^{\text{basel III}}$ represent receptively the share of assets or RWA computed under Basel2 or Basel 3 scenario.

		MCR
Basel scenario 2	Deposit taking (DTB)	$\min[8\% \cdot RWA \cdot \beta\%; \text{RegCap} \cdot \beta\%] \cdot QIS^{CAP}$
	Trading (TE)	$\min[8\% \cdot RWA \cdot (1 - \beta\%); \text{RegCap} \cdot (1 - \beta\%)] \cdot QIS^{CAP}$
Basel scenario 3	Deposit taking (DTB)	$RWA \cdot \beta\% QIS_{DT}^{RWA} \cdot 10.5\%$
	Trading (TE)	$RWA \cdot (1 - \beta\%) \cdot QIS_{TE}^{RWA} \cdot 10.5\%$
Basel scenario 3	Deposit taking (DTB)	$RWA \cdot \beta\% QIS_{DT}^{RWA} \cdot 10.5\%$
	Trading (TE)	$2 \cdot RWA \cdot (1 - \beta\%) \cdot QIS_{TE}^{RWA} \cdot 10.5\%$

Table 4: Scenarios for assessing the effectiveness of equity allocating the minimum capital requirement to deposit taking or trading activity. α , $\beta^{\text{basel II}}$ and $\beta^{\text{basel III}}$ represent receptively the share of assets or RWA computed under Basel2 or Basel 3 scenario.

		Equity (approximated by actual total regulatory capital, B3 def)
Basel 2 scenario	Deposit taking (DTB)	$\text{RegCap} \cdot \beta\% QIS^{CAP}$
	Trading (TE)	$\text{RegCap} \cdot (1 - \beta\%) \cdot QIS^{CAP}$
Basel 3 scenario	Deposit taking (DTB)	$\text{MAX}[RWA \cdot \beta\% QIS_{DT}^{RWA} \cdot 10.5\%; \text{RegCap} \cdot QIS^{CAP} \cdot \beta\%]$
	Trading (TE)	$\text{MAX}[RWA \cdot (1 - \beta\%) \cdot QIS_{TE}^{RWA} \cdot 10.5\%; \text{RegCap} \cdot QIS^{CAP} \cdot (1 - \beta\%)]$
Basel 3 scenario	Deposit taking (DTB)	$\text{MAX}[RWA \cdot \beta\% QIS_{DT}^{RWA} \cdot 10.5\%; \text{RegCap} \cdot QIS^{CAP} \cdot \beta\%]$
	Trading (TE)	$\text{MAX}[2 \cdot RWA \cdot (1 - \beta\%) \cdot QIS_{TE}^{RWA} \cdot 10.5\%; \text{RegCap} \cdot QIS^{CAP} \cdot (1 - \beta\%)]$

Table 5: Total assets in the various regulatory scenarios.

Activity	Regulatory scenario	Total Assets (TA)
Deposit taking (DTB)	Basel 2	α TA
Deposit taking (DTB)	Basel 3	α TA
Trading (TE)	Basel 2	$(1-\alpha)$ TA
Trading (TE)	Basel 3	$(1-\alpha)$ TA

Note: α represents the share of assets that are attributed to deposit taking activities. See details in Appendix B.

Source: SNL and JRC estimates.

4.2 INCOME STATEMENT SPLIT BETWEEN ACTIVITY LINES

SNL income statement data are used to estimate the net income per line of activity. Based on the definitions of trading activities introduced in the previous section, each income statement item is allocated to each activity either fully or according to a set of proportionality rules, as fully detailed in Appendix B.

The following rules are used in the income allocation procedure:³⁰

- The revenue from all loans, securities Held To Maturity, Assets held at Fair Value, securities Available For Sale are allocated to deposit taking activities;
- Commissions on Loans and credit cards are allocated to deposit taking activities;
- The revenue attributed to securities and derivatives Held For Trading are completely allocated to trading activities;
- Taxes are not considered (i.e. pre-tax income is considered), as well as non-recurring expenses, non-recurring revenues and insurance incomes
- Some comprehensive income elements are included,³¹ especially unrealized variations of value of Available For Sale securities (which are allocated to deposit taking activities together with realized gains, as detailed above)
- The part of the revenues or the expenses that are not linked to any of these two activities is split proportionally to the respective shares of assets or funding (see Appendix B for details on how funding costs are allocated).³²

³⁰ Alternative definitions have been tested for the allocation of income. Results can be provided by the authors.

³¹ This departure from the use of earnings before taxes is mainly due to the fact that under alternatives definitions of trading activities, which were tested in other versions of this work

³² For interest revenues not referring to loans, this is equivalent to an assumption that the interest rate revenue per unit of commercial or trading assets are equivalent: the hypothesis of equal returns has been confirmed via statistical tests conducted on the part of the sample for which more detailed data is available. For interest expenses this is equivalent to assuming that all activities would face the same funding cost: this assumption is not based on results from data, but constant funding costs across activities could be justified

This set of rules allows us to completely allocate all gross recurring income excluding insurance income, as well as some comprehensive income elements, to the two lines of activity.

Missing data on sub-items of the income statement hierarchy were considered as zeros.

Appendix B offers a decomposition of the differences between the sum of the incomes allocated to the two activities and the net profit presented in the balance sheets.

Due to the impossibility of precisely allocating operational expenses and funding costs, this methodology could underestimate net incomes from deposit taking activities in favour of income from trading activities. The robustness of the core results has therefore been tested by repeating the analysis without considering operational expenses: this leads to a limited convergence of the two series.³³

on the grounds that all activities within the same institution would be facing the same funding WACC. A set of regression models was tested to obtain a more detailed split of operational expenses across activity lines, without satisfactory results.

³³ Results where operational expenses are not included are available from the authors.

5. RESULTS

5.1 TOTAL ASSETS, RWAs, RWA DENSITIES AND RETURNS ON ASSETS PER LINE OF ACTIVITY

Based on the definitions presented in the previous section and on the results of the panel analysis, Total Assets, Risk Weighted Assets and MCRs for trading and deposit taking activities can now be computed under each regulatory scenario.

Estimates of Total Assets, RWA densities (i.e. the ratio RWA/TA) and MCRs for the two lines of activities are obtained for each bank and each year between 2006 and 2011 and for each scenario.

Results in this section refer to both the “candidates sample” (termed the “Output sample” in the first parts of this section) for the part illustrating the allocation of assets and Risk Weighted Assets, and only to the “candidates sample” for the part looking at Returns on Minimum Capital Requirements.

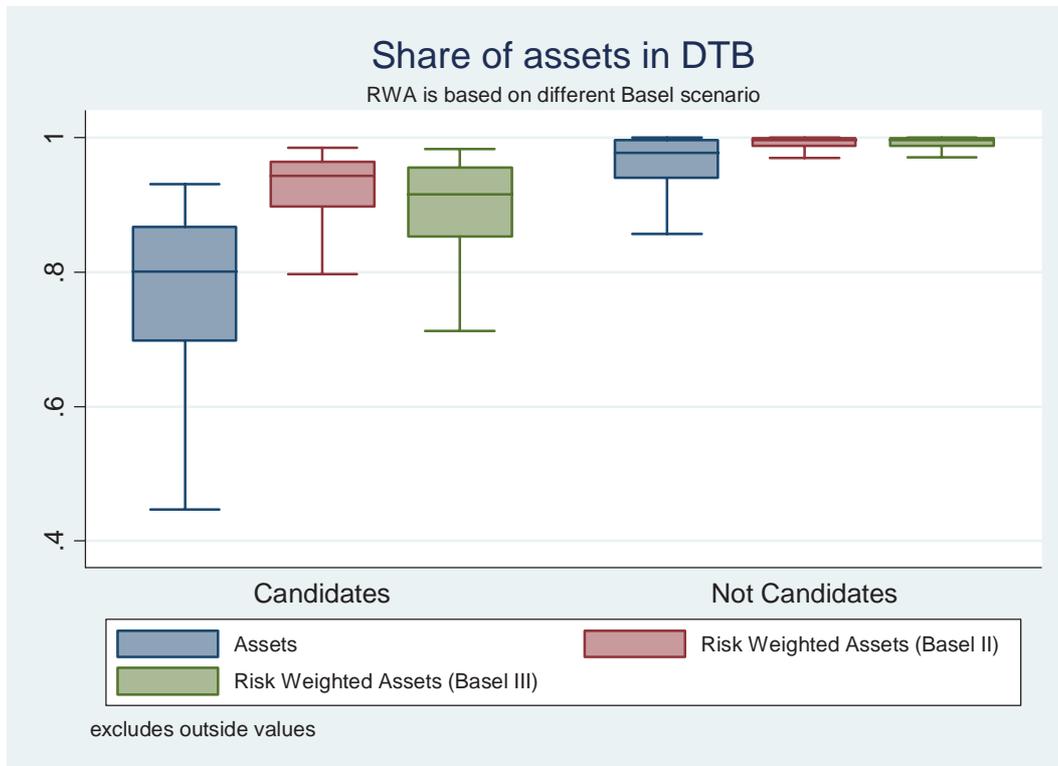
Figures 1 and 2 provide a graphical representation on how the shares on total assets of the trading and deposit taking activities and of their associated RWAs change when moving from the Candidates sample (right plots) to Rest of the sample (left plots).³⁴ In the plots, the central line of the boxes are the median value, the edges are the 25th and 75th percentiles, the whiskers extend to the most extreme data points not considered outliers.³⁵

Figure 1 shows that banks that are selected as candidate for structural separation in the calibration exercise tend to have a lower amount of deposit taking activities assets and/or RWAs. This figure also underlines the fact that the shares of RWAs (red boxplots) which are assigned to the deposit taking activity are always higher than the share of underlying assets which can be classified as “deposit taking activities” by the corresponding definition (blue boxplots).

³⁴ Graphs are based on all available observations in the entire 6-years period; thus the same bank can be considered several times in the construction of the plot.

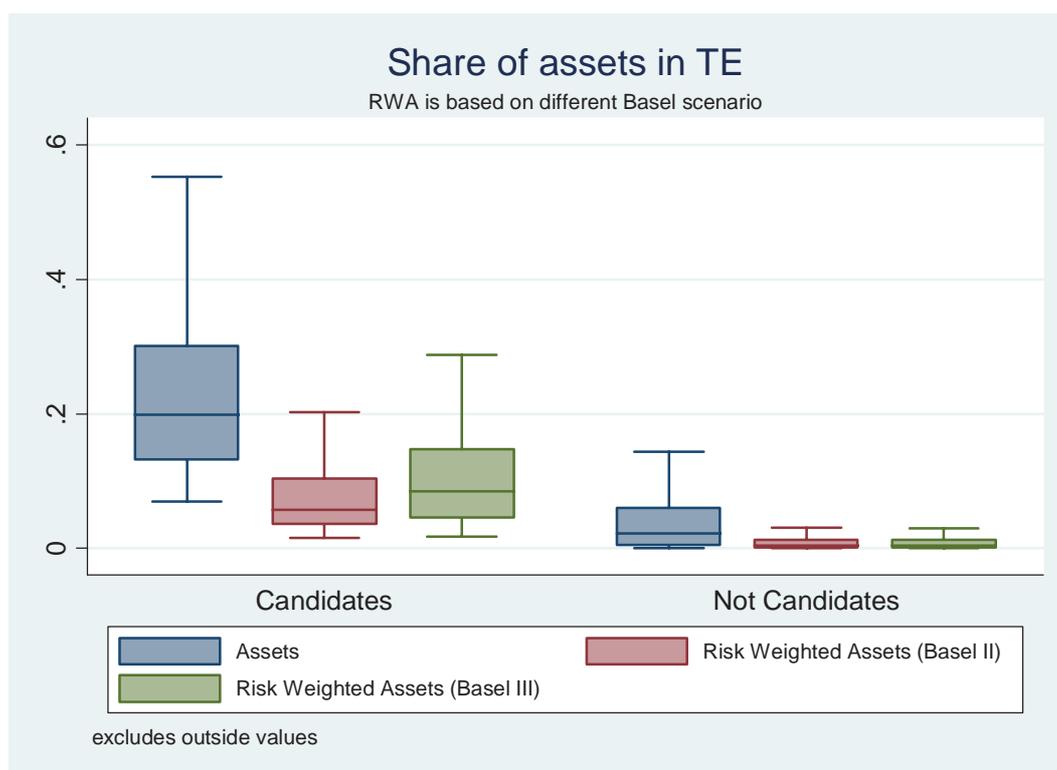
³⁵ The definitions of outliers employed here is the original introduced by Tukey: 1.5 times the inter-quartile range above or below the 3rd and 1st quartile, respectively.

Figure 1: Variation of the shares of assets or risk-weighted-assets for the deposit taking activity



Source: SNL database and JRC estimates

Figure 2: Variation of the shares of assets or risk-weighted-assets for the trading activity



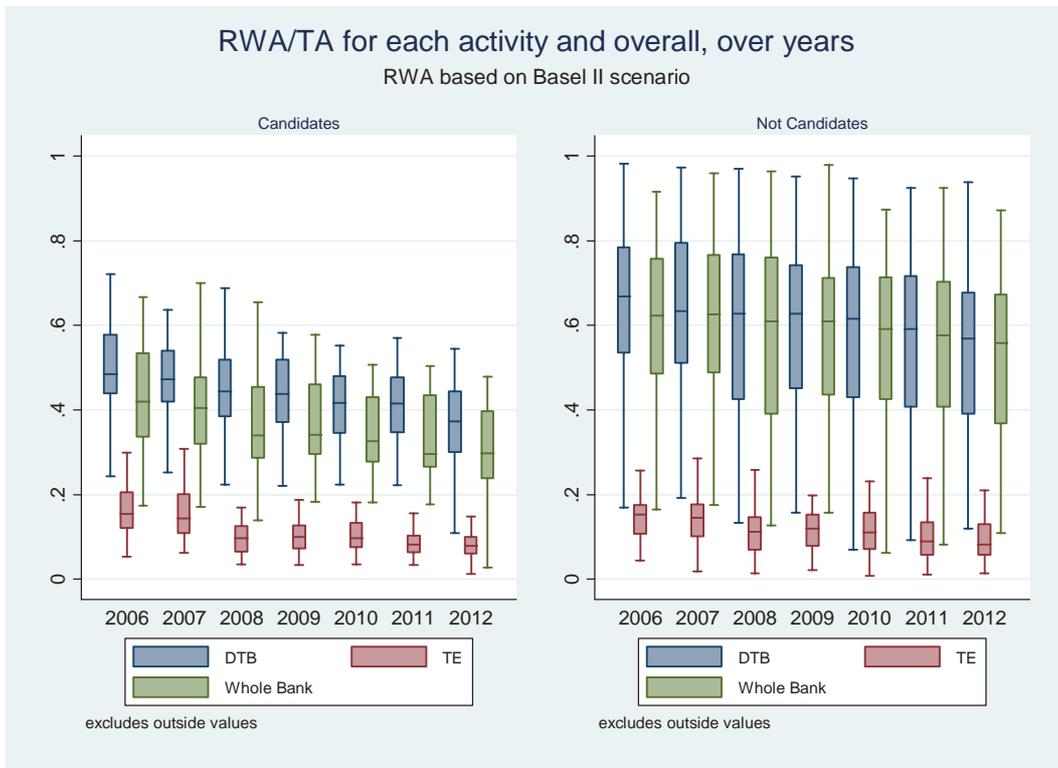
Source: SNL database and JRC estimates

Figures 3 and 4 show how the dispersion of RWA densities differs for deposit taking and trading activities, and how it varies across years and how the implementation of Basel 3 should allow to lower this difference. These graphs again illustrate how the risk weighted assets allocated to trading per unit of assets are consistently lower than the risk weighted assets allocated to deposit taking activities' per unit of assets.

We observe a decrease in the overall RWA density starting in 2006 for banks which get selected as candidates for separation in both deposit taking and trading activities. For banks that are candidate for separation the median RWA density of deposit taking activities lies between 40 and 50% for all years. For trading activities, the level of RWA on total assets remains low, under 20%, for almost all banks selected for structural separation and for all years.³⁶

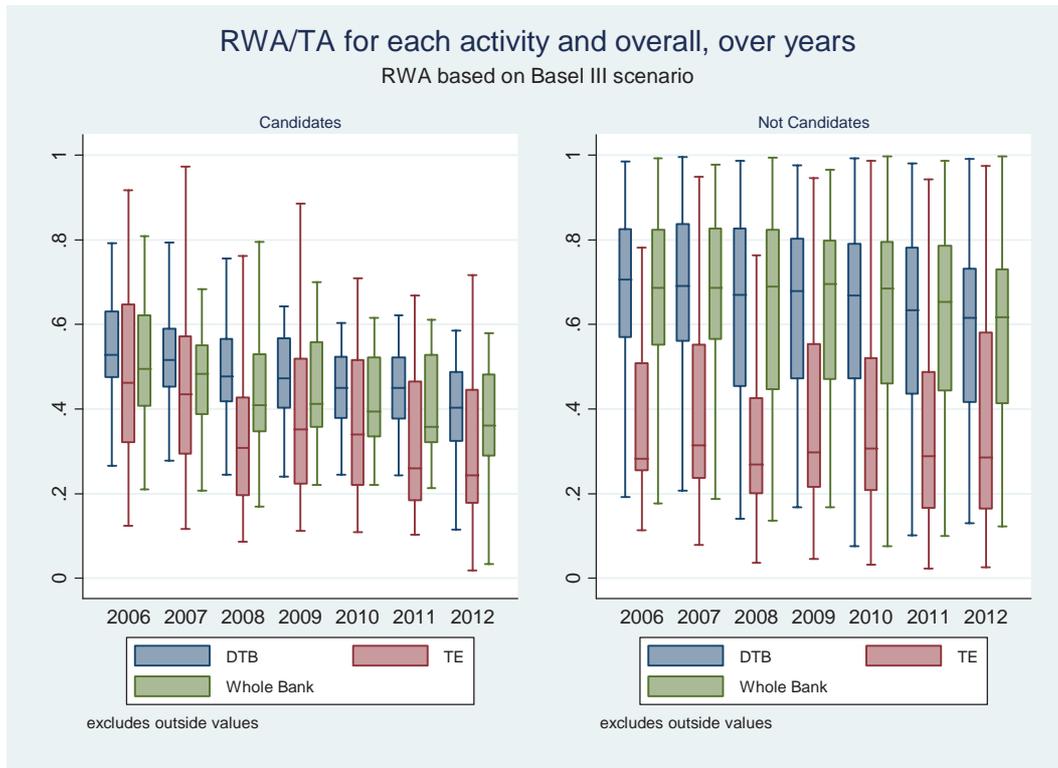
³⁶ It should be noted that, as some banks have a "whole bank" density which is 1 or very close to it (as per their balance sheet), the RWA density for the commercial activities will come out as larger than one if the density for the trading activities will be lower than the density for the "whole bank". These points are excluded from the graph.

Figure 3: share of RWA on TA for trading activities, deposit taking activities and for the whole bank, RWA is computed based on Basel II definition



Source: SNL database and JRC estimates

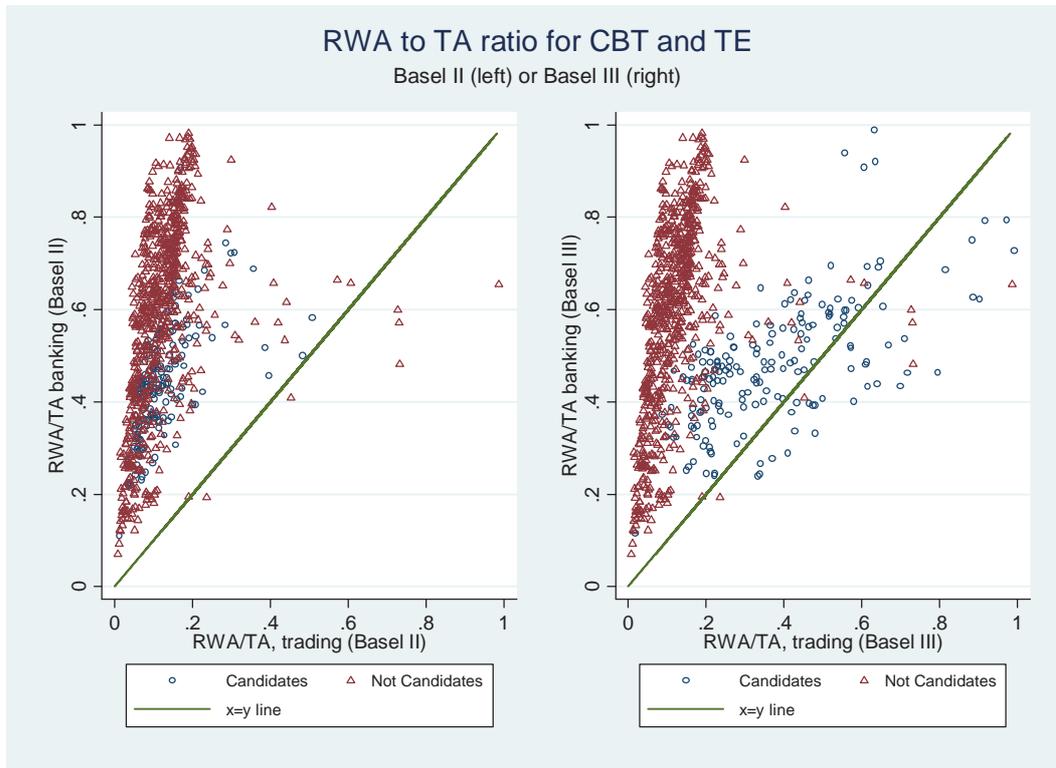
Figure 4: share of RWA on TA for trading activities, deposit taking activities and for the whole bank, RWA is computed based on Basel 3 definition



Source: SNL database and JRC estimates

Figure 5 shows how Basel 3 regulation, represented by our scenario Basel 3, has allowed increasing the RWAs associated to trading activities relative to underlying assets. It is possible to observe the shift of scatterplot towards the $x=y$ line, going from the Basel 2 scenario (left plot) to the Basel 3 scenario (right plot), which shows that RWA density of trading activities increased more than the RWA density of deposit taking activities: the cloud of dots (either black from the Candidates sample or blue dots from the rest of the sample) shifts to the right on the right figure.

Figure 5: Plot of the share of RWA over TA when changing the definition of RWA, which can be computed based on Basel II (left) or Basel III definition (right)



Source: SNL database and JRC estimates

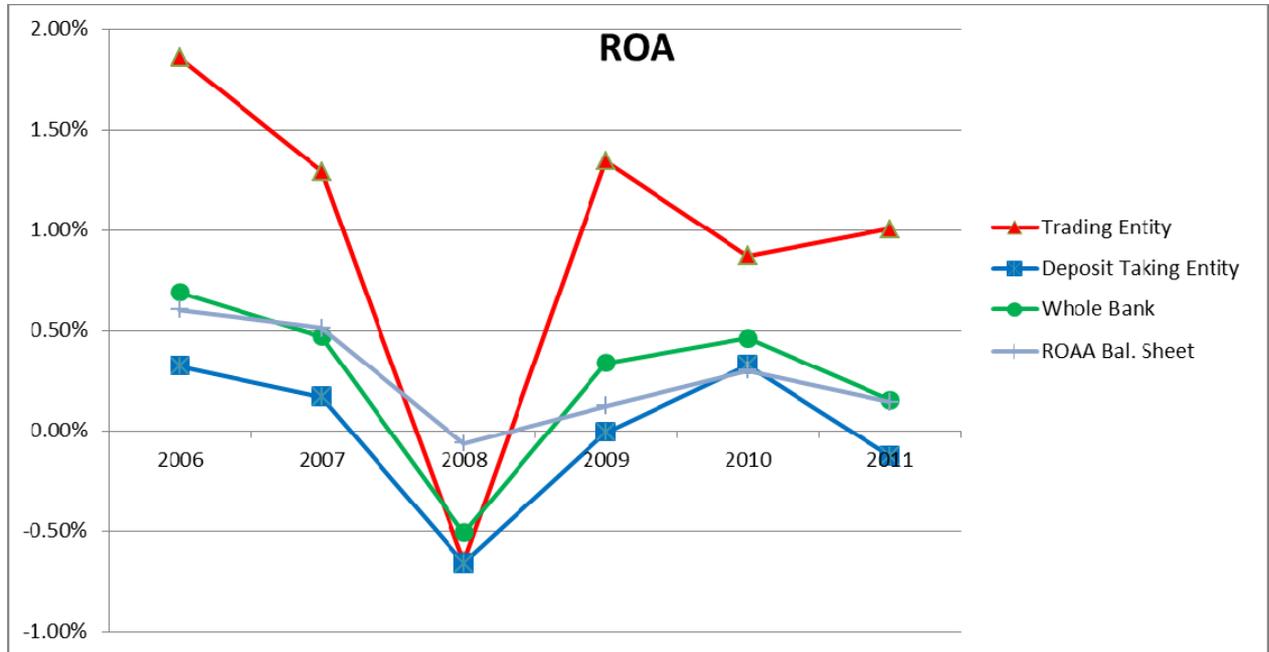
Figure 6 presents the evolution of the ROA for trading and for deposit taking activities for the 29 banks of the “candidates sample”.³⁷ By observing the figure it seems possible to conclude that:

- Deposit taking activities seem less profitable per unit of nominal value compared to trading,
- In 2008, when extreme losses were incurred, deposit taking activities performed similarly to trading activities for banks proposed for structural reform,
- However ROA on trading appears to be both much larger on average and much more volatile.

It should be kept in mind that, as the income split between trading and deposit taking activity doesn't include non-recurring expenses, non-recurring revenues and insurance, the item 'ROA for the whole bank' and 'ROA from Balance Sheet' are different as the difference between the orange line (representing the whole bank, as the sum of both trading and deposit taking activity) and light blue line (ROA from Balance Sheet) show. A decomposition of the differences due to the definitions used to calculate the balance sheet income and the income used in this analysis is presented in Appendix B.

³⁷ Three banks are excluded from the sample from this point of the document due to their results being outliers by several orders of magnitudes with respect to the rest of the data.

Figure 6: Average income / total assets for trading activity, deposit taking activity, for the whole bank (summing trading and deposit taking activity as estimated according to the methodology used for this report) and based on public data information for the 29 banks of Candidates sample. The average is weighted on banks' total assets.



Source: SNL database and JRC estimates

5.3 INCOME PER UNIT OF MCRs OR REGULATORY CAPITAL PER LINE OF ACTIVITY

To assess if existing regulation on MCRs encourages banks to prefer trading activities to credit activities, the Return On Minimum Capital Requirement (ROMCR) of the two classes are compared:

$$ROMCR(t)^{Credit} = \frac{Income(t)^{Credit}}{MCR(t)^{Credit}} \text{ vs}$$

$$ROMCR(t)^{Trading} = \frac{Income(t)^{Trading}}{MCR(t)^{Trading}},$$

where t labels the various years.

Income for the two classes is estimated using data from the financial statements of banks reclassified according to the SNL template, as detailed in Appendix B. MCRs are estimated as detailed in sections 2 to 4. The comparison is performed under each regulatory scenario introduced in *Table 3*.³⁸ Results are always expressed as a weighted average, weighted over the total assets of the banks. Figure 7 and Figure 8 show the evolution over time of the average ROMCR for each activity under each scenario for the banks in the candidates sample.

From the figure it seems possible to observe that:

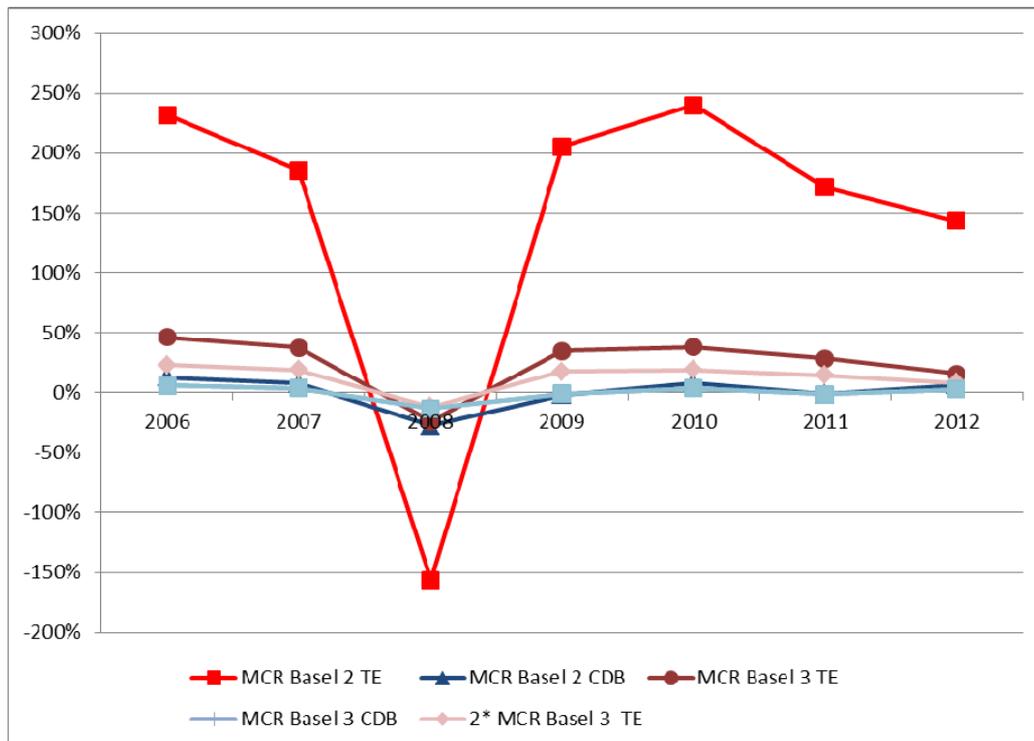
- The recent and current regulatory framework seems to provide incentives to banks to prefer trading with respect to deposit taking activities, as the ratio of income per unit of MCR in trading seems always much higher than in deposit taking activities (the exception is 2008 which could be considered as a very critical year given the economic outlook).
- Under Basel 3 the difference would be reduced but it could still on average be not negligible.
- It can also be observed that, especially under the Basel II scenario, the average ratios for trading activities exhibit a much higher volatility than deposit taking activities.

For comparison purposes, a proxy of a Return on Equity measure is also calculated in Figure 9 and Figure 10. This measure is calculated by using actual balance sheet regulatory capital (eventually including a correction for changes in the definitions of capital when moving from Basel II to Basel III) as a proxy for equity, and allocating it to the two lines of business proportionally to estimated RWAs.³⁹

³⁸ In a previous version of the study, additional scenarios based on changes in the risk weights coefficients for all years (i.e. counterfactuals for B2 weights post-2010 or for B2.5/B3 weights pre-2011) were also included. Given the fact that the new regressions do not highlight a large effect from the changes in the sample considered, and the complication of several interacting scenarios and definitions, this has not been included in the current analysis.

³⁹ The main difference with MCR is therefore that, while MCR is calculated using the exact capital adequacy ratio, this proxy of equity will take into account any eventual surplus capital and will be set always to be equal to or larger than the estimated MCR.

Figure 7: Average income /MCR by type of activity and by regulatory scenario for the candidates sample of 29 banks. MCR refer to estimated minimum capital requirements. The average is weighted on banks' total assets. , while RegCap is a proxy for return on equity based on total balance sheet regulatory capital (corrected for changes in capital definition)

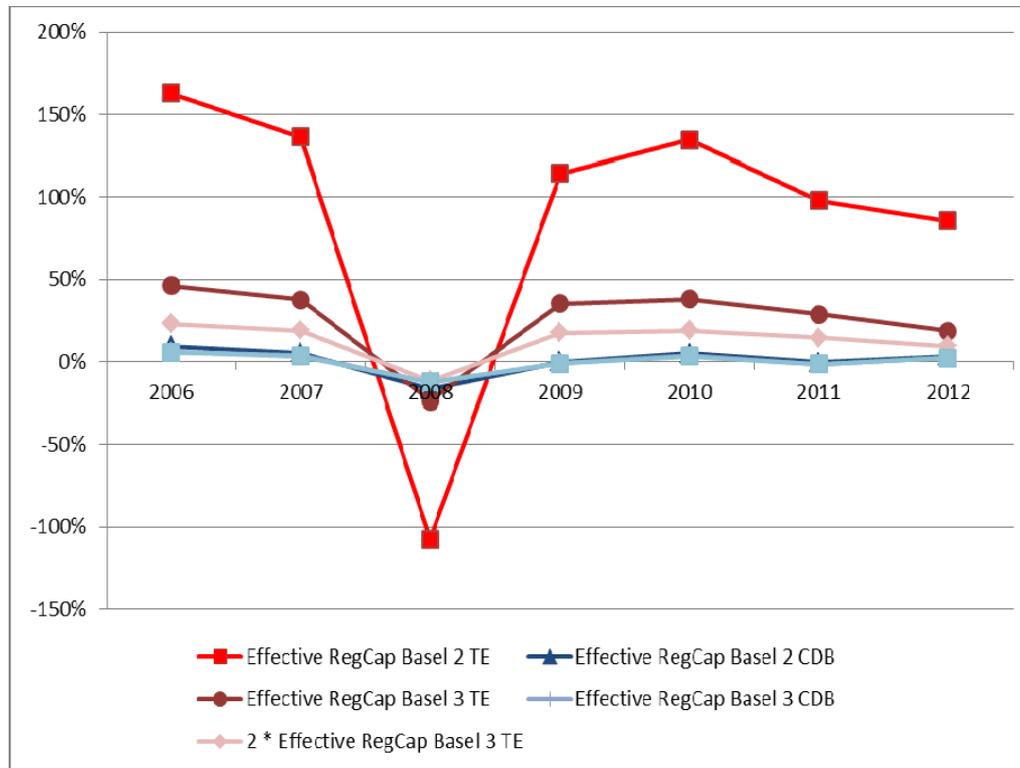


Source: SNL database and JRC estimates

Figure 8: Zoom on Figure 7: average income / MCR by type of activity and by regulatory scenario based on balance sheet information) for the Candidates sample. The average is weighted on banks' EU total assets.

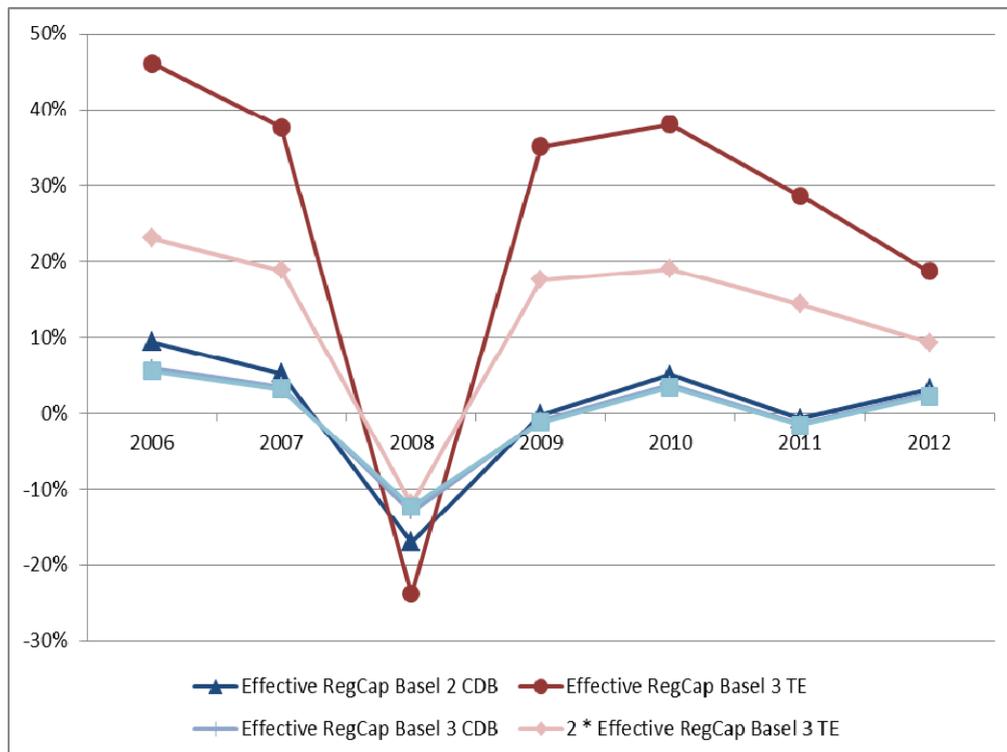


Figure 9: Average income / Equity by type of activity and by regulatory scenario for the candidates sample of 29 banks. RegCap is a proxy for return on equity based on total balance sheet regulatory capital (corrected for changes in capital definition). . The average is weighted on banks' EU total assets.



Source: SNL database and JRC estimates

Figure 10: Zoom on figure 9: average income / Equity by type of activity and by 0regulatory scenario for the Candidates sample which corresponds to the 29 banks proposed for further investigation for structural reform. The average is weighted on banks' EU total assets.



6. CONCLUSIONS

Based on the available data, and subject to the caveat that the division of activities and of risk weighted assets between trading and deposit taking activities is subject to a degree of uncertainty, results of JRC preliminary analyses show for the banks that are part of the EBA list for capital exercise:

- ✓ Possible existence of an incentive towards trading activities
 - Current regulation appears to provide incentives to banks to prefer trading activities to deposit taking activities due to differences in returns on minimum capital requirements on the two activities.
 - Results indicate that even moving to Basel III MCRs could still not eliminate this effect.
- ✓ MCR adequacy
 - Based on the definition of trading activities adopted, estimated MCRs for trading activities under current rules do not seem to allow absorbing net losses stemming from trading in crisis periods (2008), while estimated MCRs for deposit taking activities appear to allow covering net losses stemming from them more fully
 - The analysis confirms that the introduction of Basel 2.5⁴⁰ rules in 2011 at least partially achieved the goal of substantially increasing the MCRs for some activities.

⁴⁰ In 2011 the Basel Committee on Banking Supervision supplemented the trading book framework with an incremental risk capital charge, which includes default risk as well as migration risk, for unsecuritised credit products. <http://www.bis.org/publ/bcbs158.htm>

APPENDIX A: PANEL ANALYSIS TO ESTIMATE RISK WEIGHTED ASSETS FOR DEPOSIT TAKING AND TRADING ACTIVITIES

Given both the cross-sectional and temporal dimensions of the problem we implement a set a panel regressions with the aim of identifying the model that best and parsimoniously describes the data.

Given both the cross-sectional and temporal dimensions of the problem we implement a set a panel regressions with the aim of identifying the determinants of Risk Weighted Asset (RWA).

RWA for a generic bank i at given time t is explained by the following set of covariates: Total Loans to Banks (LB), Net Customer Loans (NCL), Securities (excluding loans) held at amortized value (AMZ), Securities Held to Maturity (HTM), Available For Sale securities (excluding loans) (AFS), Securities held at Fair Value (FV), Securities (excluding loans and derivatives) Held For Trading as Assets or Liabilities (TSA+TSV)/2, Derivatives Held For Trading as Assets or Liabilities (TDV), Derivatives held for Hedging purposes as Assets or Liabilities (DHV) and an interaction dummy for the period before 2011 (B2dum) representing the use of Basel 2 rules, as opposed to Basel 2.5 rules from 2011. The sample covers a total of 215 European banks of various size and typology from 2006 to 2011. The panel is balanced. The type of regressions we use is panel data model of the form:

$$RWA_{it} = \alpha_i + \beta_1 LB_{it} + \beta_2 NCL_{it} + \beta_3 AMZ_{it} + \beta_4 HTM_{it} + \beta_5 AFS_{it} + \beta_6 AFS_{it} * B2dum + \beta_7 FV_{it} + \beta_8 \frac{(TSA_{it} + TSL_{it})}{2} + \beta_9 \frac{(DA_{it} + DL_{it})}{2} + \beta_{10} DHV_{it} + u_{it} \quad (1)$$

where the α_i represents the unobserved effect that is peculiar of the i -th bank, and u_{it} are the error terms that we assume to be independent and identically distributed Gaussian random variables uncorrelated with the regressors at any lead and lag and across units. Model parameters are estimated by the fixed-effect estimator assuming that all regressors are uncorrelated with the errors and the fixed effects, i.e. $E[x_{it}(u_{it} + \alpha_i)u_{it}] = 0$. As there is some evidence of heteroskedasticity, we employ robust standard errors (cluster method) in the estimation.

Alternative regressions have been tested to check for the presence of effects of the introduction of Basel 2.5 rules on other coefficients, and to test for alternative variable definitions. The only coefficient that seems significant and shows the correct (i.e. expected on the basis of economic theory) is the coefficient for AFS, which is retained. In some of these models, we could note the presence of barely significant coefficients with positive sign on assets held at fair value and with negative sign on derivatives held for hedging, representing an indication that weights assigned to these categories in the risk management process could have been lowered (i.e. more negative for hedging) after the crisis, either due to asset reorganization or due to risk weights optimization. These results point in an interesting direction but the effects would need to be confirmed with further, more sophisticated analyses. It should also be noted that in some versions of the model also the coefficients for trading securities excluding loans and derivatives appears to increase after 2011, however in order to keep that coefficient as significant, it would be necessary to allow the post-2011 coefficients for derivatives to drop considerably and the coefficients on FVA to become not significant. We therefore repute these models not fully supported by both theory and data and discard them.

Alternative designs included considering the breakdown of loans by asset holding classification (i.e. at amortized cost, at fair value, for trading ...), the use of net exposures in trading activities, with or without sign, and the inclusion of additional elements from the liability side. None of the models which could be justified based on economic grounds proved to be satisfactory in statistical terms.

All regressions include year dummies to control for fixed time effects. Models with interactions of single year time effects and the regressors were tested and rejected.

Results for the preferred model are reported in Table 6. The t-statistic is defined as the ratio between the coefficient and its standard error, the p-value is the probability of observing by chance a test statistic which is at least as extreme as the one observed, under the null-hypothesis that the coefficient is equal to zero.

Table 6: Estimates for the unrestricted fixed-effect model (1) - 50 parameters

	β_1	β_2	β_3	β_4	β_5	β_6	β_7	β_8	β_9	β_{10}
Coeff.	.18	.52	.31	.25	.39	-.19	.23	0.198	0.048	-1.95
t-stat	1.44	8.04	2.96	0.28	2.75	-2.52	1.06	1.86	2.75	-3.64
Number of observations: 923 in 183 groups										
Std. Error adjusted for 183 clusters										
R-squared: within = 0.72					Corr(u_i, Xb) = 0.76					
Between = 0.96					Rho (fraction of variance due to u_i) = .91					
Overall = 0.95										

Notice that the effect of HTM is completely not significant according to the t-statistic.

The magnitude of fixed time effects is extremely small compared to fitted values. Individual fixed effects are very small to small in the vast majority of cases.

The model has an extremely high R-squared, this is in part to be expected due to the fact that we know that the dependent variable is obtained based on calculations including the regressors or some of their combinations.

It should also be noted that the model is not intended to check the relationship between the risk weights and underlying risk factors, but has the more limited aim of predicting (in-sample) the value of RWA based on the composition of the balance sheet.

APPENDIX B: ESTIMATION OF THE RETURNS FOR THE TWO BUSINESS LINES

This appendix reports the criteria used to allocate the revenue between deposit taking and trading activities.

The allocation of the revenue is based on income statement public data as reported in the commercial database SNL⁴¹, based on template data.

The definition of income used in this report differs from net profits as reported in the SNL balance sheet template in the following ways:⁴²

1. Income is based on pre-tax income definition
2. non-recurring expenses and non-recurring revenues are excluded
3. insurance incomes are excluded
4. unrealized gains and losses (an element of comprehensive income) are included

The main criteria used in the allocation are that:

1. the revenues from loans and HTM securities are always attributed to the deposit taking activity.
2. Securities held at fair value and securities available for sale are always counted to the deposit taking activities income as well.⁴³
3. Trading revenue of the bank mainly comes from securities and derivatives held for trading.
4. The part of the revenue or expense that is not directly attributed to one of these activities is proportionally attributed based on the allocation of assets (for income) or of liabilities (for expenses) of each type of activity (trading or deposit taking). Applying this proportionality to net-interest income and to the fees and commissions, we implicitly assume that the interest rate expense and revenue on deposit taking or trading activities' assets are equivalent.⁴⁴

Table 7 below illustrates the procedure in more detail

⁴¹ www.snl.com

⁴² The main advantage of this definition of income is that it allows to consider unrealized gains and losses in available for sale activities at the same time as corresponding gains and losses in activities accounted for at fair value.

⁴³ Alternative definitions of trading activities including one or both of these classes were also tested, results are available from the authors

⁴⁴ These hypotheses have been confirmed via statistical tests conducted on the part of the sample for which more detailed data is available. The assumption of proportional sharing of funding costs is instead not borne by the data, but could be justified on the grounds that all activities within the same institution would be facing the same funding WACC.

Table 7: Split of net income between trading and deposit taking activities based on SNL classification for definition 1 and 2. Income not directly assigned to one type of activity is split based on the share of assets (α) or liabilities (Φ) assigned to each activity.

Level	Income Statement	Rule for repartition between activity
1 Operating income		
<i>1.1</i>	<i>Net interest income</i>	
1.1.a	Interest income	
1.1.a1	Interest Earned on Customer Loans	Comm. Bk
1.1.a2	Interest Earned on Trading Assets	Trading
1.1.a3	Rest of Interest Income ⁴⁵ = 1.1.a – 1.1.a1 – 1.1.a2	α
1.1.b	Interest Expenses	
1.1.b1	Interest Expenses on Customer Deposits	Comm. Bk
1.1.b2	Interest Expenses on Trading Assets	Trading
1.1.b3	Rest of Interest Exp. = 1.1.b – 1.1.b1 – 1.1.b2	Φ
<i>1.2</i>	<i>Net fee & commission income</i>	
1.2.a	Deposits and Loans fees	Comm. Bk
1.2.b	Credit card income	Comm. Bk
1.2.c	Investment banking fee	Trading
1.2.d	Rest of Net fee & Com.= 1.2 – 1.2.a – 1.2.b – 1.2.c	α
<i>1.3</i>	<i>Net trading income</i>	
1.3.a	Net gain on securities held for trading	Trading
1.3.b	Net gain on securities held at fair value	Comm. Bk
1.3.c	Realised gain on securities	Comm. Bk
1.3.d	Other net gain on securities	α
<i>1.4</i>	<i>Other operating income</i> ⁴⁶	α
2 Operating expense		α
3	Assets write-downs	
<i>3.1</i>	<i>Loans and credit commitment impairments</i>	Comm. Bk

⁴⁵ This implies that when a value is missing, the repartition is applied to a upper level of the income hierarchy. In this case if at least one value between ‘Interest Earned on Customer Loans’ (1.1.a1) and ‘Interest Earned on Trading Assets’ (1.1.a2) is missing, α will be applied to the ‘Interest income’ (1.1.a)

⁴⁶ Other operating income = Equity accounted results + dividends from equity instruments + rental revenue + lease and rental revenue + other non-interest income

Level	Income Statement	Rule for repartition between activity
3.2	<i>Impairment on securities</i>	
3.2.a	AFS financial assets impairment	Comm. Bk
3.2.b	Held to maturity financial assets imp.	Comm. Bk
3.2.c	Other financial assets impairment	α
3.3	<i>Impairment on non-financial assets</i>	α
4	Total other comprehensive income	
4.1	<i>Change in Unrealised Gain</i>	Comm. Bk
4.2	<i>Change in FV of Effective Hedge</i>	α
4.3	<i>Change in Foreign currecny ex</i>	α
4.4	<i>Other comprehensive income</i>	α

The revenue of deposit taking activities has thus been estimated as:

$$\begin{aligned}
 & \text{Interest Earned on Customer Loans} && (1) \\
 & - \text{Interest Expenses on Customer Deposits} \\
 & + \text{Deposits and Loans fees} \\
 & + \text{Credit card income} \\
 & + \text{Net gain on securities held at fair value} \\
 & + \text{Realised gain on securities} \\
 & - \text{Loans and credit commitment impairments} \\
 & - \text{AFS financial assets impairment - held-to-maturity financial assets imp.} \\
 & + \text{change in unrealized gain} \\
 & - \Phi * \text{Sum of expenses to be split along phi as defined in eq. (3)} \\
 & + \alpha * \text{Sum of income to be split along alpha as defined in eq. (6)}
 \end{aligned}$$

where

α is the proportion of the retail assets over total assets as detailed in equation (4) ,

Φ is the proportion of the retail funding over total liabilities as detailed in equation (7)

Income issued from AFS and held to maturity securities are always completely in the income of deposit taking activities.

The revenue of trading activities has been estimated as:

$$\begin{aligned}
 & \text{Interest Earned on Trading Assets} && (2) \\
 & - \text{Interest Expenses on Trading Assets} \\
 & + \text{Net gain on securities held for trading} \\
 & - (1-\Phi) * \text{Sum of expenses to be split along phi as defined in eq. (3)} \\
 & + (1-\alpha) * \text{Sum of income to be split along alpha as defined in eq. (6)}
 \end{aligned}$$

where

$(1-\alpha)$ is the proportion of the trading assets over total assets as detailed in equation (4),

$(1-\Phi)$ is the proportion of the trading funding over total liabilities as detailed in equation (7)

The net gain issued from securities held for trading is completely included as trading income.

All remaining voices correspond to income that shall be distributed between trading and deposit taking activities based on the repartition of the underlying assets, RWA or liabilities.

The remaining voice linked to expenses will be split between trading and deposit taking activities based on the repartition of the related funding Φ . It includes only

$$\begin{aligned}
 & \text{Interest Expenses excluding the part already computed in eq(1) and (2).} \\
 & (3)
 \end{aligned}$$

These expenses are split between deposit taking (ϕ) or trading activities ($1-\phi$) based on the share of funding / liabilities repartition between these two activities as followed.

γ corresponds to the part of liabilities assigned to deposit taking activities and equals to

$$\frac{\alpha * \text{total assets} - \text{customer deposits}}{\text{total debt} + \text{banks deposits} + \text{non-financial liabilities} + \text{derivatives id. as} + \text{hedges} + \text{equity}} \quad (4)$$

We can compute the share of funding ϕ for deposit taking activities

$$\phi = \frac{\text{cust deposits} + \gamma (\text{debt} + \text{bank deposits} + \text{derivatives id. as negative hedges})}{\text{financial liabilities}} \quad (5)$$

The remaining voices not linked to expenses will be split between trading and deposit taking activities based on the repartition of the related assets α . They include:

Interest Income excluding Interest Earned on Customer Loans or on Trading Assets
(6)

+ Net fee & commission income not yet considered in (1) or (2)

- Operating expense

-Other financial assets impairment - Impairment on non-financial assets

+Change in FV of Effective Hedge

+Change in Foreign currency ex

+Other comprehensive income

where

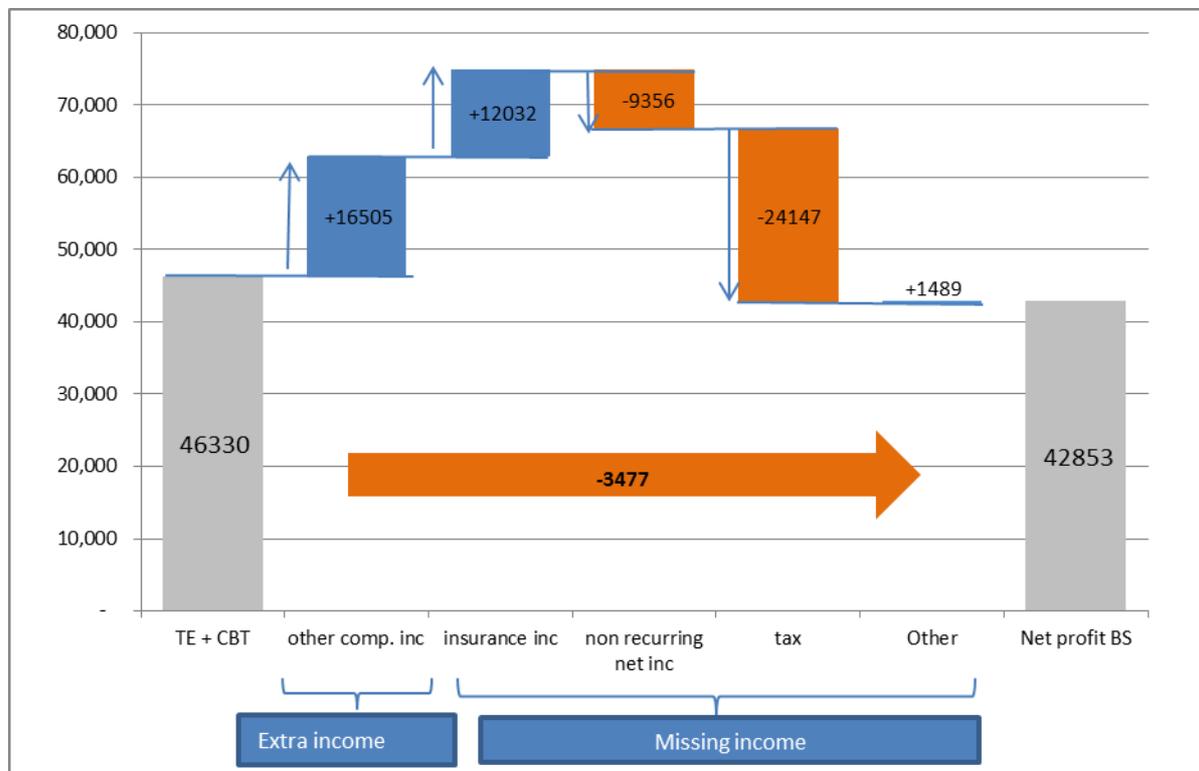
$$\alpha = \frac{\text{net loans to customers/banks} + \text{sec. held at maturity or at fair value} + \text{amortized cost sec. financial assets} - \text{cash at central bank} - \text{derivatives identified as positive hedges}}{\quad} \quad (7)$$

It should be noted that the implementation of some of the formulas that use more detail from balance sheet present problems due to data missigness even for some large banks. Missing data are imputed as zeros for the purposes of the calculations presented here.

In order to make comparison with performance indicators from the balance sheet such as ROAE or ROAA, figure 11 presents a decomposition of the differences between Net profit as presented in the balance sheet and the sum of the incomes allocated to trading and deposit taking activities used for the purposes of this study. In this decomposition, items which are not included in net profit (as defined in the SNL template) but are included in our custom definition are termed “extra income items”; items which are included in the calculation of net profit, but are ignored for the purposes of our definition are termed “missing income items”.

Also they have been no imputation of missing values, the respective amount of income is not considered if the value is missing. The voices of income that we have used are sometimes deep in the income hierarchy detail and thus for some bank some missing values can be observed. In this case, we assume missing values are 0.

Figure 11: Representation of the difference between the sum of net profit summing TE and CBT income and net profit for 2011 only from the income statement based on the 29 banks of our sample. Incomes are profited in Bio €. Area in Blue represent positive value and in orange are provided negative values.



In absolute value over the sample, the net income diminished from 3'477 Bio EUR which correspond to 8% of the summed income from TE and CBT. This is an overall figure and some individual banks can present larger differences.

APPENDIX C: CANDIDATES SAMPLE⁴⁷

This appendix describes the Candidates sample: the 29 banks have been selected as potential candidates for structural reform as presented in the Commission Staff paper “Trading activities and functional structural separation: possible definitions and calibration of a de minimis exemption rule”⁴⁸

The list of banks is presented in the following table.

Table 8: List of banks considered in the Output Sample sample used for this section.

Deutsche Bank	Groupe BPCE	LB Baden-Württemberg	Swedbank
HSBC Holdings	ING Bank	Bayerische LB	Portigon
BNP Paribas	UniCredit	KBC Group	HELABA
Crédit Agricole Group	Nordea	Handelsbanken	DekaBank
Barclays	Commerzbank	DNB	Mediobanca
RBS Group	Danske Bank	SEB	
Santander	Standard Chartered	Monte dei Paschi Siena	
Société Générale	DZ-bank	Belfius	

⁴⁷ Appendix D provides a set of figures for all banks in the original sample.

⁴⁸ A. Pagano, J. Cariboni, M. Marchesi, N. Ndacyayisenga, M. Petracco-Giudici, H. Joensson; (201) “Trading activities and functional structural separation: possible definitions and calibration of a de minimis exemption rule”, JRC (European Commission Internal).

Table 9: Summary by bank of the allocation of assets between trading (TE) and commercial banking (DTB) activities under Basel II or Basel III scenario for 2011

Institution Name	Share Business in EU	Total Assets (€000)	EU	RWA / TA	α TA _{DTB} / TA	=	Grp QIS ⁴⁹	RWA _{DTB} / RWA (B2)	RWA _{DTB} / RWA (B3)	RWA _{DTB} (B2) / TA _{DTB}	RWA _{TE} (B2) / TA _{TE}	RWA _{DTB} / TA _{DTB} (B3)	RWA _{TE} / TA _{TE} (B3)
Deutsche Bank	79.31%	1,716,350	18%	45%	83%	1	83%	73%	33%	5%	35%	10%	
HSBC Holdings	41.05%	807,780	47%	77%	92%	1	92%	83%	57%	16%	62%	42%	
BNP Paribas	87.57%	1,720,998	31%	56%	85%	1	85%	75%	47%	11%	51%	21%	
Crédit Agricole Group	97.74%	1,837,058	28%	73%	94%	1	94%	84%	36%	6%	39%	20%	
Barclays	56.34%	1,053,412	25%	52%	88%	1	88%	78%	42%	6%	45%	14%	
RBS Group	77.96%	1,406,125	29%	53%	86%	1	86%	76%	47%	9%	50%	18%	
Santander	77.81%	973,410	45%	85%	97%	1	97%	87%	52%	10%	56%	46%	
Société Générale	90.11%	1,064,534	30%	62%	87%	1	87%	78%	42%	10%	45%	21%	
Groupe BPCE	97.10%	1,105,382	34%	85%	97%	1	97%	87%	39%	7%	42%	36%	
ING Bank	85.38%	820,643	34%	90%	97%	1	97%	88%	37%	9%	41%	50%	
UniCredit	93.54%	854,551	50%	86%	97%	1	97%	88%	57%	9%	62%	54%	
Nordea	87.70%	628,111	26%	67%	92%	1	92%	82%	36%	6%	39%	17%	
Commerzbank	97%	642,506	36%	75%	95%	1	95%	85%	45%	7%	49%	26%	
Danske Bank	99%	458,252	26%	71%	93%	1	93%	83%	35%	6%	38%	19%	
Standard Chartered	100%	456,368	46%	86%	97%	1	97%	88%	52%	9%	57%	47%	
DZ-bank	100%	405,926	25%	84%	NA	1	NA	NA	NA	NA	NA	NA	
LB Baden-Württemberg	100%	373,069	29%	71%	90%	1	90%	81%	37%	10%	40%	23%	
Bayerische LB	100%	309,172	38%	84%	97%	1	97%	88%	45%	6%	49%	35%	

⁴⁹ In this exercise, Group 1 banks are those banks whose Tier Capital is over 3 bn EUR. Group 1 RWA will be increased by +21.2%, Group 2 by +6.9%.

Institution Name	Share Business in EU	Total EU Assets (€000)	RWA / TA	$\alpha = \frac{TA_{DTB}}{TA}$	Grp QIS ₅₀	$\frac{RWA_{DTB}}{RWA(B2)}$	$\frac{RWA_{DTB}}{RWA(B3)}$	$\frac{RWA_{DTB}(B2)}{TA_{DTB}}$	$\frac{RWA_{TE}(B2)}{TA_{TE}}$	$\frac{RWA_{DTB}}{TA_{DTB}(B3)}$	$\frac{RWA_{TE}}{TA_{TE}(B3)}$
KBC Group	100%	285,382	44%	91%	1	98%	89%	48%	10%	52%	67%
Handelsbanken	100%	275,514	21%	92%	1	98%	89%	22%	4%	24%	34%
DNB	100%	274,216	50%	93%	1	93%	85%	50%	48%	55%	128%
SEB	100%	264,852	29%	80%	1	95%	85%	34%	7%	37%	26%
Monte Paschi di Siena	100%	240,794	44%	89%	1	97%	88%	48%	11%	52%	57%
Belfius	100%	232,509	23%	84%	1	98%	88%	26%	3%	29%	21%
Swedbank	100%	208,464	27%	86%	1	96%	87%	30%	7%	33%	30%
Portigon	100%	167,910	29%	65%	1	94%	83%	42%	5%	45%	16%
HELABA	100%	163,985	35%	75%	1	90%	81%	42%	15%	45%	33%
DekaBank	100%	133,738	19%	70%	2	89%	87%	24%	7%	25%	8%
Mediobanca	100%	72,934	75%	79%	1	95%	86%	91%	17%	99%	63%

Source : SNL and JRC estimates

⁵⁰ In this exercise, Group 1 banks are those banks whose Tier Capital is over 3 bn EUR. Group 1 RWA will be increased by +21.2%, Group 2 by +6.9%.

Table 10: Summary by bank of the return on assets (ROA) or return on MCR (ROMCR) obtained after the split between trading (TE) and commercial banking (DTB) entities for 2011

Institution Name	Income		ROA				ROMCR				
	Trading Income	Banking Income	DTB	TE	DTB + TE	ROAA (BalSht)	TE, B2	TE, B3	DTB, B2	DTB, B3	
Deutsche Bank	7,432	-275	0.62%	-0.03%	0.33%	0.21%	218.2%	57.2%	-1.7%	-0.8%	
HSBC Holdings	10,672	5,686	2.33%	0.38%	0.83%	0.65%	286.6%	53.3%	12.6%	5.8%	
BNP Paribas	-138	7,364	-0.02%	0.67%	0.37%	0.35%	-2.8%	-0.7%	26.9%	12.5%	
Crédit Agricole Group	1,119	-1,827	0.22%	-0.13%	-0.04%	0.06%	66.3%	10.6%	-7.1%	-3.3%	
Barclays	2,878	-9,811	0.32%	-1.01%	-0.37%	0.25%	95.9%	21.6%	-45.5%	-21.2%	
RBS Group	5,038	-4,099	0.60%	-0.43%	0.05%	-0.13%	129.1%	31.6%	-17.3%	-8.0%	
Santander	4,037	546	2.13%	0.05%	0.37%	0.50%	408.6%	43.7%	1.9%	0.9%	
Société Générale	3,878	597	0.87%	0.08%	0.38%	0.24%	168.8%	39.8%	3.7%	1.7%	
Groupe BPCE	2,532	1,286	1.51%	0.13%	0.34%	0.28%	388.2%	40.4%	6.5%	3.0%	
ING Bank	-23,789	27,652	-24.74%	3.20%	0.40%	0.43%	-5014.3%	-471.8%	163.8%	74.7%	
UniCredit	148	-10,026	0.12%	-1.27%	-1.08%	-0.96%	24.5%	2.1%	-42.5%	-19.5%	
Nordea	-1,254	3,541	-0.53%	0.74%	0.32%	0.43%	-166.4%	-30.1%	39.5%	18.2%	
Commerzbank	2,304	-2,546	1.42%	-0.51%	-0.04%	0.11%	380.2%	52.0%	-21.5%	-9.9%	
Danske Bank	1,120	-888	0.84%	-0.27%	0.05%	0.05%	252.1%	43.2%	-14.9%	-6.9%	
Standard Chartered	1,740	1,903	2.66%	0.49%	0.80%	0.87%	574.7%	53.3%	17.9%	8.2%	
DZ-bank	-237	-308	-0.36%	-0.09%	-0.13%	0.15%	-4.5%	-2.0%		-33.0%	
LB Baden-Württemb.	1,308	-1,514	1.21%	-0.57%	-0.06%	0.02%	225.1%	49.0%	-29.8%	-13.7%	
Bayerische LB	563	4	1.10%	0.00%	0.18%	0.03%	334.5%	30.1%	0.1%	0.0%	
KBC Group	53	2	0.20%	0.00%	0.02%	0.02%	37.2%	2.9%	0.0%	0.0%	
Handelsbanken	-226	1,904	-1.02%	0.75%	0.61%	0.53%	-502.4%	-28.7%	64.5%	29.4%	

Institution Name	Income		ROA				ROMCR				
	Trading Income	Banking Income	DTB	TE	DTB + TE	ROAA (BalSht)	TE, B2	TE, B3	DTB, B2	DTB, B3	
DNB	505	1,799	2.55%	0.71%	0.84%	0.60%	100.8%	18.9%	26.9%	12.2%	
SEB	498	970	0.95%	0.46%	0.55%	0.49%	240.9%	35.1%	25.6%	11.7%	
Monte Paschi di Siena	764	746	2.82%	0.35%	0.63%	-1.95%	483.1%	47.0%	13.9%	6.4%	
Belfius	126	-1,108	0.35%	-0.56%	-0.42%	-0.57%	193.5%	15.5%	-40.8%	-18.7%	
Swedbank	403	1,194	1.34%	0.67%	0.77%	0.66%	351.2%	43.2%	42.8%	19.6%	
Portigon	958	-350	1.62%	-0.32%	0.36%	-0.03%	591.2%	93.5%	-14.8%	-6.8%	
HELABA	498	13	1.24%	0.01%	0.31%	0.24%	162.1%	35.7%	0.5%	0.2%	
DekaBank	587	-177	1.46%	-0.19%	0.31%	0.20%	351.2%	164.3%	-13.4%	-7.2%	
Mediobanca	121	386	0.81%	0.67%	0.70%	0.49%	90.1%	12.1%	14.0%	6.4%	

Source : SNL and JRC estimates - extreme values obtained for ROMCR on trading ING for 2006-2011 and Belfius for 2006-2010 made these banks dropped from the figures of this document.

APPENDIX D: ANALYSIS OF THE MCR STRUCTURE FOR THE FULL SAMPLE OF BANKS

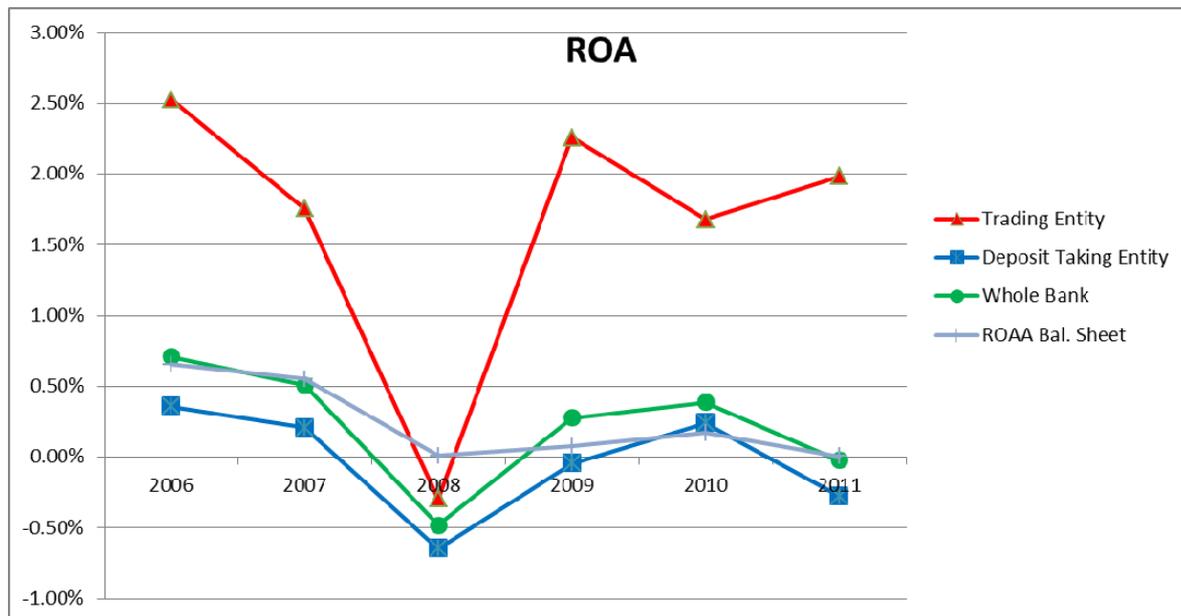
The complete sample used for panel regression contains 215 banks. The number of banks for which data are available for the computation of the ROMCR is much lower and varies across the years, as detailed in Table 11.

Table 11: Evolution of the sample size depending on data availability

Year	2006	2007	2008	2009	2010	2011
Number of banks used in the figures	144	183	187	196	204	209

The below figures are using the whole sample of banks and confirm the conclusions discussed in the main text that focusing only on the EBA sample.

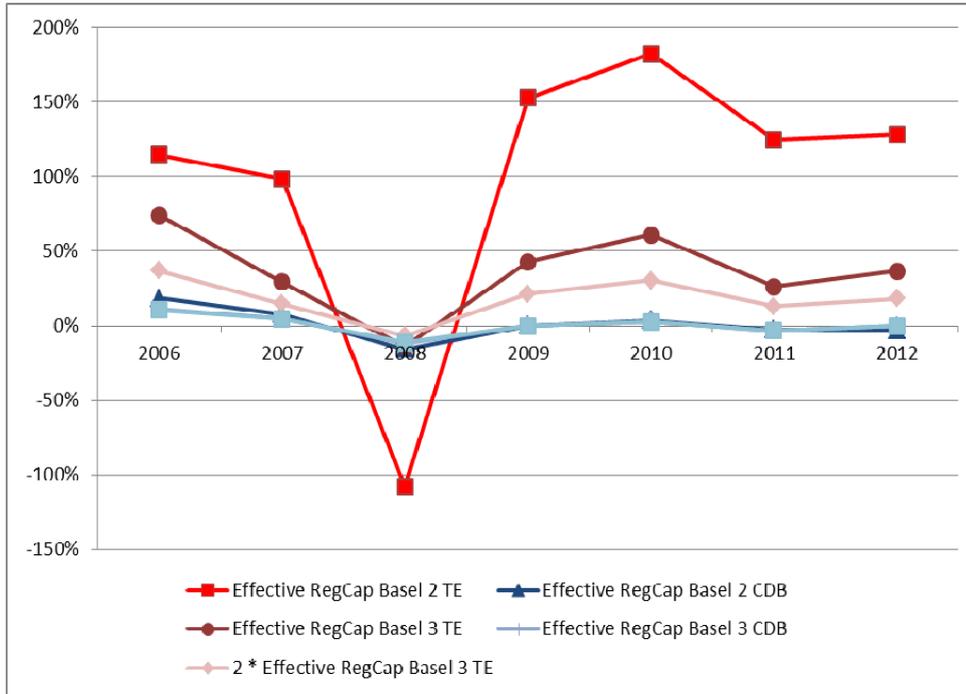
Figure 12: Average income / Total Assets by type of activity: trading, deposit taking or whole bank as computed and based on balance sheet information) for the complete sample⁵¹. The average is weighted on banks' total assets.



Source : SNL and JRC computation

⁵¹ Due to data issues (excess missingness, outlier behaviour, excess variation), LLänsförsäkringar, ING Bank, Belfius Banque, ESF Group data are not considered. Some other cajas banks are also partially considered (Dexia, Lloyds Group, Rentenbank, Caixa Económica Montepio Geral, Cajas Rurales Unidas, HSH Nordbank, SNS REAAL).

Figure 13: Average income /MCR by type of activity and by regulatory scenario for the candidates sample of 29 banks. MCR refer to estimated minimum capital requirements. The average is weighted on banks' total assets. , while RegCap is a proxy for return on equity based on total balance sheet regulatory capital (corrected for changes in capital definition)



Source : SNL database and JRC estimates

Figure 14: Zoom on Figure 7 : average income / MCR by type of activity and by regulatory scenario based on balance sheet information) for the Candidates sample. The average is weighted on banks' EU total assets.

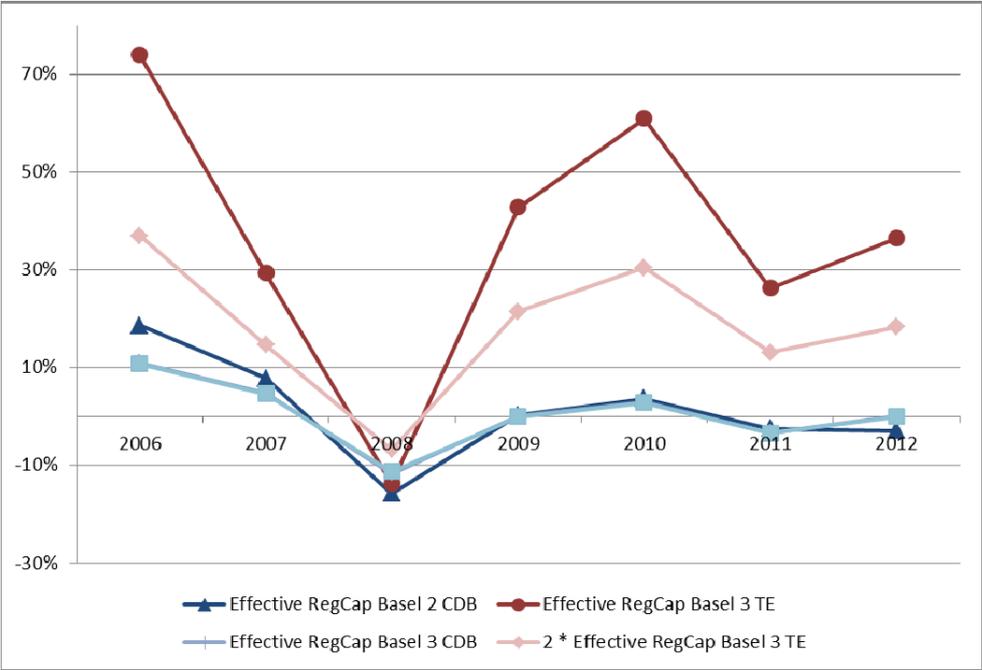
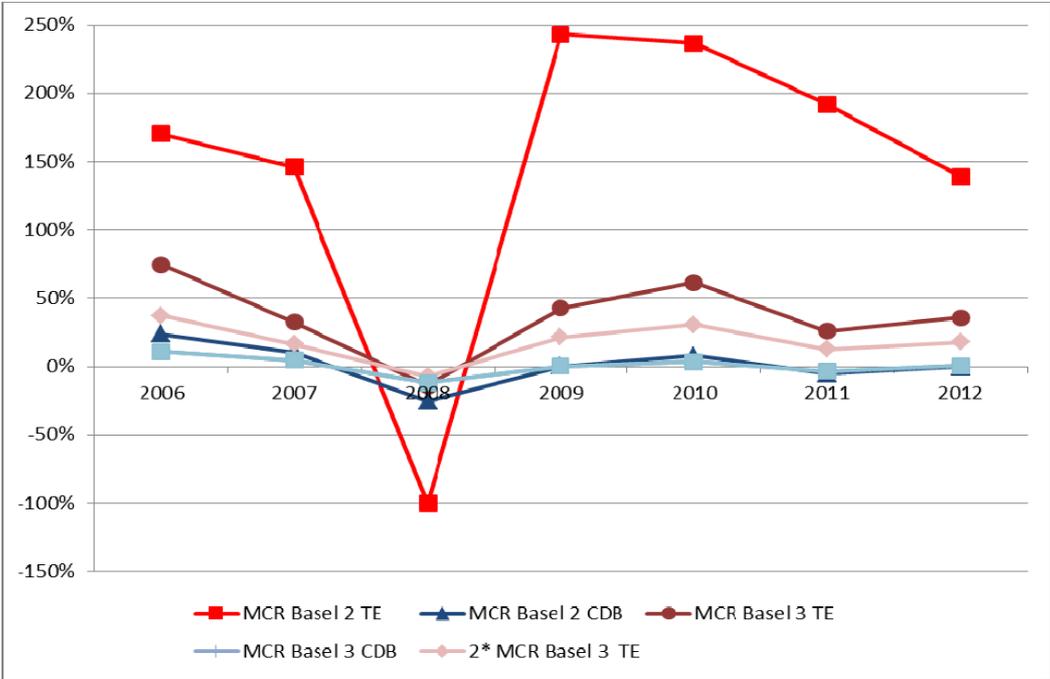
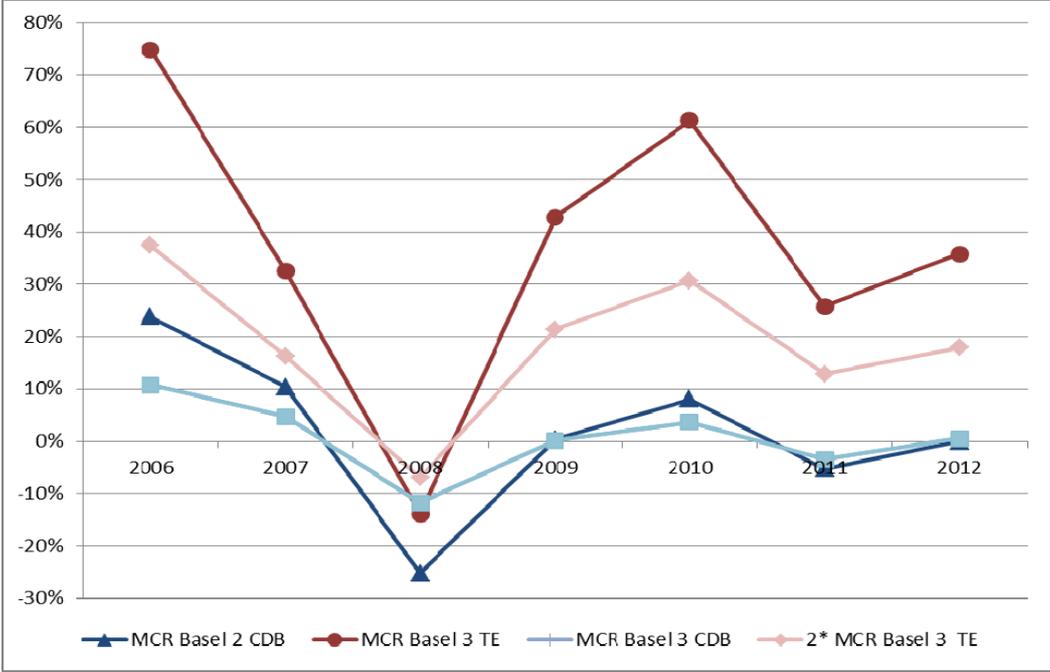


Figure 15: Average income / Equity by type of activity and by regulatory scenario for the candidates sample of 29 banks. RegCap is a proxy for return on equity based on total balance sheet regulatory capital (corrected for changes in capital definition). . The average is weighted on banks' EU total assets.



Source : SNL database and JRC estimates

Figure 16: Zoom on figure 9 : average income / Equity by type of activity and by 0regulatory scenario for the Candidates sample which corresponds to the 29 banks proposed for further investigation for structural reform. The average is weighted on banks' total assets.



APPENDIX E: CORRECTION OF RWAS

To reflect the change in RWA following the introduction of Basel III, QIS correction factors as of June 2011 are employed⁵². These changes are taking into account the strengthening of regulatory capital both in quantity and in quality imposed by Basel III.

Adjustments to take into account the impact due to the introduction of Basel 3 (CRDIV) on RWA, regulatory capital and minimum capital requirements are implemented. These adjustments imply increased RWA, a more strict definition of regulatory capital, and the introduction of the Capital Conservation Buffer. Average EU results of the 2011 Quantitative Impact Study (QIS) are employed for the adjustments, as detailed in the table below. The changes are allocated between the DTB and the TE as described in the next section.

Table 10 - Average EU (weighted on total assets) corrections for RWA and regulatory capital from EBA as of 30/06/2011

	G1 Banks	G2 Banks
Relative Change in RWA for the whole bank (%)	21.20	6.90
Relative Change in Regulatory capital for the whole bank (%)	-34.35	-7.76

Source: EBA

Note: In this exercise G1 - Tier 1 Capital > 3 bn€, G2 - Tier 1 Capital <3 bn€

The split Basel 2 RWAs are adjusted to take into account future changes introduced by Basel 3 to RWA definitions and requirements. The Basel 3 increase in the RWA is allocated based on a breakdown of the changes in RWA published by EBA⁵³, reported here in Table 10. In particular, the Table shows the part of the total percentage increase in RWA due to:

- a) the change in the ‘definition of capital’⁵⁴, which is split proportionally to the share of total assets allocated to the TE and the DTB.

⁵² <http://www.eba.europa.eu/documents/10180/87706/EBA-BS-2012-037-FINAL--Results-Basel-III-Monitoring-.pdf/778804a5-8e3e-4073-83df-afd1be0b626e>

⁵³ See footnote 5 for complete reference.

⁵⁴ These effects are not to be confused with those linked to the stricter definition of the quality of capital introduced by Basel 3. The change in the RWA due to the change in the definition of capital measures: (i) the effects of lower RWA for exposures that are included in RWA under Basel 2 but receive a deduction treatment under Basel 3; (ii) the increase in RWA applied to securitisation exposures deducted under the Basel 2 that are risk-weighted at 1250% under Basel 3; (iii) the increase in RWA for exposures that fall below the 10% and 15% limits for CET1 deduction.

b) counterparty credit risk, which is allocated to TE for the share due to Credit Valuation adjustment (CVA) and to the DTB for the part due to the higher asset correlation parameter included in the IRB formula.

c) securitization in the banking book, which is fully allocated to the DTB.

d) to market risk (including securitisation in the trading book) is fully allocated to the TE.

Table 11: EBA split of the increase in RWA due to Basel 3 (average %-increase)

Type	Total relative increase in RWA	Part due to definition of capital	CCR banking book	CCR trading book	Securitisation banking book	Trading book
G1	21.2	7.9	1.2	6.9	1.0	4.2
G2	6.9	3.4	2.9		0.2	0.4

Source: EBA

Results are presented in Table 12 both for Basel 2 and for Basel 3.

Table 12: Allocation of total RWA between the TEs and the DTBs under Basel 2 and Basel 3

	Basel 2	Basel 3
DTB	91%	79%
TE	9%	21%

The new Basel 3 definition of the quality of capital affect both entities, thus the decrease in the regulatory capital is split proportionally to the capital allocated to the two entities. For banks with adjusted regulatory capital below 10.5% of RWA, the capital is topped up to meet the Basel 3 minimum required capital including the capital conservation buffer (10.5% RWA).

APPENDIX F: ROA BY LINE OF ACTIVITY AND RELATIONSHIP WITH ROMCR

This appendix includes some further formulas illustrating the relationships between ROA, ROE, ROMCR, RWA density, leverage and the capital adequacy ratio.

ROA and ROE are related as follows:

$$ROE = \frac{Income}{E} = \frac{Income}{E} \times \frac{TA}{TA} = ROA \times \frac{TA}{E} \Big\} L = ROA \times L$$

Where:

ROE – Return on Equity;

E – Equity

TA – Total assets

L - Leverage.

ROA and ROMCR are tied by the following relationship:⁵⁵

$$ROA = \frac{Income}{TA} = \frac{Income}{\frac{TA}{d} \cdot \frac{d}{CAR}} \cdot \frac{CAR}{MCR} = \frac{Income}{MCR} \cdot d \cdot CAR = ROMCR \cdot d \cdot CAR$$

$\frac{TA}{d} = RWA$
 $RWA \cdot CAR = MCR$

Where:

ROA – Return on Assets

Income – Income as defined for the purposes of this report (see Appendix B)

TA – Total Assets

d – RWA density

CAR – Capital Adequacy Ratio (i.e. 8% currently or 10.5% under Basel III regulatory scenarios)

⁵⁵ It should be noted that total ROA referring to the income and total assets items used in this paper, which differ from the after-tax profit reported by the firm, can be obtained as $ROA^{TOT} = ROA^{TE} \frac{TA^{TE}}{TA^{TOT}} + ROA^{DTB} \frac{TA^{DTB}}{TA^{TOT}}$ where *TE*, *DTB* refer to the Trading Activity and Commercial Banking Activity.

From the two relationships above, ROE is tied to ROMCR as follows:

$$ROE = ROMCR \times d \times CAR \times L$$

Where all symbols have the same meaning as above.

ANNEX A6: QUALITATIVE ASSESSMENT OF BENEFITS AND COSTS OF SEPARATING BANKING ACTIVITIES FROM DEPOSIT TAKING ENTITIES

1. INTRODUCTION

Separating banking activities from deposit taking entities should address the problems highlighted in Chapter 2 and should deliver the following social benefits:

- Facilitate bank resolution and recovery;
- Facilitate management, monitoring and supervision;
- Reduce moral hazard;
- Reduce conflicts of interest;
- Reduce capital and resource misallocation; and
- Improve competition.

At the same time, separating banking activities from deposit taking banks may give rise to social costs:

- Foregone economies of scale and scope; and
- Operational costs.

This annex analyses in more detail the social benefits and costs of separating specific banking activities from a deposit entity. The assessment is largely qualitative, as deciding which activities need to be separated will ultimately be a social and economic issue that cannot be justified on the basis of calibrated and stylised models.

In determining the specific set of activities that should be examined with a view to assess whether they should be subject to separation, the Commission services have considered (i) the extent to which losses related to an activity would impact a bank's balance sheet; (ii) the extent to which an activity gives rise to market or counterparty risk; (iii) the importance and potential impact of the activity on systemic risk; (iv) the customer-oriented nature and usefulness of an activity for financing the real economy, and (v) the extent to which the banking activity resolves a market failure (such as asymmetric information) in the economy. The application of these criteria suggests a relatively narrow range of corporate and investment banking activities that require further analysis: proprietary trading including bank-owned hedge funds (PT/HF), market making (MM), underwriting (UW), securitisation related activities (SEC), derivatives transactions, exposure to private equity or venture capital funds (PE/VC), and lending to large corporates (LLC).

2. PROPRIETARY TRADING

Proprietary trading is the purchase and sale of financial instruments for own account with the intent to profit from subsequent price changes. Banks submitted evidence following the Commission public consultation confirming that (dedicated desk) proprietary trading is currently a banking activity of minor importance for many large EU banking groups (see Annex A11). This is consistent with evidence reported for a number of EU Member States.⁵⁶

2.1. Social benefits of separating proprietary trading

Would separating proprietary trading facilitate recovery and resolution? Proprietary trading potentially gives rise to large open positions and counterparty risk (risk that the counterparty to the investment will fail to pay), as well as interconnectedness between institutions. Correspondingly, separating proprietary trading from the deposit entity will facilitate the recovery and resolution of the separate entities. The potential opaqueness, complexity, and interconnectivity of proprietary trading represent important impediments to orderly and swift resolution.

Would separating proprietary trading reduce moral hazard? Proprietary trading is an inherently risky banking activity that is by definition not customer-oriented. It has the ability to produce “tail risk” or systemic risk and is easily scalable (in comparison to more relationship-based activities such as lending). Traders have the ability and incentive to take significant risks, even without having access to liquidity (through short-selling positions). Separating proprietary trading from the deposit entity allows shielding depositors from this type of risk-taking. Reducing the cross-subsidies would also help to re-align private and social interests. The increased funding cost would reflect the inherent riskiness of the activity (although systemic risk may still not be adequately reflected in the institution-specific funding cost). As a result, moral hazard on behalf of the trading entity will be reduced.

Would separating proprietary trading facilitate monitoring, management, and supervision? Increased market discipline on the trading entity will help the supervision of the trading entity, even without factoring in the likely reduction in proprietary trading that would result from its safety net alienation and the enhanced market monitoring that should result from it. The nature of proprietary trading hinders the ability of regulators, supervisors and bank managers to properly understand and thereby calibrate the risks taken, in particular tail risks. It is equally complex to apply the correct capital treatment so that banks have sufficient resources to absorb losses if these occur. Proprietary trading can also be a high-frequency activity that may result in thousands of daily transactions. As a result, snapshots of the positions of these activities may have limited predictive value for future positions. Understanding and monitoring the risks is difficult, in particular when management itself has difficulties in understanding and monitoring the risks. Some of the “rogue trader” losses only

⁵⁶ Many of the leading UK banks have told the UK Parliamentary Commission on Banking Standards that they do not engage in proprietary trading at all. The same message was given by NL banks to the Members of the Commission on the structure of Dutch banks. The French and the German structural reform proposals propose to subsidiarise proprietary trading (see Annex A1 for more details). Their cost-benefit analysis findings have not been made public, but BNP Paribas corporate-banking and investment-banking revenues are estimated to be impacted by the government plans by less than 2%. An internal Febelfin survey provides evidence that proprietary trading amounts to 2% of trading revenues for Belgian banks in 2012 (down from 13%, 11% and 8% in 2009, 2010, and 2011 respectively). In turn, trading revenues are estimated to amount to 9% of overall revenues in 2012 (first semester).

became apparent at a late stage, when they eventually could no longer keep accumulated losses hidden from their internal control mechanisms.⁵⁷

Would separating proprietary trading reduce conflicts of interest? Proprietary trading is particularly prone to conflicts of interests because the bank in its role of proprietary trader no longer is a service provider to its client, but becomes a potential competitor and hence faces interests that are no longer aligned with those of its clients. The bank can make improper use of client-related information to increase its own profits. The commercial bank department may have private information about the likely bankruptcy of a firm it has granted a loan and may buy credit protection against the default of the firm from the unsuspecting public, thereby reducing its own credit risk.

Would separating proprietary trading reduce capital and resources misallocation? The traditional *raison d'être* of deposit-taking banks is to be a financial intermediary between savers and investors (and thereby competing with capital markets that play a similar role). In comparison to capital markets, who intermediate more directly between savers and investors, deposit-taking banks are relatively good at (i) monitoring and knowing their customers, i.e. resolving information asymmetries, (ii) providing insurance against idiosyncratic liquidity risks faced by households and firms, (iii) pooling risks efficiently, and (iv) performing risk-return tranching services to customers. None of these roles is fulfilled by proprietary trading. Therefore, as proprietary trading activities benefit from the implicit subsidy even though they do not fit in the traditional role of banks, capital and human resources are being misallocated to the extent that they are put at work in proprietary trading rather than in engaging in loan making and other core banking services (or even other activities beyond the banking sector). Banks would no longer have an incentive to over- expand their proprietary trading activities.

Would separating proprietary trading impact on competition? Given that implicit subsidies to proprietary trading activities would be reduced with separation, there would be a beneficial impact on competition amongst banks. However, the impact will be proportional to the relatively limited importance of proprietary trading.

2.2. Social costs of separating proprietary trading

Would separating proprietary trading lead to a loss of efficiencies? Separating proprietary trading is unlikely to lead to significant social costs. In fact, as argued above, proprietary trading can be characterised by *diseconomies* of scope such as excessive complexity, conflicts of interest, excessive risk taking and interconnectedness which can lead to higher systemic risk. Genuine economies of scope related to risk diversification cannot be excluded but are likely to be small, given the limited importance of the activity. Also there may be some cost economies of scope if proprietary trading is subsidiarised as a stand-alone activity, as proprietary trading employs the trading infrastructure used in other activities such as market making. Those would not be lost if trading activities are subsidiarised altogether or if proprietary trading is prohibited from the banking group. In sum, significant economies of scope are unlikely to be foregone following a separation of proprietary trading.

⁵⁷ Jérôme Kerviel at Société Générale, Nick Leeson at Barings Bank, Kweku Adoboli at UBS are only some of the traders that caused multiple billion trading related losses, some of which effectively bringing down their employer banks.

The impact of separating proprietary trading on economic growth is likely to be small. The funding cost related to the activity is likely to go up when the inherent riskiness of the activity needs to be reflected, but the costs cannot be passed on to households and SMEs, given that proprietary trading is an own account activity. Costs are likely to be borne by traders (lower wages) or shareholders (lower net worth). Aggregate consumption may go down as a result, but again not to a material extent. In any case, the increased financial stability and elimination of diseconomies of scope will dwarf any quite hypothetical social cost.

Industry claims that prohibiting proprietary trading would negatively and significantly influence market liquidity and price-discovery relate more to market making. Also, as banks claim that they do no longer engage in proprietary trading activities to a material extent, such negative consequences appear overstated.⁵⁸

What is the impact on stakeholder groups of separating proprietary trading? Depending on the strength of separation, the reduced scope for conflicts of interest should have a positive effect on most bank clients (households and corporates). The impact on the banking industry should also be limited, given claims that banks no longer engage in this activity to a material extent. Traders will face increased competition from the hedge fund industry.

Are there doubts about the effectiveness of separating proprietary trading in achieving its objectives? It is difficult for people not involved in the actual transactions to distinguish proprietary trading (say, buying and holding a highly illiquid asset to benefit from the expected price dynamics) from customer-driven trading (say, buying and holding a highly illiquid asset because you expect a customer demand to arise for the asset in the near future). Indeed, a market maker might legitimately choose to take a long position in an asset either in anticipation of client demand to allow the order to be fulfilled quickly or to facilitate a quick sale by a client of an illiquid asset.

Moreover, proprietary trading can be conducted in other divisions of the banking group alongside the permitted activity. Proprietary trading is for example difficult to distinguish from Treasury management operations.⁵⁹

For both these reasons, it will be challenging to avoid that proprietary trading takes place within a deposit taking entity after merely having *formally* separated proprietary trading into a separated trading entity.

3. MARKET MAKING

Market making makes up for a significant part of large banking group's trading revenues.⁶⁰

⁵⁸ Very few banks submitted quantitative evidence in the public consultation. None of them reported that proprietary trading accounted for more than 4% of trading revenues, which in turn is only a fraction of total revenues.

⁵⁹ The treasury function of a bank needs to engage in trades to manage excess liquidity or hedge the risk from for example selling fixed-rate mortgages while being funded with floating rate borrowing. Over time the treasury functions in some banks have become more aggressive traders with strategies that could be seen as resembling proprietary trading. In some cases, Treasury operations no longer merely manage the natural dynamics of the balance sheet arising from customer activity, but increasingly perform a set of trading activities in themselves and become pure profit centres.

In general terms, market making is the purchase and sale of financial instruments (government bonds, corporate bonds, equities, derivatives, etc.) for own account at prices defined by the market maker, on the basis of a commitment to provide market liquidity on a regular and on-going basis.⁶¹ Consequently, market makers provide "immediacy" to clients and investors by facilitating their requests to buy and sell quickly and, arguably, in a cost-effective way for them. For example, an investor anxious to sell an asset relies on a market maker's standing ability to buy the asset for itself, immediately. Likewise, an investor who wishes to buy an asset often can call on a market maker to sell the asset out of its inventory. By doing so, market makers can instil greater investor confidence in the functioning of financial markets and encourage investors to trade confidently. Without market makers, customers would face higher transaction costs and security prices would be more volatile. A market maker acquires a position at one price and then lays off the position over time at an uncertain average price by providing liquidity to customers. The ultimate goal is to "buy low, sell high". In order to accomplish this goal on average over many trades, with an acceptable level of risk for the expected profit, a market maker relies on its expectation of the investors' needs and the future path of market prices. In general, market makers provide liquidity and produce positive externalities.

Although traders involved in the actual trade are able to identify any given transaction as being of a market making or proprietary trading nature, such a distinction no longer is simple from the perspective of an outsider such as a manager, regulator, supervisor, creditor, or judge. From a legal and economic point of view, market making (and the securities inventory used to facilitate customer trading) is difficult to distinguish from proprietary trading, in particular for "outsiders". Indeed, a market maker might legitimately choose to take a long position in an asset either in anticipation of client demand to allow the order to be fulfilled quickly or to facilitate a quick sale by a client of an illiquid asset.

⁶⁰ A Febelfin 2013 commissioned survey suggests that market making (excluding short term ALM transactions) accounts for 66% of Belgian bank trading revenues in 2012 (first semester), whereas market making (including short term ALM transactions) would account for 56% of all trading revenues for all Western European banks. Few banks submitted quantitative evidence during the public consultation about the importance of their market making activities, but those that did reported that market making accounted for 25% to 100% of their trading revenues.

⁶¹ There are two types of market makers. Voluntary Market Makers (VMM) and Designated Market Makers (DMM). VMM act on their own initiative and earn no compensation, but the profit they make by charging the bid-ask spread. DMM are appointed and have contractual obligations to maintain two way prices and volumes for a specified period of the trading day. DMM are contractually required to give customers the best bid or ask price for each market order transaction. This ensures a fair and reasonable two-sided market. In return for fulfilling these obligations, DMM are often offered a range of potential benefits by exchanges, including reduced trading fees, monthly stipends and a share of net trading revenue. DMM exist in most stock exchanges of the major industrialised countries. The presence of DMM varies across markets. The market for foreign exchange and for some classes of derivatives rely mainly on VMM. Other markets, such as equity markets give rise to both VMM and DMM. For some rarely traded instruments, DMM are the main actors. Most transactions done in OTC markets are with a MM. Designated market makers provide these benefits also in bad times and therefore dampen negative cyclical effects. Without designated market makers liquidity would dry up each time there is a market downturn. Of course, their ability to assume this role is limited, given that they expose their balance sheet to losses. Losses can put all intermediaries in distress, and given that several designated market makers are universal banks in Europe the losses on designated market making activity can put the traditional banking activities at risk such as the provision of payment system services or of loans to non-financial corporates.

While it is possible for institutions other than banks (such as funds) to take on a similar role to market makers, banks do have a natural advantage in acting as market makers because of the fact that banks have a variety of other relationships with the clients who want to make trades and the fact that acting as a market-maker for a security is often a natural follow-on activity for securities underwritten by the banking group.

The most active market makers in financial markets today are High Frequency Traders (HFT), many of whom trade as voluntary market makers with no obligations to maintain markets. According to several academic studies, high frequency market making is a profitable enterprise and, more importantly, market quality has improved alongside the growth in algorithmic trading. These results are frequently interpreted as support for a structure where participants supply liquidity because it is a profitable and viable activity on its own (see Anand and Vankatamaran (2013) for a more in-depth analysis). Several important market makers are not taking any deposits, also suggesting that market making is a viable activity on its own.

Market-making is entwined with underwriting. In every initial public offering (IPO), the lead underwriter always acts as a market maker. Market makers build up significant inventories following underwriting transactions. Ellis et al. (2000) report for Nasdaq IPOs that the lead underwriter has accumulated as market maker approximately 8% as inventory position after 20 trading days. Inventory accumulation by the underwriter gives a direct measure of price stabilisation activities. While simply buying and selling securities over the course of a trading day is not unusual for any market maker on any stock, accumulation of a significant inventory position is.

Many IPOs experience large price gains however, negating any need for market maker purposes. The inventory position of the lead underwriter will depend on the subsequent return of the IPO. The lead manager may assume approximately 60% of the trading volume on the first day. The lead manager's share of the trading volume slowly declines, but it typically still remains greater than 40% even three months after the IPO has begun trading. Of course, the trading volume in numbers of shares decreases dramatically over time. Most co-managers make a market in the issue as well, but to a fairly limited extent.

The market making profits of the underwriter include both the trading profits due to buying and selling at his quotes, and the profits and losses of his inventory position. In general, market making is profitable, particularly on the offer day. Ellis et al. (2000) find that there is no significant difference between the inventory profits of underwriters of successful and unsuccessful IPOs. This suggests that the overallotment option (see section 4 on underwriting below) is successful in reducing inventory risks for underwriters. The trading profits seem to relate to the IPO being successful or not.

Overall, it is found that market making is not a cost to underwriters, that total market making profits are positive on the first day, and that they remain positive throughout the first month of trading (Ellis et al. (2000)).

3.1. Social benefits of separating market making

Would separating market making facilitate recovery and resolution? Would separating market making facilitate monitoring, management, and supervision? A separation of market making activities would have social benefits in terms of facilitating resolvability. The resolvability of a bank is impeded by the presence of trading and inventory within a large

banking group (again, in particular due to market making as follow-on activity of securities underwriting or proprietary trading, but possibly also when significant customer orders are expected to arise in the future). Individual trading positions are treated the same way in resolution whether they result from client activity driven market making or speculation, and market making affects the quantity of positions needing to be resolved. Impediments to orderly and swift resolution, monitoring, regulation, supervisability of the activity are the opaqueness, complexity, and interconnectivity of market making. Market makers are interconnected with other large banking groups.

Would separating market making reduce moral hazard? When facilitating client business, a bank is likely to try and hedge most of its risks. Hence, genuine market making should entail limited market risk. However, the actual exposure to risk may vary across time depending on the liquidity of the instruments, on changes in market volatility and on significant variation in the sizes of positions that market making clients may wish to acquire or liquidate. Moreover, there may be a mismatch between the position and the hedge (basis risk) and the hedge will need to be rebalanced over time as market moves alter risk profiles. Furthermore, market makers are still exposed to high counterparty risk and the concrete functioning of market making can vary in relation to different financial instruments and market models.

Market making as a follow-on activity of underwriting does imply that significant securities and derivatives inventories are being built up (see above), and hence that risks are potentially significant, although hedging instruments exist.

Given its importance as a share of trading revenues, market making entails significant risk and separating it from the deposit entity will significantly reduce moral hazard, excessive risk taking, and artificial balance sheet expansion.

Making a distinction between genuine market making and proprietary trading is inherently difficult for outsiders, however. Banks remain highly leveraged and highly expert organisations that aim to make profits from managing their balance sheet. To the extent that banks conceal proprietary trades as market making transactions, the arguments raised above for proprietary trading continue to hold. Traders have the ability and the incentive to take significant risks, and interests are not always aligned with those of its customers.

Would separating market making reduce conflicts of interest? In theory, genuine market making is aiming to facilitate client business and hence the bank interests are supposed to be aligned with customer interests. However, principal agent problems need not to be confined to proprietary trading given that market making and proprietary trading activity are difficult to disentangle for outsiders to the actual transactions.

In general, if markets are opaque, such as is the case in over-the-counter markets, and if market makers have superior access to information, collusion and exploitation of conflicts of interests may occur. The origin of the problem is an inherent conflict of interest. Banks possess (asymmetric) information in the form of customer trade details, including the number and size of trades to be executed. And they have knowledge that their own proprietary positions could be harmed without or could benefit with trader intervention. The banks allegedly act on that knowledge, against their customer's best interests and in favour of their

own, as evidenced in recent banking scandals, related to front running, FX bid rigging, Libor benchmark rate setting, etc.⁶²

Would separating market making reduce capital and resources misallocation? The inherent riskiness of trading attracts and requires people who are good at taking short-term risks rather than lenders with a long-term perspective. Absent separation, a short-term returns culture may arise within the entire banking group, given the high profitability associated with trading.

Academics have argued that market makers hamper the development of securities markets.⁶³ Large universal banks are currently accused of having protected their indispensable position in the global CDS market through control of a trading body and information provider, which vetted whether new exchanges should be licensed. The alleged harm consists of exchanges being blocked from bringing part of the over-the-counter CDS transactions onto public exchanges, which would have resulted in lower transaction costs for their investor-customers, as well as in less financial instability as OTC markets are more opaque and involve more counterparty risk.

As market making activities would no longer benefit from the same level of implicit subsidies, banks would not have an incentive to over-expand their activities in the field. The level of market making activities would reflect the market pricing and therefore would not attract resources from other banking activities (or activities beyond banking).

Would separating market making impact on competition? The competition benefits relate to the removal of the implicit subsidy, post separation, as it would allow banks to compete on a level playing field. Given that market making is a significant part of banks' trading activities, the impact on competition would be relatively important. Also market makers that do not currently benefit from implicit subsidies (non-bank broker dealers) would be in a position to compete on a level playing field with the separated entities undertaking market making activities.

3.2. Social costs of separating market making

Would separating market making lead to a loss of efficiencies? Given that market making comprises significant segment of trading activities, there would be some economies of scale, and cost and diversification economies of scope lost. However, the former would only apply to small banks, while the latter would be limited and are likely to be dominated by

⁶² Market makers often have signed on to a voluntary code of conduct, which already considers manipulative practices by banks with each other or with customers to be “unacceptable trading behaviour”. However, the multiple financial scandals in the years since signing these voluntary agreements cast doubt on their effectiveness.

⁶³ Zingales (2012): “With the repeal of Glass-Steagall, investment banks exploded in size and so did their market power. As a result, the new financial instruments (such as credit default swaps) developed in an opaque over-the-counter market populated by a few powerful dealers, rather than in a well regulated and transparent public market. The separation between investment and commercial banking also helps make the financial system more resilient. After the 1987 stock market crash, the economy was unaffected because commercial banks were untouched by plummeting equity prices. During the 1990-91 banking crisis, securities markets helped alleviate the credit crunch because they were unaffected by the banking crisis. By contrast, in 2008 the banking crisis and the stock market crisis infected each other, pulling down the entire economy.”

diseconomies of scope such as increased systemic risk, excessive risk taking, increased complexity and conflicts of interests. For example, while diversification may make individual bank default less likely it actually may increase the likelihood of systemic risk (as they become more similar and they have increased interconnectedness).

As explained in chapter 4, integrated banks do have a natural advantage in acting as market makers because of the fact that banks have a variety of other relationships with the clients who want to make trades and the fact that acting as a market maker for a security is often a natural follow-on activity for securities underwritten by the banking group. This may allow integrated banks to perform this activity more efficiently than other market players, thus better serving clients and/or contributing to enhancing market liquidity. Such effects should be weighed against potential benefits that could flow from structural separation, in particular for market making, as discussed elsewhere in this Impact Assessment.

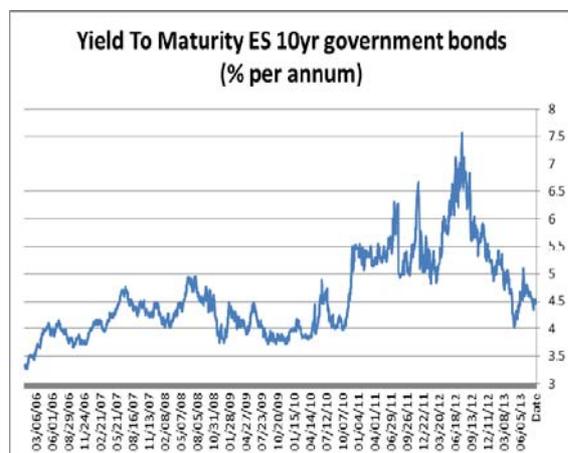
It is frequently argued that separating market making will harm market liquidity and hence will be socially costly. Bid-ask spreads may increase, increasing the costs to trade at any scale. Likewise, the set of options to investors will be reduced, as they can no longer trade as much and as easily as before. Price discovery is made more difficult. And price volatility may be reduced, if professional position takers spot price divergences from rational levels and correct them through speculation and trading.

This argument (i) neglects the fact that structural separation aims to reduce the implicit subsidies that distort the proper market functioning and bank activities, (ii) builds on the presumption that more liquidity is inherently positive, which may not always be the case⁶⁴, and (iii) should be put into perspective. Indeed, market prices are distorted when contaminated with implicit public subsidies and may in fact produce excess liquidity. One could argue that it is preferable to allow the discipline of the market to choose the pricing of these securities and the amount of liquidity. If liquidity cannot be reached then it may suggest more about the underlying securities' viability (see Richardson, 2013).

Richardson (2013) notes that the issue of liquidity is more relevant in times of crisis than in normal times when liquidity is typically not a pressing concern. Private banks, however, have not performed a significant liquidity role during crisis period and central banks have stepped in to assume the role of Market Maker of Last Resort (in covered bond markets, government bond markets, etc.). Charts 3.11 and 3.2 plot the yields and corresponding bid-ask spreads of 10 year Spanish government bonds. Chart 3 shows that yields have more than doubled and increased from less than 3.5% in June 2006 to more than 7.5% in July 2012. Chart 4 plots bid-ask spreads. Whereas their pattern is equally volatile, it is clear that they matter much less in comparison to the changes in the interest rate level. Bid-ask spreads in the period June 2006 to August 2013 on average are 2bp (0.02%) and spiked at 12bp (0.12%) in June 2012. This suggests that the ability of (private sector) market makers to influence the interest rate level is relatively limited.

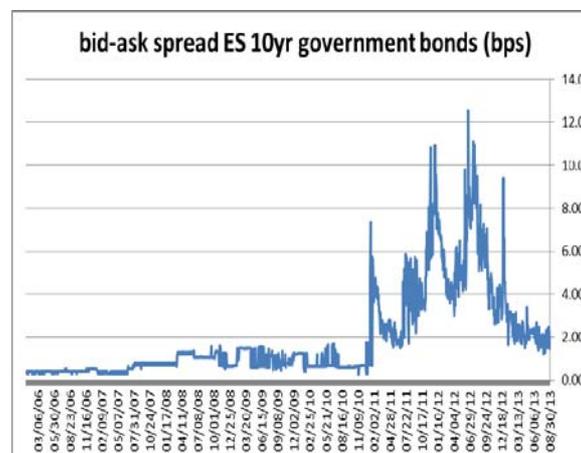
⁶⁴ For example, benefits of market liquidity should become smaller with the degree of market liquidity. The additional benefits of the extra liquidity derived from high-frequency trading must be of negligible (or negative) value compared to the benefits from having a market which is reasonably liquid on a day-by-day basis. Moreover, ever greater market liquidity may give rise to destabilising momentum effects, such as cycles of undervaluation and overvaluation. In addition, voluntary market making may not occur when it is most needed, i.e. during troubled market conditions. Even dedicated market makers are typically only allowed to post quotes during 90% of the trading period and of course they may decide to breach their contractual obligations if they deem that fulfilling them would threaten their solvency.

Chart 3.1: Yield to maturity of 10 year Spanish government bonds



Source: Commission Services - Bloomberg

Chart 3.2: Bid-Ask spreads of 10 year Spanish government bonds



Source: Commission Services - Bloomberg

To function properly markets need a large number of independent traders. A separation between deposit entities and trading entities deprives the latter of access to cheap funds (in the form of deposits), forcing them to limit their size and the size of their bets. These limitations may increase the number of market participants, making markets more liquid.⁶⁵

The increased funding cost for the trading entity that acts as market maker is unlikely to be passed on to the real economy and therefore harm economic growth.

- First, households and SMEs that are clients of a banking group that needs to separate certain capital market activities are typically and mainly clients of the deposit entity. Hence, the increased funding cost for the entity not taking deposits would not necessarily affect borrowing conditions for households and SMEs. In fact, market making entails significant risk.⁶⁶ These risks are important, given the size and importance of market

⁶⁵ Zingales (2012): “The third reason why I came to support Glass-Steagall was because I realised it was not simply a coincidence that we witnessed a prospering of securities markets and the blossoming of new ones (options and futures markets) while Glass-Steagall was in place, but since its repeal have seen a demise of public equity markets and an explosion of opaque over-the-counter ones. To function properly markets need a large number of independent traders. The separation between commercial and investment banking deprived investment banks of access to cheap funds (in the form of deposits), forcing them to limit their size and the size of their bets. These limitations increased the number of market participants, making markets more liquid. With the repeal of Glass-Steagall, investment banks exploded in size and so did their market power. As a result, the new financial instruments (such as credit default swaps) developed in an opaque over-the-counter market populated by a few powerful dealers, rather than in a well regulated and transparent public market.”

⁶⁶ When facilitating client business a bank is likely to try and hedge most of its risks. Hence, genuine market making should entail limited market risk. However, the actual exposure to risk may vary across time depending on the liquidity of the instruments, on changes in market volatility and on significant variation in the sizes of positions that market making clients may wish to acquire or liquidate. Moreover, there may be a mismatch between the position and the hedge (basis risk) and the hedge will need to be rebalanced over time as market moves alter risk profiles. Furthermore, market makers are still exposed to high counterparty

making as a share of large banks' trading activities. Separating market making from the deposit entity will reduce excessive risk taking and artificial balance sheet expansion and hence may lower the funding cost for the deposit entity.

- Second, medium-sized competitors or new entrants that are not subject to mandatory separation may gain market share from large banking groups if artificial competition distortions in favour of too-big-to fail banking groups are being reduced. Hence, whereas some banking groups may face increased costs and may no longer serve certain customers, those activities may be picked up by smaller competitors that do not face structural separation requirements. Customers are accordingly not likely to be left unserved.
- Third, under a subsidiarisation model, market making is not prohibited within a banking group. It just needs to be performed by a legally separate trading entity. Estimates for UK banks (that are amongst the most important players in the targeted trading activities) suggest that funding costs may go up for the trading entity in a range between [0bp and 75bp] (HM Treasury, 2012). As said before, the increased funding cost for the trading entity is part of the desired effects of the separation.
- Finally, market making is a financially viable activity on its own, as shown by Anand and Vankataraman (2012) and as illustrated by the fact that several important market makers are not taking any deposits.

What is the impact on stakeholder groups of separating market making? Again, the ultimate impact will also depend on the strength of the separation. Distortionary implicit subsidies are being eliminated. The scope for excessive risk-taking should decrease and conflicts of interest should be reduced. The impact on bank creditors would differ between the trading entity (more exposed to risk, hence requiring higher returns) and the deposit entity (required returns may decrease).

4. UNDERWRITING

Securities underwriting is a typical investment banking activity in which banks raise investment capital from investors on behalf of corporations and governments that are issuing securities (both equity and debt securities) in return for a fee. It is a way of selling newly issued securities, such as stocks or bonds, to investors.

There are two types of underwriting. "Firm commitment" underwriting is one in which the underwriter guarantees the sale of the issued stock at the agreed-upon price. Hence the underwriter takes the risk of an unsuccessful sale. In practice, a syndicate of banks underwrites the transaction, which means they take on the risk of distributing the securities. Should they not be able to find enough investors, they will have to hold unsold securities themselves. Alternatively, in a "best efforts" contract, the underwriter agrees to sell as many shares as possible at the agreed-upon price. Such a contract generates more limited risk for the underwriter, in comparison. Typically, the process is led by a lead underwriter or book manager, sometimes one or more co-managers and a large syndicate of investment banks that aid in the distribution of shares.

risk and the concrete functioning of market making can vary in relation to different financial instruments and market models.

Underwriters make their income from the difference between the price they pay to the issuer and what they collect from investors or from broker-dealers who buy portions of the offering ("underwriting or gross spread" or "underwriting fees"). While underwriters are typically involved in immediate IPO aftermarket trading and this market making is a stand-alone profit centre, underwriters generate most of their profits by the fees they demand for their services in issuing securities.⁶⁷

In most cases, the managing underwriter "overallots" the issue, creating a short position by accepting more orders than there are shares to be sold. The overallotment option grants an option to the underwriter to purchase from the company an additional portion of the shares sold in the IPO at the offer price. With this option, an underwriter can and virtually always does sell more than 100% of the offered shares. The motivation for this option is to provide buying support for the shares without exposing the underwriter to excessive risk. The underwriter buys back the extra portion of shares in the market at the offer price, they can do this without the market risk of being "long" this extra portion in their own account, as they are simply "covering" (closing out) their short position.

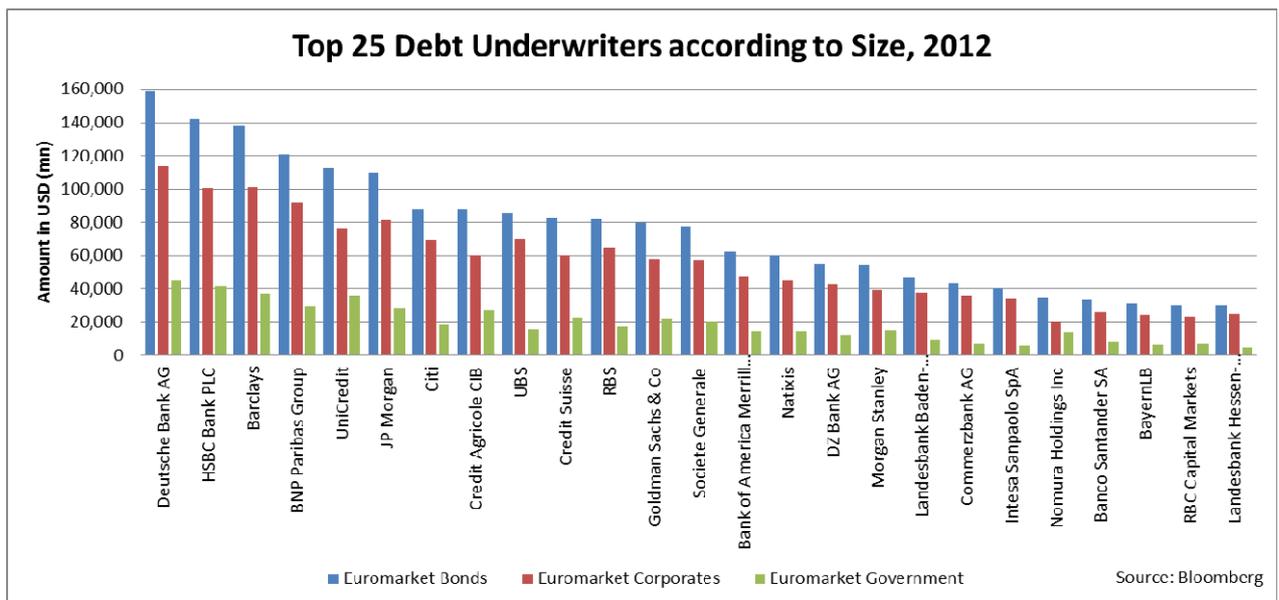
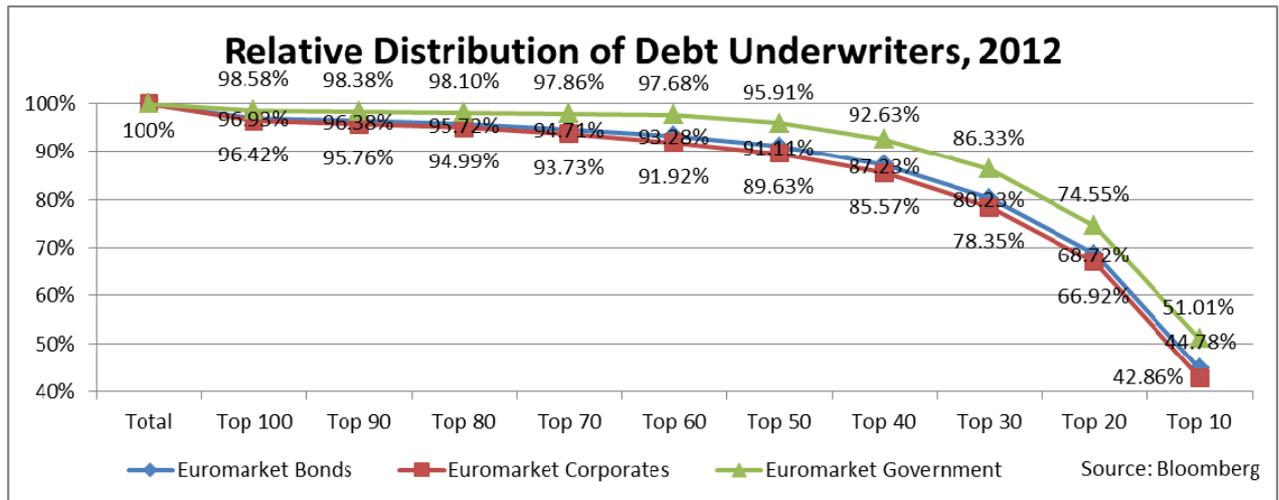
Put differently, if the offering is strong and the price goes up, the underwriter covers his short position by exercising the overallotment option at the offering price. The underwriter is able to close its short position by purchasing shares at the same price for which they sold-short the shares, so the underwriter does not lose money. If the offering is weak and the price goes down, the underwriter does not exercise the option, and instead buys back all or part of the extra portion of the shares in the market at the price below which it can sell it to its customers, thereby supporting the stock price. The overallotment option provides the underwriter with buying power in the aftermarket, enabling him to support the price of the newly traded security. The underwriter typically has 30 days to decide to exercise all or part of his option.

Underwriting and advisory services require relationship-building with clients. It is closely connected to corporate banking. From the corporate client's perspective, issuing a bond is an alternative way of financing to taking a bank loan.

Deutsche Bank, HSBC, BNP Paribas, Barclays and Unicredit make up the top 5 of the league tables for Eurobonds (2012), whereas Goldman Sachs, Deutsche Bank, Morgan Stanley, Credit Suisse, and Bank of America Merrill Lynch make up the top 5 in the league table on stocks (2011, Europe, Middle-East, and Africa). The top 10 debt underwriters account for 43% of Euromarket corporate debt issuance, and even for 51% of the government debt market. Each of the top 5 debt underwriters has underwritten in excess of 100 billion EUR in 2012. See Chart 4.1.

⁶⁷ Ellis et al. (2000) and Kang and Liu (2007)

Chart 4.1 Euromarket debt underwriting (2012)



4.1. Social benefits of separating underwriting

Would separating underwriting facilitate recovery and resolution? Given that underwriters typically retain a significant fraction in their inventories and play an active market making

role after the issuance, resolution may be improved by separating underwriting from deposit taking, as the inventory of relatively illiquid assets will be smaller. Otherwise, the underwriting as such does not give rise to similar interconnectedness across financial institutions.

Would separating underwriting reduce moral hazard? Firm-commitment underwriting is an inherently risky banking activity, although underwriters can hedge themselves to reduce the corresponding risks (Ellis et al. (2000)). Separating the activity from the deposit entity will shield depositors from such risks. Allowing it to be performed by a legal entity that enjoys an explicit safety net will encourage the activity, as the safety net presence will reduce the risk-sensitivity of its funding sources. Given that underwriting is not as easily scalable as pure market making, the scope for moral hazard reduction is significant, but smaller than for market making.

Would separating underwriting facilitate monitoring, management, and supervision? Given that underwriting is prone to conflicts of interests, the management of a group would be facilitated if performed in a more structured way in which underwriting is being separated from lending and other commercial banking activities. It does not create challenges as high as for market making, given that the activity is not short term and easily scalable.

Would separating underwriting reduce conflicts of interest? Separating underwriting will reduce the scope for conflicts of interests, as the interests of the bank as underwriter and as loan provider are typically not aligned.⁶⁸ Within a large and diversified banking group, the commercial bank department may have private information about the likely bankruptcy of the firm it has granted a loan and may hence encourage the underwriting department to sell bonds or issue shares to the unsuspecting public, thereby reducing its own credit risk whilst earning a fee. Banks have an incentive to hedge their risk as underwriters, guaranteeing the proceeds of the share issue, but this may potentially have an adverse impact on their clients' share price. Alternatively, a bank's lending division may feel pressured to provide bank loans to a firm whose shares have been issued by the bank's underwriting division, even though such loans would not be granted absent any such in-house pressure. According to certain studies, earnings forecasts and stock recommendations provided by an analyst working with the lead-underwriter are on average inaccurate and positively biased, and unaffiliated analysts perform better and provide higher long-run value to their customers. The main concern is that the bank uses the informational advantage it gains from conducting different activities to its own advantage, thereby misleading customers and investors.

Having said that, the evidence does not suggest that conflicts of interests are obvious between underwriting and loan making.⁶⁹ In fact, it suggests that bonds underwritten by commercial banks default less often than bonds underwritten by investment banks. However, the conflicts of interest seem more severe and more likely to exist in a universal bank that has an underwriting division together with an asset management division. These studies seem to support the view that asset management divisions may feel pressured by the bank's underwriting division to buy and hold poorly performing issues to make a customer satisfied, even though this may be unwise.

⁶⁸ Kroszner and Rajan (1994), Kroszner (1998), Hebb and Fraser (2003) and Stiglitz (2010)

⁶⁹ Kroszner and Rajan (1994), Puri (1994), Benston (1990), Hebb and Fraser (2002), Hebb and Fraser (2003)

Next to internal monitoring and controlling procedures, there is outside regulation (for example with respect to insider trading) and the rule of law to contain the exploitation of possible conflicts of interests. In principle, the market can also respond to apparent conflicts of interests, thereby constraining their scope. The market can penalize the service provider if they exploit conflicts of interest, in the form of a higher funding cost or lower demand for its services even to the point of forcing the firm into bankruptcy. The market can also promote new institutional means to contain conflicts of interest, by generating a demand for information from non-conflicted specialized organizations.

However, the market is likely to be unable to contain the incentives to exploit the conflicts of interests. For the market to be able to do this, it needs to have information on whether exploitation might take place. Sometimes, such information is simply not available or would require the revealing of proprietary information that would benefit a firm's competitors, thus reducing the incentives to reveal this information. Sometimes, when corporate governance is poor, even the top management of the firm is not aware of the conflicts of interest and mala fide opportunistic individuals are able to capture the firm's reputational rents.

Would separating underwriting reduce capital and resources misallocation? Conflicts of interest can substantially reduce the quality of information in financial markets, thereby increasing asymmetric information problems. In turn, asymmetric information prevents financial markets from channeling funds into the most productive investment opportunities and causes financial markets and the economy to become less efficient. Conflicts of interest become a problem for the financial system when they lead to a decrease in the flow of reliable information, either because information is concealed or because misleading information is spread. The decline in the flow of reliable information makes it harder for the financial system to solve adverse selection and moral hazard problems, which can slow the flow of credit to parties with productive investment opportunities.

On the other hand, being a client-driven and core relationship-oriented investment banking activity that was not at the root of the financial crisis, it is not obvious that banks have misdirected significant amounts of human resources and capital to underwriting activities. Moreover, underwriters fulfil a certification role to monitor public firms and their governance structures.⁷⁰

Would separating underwriting impact on competition? To the extent that underwriting activities benefit from an implicit public subsidy, there would be benefits in terms of competition. However, given that underwriting is less scalable than market making or proprietary trading, it is not able to rapidly exploit significant implicit subsidies.

4.2. Social costs of separating underwriting

Would separating underwriting lead to a loss of efficiencies? The literature suggests that the processing of information about making loans to clients facilitates the efficient provision of other financial services, including securities underwriting. This positive information-sharing process can also work in the opposite direction, whereby underwriting and other activities may improve loan-making procedures, but this relationship remains underexplored in the literature.⁷¹ Hence, a strong separation of underwriting from deposit issuing activities would

⁷⁰ Hartzell, Kallberg, Liu (2008) and Kovner (2010).

⁷¹ Diamond (1991), Rajan (1992), Saunders and Walter (1994), and Stein (2002), for example.

reduce efficiencies (genuine cost and revenue economies of scope) because of the social costs associated with losing knowledge and information advantages associated with combining lending and underwriting.⁷²

These efficiency gains and linked savings could be particularly pronounced for the issuers who are noninvestment grade-rated (Drucker and Puri (2005)). There may be economies of scope to be enjoyed from spreading fixed costs of acquiring information over multiple outputs; more specifically, concurrent lending and underwriting could be beneficial. Furthermore, the primary market activity of underwriting is connected to the secondary market activity of market making. In addition, underwriting is naturally followed by market making of the security that has been underwritten by the underwriting bank and therefore significant economies of scope arise between these two activities.

Hence, some economies of scope may arise, in particular if the separation goes beyond a subsidiarisation.

What is the impact on stakeholder groups of separating underwriting? Again, the ultimate impact will also depend on the strength of the separation. SMEs and large corporates may benefit from the reduced scope of conflicts of interests, but they may face a higher cost following the separation of underwriting from the DE.

5. SECURITISATION

Securitisation as an activity refers to the investing, sponsoring and structuring activities related to certain securitisation instruments.

Asset backed securities (ABS) are securities backed by a pool of receivables. Investors only bear the risk arising from these receivables and are generally insulated from the credit risk of the respective (former) owner of the assets (originator/seller). The receivables of the underlying portfolio that is securitised generate interest and principal payments. These payments as well as potential losses that may occur in case the underlying obligors of the securitised assets do not serve their obligations, are distributed to investors according to certain rules (“the structure”). Hence, the investors in ABS have to focus on both the underlying risk of the securitised portfolio and the rules that determine which consequences investors have to face in case a certain event occurs. Typically, the securitised assets are referenced by various notes with different risk profiles, and hence, ratings. The fact that different notes have different risk profiles, though they all reference the same underlying portfolio, is based on the respective aforementioned transaction structure. This in principle can enable investors to satisfy their individual risk appetite and needs. ABS allows for a broad band of flexibility in terms of asset classes being securitised and structures being applied.

Chart 5.1: Stylised illustration of the transfer of cash flows and risks in a securitisation deal

⁷² Kroszner and Rajan (1994), Kanatas and Qi (2002), Drucker and Puri (2005).

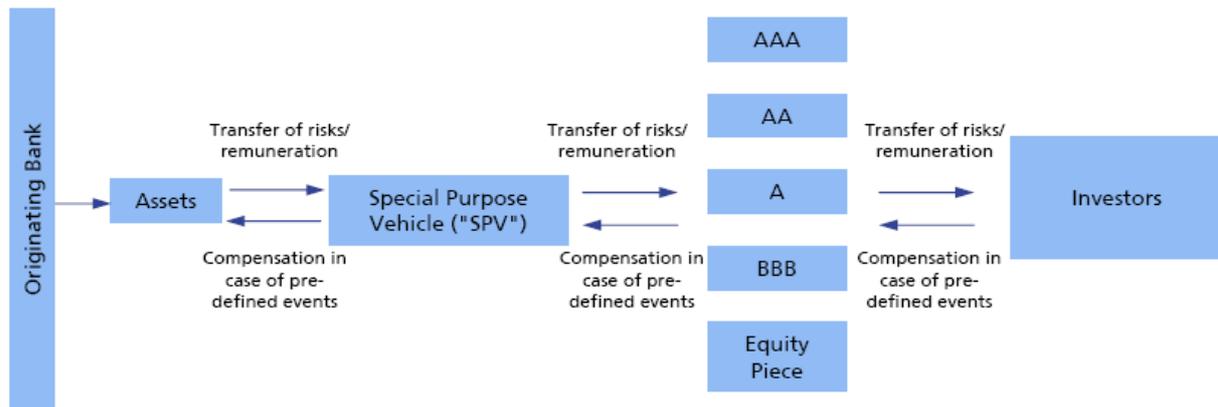


Chart 5.1 is a simple illustration of a securitisation deal with the main three parties involved: originator, the *Special Purpose Vehicle* («SPV») and investors. The *seller or originator* is the original owner of the assets. The *Special Purpose Vehicle* («SPV») is an independent entity, created for the purpose of the one specific securitisation transaction. It is typically bankruptcy remote and often located off-shore for tax reasons. Investors are typically asset managers. They are allowed to buy and sell assets during the time period subject to rules (in case of managed, i.e. non-static, pools of underlying securities). However, in practice, there are more parties involved in the transaction. The *arranger* determines the underlying pool of assets and sets up the transaction structure on behalf of the originator. The *servicer* collects and distributes the cash flows that arise from the assets (interest and/or principal), arrears management, collateral management. The *provider of external credit enhancement/liquidity* provides subordinated loans, guarantees, insurances (as protection for investors against credit risk) as well as liquidity facilities (“sponsor”). The *rating agencies* assess both the credit risk of the underlying pool of assets and the structural features of the transaction, and consequently determine the size of the required credit enhancement to achieve a certain rating level. The *trustee* is the “agent” of the investors that controls and checks cash flows, loss allocations, adherence to provisions, etc. The *swap counterparty* provides the interest rate swap to hedge market risk, as the SPV must not bear any interest rate risk due to the bankruptcy remoteness requirement, and as the securitised assets very often generate fixed-rate interest income, while the notes are mostly floaters (possibly also currency swaps).

The rationale of securitisation from the viewpoint of the originator/seller-perspective is that it allows for (i) balance sheet management, (ii) portfolio and risk management, (iii) funding management, (iv) price discovery by selling and “liquifying” illiquid assets and, (v) most importantly, lower capital requirements. The rationale of securitisation from the investor-perspective is that investors benefit from (i) the diversifications’ effects due to investments in alternative asset classes (risk diversification across geographies and asset types), (ii) the flexibility of securitisation (instruments tailored to the needs, preferences and profile with the opportunity to invest in high quality asset classes or earn a high rate of return), and (iii) being insulated from the originator’s/seller’s credit risk. In an increasingly fragmented European banking market where interbank markets gradually evaporate. Securitisation allows to channel savings from parts of Europe that have a surplus to those parts of Europe with the greatest needs and growth prospects, which is especially beneficial in an increasingly fragmented European banking market where interbank markets gradually evaporate. Whereas the funding can come from investors and depositors across Europe, the loan origination can remain with the existing local providers.

Different types of securitisations are classified, depending on the nature of assets underlying the pool. The underlying assets can be credit cards, consumer or auto credits as well leases. However, the majority of securitisation transactions in Europe, as Chart 5.2 illustrates, are Residential Mortgage-backed Securities (RMBS)⁷³, followed by Collateralized Debt Obligations⁷⁴ (CDO), Collateralized Loan Obligations⁷⁵ (CLO) and Commercial Mortgage-backed Securities (CMBS). After the peak of securitisation issuance in 2008, securitisation in Europe shows a steep downwards trend, with a significant reduction in the issuance of CDO/CLO and RMBS, as displayed in chart 5.3.

Chart 5.2. Source: JP Morgan research June 2013

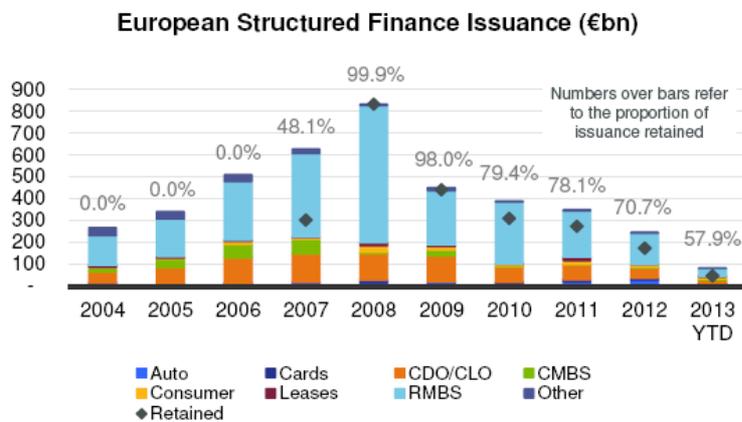
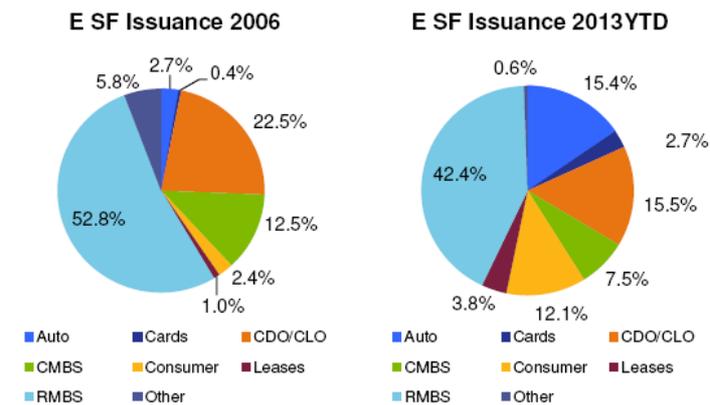


Chart 5.3. Source: JP Morgan research June 2013



⁷³ Mortgage securities are created when these loans are packaged, or “pooled,” by issuers or servicers for sale to investors. As the underlying mortgage loans are paid off by the homeowners, the investors receive payments of interest and principal.

⁷⁴ In a simple CDO, the underlying pool consists of bonds; whereas in a synthetic CDO the underlying pool consists of Credit default Swaps.

⁷⁵ Here the underlying pool consists of commercial loans.

Prior to the crisis, securitisation was regarded as contributing to financial stability, as it disperses credit risk to those that are best suited to bear it and as long intermediation chains may promote more efficient maturity transformation. However, the financial crisis has led to a rethink. Ex post, the boom of securitisation allowed to build up risks quickly, it enabled significant growth in short-term debt between financial intermediaries and led to financial intermediaries becoming more intertwined.

The valuation losses and difficulties with securitisation that have materialised since 2007 can be linked to excessive (i) originate-to-distribute activity, (ii) leverage, (iii) embedded maturity transformation, and (iv) lack of transparency.

Accordingly, for the purposes of this impact assessment, “complex” securitisation is defined as all securitisation activity that is characterised by any of the following four undesirable features:

- (1) Securitisation with risk transfer - having insufficient “skin in the game”.
- (2) Re-securitisation – Securitisation of a synthetic nature and/or containing mixed and complex pools of underlying assets. Repackaging or leveraging of existing securitisation instruments becomes increasingly complex, requires sophisticated modelling approach and is prone to model risk and valuation uncertainty.
- (3) Securitisation with maturity transformation: vehicles such as SIVs and ABCPs perform maturity transformation, on top of the liquidity risk and credit risk transformation and can be classified as unsafe types of securitisation.
- (4) Intransparent securitisation: due to the inherent complexity of the underlying pool of assets or due to available data to assess the riskiness of the instrument.

Alternatively, “simple and transparent” securitisation is characterised by the following *joint* characteristics:

- (1) Retention of sufficient “skin in the game” requirements (absence of full risk transfer), ideally of a vertical slice, as allowed by CRDIV-CRR rules.
- (2) Primary securitisation: structures other than of a synthetic nature; no repackaging or leveraging of existing securitisation instruments, as they become increasingly complex and prone to modelling risk; no mixed pools of underlying assets..
- (3) Securitisation without maturity transformation, the so called “pass-through” securitisation, links the rights of investors to receive interest and principal to the securitised assets’ generation of cash, subject only to hedging instruments or the availability of a liquidity facility designed to smooth out irregularities in payments. Vehicles such as SIVs and ABCPs perform maturity transformation and are considered “unsafe” securitisation.

Separation of securitisation activities would allow deposit entities to conduct and invest only in “simple and transparent” and not in “complex” securitisation.⁷⁶ In the following sections the social benefits and costs of this separation are discussed.

5.1. Social benefits of separating securitisation and debt origination

Would separating securitisation facilitate recovery and resolution? Would separating securitisation facilitate monitoring, management, and supervision? Separating “complex” securitisation will facilitate resolvability of large banking groups and facilitate management and supervision, as it concerns complex, opaque and illiquid securitised instruments. If the securitised assets become complex, they become hard to value and sell off without incurring large losses. Likewise, investing in securitised products may give rise to interconnectedness of financial institutions which impedes orderly and swift resolution. The ability to adequately supervise, regulate, and manage ABS structures is likely to be inversely related to its complexity and degree of transparency

Would separating securitisation reduce moral hazard? “Complex” securitization has allowed banks to grow their bank balance sheet aggressively, build up risks quickly, concentrate risks within the leveraged sector, grow notably short-term debt reliance between financial intermediaries, and make financial intermediaries significantly more intertwined. Without sufficient skin in the game, securitisation becomes a transaction-oriented and fee-driven activity, which can be scaled up easily, as clearly demonstrated in the financial crisis. If loans are packaged and sold off to investors against a fee, banks have less incentive to monitor borrowers and the interests of the bank and its borrowers are no longer aligned. Likewise, unless maturity transformation is limited, banks still run significant liquidity risk. Both, opaque securitisation structures and maturity transformation have fuelled the originate-to-distribute model, followed-up from excessive build-up of risks in the financial system. In that sense, separating “complex” securitisation from the public safety net would reduce moral hazard significantly and would stop the artificial and socially undesirable promotion of these activities.

Would separating securitisation reduce conflicts of interest? Conflicts of interests clearly arise when banks are allowed to sell ABS to investors against a fee without retaining sufficient skin in the game. This was the case during the crisis with the originate-to distribute business model.

Would separating securitisation reduce capital and resources misallocation? In retrospect, the securitisation process and transactions has led to a misallocation of capital and has given rise to real estate bubbles (in the US, Ireland, Spain, etc.) and to credit bubble in debt capital markets. They have fuelled the credit default spread (CDS) markets (used to hedge the credit risk of the underlying) and complex and synthetic fixed income products, such as collateralised debt obligation (CDOs) and CDO².

Would separating securitisation impact on competition? Separating “complex” securitisation from the public safety net would reduce the implicit subsidy that these activities benefit from and would lead to enhanced competition on the merits among banks.

⁷⁶ Note that several measures have been taken after the crisis with respect to securitisation, such as CRD IV requirements on risk retentions and due diligence duties, CRA III regulation and transparency obligation to be introduced in MIFID 2. However, the concerns of TBTF and TITF remain.

5.2. Social costs of separating securitisation and debt origination

Would separating securitisation lead to a loss of efficiencies? “Simple and transparent” securitisation potentially generates genuine economies of scope related to risk diversification, regulatory capital release, revenue increases, and cost reductions. Such securitisation facilitates banks’ ability to perform their risk pooling and asymmetric information resolving role. In general, securitisation is a funding source that is not tied to the credit of the bank. Hence, in a time of doubt about a bank’s financial strength, it may be relatively resilient, compared to unsecured or short term secured borrowing. It allows capital market investors (such as insurance companies, pension funds, etc.) to fund EU banks. It also breaks the link between the financing needs of the economy and the banks’ capacity to raise capital. However, “complex” securitisation is characterised by potential *diseconomies* of scope such as excessive complexity, conflicts of interest, excessive risk taking and increased systemic risk. There has been a sudden stop in “complex” securitisation following the eruption of the financial crisis, and it is not clear to what extent it will re-emerge. Hence, the cost of separating this activity is likely to be low, based on current activity levels. Subsidiarising “complex” securitisation in a separate trading entity would still allow for market-constrained, limited and genuine innovation to take place within the regulated banking group, whilst not promoting it artificially by linking it to the deposit entity that enjoys public safety net support.

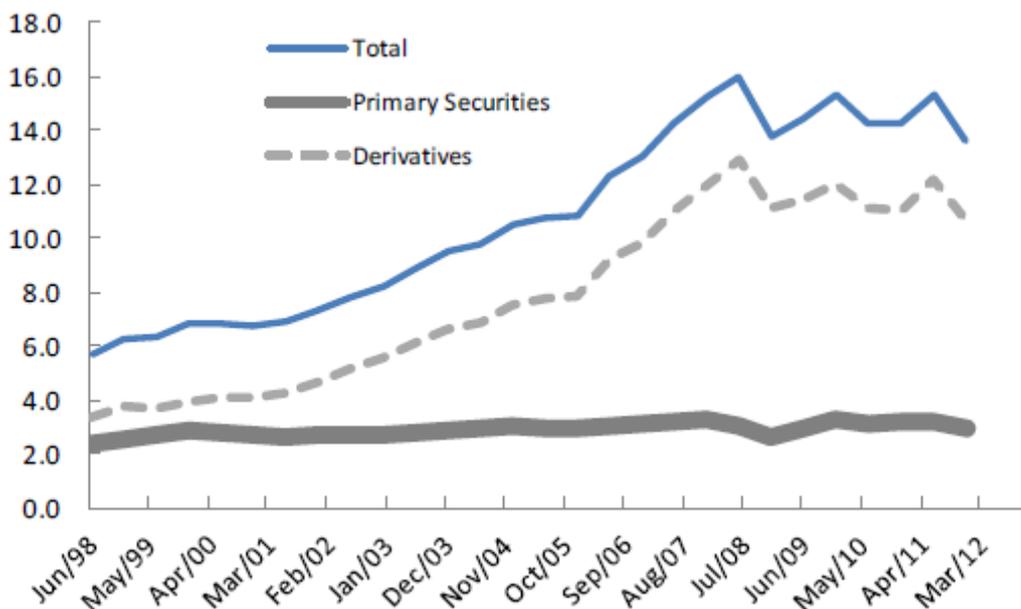
In addition, securitisation has allowed for a rapid expansion of the financial sector through greater interconnectedness. The enlargement of the financial system, beyond a certain size, is associated with reductions in real productivity growth. This, in part, is due to the financial sector competing with the rest of the economy for scarce resources. Excessively large financial systems may reduce economic growth because of the increased probability of a misallocation of resources, the increased probability of large economic crashes⁷⁷, or the endogenous feeding of speculative bubbles.

6. DERIVATIVE TRANSACTIONS

Trading in derivatives is mostly performed over-the-counter (OTC) and is dominated by a handful of large US and European banking groups. Derivatives are contracts between two counterparties. Their notional value has increased significantly and has reached extremely high levels. Chart 6.1 compares the notional value of derivatives and the volume of primary securities, consisting of all issued domestic and international securities, bank intermediated credit and equity market capitalisation, as a percent of world GDP. The Chart illustrates that the notional value of derivatives has increased from 3.5 times world GDP in 1998 to 12 times world GDP when the crisis materialised. The volume of primary securities, in contrast, has remained stable at around 3 times world GDP.

Chart 6.1: Derivative notional values versus primary securities (% of world GDP)

⁷⁷ Popov and Smets (2013) analyse the role of direct intermediation through financial markets with the indirect intermediation through levered banks. They argue that less deep financial markets in the EU relative to those of the US are, to a large extent, responsible for the smaller increase in productivity and slower pace of industrial innovation. They also compare the liquidity spirals, asset fire sales, and interbank market freezes of the recent financial crisis with the much more orderly burst of the dot-com bubble. They argue that the credit boom of the 2000s was driven by debt finance, while the dot-com bubble was mostly driven by an expansion in equity ownership, and equity is not held in levered portfolios.



Source: BIS, OECD, World Federation of Stock Exchanges, as reported in Blundell-Wignall, Atkinson, and Roulet (2012)

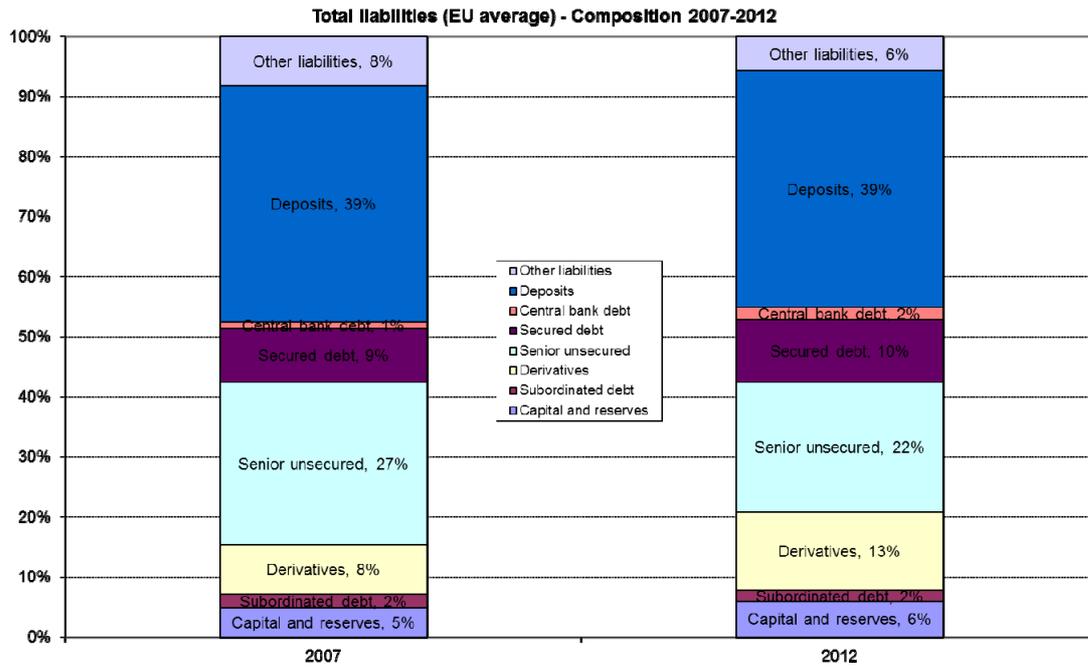
Variation margins reflect changes in prices and volatility and imply transfers from losing or out-of-the-money counterparties to winning counterparties (zero sum game). The margins are mostly collateralised with cash and sometimes government securities.

The notional value may not be informative about the riskiness of the derivative positions. First, the Gross Market Value (GMV) measures what it would cost to replace all trades at current market prices. It is typically significantly smaller than the notional value. While the notional value of global derivatives was 586 trillion USD in December 2007, the GMV at the same time was only 16 trillion USD. Even when valued at GMV, derivatives can still be very important in terms of balance sheet of the biggest systemically important banks. Second, financial firms have offsetting positions that can be netted and banks expressly hedge most of their positions. The GMV minus netting is the Gross Credit Exposure (GCE). It is against the GCE that collateral is held. It amounted to 3.3 trillion USD in December 2007, against which 2.1 trillion USD was held. The final global open exposure amounted to 1.2 trillion USD.

However, it would be a mistake to conclude from relatively small open positions that systemic risks are equally small. Changes in volatility may shift the GMV quickly and netting provides no protection against such shifts in market risks, because netting is about settlement amounts using prices at the point of close out. When the crisis hit in 2008, the GMV more than doubled from 15.8 trillion USD to 35.3 trillion USD, the GCE increased from 3.3 trillion USD to 5 trillion USD and the estimated collateral had to rise from 2,1 trillion USD to 4 trillion USD. Significant margin calls needed to be met in a highly risky environment.

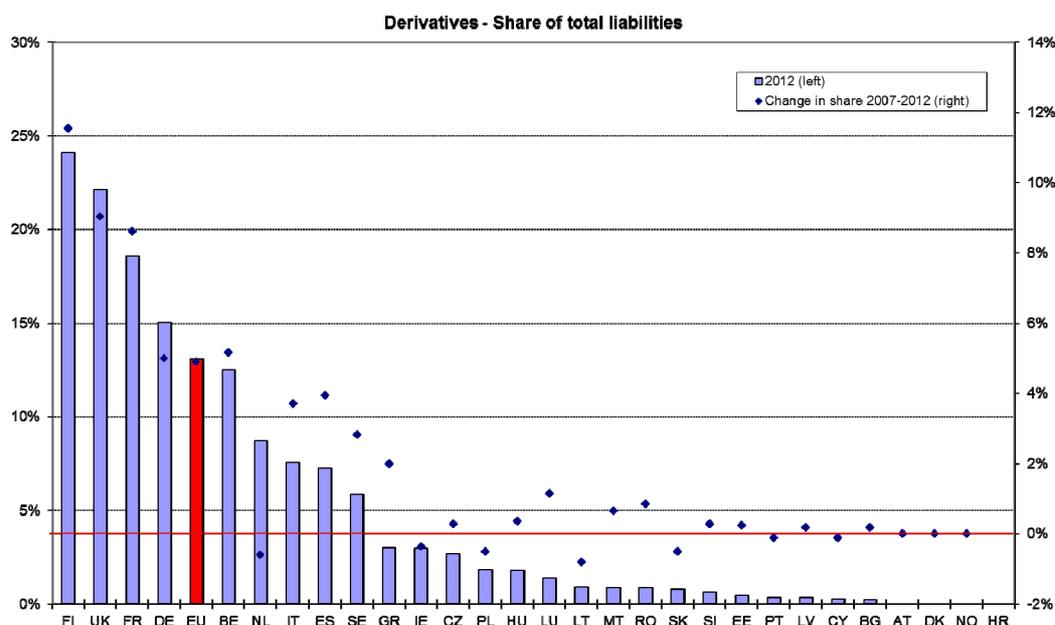
Charts 6.2 and 6.3 illustrate the size of derivatives for EU banks.

Chart 6.2 – Total liabilities for the EU average bank (2007 versus 2012)



Source: ECB

Chart 6.3 – Derivatives as a share of total liabilities for EU Member States



Source: ECB

6.1. Social benefits of separating derivatives activity

Would separating derivatives activity facilitate recovery and resolution? Would separating derivatives activity facilitate monitoring, management, and supervision? ISDA surveys suggest that roughly three quarters of trades comingle these margins in non-segregated accounts and over 90 per cent of the cash is used in rehypothecation. The amount of leverage that can be achieved through this process is high and its nature gives rise to interconnectedness between financial firms.

Would separating derivatives activity reduce moral hazard? Derivative activity allows banks to grow their bank balance sheet aggressively, build up risks quickly, concentrate risks within the leveraged sector, grow notably short-term debt reliance between financial intermediaries, and make financial intermediaries significantly more intertwined. Derivatives may imply high leverage. By making a small down-payment (or initial margin), banks can take large speculative positions in the market and can transform the riskiness of their assets and income flows, while booking revenues from fees and OTC derivative spreads. Through rehypothecation, the leverage can be multiplied throughout the financial system.

Would separating derivatives activity reduce conflicts of interest? Derivatives play a critical role in regulatory arbitrage under the Basel capital requirement framework, essentially permitting banks to have a wide discretion in risk-weighting their assets for regulatory capital purposes. Likewise, derivatives were used as a tool to profit from tax arbitrage.

Would separating derivatives activity reduce capital and resources misallocation? Derivatives play a critical role in regulatory arbitrage under the Basel capital requirement framework. The structuring of products via securitisation, swaps, use of seniority tranches and CDS insurance was an integral part of the growth of derivatives transactions.

Would separating derivatives activity impact on competition? If a bank is unable to post the necessary collateral, the risk of transacting with the bank is perceived to go up and other banks will begin to take defensive actions which exacerbate the bank's weak cash position. Ultimately, without state support, the bank will need to sell assets and unwind trades at fire-sale prices, which will amplify its distress. The moment a bank does not have a sufficient cash buffer, short term securities of sufficient quality, or the ability to borrow to meet collateral calls, it essentially becomes reliant on direct official support. For systemically important banks such public support is always there, and the support itself becomes part of the problem (distortionary implicit subsidies). Asset managers and hedge funds prefer to deal with systemically important banks precisely because the public support can be relied upon. In the absence of such cross-subsidisation support, the cost of capital would have to be much higher. Counterparties to the bank would demand segregated accounts and no re-hypothecation. Securities used for collateral would require higher haircuts. Risk premia for lending collateral would rise.

6.2. Social costs of separating securitisation and debt origination

Would separating derivatives activity lead to a loss of efficiencies? Derivatives activity has grown aggressively and is characterised by potential *diseconomies* of scope such as excessive complexity, conflicts of interest, excessive risk taking and increased systemic risk. Subsidiarising derivative activity in a separate trading entity would still allow for market-constrained, limited and genuine innovation to take place within the regulated banking group, whilst not promoting it artificially by linking it to the deposit entity that enjoys public safety net support. Derivative activity has allowed for a rapid expansion of the financial sector through greater interconnectedness. The enlargement of the financial system, beyond a certain size, is associated with reductions in real productivity growth. This, in part, is due to the financial sector competing with the rest of the economy for scarce resources. Excessively large financial systems may reduce economic growth because of the increased probability of a misallocation of resources, the increased probability of large economic crashes, or the endogenous feeding of speculative bubbles.

7. PRIVATE EQUITY/VENTURE CAPITAL

Private equity (PE) is an asset class consisting of equity instruments provided to firms that are not publicly traded on an exchange. Private equity is about buying stakes in businesses, transforming business and then realising the value created by selling or floating the business. Because it is equity, it is risk capital allocated to firms for the purpose of funding early stage ventures, growth and diversification opportunities, restructuring and management buy-outs and buy-ins in established companies. Private equity is inherently an illiquid and long-term oriented investment traded only on acquisition and exit. This differs from trading on public markets, trading liquid asset classes such as currencies, stocks, bonds and other derivatives. It typically involves the acquisition of a major stake in a targeted company and comprises also of active management of business operations therein. It can be distinguished from hedge funds which apply various trading strategies to accomplish supra-competitive returns.

One of the parties to a private equity transaction is the fund manager (private equity firm) who is in charge of managing the pooled money in the fund coming from investors and who makes investment decisions. The fund manager can be either a single person or an investment firm. He is responsible for raising funds, sourcing investments and managing them as well as realising capital gains. Another party is the private equity fund which is the investment vehicle pooling money from investors. The target company with its shareholders and management is a third party. In case of leveraged buy-outs, the bank providing debt instruments is a fourth player.

Private equity can generally be seen as a term encompassing the three subgroups venture capital, growth capital as well as management buy-outs and buy-ins.

Venture capital (VC) is that part of private equity that entails finance provided to early-stage, high-potential and possibly, high-growth start-up companies. This commonly covers the seed to expansion stages of investment. The venture capital funds follow an active investment model and provide funding in exchange for management influence and equity in the company invested in. Most often, expertise and experience of the venture capital funds' personnel is one of the main contributing factors. Venture capital firms earn money by owning equity in companies that they invested in which possess novel technologies and/or business models. In the history, most of the venture capital-backed companies have been active in biotechnology, IT, software and such. These firms are too small and their credit history is too limited to acquire debt financing from banks, but their capital need is usually too large to be satisfied by own means. In exchange for the high risk venture capital funds embrace with their investment in young companies, they are rewarded with considerable managerial control and ownership.

Growth capital is the subset of private equity investments aimed at relatively mature companies that need external financing for expanding or restructuring their operations, business diversification, market expansions or for acquisitions. This often involves a minority investment by a private equity firm to companies which are yet unable to generate sufficient funds through debt offerings. Most commonly, growth capital is common or preferred equity and lies at the intersection of mature private equity and venture capital.

The most mature private equity investments are buy-outs and buy-ins where private equity firms target companies to be acquired with equity instruments from current shareholders and restructured in order to be sold off at a later stage for a profit. These companies are usually considered to be fundamentally undervalued because of their unrealized organisational, product or management capacities. Because the targeted companies are rather large, most often these private equity deals are leveraged buy-outs (LBO) where a bank additionally provides debt financing so that the private equity firm can acquire the majority control over the mature company. This varies from venture capital and growth funds which typically do not acquire a majority stake. A special case of these activities are management buy-outs (MBO) or buy-ins (MBI) where the incumbent or an external management team raises funds to acquire a significant share in the company.

The European Private Equity and Venture Capital Association (EVCA) estimated that European private equity funds raised approximately EUR 265 billion in 2007-2012. In Europe over the period 2007-2012, banks made up 11% of all investors in private equity funds, with pension funds having the largest exposure to private equity (21%).

Banks may be involved in two different ways in private equity: as the equity investors (bank-affiliated deals) or as both the equity investor and the debt financier (parent-financed deals).

Fang et al. (2012) estimate that bank-affiliated private equity groups account for 30% of all private equity investments in the US.

Private equity is also dealt with in the "Volcker Rule" provision of the Dodd-Frank Act which limits banks' exposure to private equity and hedge funds to no more than 3% of Tier 1 capital.

7.1. Social benefits of separating private equity and venture capital

Would separating private equity facilitate monitoring, management, and supervision? Would separating private equity facilitate recovery and resolution? Hoenig and Morris (2013) argue that several non-traditional activities, including private equity, are less transparent than traditional banking activities as the success of the underlying investments depends on the opaqueness of the bank's position and on the speed at which their exposures can be changed. Transparency concerns are relevant for private equity. For example, they have led to the adoption of the non-voluntary code of conduct in the UK (Walker guidelines), which require companies to provide the same kind of information to the public that is required for publicly traded companies. The main difficulty with private equity is that valuing private equity investments is inherently difficult for the market. Therefore market monitoring will be less effective, although the relatively long-term nature of private equity mitigates some of the uncertainty. Supervision cannot address all shortcomings as supervisors only have snapshots of various operations while the underlying activities can become very risky in a short time span changing a bank's risk profile. However, as Hoenig and Morris (2012) point out, there is a risk that such activities following separation would migrate into shadow banking leading to even less transparency and monitoring.

The resolvability of banks may be affected as it is difficult to determine reliably the true value of the private equity activities, which raises obstacles to the resale of the bank during resolution. Also, almost all bank-affiliated and parent-financed private equity deals run through special purpose vehicles (SPV) which may complicate these procedures.

Would separating private equity reduce moral hazard? Gilligan and Wright (2012) argue that private equity tries to address the principal agent problem between managers and shareholders, as private equity backed companies do not pay material cash bonuses to senior managers and get a return if the business is sold or floated. On the other hand, despite the long-term nature of private equity investments (compared to proprietary trading) and the informational advantages enjoyed by private equity firms specializing in investing in certain industry sectors, equity investments made by private equity funds remain inherently risky. Private equity firms managing the funds can assess the true valuation of the targeted company only with significant uncertainty, given the start-up nature and/or restructuring required for the target companies. This may lead to significant discrepancy between the price paid for gaining managerial control over a targeted company and the true fair value of the company once taken over. Fang et al. (2012) argue that banks still run serious risks when investing in private equity funds, and have experienced substantial losses. As the potential downside when investing in private equity is high, the potential to reduce moral hazard when separating risky private equity activities from commercial banking is also significant. There is also evidence that private equity performance is highly pro-cyclical. Fang et al (2012) also explain that bank-affiliated deals, even though have similar characteristics and financing compared to stand-alone deals, perform worse if they are made during peaks of the credit market.

Would separating private equity reduce conflicts of interest? Private equity may lead to conflicts of interest between banks and other stakeholders. A bank may take advantage of its superior information about firms as private equity provider to make decisions that benefit the banks at the expense of the target firm (similarly as in underwriting). Furthermore, banks may have stronger incentives to finance in-house deals compared to outside investors as these deals may lead to more cross-selling opportunities to the banks. It can bring additional revenues to banks as the private equity target can be a potential customer for the bank. On the other hand, Fang et al. (2012) explain that banks become exposed to both the equity and debt of the target through private equity and commercial lending and hence that there is a better alignment of stakeholder versus debt-holder's incentives.

Would separating private equity reduce capital and resources misallocation? The removal of the safety net from private equity can restore the level of these activities to the level dictated by the market. Given, however, the significant asymmetric information and other market failures relevant to the financing of companies, and in particular start-ups, it is not obvious that separation would lead to an improvement in capital and resources.

Would separating private equity impact on competition? The reduction in the implicit subsidy in private equity activities would have a positive effect on competition among banks, but relatively limited given the relative size of these activities for banks. Furthermore, it would lead to a level playing field between banks and non-bank-affiliated private equity firms (depending on the extent that the implicit subsidy is removed).

7.2. Social costs of separating private equity and venture capital

Would separating private equity lead to a loss of efficiencies? Economies of scope would be lost when separating private equity activities from the deposit issuing entity that is also active in lending to SMEs. Firstly, as Gilligan and Wright (2012) point out, banks' involvement in private equity activities provides scope for diversification of risk. The Frontier Economics report (2013), commissioned by EVCA, argues that the advantages of private equity include the possibility to diversify portfolios, while earning returns, and having access to otherwise unavailable investment opportunities. Private equity provides institutions (including pension funds, banks and insurance companies) with investment opportunities that they may not be able to pursue otherwise, improving the diversification of their portfolio. Given the attractiveness of diversifying the portfolio and the possibility of earning greater returns from this diversification, the preservation of private equity activities within the deposit-taking bank may provide the potential for advantageous returns and portfolio characteristics for the bank, as well as the bank's customers. A second efficiency relates to the informational advantages that can be exploited by banks' involvement in private equity which stem from relationship banking. Fang et al (2012) claim that through the screening of loans and monitoring banks obtain private information about their clients which they can reuse (and similarly they could use information gathered during past banking relationships to make private equity investment decisions). Thirdly, the banks' engagement as a private equity investor could carry a positive signal about the quality of the investment. This would be credible if the bank has past relationships with the firm and if the bank has a good reputation. Popov and Roosenboom (2012) estimate that while the ratio of venture capital to R&D has averaged around 6% between 1991 and 2005, venture capital has accounted for 9.7% of industrial innovation during that period.

What is the impact on stakeholder groups of separating private equity? Private equity is often argued to be an important source of funding for SMEs. The channelling of fund to SMEs via private equity may make also bring benefits to SMEs through external expertise provided by private equity firms in regards to investments into specific industry sectors. Hence, a separation of private equity activities and the increased funding costs for private equity may have an adverse impact on SMEs. Furthermore, several studies suggest that private equity has an important impact on growth, though innovation and increased productivity.⁷⁸

8. LENDING TO SMEs AND HOUSEHOLDS

Relationship-oriented banking refers to the traditional originate-and-hold model of banking; Banks build up and maintain long relationships with their clients, have an alignment of interests with their clients (they fare well if their customers fare well), have limited scope for trading, and are encouraged to monitor and serve their clients.⁷⁹

Lending to SMEs (as well as syndicated lending and lending to less advanced economies) is relatively intensive in “soft information” that cannot be easily exchanged and sold.

8.1. Social benefits of separating lending to SMEs and households

Would separating lending to SMEs and households reduce moral hazard? Lending to households and SMEs is risky and hence separating the activity would allow shielding deposits from potentially large losses. On the other hand, in normal times the risk is primarily of a non-systemic nature. Loan portfolios are typically relatively granular and obey the law of large numbers and proper risk management. Also, the ability to build up tail risk is not present, to the extent that it is for trading activities. The scalability of lending to SMEs and households is not as prominent as for certain other banking activities.

Would separating lending to SMEs and households facilitate recovery and resolution? Separating lending to SMEs and households would not facilitate resolvability to a significant extent, nor would it facilitate the management, monitoring and supervision of the banking group, given that retail lending does not give rise to complex interconnectedness and intra-financial sector contagion.

Would separating lending to SMEs and households reduce conflicts of interest? Separating lending does not reduce conflicts of interest, because it is a typical example of relationship-

⁷⁸ A Frontier Economics report (2013) estimates that the market value of patents granted to private equity backed firms in 12 large European countries between 2007 and 2011 is 1.5 times the total amount of private equity investment during that period. Also they find that the value added of financing in private equity can be significantly more effective in promoting innovation (measured by the number of patents granted) than non-private equity finance. Mollica and Zingales (2007) show that the causality runs from private equity (in particular venture capital) to innovation and not the other way around (that is private equity selecting more innovative firms). However, Gilligan and Wright (2012) consider that the evidence is ambiguous on whether private equity performance outweighs alternative forms of investments such as quoted shares. They explain that while industry studies shows better performance of private equity funds, once controlling for risk and correcting for sample bias evidence shows that average fund performance is very close to the S&P 500 (from slight over-performance to 3% per annum underperformance).

⁷⁹ Not all investment banking activities are transaction-oriented activities. Not all commercial banking activities are relationship-oriented activities.

oriented banking in which the interests of the lender and the borrower are aligned. The lender does well if the borrower does well, and vice versa.

Would separating lending to SMEs and households reduce capital and resources misallocation? Would separating lending to SMEs and households impact on competition? Separating lending would not result in reduced resource misallocation, given that monitoring small and medium sized borrowers is a core activity of deposit taking banks. Linking savers and borrowers implies that asymmetric information get resolved. If lending and intermediation is left to the market, this is likely to lead to under-provision of credit for SMEs and households.

8.2. Social costs of separating lending to SMEs and households

Individuals are typically risk averse and this characteristic is reflected in their preferences. Those with an excess of funds typically have a preference to lend short, while those with a shortage of funds have a preference to borrow long. Still, in the presence of perfect financial markets (Arrow and Debreu (1954)), there would be no need for maturity-mismatching intermediating banks, since savers and borrowers would execute their transactions directly with sufficiently rewarded and willing counterparties in the financial markets (see also Modigliani and Miller (1958)). So, the true *raison d'être* of banks are market imperfections such as information asymmetries, transaction costs, tax distortions and market incompleteness.

Given the existence of market imperfections, there is a role for banks in bringing risk-averse savers and borrowers together. However, banks create a mismatch between the maturity of their assets and liabilities by issuing demandable and other short-term debt and granting long-term loans. Among many others Diamond (1984) and Gorton and Pennacchi (1990) try to understand the exact circumstances under which each of these two separate activities might require the existence of an intermediary, as opposed to being implemented directly through arm's-length financial markets. Although this literature yields many insights, only a few papers address the more fundamental question of why it would make economic sense for a single institution to carry out both functions under the same roof. Real synergies have to exist between the two activities, since if there exist none, there would be no rationale for the existence of loan making and deposit taking banks.

Kashyap et al. (2002) show that, indeed, as long as markets are imperfect, synergies exist between deposit-taking and loan-making activities. They argue that banks offer credit lines or loan commitments to their borrowers, such that the latter hold the option to draw down the loan on demand over a specified period of time. Once the decision to extend a credit has been made, the borrower can show up at any time and withdraw funds, just as with a demand deposit. In that sense, banks provide their customers with liquidity on both the liability and asset side to accommodate their unpredictable needs, extending the original Diamond and Dybvig (1983) argument⁸⁰. Now, given that financial markets are imperfect, a bank cannot accommodate liquidity shocks instantaneously by raising new external finance, so that a buffer stock of liquid assets needs to be held. Holding this buffer is costly for several reasons: opportunity costs, tax distortions, increased agency costs, etc. So, if demand withdrawals and

⁸⁰ The classic motivation (Diamond and Dybvig, 1983) for banks to offer deposits derives from the existence of random liquidity shocks faced by depositors and the need for depositors to be insured against these liquidity shocks. The law of large numbers implies that aggregating over these idiosyncratic liquidity shocks leads to exploitable diversification benefits.

loan draw downs are not perfectly correlated, a real synergy arises and a bank would be able to hold a smaller total liquid asset stock than two separate institutions would have to hold jointly.

Other arguments have also been raised. Dermine (2003a,b) lists several synergies between loan making and deposit taking that lead to real cost reductions. For example, there could be joint operating expenses in delivering deposits and loans, or the terms of mortgage loans could simply require the opening of deposit accounts. Diamond and Rajan (2001) argue instead that banks commit themselves to bearing withdrawal risk by issuing demandable deposits. Hence, the bank will be committed to do the utmost to collect from borrowers to repay depositors. If not, a run might be precipitated and the bank would fail. Similarly, Calomiris and Kahn (1991) argue that deposits may discipline bankers and hence, by submitting themselves to demandable deposits, bankers may attain a lower cost of capital. Finally, Mester et al. (2001) argue that deposits may help banks in monitoring borrowers, thereby becoming superior lenders.

Would separating lending to SMEs and households lead to a loss of efficiencies? Lending and deposit taking naturally belong to each other and separating one from the other would give rise to important efficiency losses. As argued above, Kashyap et al. (2002) show that, indeed, so long as markets are imperfect, synergies exist between deposit-taking and loan-making activities. Dermine (2003a,b) list other synergies between loan making and deposit taking that lead to real cost reductions. For example, there could be joint operating expenses in delivering deposits and loans, or the terms of mortgage loans could simply require the opening of deposit accounts. Diamond and Rajan (2001) argue that banks commit themselves to bearing withdrawal risk by issuing demandable deposits. Hence the bank will be committed to do the utmost to collect from borrowers to repay depositors. If not, a run might be precipitated and the bank would fail. Also, deposits might help banks in monitoring borrowers, thereby becoming superior lenders (Mester et al., 2007).

Given the existence of market imperfections, there is a role for banks in bringing risk-averse savers and borrowers together.

Given its impact on household consumption and SME investment, increasing the private funding costs would give rise to social costs and reduced GDP and economic growth.

9. LENDING TO LARGE CORPORATES

The assessment and analysis of lending to large corporates is similar to lending to households and SMEs elaborated in section 8, except for the fact that large corporates depend much less on banks for their funding, as they have easier access to debt issuance and capital markets in general. The information asymmetry (and hence market imperfection) is also less prominent, given that more analysts scrutinise large corporates.

As a result, lending to large companies need not be linked to a deposit-issuing entity, but it can be performed by a deposit entity.

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ANNEX A7 – STRENGTH OF SEPARATION

1. INTRODUCTION

Building on chapters 4 and 5 of the impact assessment, this Annex will continue the discussion on what forms of separation could be envisaged as well as the strength of the fence, i.e., the combination of measures of a legal, operational, economic, and governance nature that could be adopted to ensure the independence, robustness and effectiveness of the ring-fenced entity. To decide the optimal strength of the fence, different proposed solutions will be evaluated to see how they would address the specific objectives associated with structural reform. This is done by evaluating the various proposals against the social benefits and social costs of implementing them.

The Annex is structured as follows: section 2 outlines the main forms of separation that are considered in this Impact Assessment (accounting separation, functional separation and ownership separation) and assesses each of these in light of the specific objectives of structural reform (reduce moral hazard, improve resolvability, facilitate monitoring, management and supervision, reduce conflicts of interests, reduce a misallocation of capital, reduce losses of efficiency and impact on competition) and identifies ownership separation and "subsidiarisation"⁸¹ as the options going forward. Section 3 proceeds to a more in-depth analysis of what subsidiarisation actually means in terms of what existing legislation requires, what changes to current legislation would be required to maintain the integrity of subsidiarisation, and what additional rules can be used, and in what combinations, to reinforce the independence of the separated entity from the rest of the wider corporate group. Finally, section 4 aims at specifically evaluate different "ring-fences" in that respect against the social benefits and social costs of implementing them which will provide an answer as to how suitable they may be for addressing the specific objectives of structural reform. Given the large permutation of possible combinations of additional restrictions on economic, legal, governance and operational links that may exist, this Annex elaborates and assesses a wider range of ring-fencing approaches than the ones compared in the main body of the Impact Assessment.

2. DIFFERENT FORMS OF STRUCTURAL SEPARATION

This Annex presents three broad forms of separation: (1) accounting separation; (2) functional separation through subsidiarisation; and (3) ownership separation (i.e., a prohibition of certain business lines). These forms of separation display an increasing level of severity and intrusiveness in a financial institution's structure.

⁸¹ What subsidiarisation means in practice is breaking up complex financial institutions, including branches that cross borders – into distinct subsidiaries. This is often called "ring-fencing," a term that makes clear that the goal of subsidiarisation is to define robust boundaries between different corporate operations to keep the "sheep on one side and the wolves on the other."

More specifically:

1. Accounting separation means that a financial institution that provides integrated financial services would have to provide separate accounts for each of its different business segments and make these reports publicly available. This would constitute the lightest degree of structural separation compared to the current status quo.
2. Functional separation through subsidiarisation is a requirement for a financial institution to transfer certain activities of different business units into a separate, legal subsidiary.
3. Ownership separation implies a prohibition on a financial institution to engage in certain activities. This is the most intrusive degree of structural intervention as it would involve winding down or selling off assets connected to certain activities to an independent third party.

These three forms of separation are not necessarily mutually exclusive; functional separation, for example, presupposes a degree of accounting separation. The following sections will discuss each of these forms of separation and evaluate them against the operational objectives of structural reform.

2.1. Accounting separation

Accounting separation would require financial institutions to provide separate accounts for the main activities they are engaged in (whether through business divisions or subsidiaries). As a result, the costs and ultimately revenues of each business division or subsidiary (and transfers between them) would in principle be separately identified. Accounting separation therefore increases transparency and makes it easier to understand different parts of a financial institution and easier to monitor and control potential financial transfers between divisions and subsidiaries.

Accounting separation has typically been used in the utilities sector (e.g., in gas and water companies) to enable the development of competition in contestable parts of the value chain and to prevent cross-subsidies between the various activities of the operator. Accounting separation is also obligatory for firms that provide services of general economic interest next to any commercial activity.

Currently there are two accounting frameworks applicable for financial institutions in the EU: (1) the International Financial Reporting Standards (the “IFRS”);⁸² and (2) the Directive on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings (the “Accounting Directive”).⁸³

⁸² See as explained on <http://www.ifrs.org>.

⁸³ Directive 2013/34/EU of the European Parliament and of the Council on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EC of the European Parliament and of the Council and repealing Council Directives 78/660/EEC and 83/349/EEC, OJ L 182, of 26 June 2013, page 19. In this context, it is also relevant to mention the specific Directive that applies to banks and other financial institutions in combination with the Accounting Directives, namely: Council Directive 86/635/EEC on the annual accounts and consolidated accounts of banks and other financial institutions, OJ L 372, of 31 December 1986, page 1.

The IFRS is mandatory for the consolidated accounts of listed companies but EU Member States have the option to apply IFRS also to the consolidated accounts of non-listed companies. The Accounting Directive applies by default to individual accounts. IFRS is optional for individual accounts in general.

The introduction of the IFRS in EU has led an increase in disclosures as IFRS requires more disclosure than the Accounting Directive. For example, the IFRS requires detailed information on consolidation and fair value measurement but also on different risks borne by the financial institution (e.g., credit risk, liquidity risk or market risk).⁸⁴ More importantly, IFRS standards have led to improvements in the level of quality of disclosures which means that it is now easier to assess a bank's risks.

The IFRS asks for specific information per business segment (e.g., investment banking, retail, corporate banking, and assets management).⁸⁵ However, companies have leeway to define their segments which means that the definition and the scope of the segments can differ from one bank to another. Moreover, the information provided is in aggregate form. Therefore, there is not always enough detail in the financial statements to identify the financial flows either between business segments (e.g., "do retail deposits fund investment banking activities?") or between business divisions and subsidiaries. It is furthermore not possible to identify where the profit, the cash or the own funds come from within a wider corporate group.

Because the Accounting Directive leaves Member States some flexibility in the way they transpose the requirements of the Directives into national law (for example with regard to measurement of financial instruments, re-evaluation of tangible or intangible assets), there are now different national, general accepted accounting principles. As a consequence, it is difficult to compare the financial statements of EU financial institutions when they are based on the Accounting Directive. The disclosure requirements in the Accounting Directive are also less stringent than those of the IFRS. For example, disclosure requirements regarding risk or business segments are different.

In addition, in accordance with the Directive on the access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms (the "CRDIV")⁸⁶ all financial institutions must report to prudential supervisors on own funds/capital requirements – "COREP." Prudential supervisors also demand additional quarterly reports ("FINREP") on a consolidated level from "IFRS financial institutions." This is optional for non-IFRS banks. Finally, financial institutions are also required to publically disclose information regarding their prudential calculation (so-called "Pillar 3 disclosures").⁸⁷

⁸⁴ See Article 7 of Regulation (EC) No 1606/2002 of the European Parliament and of the Council on the application of international accounting standards, OJ L 243 of 19 July 2002, page 1 ("IFRS Regulation").

⁸⁵ See Article 8 of the IFRS Regulation.

⁸⁶ See the Directive of the European Parliament and of the Council on the access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms and amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC (the "CRDIV"), OJ L176, of 27 June 2013, page 338.

⁸⁷ Directive 2009/111/EC of the European Parliament and of the Council amending Directives 2006/48/EC, 2006/49/EC and 2007/64/EC as regards banks affiliated to central institutions, certain

2.1.1. *Social benefits and social costs*

As explained below, the net social benefits of using accounting separation appear modest.

Would accounting separation facilitate recovery and resolution? The simplification of and more transparency in a financial institution's accounts could be one contributing factor for facilitating the drawing up of a resolution plan. However, accounting separation in itself is highly unlikely to significantly increase resolvability because it does not address the issues that impact on resolvability: for example, nature of activities (e.g., risky and easily scalable), the level of complexity of the legal structure, size and intra-group connectedness.

Would accounting separation reduce moral hazard? To the extent accounting separation provides more transparency and to the extent information is publicly available this could contribute to more informed choices and monitoring by investors (depositors, creditors, and shareholders). However, accounting separation does nothing to reduce or remove the incentives to take risk that arise because of the perception of the implicit public safety net; it would most likely have an insignificant impact on the incentives of investors to monitor and control bank risk taking and therefore on the incentives for managers to take excessive risk from the beginning. The impact on moral hazard would therefore be limited.

Would accounting separation facilitate monitoring, management and supervision? Accounting separation leads to more information in the public domain which could make it easier for relevant supervisory authorities to understand a financial institution's balancing sheet. Similarly, it could make it easier for investors to monitor balance sheet activities. However, given that this degree of separation would not affect incentives to act on information, it is doubtful that accounting would facilitate monitoring, management and supervision to such an extent that incentives for excessive risk taking would change.

Would accounting separation reduce conflicts of interest? As accounting separation does nothing to actually put a wall between the types of activities which may give rise to conflict of interests it is highly unlikely that it would have any significant impact on reducing conflicts of interests.

Would accounting separation reduce resource and capital misallocation? No. Accounting separation is more a transparency measure. It will most likely have no impact on incentives to allocate capital and human resources to trading and intra-financial activity and away from lending activity.

Would accounting separation lead to a loss of efficiencies? No. This is because accounting separation has no impact on diversification benefits and synergies arising from universal banking.

Would accounting separation impact on competition? Accounting separation in itself is unlikely to address the competition concerns that may follow from an implicit public safety net; bank creditors' perception that the government will intervene to protect them from the risk of bank failure will remain and any distortions of competition arising from those banks who benefit from the implicit subsidy (i.e., lower funding costs) and therefore have the ability

own funds items, large exposures, supervisory arrangements, and crisis management, OJ L 302, of 16 September 2009, page 97.

to expand at the expense of those banks that do not benefit from the implicit subsidy will remain.

To conclude, accounting separation appears to be ineffective in addressing the operational objectives of structural reform and this form of separation is therefore discarded from further evaluation.

2.2. Functional separation through subsidiarisation

Under functional separation through subsidiarisation financial institutions would have to transfer certain activities to a new legal entity (the "trading entity") or at least ensure that certain activities are carried out in a separate legal entity to insured deposit taking.⁸⁸ This trading entity would have to be authorized as an investment firm⁸⁹ or, to the extent it would intend to take uninsured deposits as a credit institution.⁹⁰ When part of a wider corporate group it would have to be ensured that the trading entity could be swiftly isolated from the entity taking insured deposits (the "deposit entity") should the financial health of the trading entity be at risk.

Subsidiarisation would require the trading entity and the deposit entity to maintain self-standing reserves of capital and of loss-absorbing debt, as well as to comply with other prudential requirements on an individual, sub-consolidated or consolidated basis. Subsidiarisation provides a degree of independence and to some extent also insulates the deposit entity from shocks and losses. For more on subsidiarisation as a stand-alone fence, *see* section 4 below. Moreover, and importantly, subsidiarisation can be coupled with additional rules of a legal, operational, economic, and governance nature to further regulate the relationship between the ring-fenced entity and the wider corporate group.

This form of separation has been followed in different ways in a number of instances in other countries. For example, in the United States bank holding companies are allowed to provide non-banking financial services (e.g., securities dealing and insurance) under the condition that these services are located in separate subsidiaries. In a similar manner, the UK Government has also proposed a ring-fence around certain banking activities based on functional separation through subsidiarisation, as have the French and German Governments.⁹¹

Finally, the act of separating certain activities could take place through the transfer of relevant assets and related liabilities to an existing legal entity (wholly-owned or not) or

⁸⁸ For purposes of this Annex, "insured deposits" are defined as deposits repayable by the guarantee scheme under national law.

⁸⁹ An Investment firm is any legal person whose regular occupation or business is the provision of one or more investment services to third parties and/or the performance of one or more investment activities on a professional basis. Investment services and activities are listed in Annex I to the Directive 2004/39/EC of the European Parliament and of the Council on markets in financial instruments amending Council Directives 85/611/EEC and 93/6/EEC and Directive 2000/12/EC of the European Parliament and of the Council and repealing Council Directive 93/22/EEC, OJ L 145, of 30 April 2004, page 1, ("MiFID").

⁹⁰ However, this credit institution authorization could not cover receiving insured deposits.

⁹¹ For a more in-depth description of on-going structural reform projects both within the EU and outside, *see* Annex A1 of this Impact Assessment.

through the creation of a new legal entity (wholly-owned or not) to which assets and liabilities are then transferred. Separation would affect shareholder and creditor rights to the extent that current rules provide for their consent for the increase/decrease of capital, and/or for mergers (including cross-border mergers) and divisions.⁹² It cannot be excluded that relevant legislation would therefore have to be amended to ensure that shareholders and creditors could not oppose separation.

2.2.1. *Social benefits and social costs*

As will be explained below, functional separation through subsidiarisation has high potential for scoring well on addressing the operational objectives associated with structural reform. This is because subsidiarisation provides a degree of independence and to some extent also insulates the deposit entity from shocks and losses, but also because it can be further strengthened by the addition of various restrictions of legal, operational, economic, and governance nature. These restrictions can be added in various combinations to further regulate the relationship between the ring-fenced entity and the wider corporate group and strengthen the wall in between them. It is important to note that the social benefits and the social costs increase with the strength of the fence: The better insulated and the more independent the separated entity is vis-à-vis the wider corporate group and, in particular, the deposit entity, the better subsidiarisation will address the specific objectives, which as a result will impact positively on the social benefits. However, the stronger the fence is the higher the social costs may also be. For a more developed discussion and analysis of subsidiarisation and the strength of the fence, see below section 4.

Would subsidiarisation facilitate recovery and resolution? Functional separation could facilitate resolvability and resolution as balance sheets would become smaller and more structured. This could expand the resolution options available to relevant authorities, e.g., it could be easier to divide groups into different parts and sell off/close them down. If the effects of a failure can be functionally insulated, it could also be easier to concentrate supportive funding to those parts that the society wants to support and therefore reduce public sector support for other socially less desirable functions (e.g., retail versus certain trading services). The stronger the fence the more subsidiarisation would facilitate recovery and resolution.

Would subsidiarisation reduce moral hazard? Complying with capital requirements on a stand-alone basis may have the effect of better aligning risk-taking incentives within a banking group. For example, the cost of increasing trading activities would partly be reflected in the stand-alone capital requirements. Banks would not be in a position to expand their trading activities entirely on the basis of capital from the deposit entity. Depending on the degree of restrictions of legal, economic and governance nature, functional separation could significantly curb moral hazard which may have led boards and managers to encourage excessive risk taking as they knew that big losses would be paid largely by taxpayers rather than stakeholders. The stronger the fence the larger the impact would be on reducing moral hazard.

⁹² Directive 2011/35/EU of the European Parliament and of the Council concerning mergers of public limited liability companies, OJ L 110, of 5 April 2011, page 1; the Sixth Council Directive 82/891/EEC based on Article 54(3) of the Treaty, concerning the division of public limited liability companies, OJ L 378, of 31 December 1982, p. 47; and Directive 2005/56/EC of the European Parliament and of the Council on cross-border mergers of limited liability companies, OJ L310 of 26 October 2005, page 1.

Would subsidiarisation facilitate monitoring, management and supervision? Functional separation could increase transparency and clarity, and reduce complexity in the structure of a group. How much easier market monitoring, management and supervision of risks in the different subsidiaries become will depend on the legal, economic and governance links between the separated entity and the wider group (i.e., the strength of the fence).

Would subsidiarisation reduce conflicts of interest? Subsidiarisation will provide thicker walls between various activities in a group. Again, the more legal, economic and governance links between various group entities are restricted (the higher the fence) the better conflicts of interest could be resolved.

Would functional separation reduce resource and capital misallocation? By separating certain activities from insured deposit taking, the funding of those activities would become more risk-sensitive. As a result, financial institutions would have less of an incentive to encourage excessive risk taking. However, the extent to which funding becomes fully risk sensitive depends on the degree of separation. If the incentives for excessive risk taking are reduced so would the incentives to allocate capital and human resources to trading and intra-financial activity and away from lending activity.

Would functional separation lead to a loss of efficiencies? Subsidiarisation would not necessarily affect a financial institution's ability to provide a universal set of services within a group. Therefore, effects on potential efficiencies resulting from such diverse services may be limited. However, there is a link between the strength of the fence and a reduction in efficiency gains. For example, the requirement to comply with capital requirements on a stand-alone basis would imply additional capital costs for the two entities due to possible diversification of capital effects. Also, the stronger the fence is on requiring subsidiaries to be self-standing and independently funded, the more functional subsidiarisation could reduce efficiency gains stemming from economies of scope and scale.

Would subsidiarisation impact on competition?

Similar to accounting separation, subsidiarisation in itself and without additional restrictions is unlikely to address the competition concerns that may follow from an implicit public safety net. This is because it does not address bank creditors' perception that the government will intervene to protect the too-big-to-fail banks ("TBTF" banks) from the risk of failure. Therefore creditors have no incentive to demand banks to pay the right compensation for bearing risks, which in turn lowers funding costs for the TBTF banks. This enables the latter to benefit from lower funding costs which in turn enables them to distort competition by expanding at the expense of those banks that do not benefit (or benefit less) from the implicit subsidy. Moreover, because different Member States have a different ability and willingness to intervene to rescue banks, competition among Member States (and wider, on an international level) also remains distorted.

2.3. Ownership separation

Ownership separation is a prohibition on those financial institutions that are caught by the relevant thresholds, and therefore subject to structural reform (the "affected institutions"), to engage in certain activities, even through legally separated affiliates. This is the most intrusive form of structural separation as the affected institutions would accordingly have to wind down or divest any assets supporting such activities as well as the liabilities related to the assets that were up for divestiture. If divested, those assets and related liabilities would

have to be sold off/transferred to a completely different legal and structurally separate entity with which the affected institutions could have no links of any nature. This would impact on the universal banking model to the extent that not all activities could be provided by one and the same financial institution.

Ownership separation could be accomplished by way of division of assets, transfer of all assets and liabilities through a merger or an acquisition or through a spin off that would lead to the creation of an independent company through the sale or distribution of new shares of an existing business/division.

Whichever way, it cannot be excluded that changes to current EU law would be required to ensure that ownership separation could not be opposed; For example, current rules that: (i) require shareholders' approval of any increase or reduction of capital,⁹³ and (ii) require approval by the General Meeting of merger/cross-border merger/divisions.⁹⁴ Moreover, CRDIV currently provides that Member States can object to the change of ownership of a bank only on certain prudential grounds. A ban on the acquisition of a deposit bank by an investment bank – for the reason that it is an investment bank – could well be held to breach the obligation on the competent Member State authority to object to an acquisition only on the limited set of prudential criteria set out in Article 23, which does not include the criterion that an acquirer of a deposit bank is not an investment bank.

Imposing ownership separation on financial institutions could also have an impact on the EU Internal Market. In particular, ownership separation could limit the freedom to provide services to the extent that the affected institution would no longer be permitted to carry out certain activities in combination with insured deposit taking. Finally, the right to property is a fundamental right protected in the Charter of Fundamental Rights

2.3.1. *Social benefits and social costs*

As the below description will illustrate, there are good arguments why ownership separation may lead to high social benefits. It could, however, also lead to significant losses of economies of scope and trigger a migration of certain activities toward non-bank credit intermediaries (so-called "shadow banks"), which could imply high social costs.

Would ownership separation facilitate recovery and resolution? Ownership separation would facilitate resolution mainly because certain risks linked to the prohibited activities would no longer feature on the balance sheets of the financial institution. Depending on the scale of the relevant activities, banks may also become less complex and smaller in size as a result of divesting them or winding them down.

⁹³ Directive 2012/30/EU of the European Parliament and of the Council on coordination of safeguards which, for the protection of the interests of members and others, are required by Member States of companies within the meaning of the second paragraph of Article 54 of the Treaty on the Functioning of the European Union, in respect of the formation of public limited liability companies and the maintenance and alteration of their capital, with a view to making such safeguards equivalent, OJ L 315, of 25 October 2012, page 374.

⁹⁴ Directive 2011/35/EU of the European Parliament and of the Council concerning mergers of public limited liability companies, OJ L 110, of 5 April 2011, page 1; the Sixth Council Directive 82/891/EEC based on Article 54(3) of the Treaty, concerning the division of public limited liability companies, OJ L 378, of 31 December 1982, p. 47; and Directive 2005/56/EC of the European Parliament and of the Council on cross-border mergers of limited liability companies, OJ L310 of 26 October 2005, page 1.

Would ownership separation reduce moral hazard? The primary advantage of ownership separation is that, while it may be complex to implement, it is an “unclouded” solution which after completion could alleviate the need for further regulation within the context of structural reform. Ownership separation could effectively remove the implicit state subsidy from those financial institutions that are TBTF. This would remove the related moral hazard, depending on the extent of the ownership separation, i.e., the activities to be separated.

However, ownership separation could give rise to more homogeneous and less diverse entities and business models and allow for less economies of scope, such as risk diversification. It can therefore not be excluded that completely separated entities may fail more, and, if so, more as a herd, which would complicate system-wide resolution.

Would ownership separation facilitate monitoring, management and supervision? Monitoring, managing and supervision could be facilitated, as the activities that are most scalable and complex and consequently difficult to monitor would be located outside the financial institution.

Would ownership reduce conflicts of interest? The impact on conflicts of interests will depend on the range and type of activities that are prohibited from the group. See Annex A6 for a discussion of the different activities. Depending on the scope of the activity prohibition, conflicts of interest may be significantly reduced through ownership separation.

Would ownership separation reduce resource and capital misallocation? With the most risky activities no longer part of its balance sheet, a financial institution could be able to focus on and allocate more resources to lending to the real economy.

Would ownership separation lead to a loss of efficiencies? The primary disadvantage is the loss of potential economies of scope from integration within the universal banking model. Economies of scope consist of risk diversification, cost economies of scope, and revenue economies of scope. Economies of scale would be present to the extent there are significant fixed costs for some operations, even though diseconomies of scope can arise. Similarly, economies of scale are found to be exhausted at relatively low levels of bank assets, and thereafter diseconomies of scale become also important.

As a result of the loss in economies of scope (and scale), private funding and capital costs increase with the strength of separation and hence would be the highest under ownership separation. If some of these activities perform an important role in the economy these additional costs may have further efficiency effects in other areas of the economy.

Would ownership separation impact on competition?

Ownership separation could eliminate implicit cross-subsidies and introduce effective market discipline on the trading entity. This would have the effect of evening out the level playing field among small, medium-sized and large banks not only within a single Member State but also across Member States (and wider).

Finally, it cannot be excluded that divested activities will migrate from affected institutions to shadow banks where there may be less scope for control by supervisors (whether or not located with the EU). Work done by the Financial Stability Board (the "FSB") has highlighted that the disorderly failure of shadow bank entities can carry systemic risk, both directly and through their interconnectedness with the regular banking system. The FSB has

also suggested that as long as such entities remain subject to a lower level of regulation and supervision than the rest of the financial sector, reinforced banking regulation could drive a substantial part of banking activities beyond the boundaries of traditional banking and towards shadow banking. The European Commission has recently adopted a Communication setting-out a roadmap for tackling the risks inherent in shadow banking. The measures foreseen in this roadmap, including a series of regulatory measures such as a framework for the interaction between banks and the shadow banking sector, are intended to ensure that the potential systemic risks to the financial sector are covered and that the opportunities for regulatory arbitrage are limited, in order to strengthen market integrity and increase the confidence of savers and consumers. This includes tightening the prudential rules applied to banks in their operations with unregulated financial entities in order to reduce contagion risks.⁹⁵

2.4. Ownership separation and functional separation through subsidiarisation are the preferred options going forward

Based on the above evaluation of each of the different forms of functional separation the following conclusions are appropriate:

- While *accounting separation* would leave potentially existing economies of scale and scope intact, it would have no or only limited impact on any of other criteria used to measure social benefits and social costs. It will therefore not be subject to any further analysis.
- *Ownership separation* scores very high on social benefits but also come at high social costs. There is also a risk which is not insignificant that some of the prohibited activities might migrate to the shadow banking sector.
- Conversely, *subsidiarisation* would come at a comparably lower social cost than ownership separation. As section 4 illustrates there is also a case that subsidiarisation can deliver similar social benefits as ownership separation at a lower social cost (this lower cost may vary depending on the strength of the fence). The additional costs of ownership separation as opposed to subsidiarisation would therefore need to be justified by additional social benefits on an activity by activity basis. For example, as highlighted in Chapter 5, as regards ownership separation of proprietary trading, the balance between benefits in terms of e.g., facilitating resolvability and reducing moral hazard and conflicts of interest clearly outweigh the costs in terms of foregone efficiency, as these are very limited.
- While individual weightings might differ, the sum of social costs and benefits of ownership separation and subsidiarisation may be more or less equal and they are both candidates for the preferred policy option. Given, however, that subsidiarisation is a wider concept and can exist in various degrees the remainder of this Annex will focus on subsidiarisation and the determination of the appropriate degree/strength of subsidiarisation.

⁹⁵ See as explained in the European Commission's Green Paper on Shadow Banking, COM(2012) 102 final, Brussels 19 March 2012.

3. SUBSIDIARISATION

The remainder of this Annex will discuss functional separation through subsidiarisation in more depth to see how this form of separation can best address the specific objectives of structural reform.⁹⁶ In particular, the remaining part will discuss various "degrees" of subsidiarisation that can be achieved by adding rules in various combinations to reinforce the fence between the separated entity and the rest of the wider corporate group.

To that end, section 3.1 aims at describe what the simplest form of separation through subsidiarisation actually means in terms of how current key banking legislation on prudential requirements and resolution apply to the separated entities. Section 3.2 discusses more normatively what changes to current legislation could be envisaged to secure the effectiveness of subsidiarisation and limit that prudential concerns arise. Section 3.3 lists additional rules that can be added in various combinations on top of current legislation to build on subsidiarisation and reinforce the independence of the separated entities and the wall in between them (i.e., to build a stronger fence between the separated entity and the rest of the group, in particular the deposit entity). Finally, section 4 aims at determine the appropriate strength of the fence by specifically evaluating the social benefits and costs of various combinations of rules (different fences) section.

3.1. Subsidiarisation under current regulatory framework

In accordance with existing legislation regarding prudential requirements and recovery and resolution,⁹⁷ the following would apply automatically in case of subsidiarisation:

Separate management bodies: Under subsidiarisation, the trading entity and the deposit entity will have their own separate management bodies⁹⁸ and follow the requirements regarding composition and selection of members set out in the CRDIV.⁹⁹

Prudential requirements: In accordance with CRDIV and the Regulation on prudential requirements for credit institutions and investment firms (the "CRR")¹⁰⁰ the general rule is

⁹⁶ Those objectives are: reducing moral hazard (excessive risk taking); facilitate resolvability; facilitate management, supervision; reducing conflicts of interest; reducing resource and capital misallocation; and reducing efficiencies.

⁹⁷ The Directive establishing a framework for the recovery and resolution of credit institutions and investment firms (the "BRRD") is formally not yet in force. However, for purposes of this Annex it has been assumed that it will be in force prior to the implementation of any separation measure required by financial institutions. It will therefore be included in the notion of "existing legislation" as used in this Annex.

⁹⁸ "Management body" is defined in the CRDIV and means the body or bodies of an institution, appointed in accordance with national law, which is empowered to set the institution's strategy, objectives and overall direction, and which oversees and monitors management decision-making. This shall include persons who effectively direct the business of the institution.

⁹⁹ See Article 91 of the CRDIV.

¹⁰⁰ Regulation (EU) No 575/2013 of the European Parliament and of the Council on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 (the "CRR"), OJ L 176, of 26 June 2013, page 1. Note that all Investment firms as defined in Article 4(1) of MiFID are subject to CRR prudential requirements as laid down in the CRDIV and the CRR. Investment firms which are not authorised to provide ancillary services or which provide only certain

that the basic prudential requirements with regard to own funds, capital, leverage (as of 2019), liquidity, large exposures¹⁰¹ and prudential reporting apply on an individual and consolidated basis.¹⁰² This means that both the trading entity and the deposit entity would have to abide by these rules on an individual or consolidated basis. The CRR also provides competent Member State authorities under certain circumstances with some discretion to impose additional capital requirements in the form of buffers on so-called global and other systemically important institutions. This may include both the trading entity and the deposit entity.¹⁰³

Bail-in tools: The BRRD requires that each credit institution and investment firm maintains a sufficient amount of liabilities in their balance sheet that could be subject to bail-in powers.¹⁰⁴

Capital transfers and dividend payments: According to CRDIV, capital transfers and dividend payments are allowed only when it can be established that the institution has sufficient financial resources to do so and when this does not lead to a breach of any prudential requirements regarding, for example, capital. This means that capital transfers and dividend payments from the deposit entity to the parent or the trading entity could only be effectuated under those circumstances.¹⁰⁵

Corporate governance arrangements: The CRDIV sets out the basic rules regarding the management body and other governance arrangements. In particular, the CRDIV provides that each entity within a wider corporate group has to have its own risk management strategy which must cover measures to manage, monitor and mitigate risks which the institution is and might be exposed to. This risk management strategy needs to be approved and implemented by each separate legal entity's management body.¹⁰⁶ The trading entity shall also formulate its

services and activities or which are not permitted to hold money or securities belonging to their clients are subject to specific prudential requirements which are specified in the CRR and the CRDIV.

¹⁰¹ More specifically, credit institutions and investment firms (with some exceptions) are not allowed to incur an exposure to any of their counterparties exceeding 25% of their eligible capital. Importantly, where Member States adopt national laws requiring structural measures to be taken within a banking group, intragroup exposures, where these exposures consist of exposures to an entity that does not belong to the same subgroup, competent authorities may apply a limit on a sub-consolidated basis which is set at a level below 25% but not lower than 15% until 30 June 2015 after which the limit may go as low as to 10% but not further. *See* Article 395(6) of the CRR.

¹⁰² This general rules is set out in Articles 6, 11 and 412 of the CRR.

¹⁰³ *See* Articles 131 and 133 of the CRDIV.

¹⁰⁴ *See* Articles 37 to 50 of the Directive of the European Parliament and of the Council establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directives 77/91/EEC and 82/891/EC, Directives 2001/24/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC and 2011/35/EC and Regulation (EU) No 1093/2010 (the "BRRD"). Subject to certain specific conditions, resolution authorities may choose to apply the minimum requirement of own funds and liabilities on a consolidated basis to groups which are subject to consolidated supervision.

¹⁰⁵ *See* Article 104 of the CRDIV.

¹⁰⁶ Governance arrangements have to include a clear organizational structure with well-defined, transparent and consistent lines of responsibility, effective processes to identify, manage, monitor and report the risks that financial institutions are or might be exposed to, adequate internal control mechanisms, and remuneration policies and practices that are consistent with and promote sound and

remuneration policies in line with the rules set out in the CRDIV which require that the remuneration policy is consistent with and promotes effective risk management, is in line with business strategies and long-term interest of the institution.¹⁰⁷

Disclosures: Where the trading entity is part of a wider corporate group and to the extent it constitutes a “significant subsidiary” of an EU parent institution,¹⁰⁸ it shall disclose information regarding its own funds, capital requirements, capital buffers, credit risk and credit risk mitigation techniques, remuneration policy, leverage on an individual or sub-consolidated basis.¹⁰⁹ When the trading entity is not part of a wider corporate group all disclosures and prudential reporting requirements obviously apply on an individual basis.

Recovery plans: Finally, according to the BRRD, group recovery plans as well as individual recovery plans for each institution that is part of the group need to be drawn up which means that each of the trading entity and the deposit entity will have to draw up its own recovery plan.¹¹⁰ This includes identifying arrangements for cooperation and coordination with relevant authorities in third countries where a group includes entities incorporated abroad.¹¹¹

3.2. What amendments to the current regulatory framework could be envisaged to enhance the effectiveness of subsidiarisation?

As described in the previous section, subsidiarisation itself already provides a certain degree of separation in terms of legal, economic and governance links with the rest of the group. Subsidiarisation therefore insulates the deposit entity from shocks and losses to a certain extent. To enhance the effectiveness of subsidiarisation and reduce chances that prudential concerns arise, a number of amendments to existing legislation could be envisaged. These amendments relate to legislation regarding prudential requirements and recovery and resolution.

Amendments ensuring adherence to the prudential requirements on a sub-consolidated basis: The requirement that prudential obligations must be fulfilled on an individual basis can be waived under current legislation and under certain conditions, for example for a subsidiary or a parent established in the same Member State as the group if certain conditions are met.¹¹² To ensure the effectiveness of the subsidiarisation it could be envisaged to prescribe that obligations should apply at sub-consolidated level – i.e., among entities belonging to the

effective risk management. This translates into a requirement for the management body to approve and implement an effective risk management strategy. *See* Article 88 the CRDIV

¹⁰⁷ *See* Articles 92 to 96 of the CRDIV on remuneration policies.

¹⁰⁸ The term "significant subsidiary" of an EU parent institution is not defined in the CRR.

¹⁰⁹ *See* Article 13 of the CRR.

¹¹⁰ *See* Article 7 of the BRRD.

¹¹¹ *See* Article 11 of the BRRD.

¹¹² *See* Articles 7 and 8 [and 10??] of the CRR regarding the derogation to the application of prudential requirements on an individual basis with regard to own funds, large exposures, leverage, liquidity and public disclosure.

same sub-group.¹¹³ It would also have to be clarified that it can only be applied among similar entities. Doing so will require changing those provisions in the CRR that provide for derogation to the application of prudential requirements on an individual basis. With regard to intra-group large exposures in particular it should also be envisaged to specifically prescribe that the limits currently set out in Article 395(6) of the CRR will not apply once an EU law is adopted and that large exposures rules shall apply as between entities belonging to different sub-groups of similar entities.

Amendments ensuring that disclosures are made on an individual or sub-consolidated basis among similar entities: In order to ensure the effectiveness of monitoring and supervision of the separated entity, it could be envisaged to define the trading entity as a "significant subsidiary" of an EU parent within the meaning of Article 12 of the CRR because otherwise disclosure requirements regarding own funds, remuneration policy and leverage ratio apply on a consolidated basis for the wider corporate group.

Amendments ensuring that the deposit entity is not made liable for costs related to resolution actions involving the trading entity: In view of recovery and resolution, the BRRD currently allows entities within a wider corporate group that are covered by the supervision of the parent undertaking to enter into agreements with each other to provide financial support to any party of the agreement that experiences financial difficulties.¹¹⁴ Moreover, group resolution plans shall identify how the group resolution actions could be financed and, where appropriate, set out principles for sharing responsibility for that financing between sources of funding in different Member States.¹¹⁵

In principle, the agreement to provide financial support may only be concluded if the supervisory authority considers none of the parties in breach of the CRDIV in relation to the rules on capital or liquidity, or is at risk of insolvency. However, to avoid that the deposit entity becomes liable for costs related to resolution actions involving the trading entity which may put undue stress on the balance sheet of the deposit entity it could be envisaged to specifically set out in legislation that for the deposit entity such agreements can by their nature jeopardize the liquidity or solvency of the deposit entity or create a threat to financial stability and therefore cannot be concluded. Similarly with regard to the shared financial responsibility for resolution actions, it should be specified that the deposit entity should not be liable for any costs related to resolution actions involving the trading entity. Both these clarifications would require amendments to the BRRD.

* * *

In addition to the above amendments, to safeguard the objectives of subsidiarisation, there are a number of additional rules that could be used in various combinations to further strengthen

¹¹³ Article 11(5) of the CRR already provides that competent authorities may require structurally separated institutions to comply with the large exposure obligations on a sub-consolidated basis.

¹¹⁴ Articles 16 to 22 of the BRRD provide the conditions and procedures for intra-group financial support. Currently Member States shall ensure that parents and subsidiaries may enter into agreements to help each other. Approval of such an agreement is subject to certain conditions (Article 19).

¹¹⁵ See Article 11 of BRRD that provides that group resolution plans shall identify how the group resolution actions could be financed and, where appropriate, set out principles for sharing responsibility for that financing between sources of funding in different Member States.

the separation between the trading entity and the rest of the group, in particular the deposit entity. The following section lists a number of such rules. These rules are not mutually exclusive.

3.3. Potential additional rules to further strengthen separation

3.3.1. Rules to achieve stronger legal and operation separation

To further strengthen the insulation of the trading entity, to avoid an unrestricted mixture of activities, to limit that liabilities or potential liabilities are shifted around between entities within the wider corporate group, and to limit conflicts of interests, one or several of the following additional rules could be added to the subsidiarisation:

Intra-group ownership restrictions:

- The trading entity is not allowed to hold shares or voting power in a deposit entity. *The purpose of this rule would be to avoid the creation of potential conflicts of interests and culture shocks that may affect banking standards, and to reduce risks related to moral hazard that may arise from funding and subsidy leakages that can occur between the different entities; and/or*
- The deposit entity is not allowed to hold shares or voting power in a trading entity. *The purpose of this rule would be to avoid that the deposit entity has to bear any losses related to the trading entity; and/or*
- The trading entity is not allowed to hold shares or voting power in critical infrastructure needed for the operation of the deposit entity. *The purpose of this rule would be to ensure the continuity of vital banking services provided by the deposit entity in case the trading entity fails.*

Operational continuity:

- Another option could be that the wider corporate group, including the parent, would have to ensure the operational continuity of the deposit entity under all circumstances; irrespective of the financial health of the trading entity. This would include but not be limited to: access to critical infrastructure, staff, data and information, and services.

3.3.2. Rules to achieve stronger economic separation

To further ensure that subsidiarisation results in separate and independent entities that can effectively operate as stand-alone entities and to increase transparency for supervisors and market participants, the following requirement could be considered in addition to subsidiarisation:

- *Separate debt issuance:* Both the deposit and trading entities could issue their own debt (i.e., independently from each other and any other entity, including the parent, in the wider corporate group). *The purpose of this rule would be to avoid any effects of increasing contagion risk within a group in the event of distress.*
- *Disclosures:* The trading entity and the deposit entity could make all *financial and supervisory disclosures* on an individual or sub-consolidated basis. *The purpose of this rule would be to facilitate monitoring, management and supervision by investors, creditors, managers and supervisors.*

Specifically on reducing intra-group interconnectedness:

To further ensure the insulation and independence of the trading entity when it forms part of a wider corporate group and to limit contagion risks, the following rules, which in various combinations contribute to reducing the interconnectedness among group entities, could be considered with regard to interactions between the trading entity and the rest of the group – including the parent:

Exposures¹¹⁶ to an individual group entity or group of entities:

- Intra-group exposures could only be allowed between "similar" entities. *The purpose of this rule would be to remove any contagion risks between the trading entity and the deposit entity as it would effectively result in a zero per cent large exposure limit to any intra-group exposures between trading entities and entities not belonging to the same sub-group; or*
- A large exposure limit could apply to the exposures of all deposit entities to each trading entity or wider to include also other financial sector entities (the limit is applied on a sub-consolidated basis and equal to [x]% of the eligible capital of the sub-group of deposit entities). This limit could apply on a net basis and after taking account of credit risk mitigation techniques. *The purpose of this rule would be to reduce contagion risks from trading entities to deposit entities; or*
- A large exposure limit could apply to the total amount of exposures of all trading entities to all deposit entities (the limit is applied to aggregated exposures on a sub-consolidated basis and equal to [x]% of the eligible capital of the sub-group of trading entities). This limit could apply on a net basis and after taking account of credit risk mitigation techniques. *The purpose of this rule would be to limit contagion risks from deposit entities to trading entities.*

Treasury Management:

Treasury management plays a pivotal role in the running of a financial institution as it is responsible for the management of the institution's capital, liquidity and funding. However, to ensure an appropriate relationship between the trading entity and the deposit entity that is in the spirit of structural reform, the following rule could be considered:

- The trading and deposit entities should have their own separate treasury management. *The purpose of this rule would be to limit the deposit entity's dealing in investments and to avoid any potential conflicts of interest that may arise.*

Contracts and other transactions:

To ensure that both entities are acting in their own self-interest and are not subject to any pressure or duress from the other party, and to increase transparency and facilitate monitoring and supervision, one or several of the following rules could be considered:

¹¹⁶ "Intra-group exposures" consist of exposures of a group entity or a subgroup of entities to another group entity or subgroup of group entities. Those intragroup exposures may arise from assets or off-balance sheet items attracting a capital requirement for credit or counterparty credit risk. Limiting intra-group exposures aims at reducing the concentration risk associated with the default of a group entity.

- All transactions within the group (including, if relevant, the parent) could be made at arm's length commercial basis. *The purpose of this rule is to avoid undue influence by one entity over the other and to increase transparency,¹¹⁷ or*
- Only transactions between the trading entity and the deposit entity could be at arm's length commercial basis. *The purpose of this rule would be to avoid undue influence by the trading entity over the deposit entity and to increase transparency.*
- Extensions of credit and guarantees to the trading entity from the deposit entity could be secured by high-quality collateral. *The purpose of this rule is to act as a mitigant to any prudential concerns.*

Intra-group financial support:

In view of recovery and resolution, one option could be that the trading entity is not allowed to enter into agreements to receive or in any other form, direct or indirect, benefit from financial support from the deposit entity (or only if it would be absolutely satisfied that it can do so without putting into question the "integrity" of the separation).¹¹⁸ *The purpose of this rule would be to ensure that the deposit entity cannot be burdened by financial obligations of the trading entity that ultimately may put at risk its own solvency.*

Resolution actions:

With regard to the financing of groups' resolution actions, one option could be that the deposit entity should not be liable for any costs related to resolution actions involving the trading entity.¹¹⁹ *The purpose of this rule would be to ensure that the deposit entity cannot be burdened by financial obligations toward the trading entity that ultimately may put at risk its own solvency.*

Specifically on reducing interconnectedness between banking groups

To reduce the interconnectedness between banking groups, to mitigate systemic contagion risks and protect the insured deposits, one or several of the following rules could be considered:

¹¹⁷ Whether a transaction is undertaken on an arm's length basis is in principle judged according to all the circumstances of each particular transaction. The test to apply could be to consider whether a prudent person acting with due regard to their own commercial interests would have made such a transaction. Note, however, that Article 248(2) of the CRR provides that the EBA shall, in accordance with Article 16 of Regulation (EU) No 1093/2010, issue guidelines on what constitutes arm's length conditions.

¹¹⁸ Articles 16 to 22 of the BRRD provide the conditions and procedures for intra-group financial support. Currently Member States shall ensure that parents and subsidiaries may enter into agreements to help each other. Approval of such an agreement is subject to certain conditions (Article 19). As previously mentioned, in principle, an agreement to provide financial support may only be concluded if the supervisory authority considers none of the parties in breach of the rules on capital or liquidity, or is at risk of insolvency. However, it makes sense to specifically set out in legislation that for the deposit entity such agreements can by their nature jeopardize the liquidity or solvency of the deposit entity or create a threat to financial stability and therefore cannot be concluded.

¹¹⁹ See Article 11 of the BRRD that provides that group resolution plans shall identify how the group resolution actions could be financed and, where appropriate, set out principles for sharing responsibility for that financing between sources of funding in different Member States.

Exposures to an individual counterparty or groups of connected counterparties:

- Exposures of all entities within the wider corporate group to financial institutions not part of the same wider corporate group could be limited beyond current rules regarding large exposures. *The purpose of this rule would be to limit the effects of a financial institution's failure on the entire financial system ; or*
- All the exposures of all trading entities within a wider corporate could be limited. *The purpose of this rule would in particular be to limit the effects of a trading institution's failure on the entire financial system.*
- To the extent that an ownership separation of certain activities was to be combined with subsidiarisation, one could consider limits (including aggregate limits) to the large exposure regime for the deposit entity toward the trading entity or any financial sector entity. This could be particularly important for the deposit entity to manage risk especially in cases where an ownership separation of a significant amount of trading activities that give rise to major risks could cause a migration of such activities to the shadow banking area where they are more likely to remain outside the scope of supervision.¹²⁰

3.3.3. *Rules to achieve stronger corporate governance*

As described in the Commission's Staff Working Document on Corporate Governance in Financial Institutions, the latest financial crisis revealed serious flaws and shortcomings in board performance at a number of financial institutions.¹²¹ Corporate governance requirements are intended to encourage a bank to be well managed. Good corporate governance may therefore, in an indirect way, help limiting the probability of failure and also mitigate the impact of a failure.

To strengthen the separation of the trading entity, to limit conflicts of interest and to ensure that the trading entity has a relationship with the rest of the group that is in the spirit of structural reform, to align incentives, while still leaving flexibility for the parent to deliver group strategies, one or several of the following rules could be considered:

*The composition of the management body:*¹²²

¹²⁰ This would have to be coordinated with the Commission's assessment of the appropriateness and the impact of imposing limits on exposures to shadow banking entities which carry out banking activities outside a regulated framework that need to be finalized by 31 December 2015. (See Article 395 of the CRR.)

¹²¹ The Commission Staff Working document from June 2 2010, SEC (2010) 669: "*Corporate Governance in Financial Institutions: Lessons to be drawn from the current financial crisis, best practices.*" Accompanying document to the Green Paper: "*Corporate governance in financial institutions and remuneration policies;*" COM(2010) 284 final.

¹²² Current CRDIV rules provide that members of the management body have to possess "sufficient knowledge, skills and experiences" to perform their duties. The overall composition of the management board shall also reflect an adequately broad range of experiences. The number of directorships is limited so that board members of significant institutions cannot hold more than one executive directorship and two non-executive directorships or four non-executive directorships. Executive or non-executive directorships *within the same group* are counted as one.

- A sufficient number of management body members should be non-executive members. *The purpose of this rule would be to reduce conflicts of interests and provide for more independence within a management body;*¹²³
- Another option could be that there should be no (or limited to a minority) cross-membership between the management body of the trading entity and that of the deposit entity. *The purpose of this rule would be to reduce conflicts of interest and culture between the two entities; and/or*
- Another option could be that there should be a limit to the number of management body members from the parent sitting on the management bodies of the trading entity and the deposit entity. *The purpose of this rule would be to limit undue influence of the parent over the deposit entity and to reduce conflicts of interest; and*
- The same parent member is not allowed to sit on both the trading entity and the deposit entity management body. *The purpose of this rule would be to reduce, if not avoid, parental influence over the deposit entity and to reduce conflicts of interest.*

The duties of the management body:

- One option could be to impose a statutory duty for managers and all management bodies (including the parent's) to uphold the objectives of the separation. *The purpose of this rule would be to make the duty to uphold the objectives of the separation a fiduciary duty to ensure that business strategies are aligned with the objectives of the separation;*¹²⁴
- Another option could be to state that the management body of the deposit entity and the parent should have a statutory duty to protect depositors. *The purpose of this rule would be to make the duty to protect depositors a fiduciary duty to ensure that the deposit entity's business strategies are aligned with the objectives of the separation.*

Governance structures, Remuneration:

- There could be a statutory duty for the trading entity and the deposit entity to ensure that the internal remuneration policy is in line with the objectives of the separation. *The purpose of this rule would be to ensure alignment between remuneration policies, risk management and internal control systems.*

¹²³ If this rule is selected the term "sufficient" would have to be defined. The definition of "sufficient" is to some extent contextual and will depend on the strength of the fence and the overall objectives of the rule. This rule will not necessarily marry well with other rules and might even become redundant; for example in combination with b.

¹²⁴ Any of a and b would require provisions on sanctions in case of non-compliance. I.e., Member States would have to ensure effective penalties in case of non-compliance.

4. DETERMINING THE APPROPRIATE STRENGTH OF SEPARATION

The previous section identified a number of rules that could be used in the context of subsidiarisation and explained what the purpose of each rule would be when building a fence. This section evaluates how various groups of rules (legal, economic and governance) would address the specific objectives associated with structural reform. Although a great variety of groups could surely be envisaged the subsequent section will be limited to assessing three different models of fences displaying various degrees of strength ranging from limited separation (subsidiarisation only) to very strong separation (subsidiarisation ++). This range constitutes the most representative picture of how rules could be played around with to establish an appropriate fence. The assessment will include an evaluation of each of these models measured against the social benefits and social costs¹²⁵ of implementing them to see how far they go toward addressing the microeconomic objectives of structural reform.

4.1. Social benefits and social costs linked to legal, economic and governance rules

4.1.1. Social benefits and social costs of legal rules

The legal rules discussed in 3.3.1 are basically rules prohibiting certain ownership: (i) the trading entity cannot hold shares or voting power in a deposit entity; (ii) the deposit entity cannot hold shares or voting power in a trading entity; and (iii) the trading entity cannot hold shares or voting power in critical infrastructure needed for the operation of the deposit entity.

- *Would the legal rules facilitate recovery and resolution?* Ownership restrictions can have the effect of further insulating the trading entity from the deposit entity in terms of funding; more insulation enhances resolvability without taxpayer support. It may also reduce complexity in resolvability. Moreover, if there were a sibling structure entirely different resolution tools could be deployed for the trading entity and the deposit entity. The risk of contagion would also be reduced as the parent/holding company would act as a firewall between the two sister companies
- *Would the legal rules reduce moral hazard?* Ownership restrictions are consistent with the principle of insulating the trading entity from the deposit entity that structural reform seeks to achieve through functional separation. The more independent the trading entity is and the more intra-group relationships are assimilated to relationships with third parties, the more credible it may be to the market place that the trading entity will not benefit from government support in case of financial trouble. This can discipline any incentives for excessive risk taking as well as ensuring better alignment of incentives. Ultimately, however, the effect on moral hazard will also depend on the extent other parts of the intra-group relationship are regulated (i.e., see the discussion below regarding economic and governance links).
- *Would the legal rules facilitate monitoring, management and supervision?* More insulation of the trading entity from the deposit entity would mean that the objectives and needs of each separate entity would be even clearer and therefore easier for management to implement and supervise. Reducing the intra-group

¹²⁵ Those objectives are: reducing moral hazard (excessive risk taking); facilitate resolvability; facilitate management, supervision; reducing conflicts of interest; reducing resource and capital misallocation; and reducing efficiencies.

interconnectedness will make each entity's accounts more clear and likely more transparent, which will facilitate supervision.

- *Would the legal rules reduce conflicts of interest?* Different legal entities with separate management bodies with their own separate objectives can reduce conflicts of interest.
- *Would the legal rules reduce resource and capital misallocation?* On its own there is no guarantee that an ownership restriction would significantly disincentivize the allocation of capital and human resources to trading and intra-financial activity and away from lending activity. It will depend on the entire group structure and what other measures there would be to curb incentives to take excessive risks.
- *Would the legal rules lead to a loss of efficiencies?* Not on its own; it would depend on what additional rules may apply among entities within the wider corporate group and that may restrict to a varying degree efficiencies of scale and scope to be shared among group entities. However, the legal rules under consideration would have a significant effect on legal corporate structures and holding patterns within the wider corporate group.
- *Would the legal rules impact on competition?* Generally, legal rules complement economic and governance rules and, taken together, they may credibly remove the implicit subsidy and improve competition. However, an ownership separation applied across an entire sector would be the most effective and credible way to eliminate the implicit public safety net and could therefore improve the level playing field.

As is illustrated above, an ownership restriction on its own can be effective with regard to certain issues. Its effectiveness will, however, increase if it is imposed on both the trading and the deposit entity and if it is coupled with additional rules that can target other parts of intra-group relationships.

4.1.2. *Social benefits and social costs of economic rules*

The economic rules discussed in section 3.3.2 concerned: (i) separate debt issuance; (ii) financial and prudential disclosure requirements; (iii) large exposure rules (both within a banking group and among different banking groups); (iv) treasury management; (v) arm's length base approach in contracts and other transactions; and (vi) intra-group financial support for resolution purposes.

- *Would the economic rules facilitate recovery and resolution?* The effect of making in particular the trading entity more independent of the other entities in the wider corporate group in the sense that it is not reliant on resources provided by the wider corporate group is that it enhances resolvability without taxpayer support.
- *Would the economic rules reduce moral hazard?* The more economically independent in particular the trading entity is of the other entities in the wider corporate group in the sense that it is not reliant on resources provided by the wider corporate group, the greater the incentives of investors (depositors, creditors, and shareholders) to monitor and control bank risk taking, which in turn decreases incentives for managers to take excessive risk as they would have to bear the consequences of their own risk actions.

- *Would the economic rules facilitate monitoring, management and supervision?* The more the trading entity's funding has to come from external capital markets the more shareholders and creditors would be incentivized to monitor risk taking. Moreover, reducing the intra-group interconnectedness will make each entity's accounts more clear and self-contained and likely more transparent which will facilitate supervision.
- *Would the economic rules reduce conflicts of interest?* On their own, economic rules most likely have a limited impact on reducing conflicts of interests.
- *Would the economic rules reduce resource and capital misallocation?* The more economically independent in particular the trading entity is of the other entities in the wider corporate group in the sense that it is not reliant on resources provided by the wider corporate group, the more its funding will be risk sensitive and also more costly. This may reduce incentives to invest in projects which are not worthwhile on average, but risky enough to have at least some chance of making money, which could lead to a better allocation of capital in the economy.
- *Would the economic rules lead to a loss of efficiencies?* In principle, the imposition of economic rules could lead to some losses of economies of scale and scope. However, imposing additional economic rules does not prevent the bank from deciding to place many activities on either side of the fence, excess capital could under certain conditions still be transferred among the entities within the wider corporate group and customers could still use a single group for all of their services, which means that a certain level of diversification benefits would still remain (for more on economies of scale and scope *see* Annex A9). Similarly, groups may continue to benefit from operating cost reductions from pooling certain resources such as, for example, IT and finance systems and from shared marketing and advertising campaigns. Even so, the introduction of separate debt issuance and individual/sub-consolidated application of prudential requirements would be associated with a cost for the bank.
- *Would the economic rules impact on competition?* To the extent that economic rules could successfully and credibly remove the implicit public subsidy there would be scope to argue for an improved level playing field. However, it is doubtful that economic rules on their own would achieve that.

As is illustrated above, economic rules can be effective in terms of addressing the operation objectives of structural reform. The effectiveness may depend on the combination of economic rules imposed and, as for the legal rules, the effectiveness will increase when coupled with also other types of rules.

4.1.3. *Social benefits and social costs of governance rules*

The governance rules discussed in section 3.3.3 concerned: (i) the composition of the management body; (ii) the duties of the management body; and (iii) remuneration.

- *Would the governance rules facilitate recovery and resolution?* Governance rules are unlikely to have any significant impact on the resolvability of entities.
- *Would the governance rules reduce moral hazard?* Rules governing not only the composition of management bodies but also the fiduciary duties of members of the management body and senior management could have a rather significant impact on disciplining incentives for excessive risk taking.

- *Would the governance rules facilitate monitoring, management and supervision?* Governance rules regarding duties to uphold the objectives of the separation could significantly impact on the way it operates with regard to excessive risk taking. This could mean that the objectives and needs of each separate entity would be even clearer and therefore easier for management to implement and supervise.
- *Would the governance rules reduce conflicts of interest?* Governance rules would be of significant importance to reduce conflicts of interest and of culture.
- *Would the governance rules reduce resource and capital misallocation?* To the extent governance rules have an impact on incentives they are of some relevance.
- *Would the governance rules lead to a loss of efficiencies?* No. Long-term, dedicated governance to specific business lines may improve managerial attention on mastering associated risks, and running the specific business line in the most effective way possible.
- *Would governance rules impact on competition?* However, it is doubtful that governance rules on their own would have enough impact on the implicit public subsidy to be able to significantly improve the level playing field within Member States and across Member States (and wider).

As is illustrated above, governance rules can be very effective with regard to in particular impact on moral hazard, monitoring and supervision and managing conflicts of interest. The effectiveness will, however, increase when coupled with additional rules of both legal and economic nature.

4.1.4. Conclusion on social benefits and social costs

On the basis of the above, the following table summarises how effective and efficient rules of legal, economic and governance nature can be in achieving the specific objectives. This clearly highlights that the different rules are largely complementary, as they achieve the specific objectives in different ways. For example, rules providing for a stricter economic separation are particularly effective in reducing moral hazard, whereas rules providing for a stricter degree of legal separation are particularly helpful in facilitating resolution, and stricter governance rules address conflicts of interest particularly effectively. As could be expected, the stricter the legal and economic separation, the higher the private cost in terms of foregone efficiency (to the extent economies of scale and scope result in such efficiency). Governance separation, while complementary to the other restrictions, would in isolation not be associated with the same efficiency loss.

Table 1: Mapping the effectiveness and efficiency of legal, economic and governance separation

Objective	Moral hazard	Recovery and resolution	Monitoring, management, supervision	Conflicts of interest	Capital misallocation	Efficiency loss
Legal rules	+	++	+	+	≈	+
Economic rules	++	++	+/≈	≈	++	+
Governance	+(+)	≈	+	++	≈	≈

rules						
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4.2. Evaluation of different models of a fence

As illustrated above, each category of rules has a complementary role to play. In providing a robust degree of separation, a combination of rules in these different categories is accordingly likely to be necessary. However, the rules can be combined in many different ways. To ensure an effective as well as efficient assessment, the rest of this Annex assesses three different packages that combine these rules in different ways. More specifically:

- Separation 1 - subsidiarisation:** This implies a limited, low fence and is based on subsidiarisation only in according with current legislation and under the assumption that amendments to current legislation suggested in section 3.2 have been implemented. This provides for a degree of separation, mainly of economic nature. This fence constitutes the base from which all other fences depart and is the least “intrusive” for financial institutions because it leaves them more flexibility to determine their internal structure and business models. This fence is limited to separating certain activities to a separate legal entity which (along with the deposit entity) will be subject to prudential and other rules on an individual, sub-consolidated and consolidated basis as described in sections 3.1 and 3.2.¹²⁶
- Separation 2 – subsidiarisation+:** Separation 2 provides for a stricter economic separation (e.g., separate debt issuance and arm’s length relations). Moreover, it also provides for a somewhat stricter degree of legal (deposit entity not to own trading entity) and governance separation (e.g., cross-membership of boards) where the trading entity forms part of a wider corporate group;
- Separation 3 – subsidiarisation++:** This would provide a fence of maximum strength to protect the objectives of the separation. Accordingly, this model would provide for stricter independence of not only the separated trading entity but also the deposit entity. This would include a provision that a trading entity could not own a deposit entity (in addition to the prohibition on deposit entities owning trading entities). For corporate groups, this would require a sibling structure where the trading entity and the deposit entity are sister companies operating entirely separately and with no connection other than ultimately sharing the same parent company. This fence would also aim at limiting the interconnectedness among various banking groups to dampen the impact of more systemic shocks. To this end, it would be stipulated that current large exposures limits be made more restrictive. Finally, the high fence under Separation 3 would limit the number of board members from the parent sitting on the boards of the trading entity and the deposit entity.

Graph 1 illustrates the three different models discussed above and highlights the corresponding restrictions.

¹²⁶ Derogations to individual requirements could not be allowed which most likely will require some type of amendment to current rules.

Functional separation I (SUB)

Separate subsidiary

Application of current prudential rules on individual/sub-consolidated level

Certain disclosures on individual basis

Functional separation II (SUB +)

More autonomous subs by stricter legal/ec/gov separation to reduce interconnectedness and increase transparency. In addition to FS1:

- + TE and DE separate debt issuance
- + DE cannot own TE
- + Individual/or sub-consolidated disclosures
- + Limit intra-group exposures
- + All intra-group transactions at arm's length basis
- + No resolution support from DE to TE
- + No cross-board membership TE-DE
- + Board of parent entity + DE statutory duty uphold separation
- + Wider corporate group has to ensure operational continuity of DE

Functional separation III (SUB ++)

Strictest legal, economic and governance separation, while remaining universal bank. In addition to FS2:

- + TE cannot own DE
- + Stricter limits on large exposures between different banking groups
- + Limit number of parent members on TE and DE boards

*TE = trading entity

**DE = deposit entity

4.2.1. Separation I - subsidiarisation

An evaluation of subsidiarisation as a stand-alone fence gives rise to questions as to its effectiveness:

Would subsidiarisation facilitate resolvability: Subsidiarisation requires the trading entity and the deposit entity to maintain self-standing reserves of capital and of loss-absorbing debt, as well as to comply with the other prudential requirements on an individual or sub-consolidated basis which facilitate resolution. Subsidiarisation would therefore likely bring more clarity, transparency and structure to a banking group's internal organization which could facilitate the architecture of a recovery and resolution plan and also facilitate resolvability. This is because, in the first instance, the economic, operational and governance separation facilitates the preservation of the viable residual elements and the resolution and wind-down of non-viable elements. In the second instance, if the whole entity is to be resolved, asset valuation (and the application of pre-insolvency bail-in tools) is facilitated by the easy identification of assets and losses.

Would subsidiarisation reduce moral hazard (excessive risk taking): Because subsidiarisation requires the trading entity and the deposit entity to maintain self-standing reserves of capital and of loss-absorbing debt (which may not be diminished below safeguard levels set out in the CRR and the BRRD), as well as to comply with the other prudential requirements on an individual basis, subsidiarisation provides a certain degree of independence and to some extent also insulates the deposit entity from shocks and losses affecting the trading entity. In principle, it also means that risks and costs are shifted to who bears them. This should have the effect of curbing the incentive to take excessive risks.

However, if the trading entity is part of a wider corporate group the parent company remains in control of the trading entity and the deposit entity.¹²⁷ This parent/subsidiary relationship may signal that the implicit safety net is still present in which case the trading entity will continue to benefit from "preferential" access to and cost of funding. This effect would be exacerbated if the trading entity is the parent undertaking owning the deposit entity. Moreover, because excess capital can be shifted around within the wider corporate group there may be an additional incentive for the parent/trading entity (and for the deposit entity especially if its board members' remuneration schemes are based also on performance of the entire corporate group) to encourage the allocation of capital and human resources to trading and away from, for example, lending activity and continued excessive risk taking.

Would subsidiarisation facilitate monitoring, management and supervision: Each of the entities will be subject to separate capital requirements and a requirement to maintain a sufficient level of loss-absorbing debt, which could impact on shareholders' incentives to monitor risk taking. Separation may also improve transparency and therefore improve the ability for shareholders to better monitor the activities.

The responsibility and independence of management could increase through separation and this may make it easier to ensure that objectives and needs are more clearly defined. This could overall benefit the management of these entities. Separation 1 would result in a clearer corporate and business structure which could facilitate supervision and will likely also facilitate the application of recovery and resolution measures.

Would subsidiarisation reduce conflicts of interest: Governance separation could contribute to reducing conflicts of interest between the trading business and the deposit-taking business. Because governance separation would to some extent enhance managers' independence this could further contribute to reducing conflicts of interest and culture shocks. However, because it is not excluded that the trading entity would own the deposit entity and, if so, that they would be engaged in the same or similar line of business,¹²⁸ their interests inevitably would collide and, thus, the interest of creditors or employees with stock options could be at stake.

As long as there is no ownership restrictions on the trading entity and as long as governance rules do not reach further than the basics outlined in the CRDIV, and especially as long as there is no duty on the parent to uphold the objectives of separation, it may be questioned whether the objectives of the separation will be sufficiently safeguarded and whether the risk taking management culture will not continue to influence the operations of the deposit entity.

Would subsidiarisation reduce resource and capital misallocation: While separation of certain activities and separate governance could contribute to limiting the incentives for financial institutions to allocate resources and capital away from lending activities to trading activities it is unlikely that this would have a very significant impact under Separation 1. This is because excess capital can be shifted around within the wider corporate group, which provides an incentive for the parent - and for the deposit entity if its board members' remuneration schemes depend also on performance of the entire corporate group - to allocate

¹²⁷ The degree of control will depend on the management style of the parent company's executives and the share ownership structure.

¹²⁸ The deposit entity may engage in certain activities that are not separated but involve a certain degree of trading; for example, underwriting which may necessitate some ancillary market making.

capital and human resources to trading and intra-financial activity rather than to lending activity. This could particularly be the case as there is no duty on the parent board to maintain the objectives of separation.

Would subsidiarisation lead to loss of efficiencies: Separation 1 would have an impact on a banking group's ability to benefit fully from diversification in the sense that the scope for using income smoothing techniques through diversification of activities and centralisation of liquidity and risk management would be reduced. Therefore the increased costs would only reflect the loss of diversification for meeting prudential needs on a stand-alone basis. However, the option to place many activities on either side of the fence, the fact that excess capital could under certain conditions still be transferred among the entities within the wider corporate group, the ability to pull funding needs, and the fact that customers could still use a single banking group for all of their services means that a certain level of diversification benefits would remain. Similarly, banking groups may continue to benefit from operating cost reductions from pooling certain resources such as IT and finance systems, and from shared marketing and advertising campaigns.

Would subsidiarisation improve competition: Because Separation 1 does not remove the implicit public subsidy any competitive distortions (large banks versus small banks, within a Member State or across Member States or wider) will remain.

Based on the above, this degree of separation is unlikely to be sufficiently strong to effectively achieve the operational goals of structural reform.

4.2.2. Separation 2 – "subsidiarisation +"

Separation 2 puts more emphasis on making the trading entity and the deposit entity more self-standing and, where the trading entity forms part of a wider corporate group, regulating the intra-group relationship.

To start with, it would therefore be required that each sub-consolidated group of homogeneous entities (i.e., the "deposit group," and the "trading group") would have to issue its own debt independently from all other entities within the wider corporate group (including the parent).¹²⁹ This means that each sub-consolidated group would, to a large extent, have to fund themselves independently from the group.

To the extent that the trading entity forms part of a wider corporate group, the CRDIV prudential rules regarding disclosure need to apply fully to both the trading and the deposit entities on a sub-consolidated basis.

To reduce the interconnectedness of entities that form part of a wider corporate group and to ensure a transparent and appropriate relationship between them, it would first be required that a deposit entity cannot own shares or voting powers in a trading entity. Second, all intra-group contracts and other transactions would have to be made on an arm's length basis and on normal commercial terms. The latter limits intra-group relationships to the same general level as general third party relationships. It would also be made clear that the trading entity could not benefit from resolution support from the deposit entity.

¹²⁹ For sake of clarity intra-group lending and borrowing is not included in the definition of debt and can therefore take place.

To further reduce conflicts of interests at governance level it would be required that there be: (i) no cross-membership between the boards of the trading entity and the deposit entity (or only a minority of members can sit on both boards); and (ii) a statutory duty for the parent and the deposit entity boards to uphold the objectives of the separation.

Finally, there would be an obligation imposed on the parent to secure the deposit entity's operations (e.g., access to critical infrastructure such as payments services, staff, data, information and other services) irrespective of the wider group's financial health.

The fence under Separation 2 would be of virtually the same strength as the current UK fence.

4.2.2.1. Social benefits and social costs

Would subsidiarisation+ facilitate resolvability: Separation 2 has the effect of further insulating the trading entity from the deposit entity in terms of funding; more insulation enhances resolvability without taxpayer support. This would also curtail implicit government guarantees, reducing the risk to the public finances and making it less likely that banks will run excessive risks in the first place. In addition separate funding also reduces complexity of funding sources.

Would subsidiarisation+ reduce moral hazard (excessive risk taking): The fence under Separation 2 focuses more on independence and regulating the relationship among entities within the wider corporate group than the previous fence. The rule on separate debt issuance would make it more difficult for the trading entity (and the deposit entity) to get access to "intra-group funding" which means that it has to procure funding from the "external" market place. This would have the effect of making funding of risky activities more expensive as the funding of operations would better reflect their underlying riskiness. Conducting all transactions on an arm's length commercial basis would also most likely lead to an increase in sales/service price. Cross-subsidization of trading activities with "cheap" deposits would be significantly reduced. Compared to Separation I, these higher costs should have the effect of restraining even more the incentives of the trading entity to take excessive risks. However, to the extent that the trading entity is part of a wider corporate group and controls the deposit entity that effect would be countered. This could to some extent be mitigated when the trading entity cannot get any support in resolution from the deposit entity and when the management body of the parent (i.e., possibly the trading entity itself) as well as the management body of the deposit entity would be under a duty to uphold the objectives of the separation. These requirements could provide additional credibility to the fence and signal to the market place that the implicit safety no longer exists. This should change the incentives for institutions to become more moderate in risk-taking and therefore reduce moral hazard.

Would subsidiarisation+ facilitate monitoring, management and supervision: The more the trading entity's funding has to come from external capital markets the more shareholders should be incentivized to monitor risk taking. The fact that the parent (possibly the trading entity itself) management body would be under a duty to uphold the objectives of the separation could significantly impact on the way it operates with regard to excessive risk taking. Again, more insulation of the trading entity from the deposit entity would mean that the objectives and needs of each separate entity would be even clearer and therefore easier for management to implement and supervise. Reducing the intra-group interconnectedness will make each entity's accounts more clear and likely more transparent, which will facilitate supervision.

Would subsidiarisation+ reduce conflicts of interest: Prohibiting cross-management body memberships could be very effective in reducing conflicts of interest and culture between the trading business and the deposit taking business. However, in case the trading entity is the parent of the deposit entity this requirement would likely be far too strict as it would not allow the parent any influence over wider corporate group strategies and would sever the line of accountability through the parent to investors and likely make the banking group significantly less attractive as an investment object.

Importantly, the duty on the parent and the deposit entity boards to uphold the objectives of separation could have a significant impact on conflicts of interest as well as on the extent of risk taking within each of the entities. This would particularly be the case if the trading entity owns the deposit entity.

Would subsidiarisation+ reduce resource and capital misallocation: Notwithstanding the ability to shift around excess capital within the wider corporate group, the fence under Separation 2 restricts intra-group relationships and puts them on the same base and terms as strictly third party commercial relationships. Coupled with the governance duties to uphold the objectives of the separation, Separation 2 could better contribute to limiting the incentives for financial institutions to allocate resources and capital away from lending activities to trading activities.

Would subsidiarisation+ generate loss of efficiencies: The stricter fence would make it more expensive for the group to benefit from diversification and other economies of scope. This would be reflected in higher funding costs of relatively risky activities but possibly in even lower funding costs for safer activities. As under Separation 1 there is still the option to place many activities on either side of the fence, excess capital could under certain conditions still be transferred among the entities within the wider corporate group and customers could still use a single group for all of their services, which means that a certain level of scope economies would remain. Similarly, groups may continue to benefit from operating cost reductions from pooling certain resources such as, for example, IT and finance systems and from shared marketing and advertising campaigns (operational efficiencies).

Would subsidiarisation+ improve competition: Only to the extent that Separation 2 could constitute a credible threat that the implicit public subsidy would be reduced would competitive distortions (large banks versus small banks, within a Member State or across Member States or wider) be lowered correspondingly.

Based on the above, it is concluded that Separation 2 (subsidiarisation +) constitutes a more credible fence than Separation 1, and, on a balance, it appears that the social benefits outweighs the social costs; however, this fence remains permeable.

4.2.3. Separation 3 - "subsidiarisation ++"

Separation 3 aims at provide a fence of maximum strength to protect the objectives of the separation while still leaving room for banking groups to provide a universal set of services and thus allowing for some efficiency and diversification benefits at the group level. It builds on the model for Separation 2 as described above in section 4.2.2.

To this end it would be stipulated that the trading entity could not own a deposit entity (in addition to the prohibition on deposit entities owning trading entities).¹³⁰ For corporate groups, this would require a sibling structure where the trading entity and the deposit entity are sister companies operating entirely separately and with no connection other than ultimately sharing the same parent company.

Separation 3 would also aim at limiting the interconnectedness among various banking groups to dampen the impact of more systemic shocks. To this end, it would be stipulated that current large exposures be subject to stricter limits than currently applicable.

Finally, the high fence under Separation 3 would limit the number of board members from the parent sitting on the boards of the trading entity and the deposit entity. This would allow the parent to contribute to strategy and objective setting while leaving each subsidiary freedom to set its own agenda.

4.2.3.1. Social benefits and social costs of Separation 3 (subsidiarisation ++)

Would subsidiarisation++ facilitate resolvability: It would be easier in a sibling structure to deploy entirely different resolution tools for the trading entity and the deposit entity. The risk of contagion would also be reduced as the parent/holding company would act as a firewall between the two sister companies and stricter large exposures would apply. I.e., if the trading entity were to fail, the regulator could shut it down without affecting its deposit entity sister firm in a critical way.

Would subsidiarisation++ reduce moral hazard (excessive risk taking): Separation 3 would require some type of sibling structure for corporate groups. This type of structure would be consistent with the principle of insulating the trading entity from the deposit entity, which is what structural reform seeks to achieve through subsidiarisation. The more independent the trading entity is and the more intra-group relationships are assimilated to relationships with third parties, the more credible it may be to the market place that the trading entity will not benefit from government support in case of financial trouble. Coupled with the fact that the trading entity would no longer have access to cheaper internal funding, incentives for excessive risk taking should be significantly reduced. The limit on the number of parent members sitting on the boards of the trading entity and the deposit entity (coupled with the duty of the parent to uphold the objectives of the separation) would also further discipline any incentives for excessive risk taking as well as ensuring better alignment of incentives.

Would subsidiarisation++ facilitate monitoring, management, supervision and regulation: Separation 3 would clearly separate banking groups' structures and operations and make them clearer and transparent which makes it easier for regulators, investors, creditors and managers to see potential weaknesses and to discipline excessive risk taking.

Would subsidiarisation++ reduce conflicts of interest: Separate governance through a sibling structure could contribute to reducing conflicts of interest between the trading business and the deposit taking business and bring about thicker walls between the sister companies. Limiting the number of parent members sitting on the boards of the trading entity and the deposit entity could also further reduce conflicts of interest between ultimate shareholders and the trading and deposit entities.

¹³⁰ With regard to ownership restrictions, *see* footnote 56.

Would subsidiarisation++ reduce resource and capital misallocation: A sibling structure would further cement the separation of the trading entity and the deposit entity and lend more credibility to the integrity of the fence between the two entities. Since cheap access to internal funding would no longer be available, the trading entity would have to rely more on the external market, which would make its funding more risk sensitive and hence more expensive (at least for the trading activities). Because of the additional insulation of the trading entity, Separation 3, compared to the other fences, has a more credible positive impact on reducing any implicit subsidy. Reduced incentives to invest in projects which are not worthwhile on average, but risky enough to have at least some chance of making money could then also lead to a better allocation of capital in the economy.

Would subsidiarisation++ generate loss of efficiencies: Separation 3 would further make it more expensive for the banking group to benefit from diversification and other economies of scope. However, there is still the option to place many activities on either side of the fence. Also, excess capital could under certain conditions still be transferred among the entities within the wider corporate group and customers could still use a single group for all of their services. This means that a certain level of economies of scope would remain. Similarly, groups may continue to benefit from operating cost reductions from pooling certain resources, such as IT and finance systems, and from shared marketing and advertising campaigns.

Would subsidiarisation++ improve competition: Next to ownership separation, Separation III constitutes the most credible threat that the implicit public subsidy would be eliminated. Removing the implicit subsidy would contribute significantly to removing competitive distortions between large banks versus small banks, within a Member State or across Member States or wider. Based on the above it is concluded that Separation 3 (subsidiarisation ++) provides the most non-permeable separation short of ownership separation but also comes at a higher cost for financial institutions compared to Separation I and II. For this reason it has not been retained for assessment in the main body of the Impact Assessment.



JRC SCIENTIFIC AND POLICY REPORTS

**Annex A8 : Trading activities and
Bank Structural Separation:
Possible Definitions and Calibration of Screening**

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2013

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JRC84704

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Executive summary

Commission Services have undertaken work with the aim of reviewing the *examination* thresholds suggested by the High Level Experts Group (HLEG) to select bank to be subject to structural separation. This work is focusing in particular on how to define trading activity, estimating the institutional implications of different examination thresholds, and benchmarking the results against other readily available metrics.

Commission Services have assessed a number of options for defining trading activity in order to determine the scope of the institutions subject to a separation requirement. Due to the absence of publicly available data for banks' specific business lines, this analysis has been done on the basis of publicly available accounting (balance sheet) data from commercial providers. The analyzed options are:

- HLEG definition (assets held for trading and available for sale);
- a more narrow definition that excludes available for sale assets as mostly composed of securities held for liquidity purposes ;
- a definition focused on the gross volume of trading activity, which is likely to focus on proprietary traders and market-makers; or
- a definition focused on net volumes, which is likely to only capture those institutions that have a higher share of unbalanced risk trading (proprietary traders).

For each of the last three options, absolute and relative thresholds have been assessed. Depending on the option chosen, about 30-35 banks are selected. Even though the selected banks represent less than 20% of the sample, their assets account between 50% and 75% of the assets in the sample, and by and large between 40% and 60% of EU banking assets. It is important to remark that 20 banks are selected under all definitions and they represent 50% of the sample in terms of total assets. By considering only banks with total assets over 30 bn EUR, 16 banks are selected by all definitions to be proposed for structural reform.

TABLE OF CONTENTS

1. INTRODUCTION AND SCOPE

Following the suggestions of the report by the High Level Experts Group (HLEG) on reforming the structure of the EU banking sector, the so called Liikanen report,¹³¹ Commission Services have been investigating the impact that a functional structural reform could imply.

The Liikanen report suggests that “proprietary trading and all assets or derivative positions incurred in the process of market-making must be assigned to a separate legal entity within the banking group”. Separation would only be mandatory if trading activities amount to a significant share of balance sheet, or if their volume can be considered significant from the viewpoint of financial stability. In particular the HLEG suggests that separation should be mandatory if the sum of “bank’s assets held for trading and available for sale“ is (i) either a significant volume (above 100 bn EUR), or (ii) a significant share of the bank’s balance sheet (between 15-25%). However, the Supervisors would determine the activities that would actually need to be separated, so that above mentioned thresholds would serve for “examination” purposes by Supervisors (*examination thresholds*).

During the consultation¹³², HLEG definition of trading activities has been criticized, especially as Available-For-Sale assets can be composed to a large extent by high quality liquid assets: government or corporate bonds held by banks for liquidity rather than for trading purposes. It was also pointed that current reforms, including European Market Infrastructure Regulation¹³³, Capital Requirement Directive IV¹³⁴, Tax on Financial Transactions¹³⁵ and the bank recovery and resolution directive (BRR), should also be considered when analyzing the impact of functional structural separation.

Within this context, this report analyses how to possibly modify the definition of trading activities relying on balance sheet data and how to calibrate examination thresholds for functional structural separation. The alternative definitions proposed by Commission Services are based on specific bank activities such as proprietary trading and market making.

The remaining of the report is structured as follows. Section 2 describes the data public available in SNL for analysing trading activities and introduces different definitions of trading activities which will be analysed in the remaining of the report, starting from the HLEG definition. Section 3 presents the results of the cluster analysis for each definition and set potential thresholds. Section 4 compares results of the various definitions and Section 5 concludes.

¹³¹ http://ec.europa.eu/internal_market/bank/docs/high-level_expert_group/report_en.pdf

¹³² http://ec.europa.eu/internal_market/consultations/2012/hleg-banking/replies-summary_en.pdf

¹³³ http://ec.europa.eu/internal_market/financial-markets/derivatives/index_en.htm

¹³⁴ http://ec.europa.eu/internal_market/bank/regcapital/new_proposals_en.htm

¹³⁵ http://ec.europa.eu/taxation_customs/taxation/other_taxes/financial_sector/

Some appendices will provide additional analyses and technical details. Appendix A provides details on the sample used for the analyses. Appendix B presents some additional graphs on the banks selected under the HLEG definition but not under alternative definitions. Appendix C investigates on the stability of thresholds across the years. Appendix D discusses definitions taking into account EMIR/FTT initiatives. Appendix E present an analysis based on balance sheet structural indicators. Appendix F gives few technical details on the clustering techniques used for setting the thresholds.

2. DATA AND DEFINITIONS OF TRADING ACTIVITIES

2.1 DESCRIPTION OF THE SAMPLE AND OF THE DATA USED

The banks sample used is extracted from the SNL database¹³⁶.¹³⁷ It covers 245¹³⁸ EU banks and spans the years 2006-2011, for which consolidated balance sheet data have been considered. Only banks with total assets higher than 1% of their home-country GDP are included in this calibration exercise.¹³⁹ This set of banks (see *Table 1*) represents around 75% of the EU banking sector in terms of total assets with respect to 2011¹⁴⁰.

Due to the presence of missing items the number of banks may differ according to definitions and to the reference year. In general there are around 190 banks for which all needed variables are available. In all cases, most of the banks for which data are not available are small¹⁴¹. In terms of total assets not including the banks with missing data reduces the coverage of EU27 banking sector to 74%. Hence all the statistics dealing with shares over total assets will refer to the entire sample set of 245 banks.

¹³⁶ <http://www.snl.com/>. See Annex I for additional information on the sample.

¹³⁷ The use of annual reports published by individual banks is not retained since balance sheet items published in annual reports do not always use the same classification of financial instruments.

¹³⁸ 244 banks are part of EU 27 and 1 bank of Norway (DNB ASA) has been added in order to cover the EBA sample.

¹³⁹ No small banks are available in SNL, which means that these banks cannot be used for the calibration and consequently not been proposed for structural separation.

¹⁴⁰ Source ECB MFI Balance Sheets (GB, DK, LV, PL, SE + Eurozone countries)

¹⁴¹ The only exception is Nykredit Realkredit, whose average 2006-2011 total assets amounts to roughly 170 bn EUR.

Table 1: Breakdown of the sample in bucket of sizes based on total assets averaged between 2006-2011. 500 bn EUR roughly corresponds to the 75th percentiles of the total assets of the banks in the sample of banks considered by the European Banking Authority in its capital exercise¹⁴². 30 bn EUR is the size above which banks will be supervised directly by the SSM.

Banks' Buckets	Banks' size (Total Assets)	Number of banks in the sample	Share of total assets in the sample
Small banks	Up to 30 bn EUR	141	4%
Medium banks	between 30 and 500 bn EUR	85	32%
Large banks	larger than 500 bn EUR	19	64%
Total		245	100%

The balance sheet items reclassified in SNL used to estimate trading activities are reported in Table 2.

Table 2: Classes of assets and liabilities used for estimate the size of the trading activity available in SNL.

Item	Label	Data definition
Total Assets	TA	All assets held by the banks at the indicated date, as carried on the balance sheet and defined under accounting principles in use.
Trading Securities Assets	TSA	Assets part of a portfolio managed as a whole and for which there is evidence of a recent actual pattern of short-term profit-taking, excluding derivative assets.
Derivatives Assets	DA	Derivatives with positive replacement values not identified as hedging or embedded derivatives.
Available For Sale Securities	AFS	Total securities designated as available for sale
Derivatives Liabilities	DL	Derivatives with negative replacement values not identified as hedging instruments.
Trading Liabilities	TSL	Liabilities taken with the intent on repurchasing in the near term, part of a portfolio managed as a whole, and for which where there is evidence of a recent actual pattern of short-term profit-taking, excluding derivative liabilities.

¹⁴² <http://www.eba.europa.eu/capitalexercise/2011-EU-Capital-Exercise.aspx>

Figure 1 plots the average breakdown of trading activities under the HLEG definition (DA + TSA + AFS) for each bank size bucket, using average 2006-2011 data. It can be observed that:

- the share of total trading activities on total assets is larger for large banks;
- larger banks have more derivatives and trading securities;
- smaller banks focus relatively more on AFS.

Figure 1: Average share of trading activities in the asset side of the balance sheet on total assets by bucket of size. Data are the average 2006-2011. Source: SNL and JRC calculations.

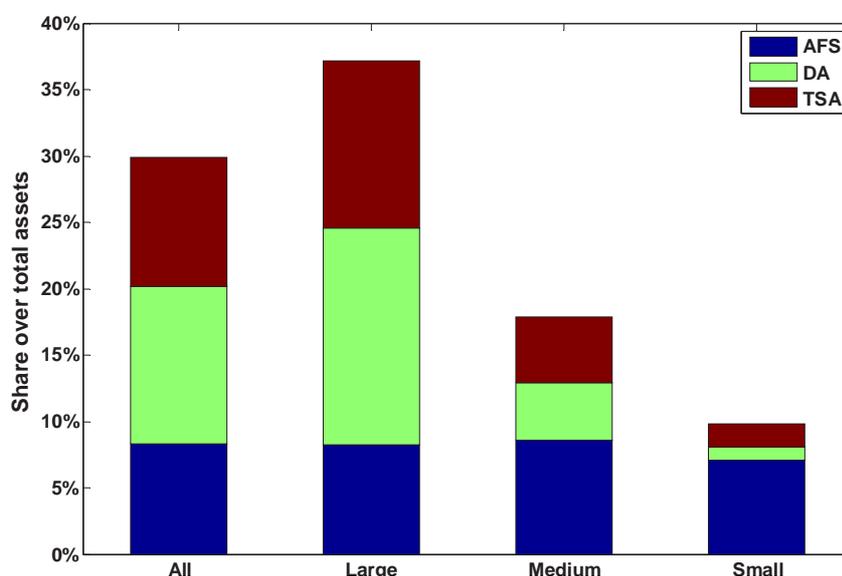
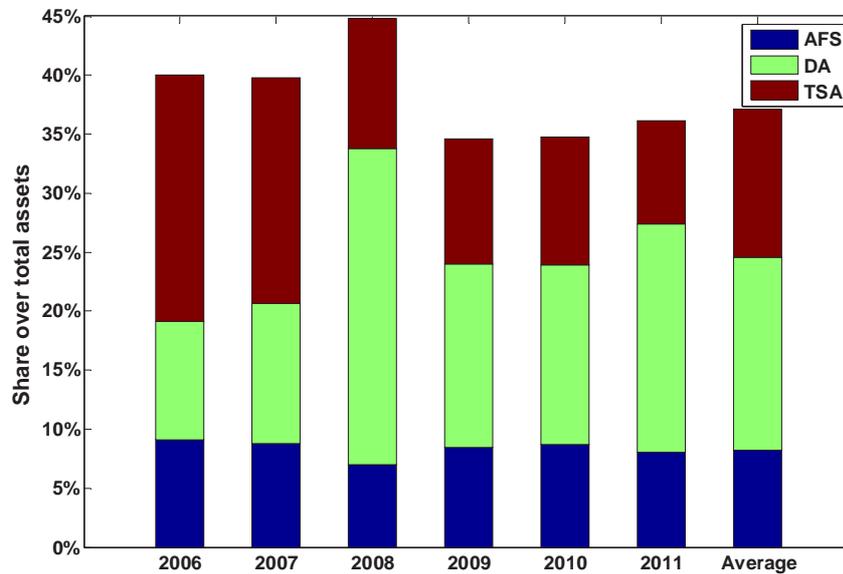


Figure 2 shows how the share of trading activities under the HLEG definition and the relative importance of the three classes change over time for the large banks, highlighting how both the total share and the relative share of derivatives or securities held for trading are volatile.

This implies that, in order to have thresholds that remain stable over time, it is necessary to consider the average behavior over a certain time horizon. In the present work a 6-year average is considered.¹⁴³

¹⁴³ Switching to a 3-year moving average has shown not to considerably change results (see Annex III).

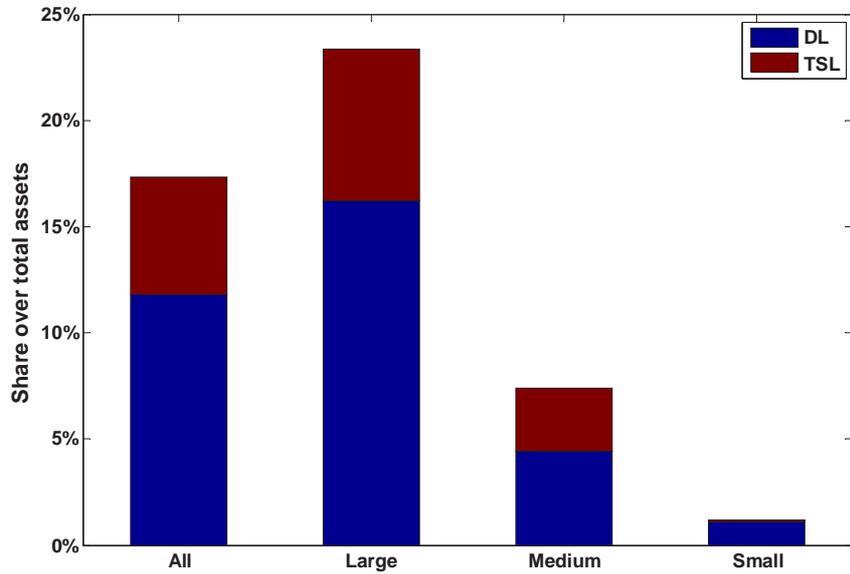
Figure 2: Evolution of trading activities over time for the large banks in the sample. Source: SNL and JRC calculations.



Among the proposed alternative definitions, trading liabilities are also considered. Figure 3 shows the shares of the two classes of trading activities in the liability side over total assets. Large banks tend to have large share of trading liabilities.

Comparing Figure 3 with Figure 1, trading securities assets tend to be higher than trading securities liabilities while derivative assets and liabilities tend to be more balanced for all bank size bucket.

Figure 3: Average share of trading activities on liability side on total assets by bucket. Data are the average 2006-2011. Source: SNL and JRC calculations¹⁴⁴.



¹⁴⁴ All graphs and tables are based on SNL data and JRC elaborations

2.2 USE OF ALTERNATIVES DEFINITIONS OF TRADING ACTIVITIES: DISCUSSION AND PROPOSITION

In this section, different definitions of trading activities using balance sheet data are introduced and discussed and eventually used to calibrate the *de minimis* exemption rule.

Starting from the HLEG definitions and alternative definitions are considered with the aim to take into account the comments from stakeholders collected through the HLEG report consultation¹⁴⁵. In particular: some consultation replies have pointed out that Available-For-Sale assets are normally composed of high quality liquid assets, such as government bonds or corporate bonds of high-quality, held by banks for liquidity purposes rather than for trading purposes.^{146,147} Some criticisms have also been raised on the fact that the HLEG definition does not seem to provide a good proxy of the risks undertaken through trading activities.

These comments have led the Commission Services to consider the removal of AFS from the definition of trading activities and to consider some additional definitions which may better focus on the two main risks due to trading: market risk and counterparty risk. While market risk can be considered to be more related to one directional bets on market movements, counterparty risk depends more on the volume of trading undertaken by the bank¹⁴⁸.

On the basis of these considerations, the Commission Services have decided to analyse the definitions presented in Table 3, also considering limitations due to the need to rely on publicly available accounting data.

¹⁴⁵ http://ec.europa.eu/internal_market/consultations/2012/banking_sector_en.htm

¹⁴⁶ See also *Opinion of the European Banking Authority on the recommendations of the High-level Expert Group on reforming the structure of the EU banking sector*, where on page 4 one can read “the EBA suggests that available for sale components of liquidity portfolios are excluded from the first threshold calculation”. <http://www.eba.europa.eu/cebs/media/Publications/Other%20Publications/Opinions/EBA-BS-2012-219--opinion-on-HLG-Liikanen-report---2-.pdf>

¹⁴⁷ AFS composition can be volatile. For instance for Lloyds in 2011 the share of government securities (good for liquidity constraint) in AFS is roughly 70% while in 2010 it was 30% (more ABS and corporate securities. Source: Lloyds annual report). This split is not available for most of the banks in the sample.

¹⁴⁸ Large volumes of securities and derivatives held for trading also signal the presence of market risk due to trading activities.

Table 3: Definitions of trading activities based on the labels of balance sheet items introduced in Table 1.

	Definition	Description
1	TSA + DA + AFS	HLEG definition
2	TSA + DA	Exclusion of AFS under the assumption that they are mostly held for liquidity purposes
3	$(TSA + TSL + DA + DL)/2$	Exclude AFS + Gross volumes of securities and derivatives held for trading (to focus on market and counterparty risk)
4	$ TSA - TSL + DA - DL $	Exclude AFS + Net volumes of securities and derivatives held for trading (to focus on market risk)

A second issue linked with the choice of the definition is the scope of the separation. The HLEG recommends that *assets or derivatives positions incurred in the process of market-making must be assigned to a separate legal entity*. The Commission Services also consider the possibility that only proprietary trading is separated.¹⁴⁹

It is still worth to notice that while precise legal and economic definitions of proprietary trading and market making is subject to a certain level of uncertainty¹⁵⁰, one can - in very general terms - consider that proprietary trading is more exposed to market risk while market making is more related to counterparty risk.

To capture both market makers and proprietary traders, Commission Services propose to use definition 3, which focuses on gross volumes of trading activities by summing assets and liabilities. In fact, this measure could be considered a proxy for banks' exposure to counterparty and market risk.

To capture proprietary traders only, Commission Services propose to use definition 4, which focuses on unbalanced positions between assets and liabilities (net volumes). This idea is based on the assumption that market makers normally try to keep a balanced net position while still showing important gross positions; while proprietary trading is based on directional bets that the

¹⁴⁹ The Commission Services are also considering the option of separating underwriting, as this activity is highly linked to market making. However, due to lack of time and data (limited in number of operations are available) underwriting could not be investigated.

¹⁵⁰ Also U.K. authorities recognizes the: "significant challenge of defining proprietary trading clearly and distinguishing it from other forms of trading activity [...] The difficulty that most of us witnesses is trying to distinguish pure proprietary trading from market-making" (see 3rd Report -Proprietary trading: <http://www.publications.parliament.uk/pa/jt201213/jtselect/jtpebs/138/138.pdf>).

market will move in a certain direction, so that it generates asymmetric positions on the two sides of the balance sheet.

Commission Services have also investigated additional definitions (see Appendix D) aimed at taking into account some other ongoing Commission legislative initiatives that might impact on the volumes of trading activities, notably EMIR (European Market Infrastructure Regulation) and FTT (Financial Transaction Tax).

3. THRESHOLDS CALIBRATION

The HLEG suggests examination thresholds for functional structural separation based on the *amount* of trading activities and *share* of trading activities on total assets, equal to 100 bn EUR or 15-25% respectively. The results presented in this report are based on the assumption that the ‘or’ logical operator best suits for the purposes of a functional structural separation.

The scope of this section is to calibrate thresholds for each definition of trading activities introduced in Table 3, using banks’ balance sheet data spanning the period 2006-2011.

We develop a clustering exercise¹⁵¹ in the two dimensional space (*amount*, *share*) to build banks clusters and set the thresholds according to them. The analysis is based on averages of balance sheet data over the considered period.¹⁵²

Given the results of the clustering exercise, thresholds are chosen in such a way that

- respect the shape of clusters and avoid splitting them;
- are multiple of 10 bn EUR for the *amount* and of 2.5% for the *share* of trading activities;¹⁵³
- show consistency across years;
- show as much consistency as possible with the thresholds set by the HLEG.

¹⁵¹ Technical details on the clustering technique adopted are presented in Annex VI see <http://www.eio.uva.es/inves/grupos/representaciones/trTCLUST.pdf> for further references.

¹⁵² In Annex III we will briefly discuss the stability over the years of the thresholds, considering four moving averages over a three years span: 2006-2008, 2007-2009, 2008-2010 and 2009-2011. In general we do not see many differences except for the 2008-2010 average.

¹⁵³ We made this choice since these thresholds might become part of legislation.

3.1. HLEG DEFINITION

Figure 4 shows the results of the clustering exercise for the HLEG definition. The top plot presents all banks in the sample, while the bottom left one zooms on total trading activities below 250 bn EUR, excluding the well separated group of very large players (SocGen, HSBC, CrAgr, Barclays, RBS, BNPP, Deutsche Bank). The bottom right plot is used to identify those banks which are close to the thresholds.

On the *amount* dimension (*x*-axis), the presence of a stretched cluster of banks (green diamonds) between 30 bn EUR and 150 bn EUR does not allow to fix a threshold on the *amount* dimension in the neighbourhood of 100 bn EUR that does not intersect this cluster. However, as shown in the bottom left plot, there is an important gap between 50 bn EUR and 100 bn EUR, for shares lower than 15%. On this basis, a threshold is suggested equal to **80 bn EUR**. This smaller amount compared to the 100 bn EUR is suggested by the following:

- the presence of several banks belonging to the green diamonds cluster in the area close to 100 bn EUR;
- the presence of many fewer banks in the area close to 80 bn EUR, which could help the threshold to be more stable over time.

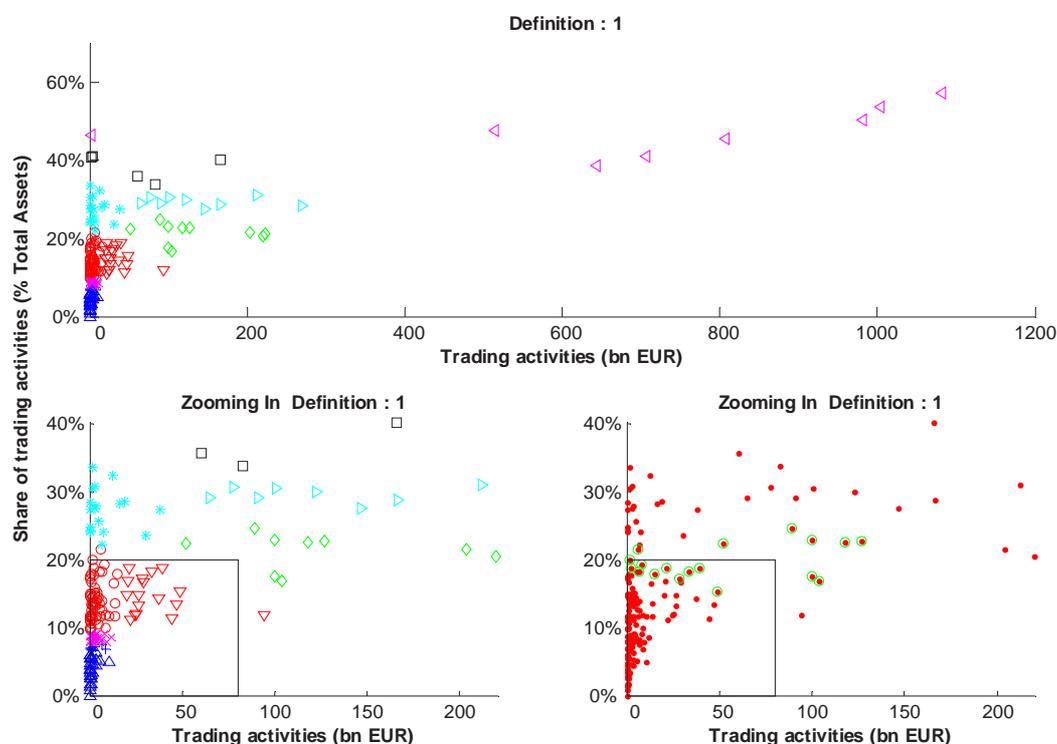
On the *share* dimension (*y*-axis), it is more difficult to identify a unique threshold due to the very dense presence of banks of smaller size. This difficulty is in line with the decision of the HLEG to provide a range (15%-25%) instead of a single threshold on the *share* dimension. The clustering analysis suggests that a threshold, within the suggested range, could be fixed at 20%, so as to separate light blue stars from the red circles.

Fixing the examination thresholds at 80 bn EUR for the amount or 20% for the share allows preserving the stretched cluster of green diamonds. It can also be noticed that a rather populated cluster of small banks with a high share of trading activities (light blue stars) would be captured with this choice. Not considering AFS will reduce the number of very small banks selected (see next sections).

The bottom right plot of Figure 4 highlights those banks which are close to the thresholds (see also Appendix C for a detailed discussion). The use of a measure of *distance from the thresholds* would allow softening the definition of hard thresholds resulting from cluster analysis and could be used as additional information for supervisors to discretionally enlarge the list of banks subject to separation.¹⁵⁴

¹⁵⁴ For instance, banks such as Allied Irish, Bankia and Monte dei Paschi are part of this group.

Figure 4: Clusters under Definition 1 (Liikanen) .



3.2. ALTERNATIVE DEFINITIONS

In this section we use the cluster analysis to set potential thresholds for the alternative definitions. To the list of criteria we already mention to properly set the thresholds based on clusters we add the need of having values differing as little as possible from thresholds “equivalent” to the HLEG ones.

The “equivalent” thresholds are obtained shifting and/or rescaling the HLEG thresholds (80 bn EUR or 20%) using the sample weighted average of the items of balance sheets cut, added or rescaled in the various definitions.¹⁵⁵

Table 4 shows the equivalent thresholds. Table 5 presents a choice of potential thresholds based on cluster analysis. Graphs are presented in Figure 5, 6 and 7. Comparing the equivalent thresholds in with those obtained via cluster analysis we observe similar results.

¹⁵⁵ As an example, the changes of thresholds from definition 1 to definition 2 can be obtained as follows. Definition 2 excludes AFS, whose average in the sample is 15 bn EUR. Therefore the *amount* threshold is shifted down from 80 bn EUR to 65 bn EUR. On the other hand, the share of AFS over total assets accounts on average for around 8%, hence the threshold for the *share* dimension moves from 20% down to 12%.

Table 4: HLEG “equivalent” thresholds for the alternative definitions.

HLEG “EQUIVALENT” THRESHOLDS									
Definition		THRESHOLDS		SELECTED BANKS			SELECTED BANKS BY SIZE		
		TradAct bn EUR	Shar TradAct	Num ber	% of the sampl e	% of the sample in total assets	Larg e	Mediu m	Sma ll
1	TSA + DA + AFS	80	20%	52	21%	75%	19	16	17
2	TSA +DA	66	12%	40	16%	65%	14	13	13
3	(TSA+TSL + DA+DL)/2	62	10%	36	15%	65%	13	16	7
4	TSA-TSL + DA- DL	37	8%	28	12%	45%	9	6	13

Table 5: Proposed thresholds based on cluster analysis.

THRESHOLDS FROM CLUSTERS									
Definition		THRESHOLD S		SELECTED BANKS			SELECTED BANKS BY SIZE		
		TradAct bn EUR	Shar TradAct	Num ber	% of the sampl e	% of the sample in total assets	Larg e	Mediu m	Sma ll
1	TSA + DA + AFS	80	20%	52	21%	75%	19	16	17
2	TSA +DA	70	15%	32	13%	60%	13	10	9
3	(TSA+TSL + DA+DL)/2	70	10%	36	15%	65%	13	16	7
4	TSA-TSL + DA- DL	30	8%	33	14%	51%	11	7	15

Figure 5: Cluster for Definition 2 (exclude AFS).

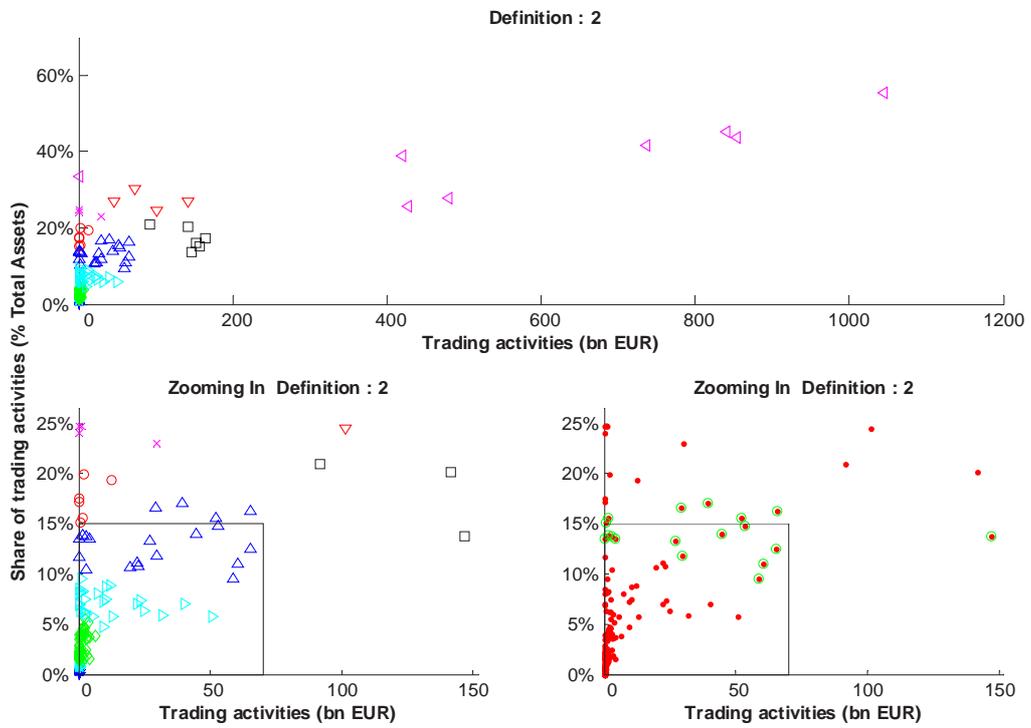


Figure 6: Clusters for Definition 3 (volumes without AFS).

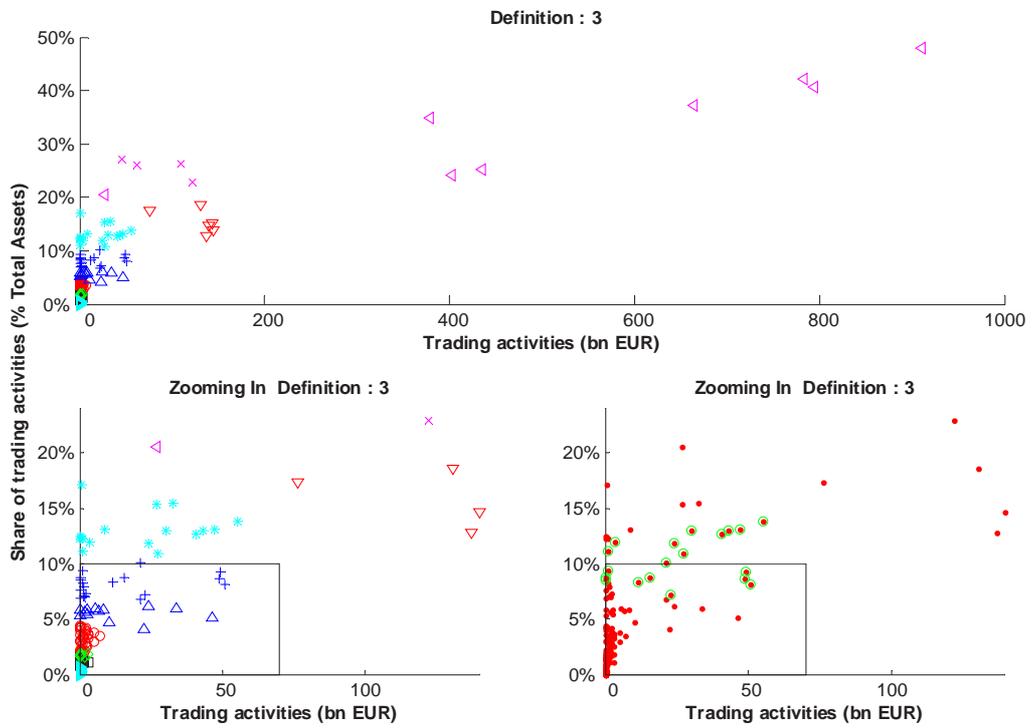
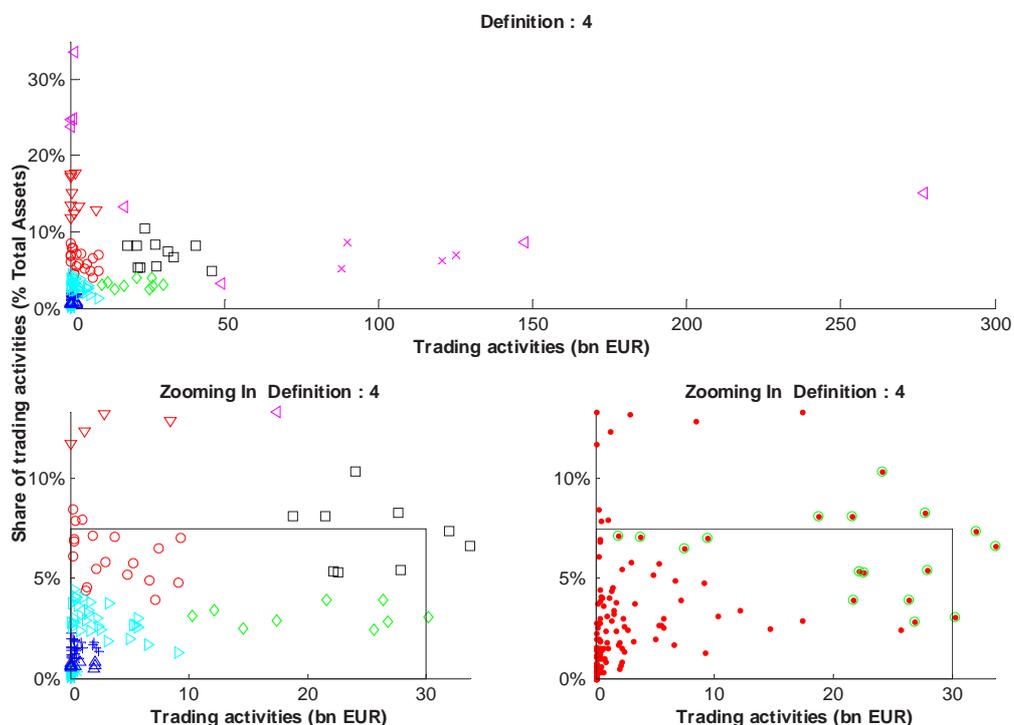


Figure 7: Clusters for Definition 4 (net volumes on derivatives and securities without AFS)



From these scatter plots and the associated cluster analyses, one can notice that the information about proximity to the thresholds (bottom right plots) becomes more and more relevant in order to better preserve similarity among selected banks which may be partly lost when using hard thresholds.

To have an insight in the characteristics of the set of selected and non-selected banks for each definition, Figure 8 shows the two dimensional box-plot of the share of trading activities (x -axis) versus share of covered deposits on total assets (y -axis).¹⁵⁶ This figure shows that the selected banks have much larger share of trading activities (by definition), but smaller share of covered deposits¹⁵⁷. This together with the relative dimensions of the rectangles including the central values (measures of dispersions) suggests that banks with large share of trading activities tend to finance it with sources of funding other than covered deposits.

¹⁵⁶ The graph refer to the average shares 2006-2011 and is based on the subset of banks in the sample for which information on deposits is available (approximately 180 banks). For all selected banks the information on deposits is available.

¹⁵⁷ Covered deposit are obtained from customer deposit applying an estimated correction factor equal to 0.54, averaging over EU27 data from ECB and from EU Deposit Guarantee Schemes.

Figure 8: Boxplot in two dimensions for the HLEG definition 1: the stars identify the median values, the light cyan and orange rectangles include 80% central values while the dark cyan and orange rectangles include the 50% central values

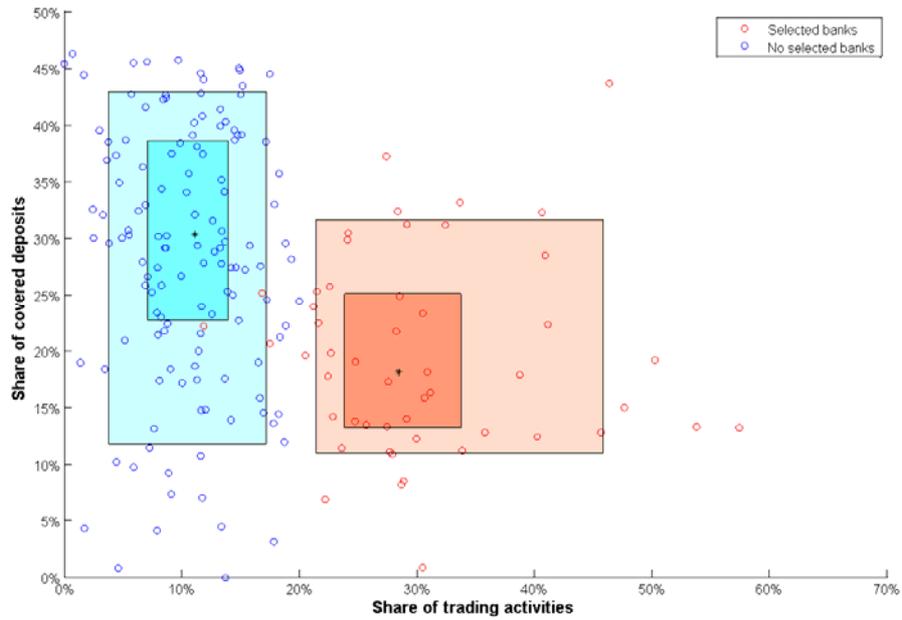


Figure 9: Boxplot in two dimensions for definition 2: the stars identify the median values, the light cyan and orange rectangles include 80% central values while the dark cyan and orange rectangles include the 50% central values

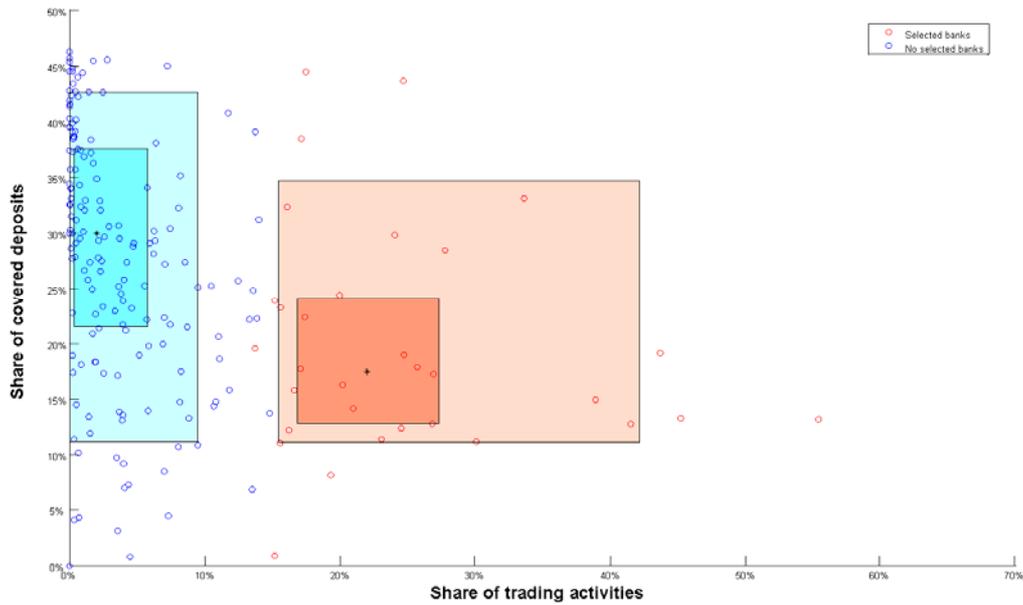


Figure 10: Boxplot in two dimensions for definition 3: the stars identify the median values, the light cyan and orange rectangles include 80% central values while the dark cyan and orange rectangles include the 50% central values.

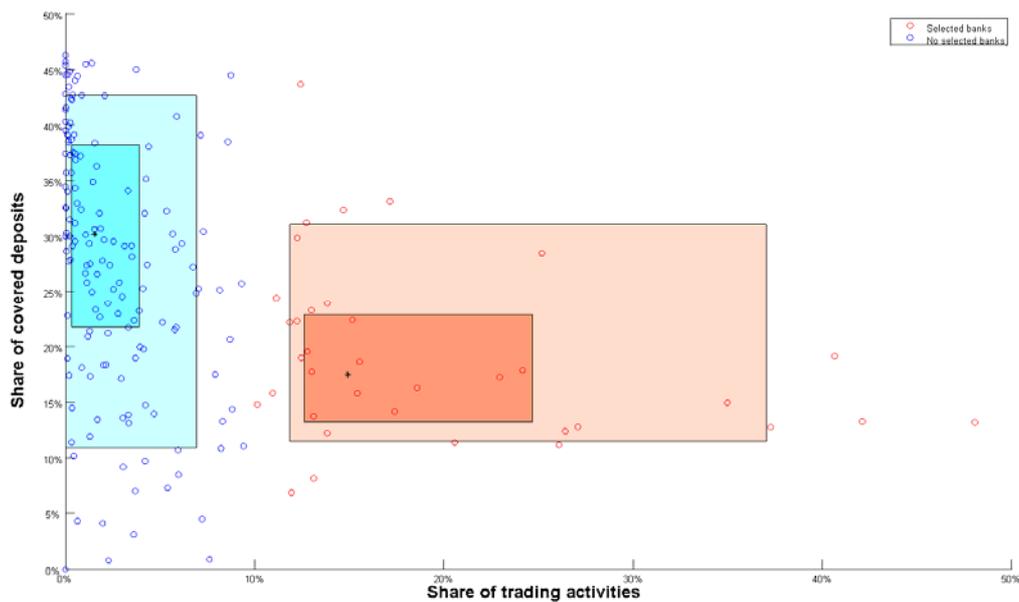
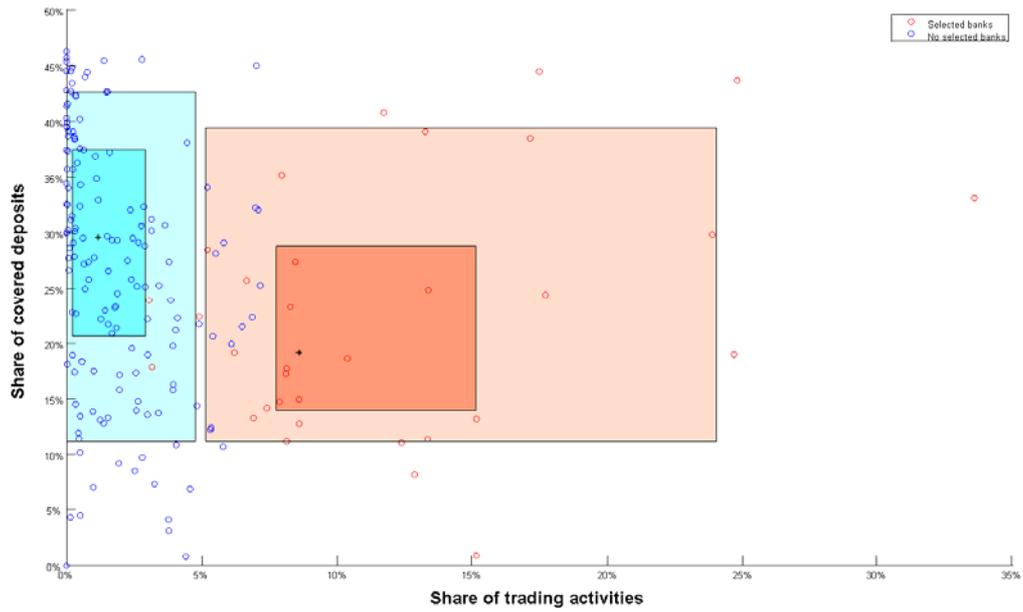


Figure 11: Boxplot in two dimensions for definition 4: the stars identify the median values, the light cyan and orange rectangles include 80% central values while the dark cyan and orange rectangles include the 50% central values.



4. COMPARISON ACROSS DEFINITIONS

This section presents a comparison among banks selected according to each definition (and relative thresholds). Twenty banks are selected by all definitions which correspond to less than 10% of the sample in terms of individuals. Considering the size, they actually account for about 50% of the sample total assets. Other 44 banks are selected by at least one definition, and, among them 17 are selected only by HLEG. In term of total assets all 44 account for 30% of the sample.

Further, it is worth noticing that:

- among the 20 banks selected by all definitions (see Table 6) 10 are large banks, 6 medium-sized and only 4 are small-sized. Ten of these banks are in the list of the G-SIBs.
- The 17 banks selected only by the HLEG (see Table 7) include 5 large banks, 4 medium sized banks and 8 small banks. These small banks are selected by HLEG due the size of their AFS assets (see Appendix B). None is a G-SIB, although only recently Lloyds have been excluded from this list.
- the 27 banks are selected according to more than one definition but not all (see Table 8) include 4 large banks, 10 medium sized banks and 13 small banks. These small banks are selected by the definition 4 and are mainly located in Denmark (4 banks) and Italy (5 banks).
- the 14 EU G-SIBs provided by the Financial Stability Board¹⁵⁸ are all selected by at least one definition. While the HLEG definitions select all of them, definitions 2 3 and 4 select 12, 13 and 11 G-SIBs respectively. BBVA and Standard Chartered are selected by only one alternative definition (4 and 3 respectively).

In Tables 6 to 9, a double-line frame circles banks with total assets above 30 bn EUR.

¹⁵⁸ Financial Stability Board list of SIFI as of 2012.
http://www.financialstabilityboard.org/publications/r_121031ac.pdf

Table 6: List of the banks selected by all definitions (ordered by size bucket). Size: L=Large, M=Medium and S=Small

	Bank	Size	MS	1	2	3	4	G-SIBs
				TSA+DA +AFS	TSA+DA	(TSA+TSL+ DA + DL)/2	TSA - TSL + DA - DL	
1	BNP Paribas	L	FR	Y	Y	Y	Y	Y
2	Crédit Agricole Group	L	FR	Y	Y	Y	Y	Y
3	SocGen	L	FR	Y	Y	Y	Y	Y
4	Deutsche Bank	L	DE	Y	Y	Y	Y	Y
5	Unicredit	L	IT	Y	Y	Y	Y	Y
6	Santander	L	ES	Y	Y	Y	Y	Y
7	Barclays	L	UK	Y	Y	Y	Y	Y
8	HSBC	L	UK	Y	Y	Y	Y	Y
9	RBS	L	UK	Y	Y	Y	Y	Y
10	Nordea	L	SE	Y	Y	Y	Y	Y
11	KBC	M	BE	Y	Y	Y	Y	
12	Danske Bank	M	DK	Y	Y	Y	Y	
13	DekaBank Deutsche GZ	M	DE	Y	Y	Y	Y	
14	Portigon	M	DE	Y	Y	Y	Y	
15	Mediobanca	M	IT	Y	Y	Y	Y	
16	SEB	M	SE	Y	Y	Y	Y	
17	Arbejdernes Landsbank	S	DK	Y	Y	Y	Y	
18	DiBa Bank	S	DK	Y	Y	Y	Y	
19	Banca Generali	S	IT	Y	Y	Y	Y	
20	FIMBank	S	MT	Y	Y	Y	Y	

Table 7: List of the banks selected only in HLEG definitions. Size: L=Large, M = Medium and S= Small.

	Bank	Size	MS	1	2	3	4	G-SIBs
				TSA+DA+ AFS	TSA+DA	$(TSA+TSL+DA+DL)/2$	$(TSA - TSL) + DA - DL $	
1	Lloyds Banking Group	L	UK	Y				
2	Rabobank Group	L	NL	Y				
3	Crédit Mutuel Group	L	FR	Y				
4	Dexia	L	BE	Y				
5	Intesa	L	IT	Y				
6	Landesbank Berlin Holding AG	M	DE	Y				
7	NORD/LB	M	DE	Y				
8	Banque Intl. Luxembourg	M	LU	Y				
9	Banque et Caisse d'Epargne	M	LU	Y				
10	Credito Emiliano SpA	S	IT	Y				
11	Aktia Plc	S	FI	Y				
12	AXA Bank Europe	S	BE	Y				
13	Banca Comerciala Carpatica SA	S	RO	Y				
14	Raiff. Landsbk Steiermark	S	AT	Y				
15	Getin Noble Bank	S	PL	Y				
16	ICICI Bank UK Plc	S	UK	Y				
17	SaarLB	S	DE	Y				

Table 8: Banks selected according to some but not all definitions (Y if selected, empty otherwise). Size: L=Large, M=Medium and S=Small.

	Bank	Size	MS	1	2	3	4	G-SIBs
				TSA+DA+ AFS	TSA+DA	(TSA+TSL+ DA + DL)/2	TSA - TSL + DA - DL	
1	Groupe BPCE	L	FR	Y	Y	Y		Y
2	ING	L	NL	Y	Y	Y		Y
3	Commerzbank	L	DE	Y	Y	Y		
4	BBVA	L	ES	Y			Y	Y
5	Belfius Banque	M	BE	Y		Y		
6	DZ Bank AG	M	DE	Y	Y	Y		
7	Landsbk Baden-Württ.	M	DE	Y	Y	Y		
8	Bayerische Landesbk	M	DE	Y		Y		
9	Monte Paschi Siena	M	IT			Y		
10	DNB ASA	M	NO			Y	Y	
11	Helaba	M	DE	Y	Y	Y		
12	Swedbank	M	SE		Y	Y		
13	Handelsbanken	M	SE			Y		
14	Standard Chartered	M	UK	Y		Y		Y
15	Spar Nord Bank A/S	S	DK		Y	Y	Y	
16	Lån & Spar Bank	S	DK		Y		Y	
17	Vordingborg Bank A/S	S	DK		Y		Y	
18	Nordfyns Bank A/S	S	DK				Y	
19	Naspa Dublin	S	IE	Y	Y		Y	
20	Banca Finnat Euramerica	S	IT	Y			Y	
21	Banca Pop di Sondrio	S	IT				Y	
22	Banca Pop di Spoleto	S	IT				Y	
23	Banca Sella Holding	S	IT				Y	
24	Istituto Centrale delle BP	S	IT				Y	
25	NIBC Bank NV	S	NL	Y		Y		
26	Handlowy w Warszawie	S	PL	Y		Y		
27	Banco Coop Español	S	ES	Y	Y		Y	

Table 9: G-SIBs.

	Bank	Size	MS	1	2	3	4	G-SIBs
				TSA+DA+AFS	TSA+DA	(TSA+TSL+DA+DL)/2	[TSA - TSL] + DA - DL	
1	BNP Paribas	L	FR	Y	Y	Y	Y	Y
2	Crédit Agricole Group	L	FR	Y	Y	Y	Y	Y
3	SocGen	L	FR	Y	Y	Y	Y	Y
4	Deutsche Bank	L	DE	Y	Y	Y	Y	Y
5	Unicredit	L	IT	Y	Y	Y	Y	Y
6	Santander	L	ES	Y	Y	Y	Y	Y
7	Barclays	L	UK	Y	Y	Y	Y	Y
8	HSBC	L	UK	Y	Y	Y	Y	Y
9	RBS	L	UK	Y	Y	Y	Y	Y
10	Nordea	L	SE	Y	Y	Y	Y	Y
11	ING	L	NL	Y	Y	Y		Y
12	Groupe BPCE	L	FR	Y	Y	Y		Y
13	BBVA	L	ES	Y			Y	Y
14	Standard Chartered	M	UK	Y		Y		Y

5. CONCLUSIONS

This report stems from the decision of the Commission Services to investigate alternative definitions of trading activities in order to address some of the questions raised during the stakeholder consultation following the HLEG report. Various definitions of trading activities have been analysed and corresponding *examination* thresholds for functional structural separation have been identified on the basis of cluster analysis.

In total three alternative definitions of trading activities have been proposed in addition to the HLEG one. In all of them the AFS assets are not considered, since this class is mainly composed of assets held for liquidity purposes, rather than for trading purposes. In particular, one definition also focuses on total volumes of trading activities, averaging the asset and liability sides, in order to capture both market and counterparty risks. Finally, another definition focuses also on net volumes of trading activities, netting assets and liability sides, to capture directional bets on market movements (market risk).

All definitions are based on publicly available balance sheet data and they have been computed considering averages over a 6-year period (2006-2011). Examination thresholds have been calibrated via a cluster analysis, aiming at identifying banks (those above the thresholds) that would be subject to functional structural separation, after a supervisory scrutiny that would determine the part of their assets to be separated.

On the basis of the results presented in the report and in the enclosed appendices the following conclusions can be drawn:

- independent of the definition of trading activities the percentage of banks selected in our sample (composed of 245 banks¹⁵⁹) is rather small in terms of individuals, varying in the range 13%-21% in terms of number and between 50% and 75% in terms of total assets, i.e. by and large between 40% and 60% of EU banking assets. Most G-SIBs are identified by all definitions
- with respect to HLEG definition, the cluster analysis suggests thresholds of 80 bn EUR for the amount of trading activities, 20% for their share. These are to a large extent in line with the thresholds proposed by the HLEG (100 bn EUR, 15%-25%).¹⁶⁰ The HLEG definition selects more banks than the others, partly due to the presence of the AFS assets (not considered in the other definitions).
- 20 banks are selected under all definitions (around 10% of the sample). These banks represent a large share of the total number of selected banks under all definition (varying roughly from 40% to 65%). They also account for almost 50% of the sample total assets.
- the definition based on gross volumes is used to have a proxy able to identify market making and proprietary trading. It shows a quite stable pattern along the years; the total number of selected banks is lower than for HLEG.

¹⁵⁹ Note that the number of banks may slightly varies across the years and across the definitions

¹⁶⁰ Fixing the threshold to 80 b€ would allow to select banks such as Lloyds and Intesa Sanpaolo respecting the clusters structure, due to the large gap existing between 50 b€ and 100b €

- the definition based on net volumes is used to identify proprietary trading only. In general the results based on this definition are slightly less stable over time with respect to the others; the total number of selected banks is lower than for HLEG.
- the use of a measure of *distance from the thresholds* would allow softening the definition of hard thresholds resulting from cluster.

APPENDIX A: DESCRIPTION OF THE SNL SAMPLE

The analysis is based on the SNL database¹⁶¹ since it allows for a detailed disaggregation of balance sheet items related to assets held for trading and it allows distinguishing derivatives for trading from derivative for hedging. This breakdown is not available in other commercial databases such as Bankscope.

However the coverage of SNL for EU countries is still not complete, since SNL was historically focused on US. This appendix presents quality checks made on the sample of banks from SNL and quantifies how much this database is relevant for European banks.

In SNL we found 244 banks that are headquartered in EU27 and have a consolidated total assets available in 2011. These banks have also total assets to GDP ratio larger than 1% in 2011. The sample accounts for 75% of the total EU banking sector¹⁶². It contains most of the 65 banks listed by European Banking Authority (EBA) in its capital exercise except Banco Espirito Santo (Portugal), Raiffeisen Bank International (Austria), and KBC Bank (Belgium). These entities are “replaced” in the sample by their holdings or by some other relevant entity of the same financial group.

Comparing the available sample with data from another data provider (Bankscope) one can observe 8 large financial institutions having total assets greater than 100 bn EUR missing in the SNL sample: NatWest, Caisse de Depots et Consignations, Sparkasse Hessen-Thuringen, BNG, Depfa, Exor, UKAR, Deutsche Pfandbriefbank.

Table I.1 reports the repartition of the SNL sample by countries. No bank is available in Czech Republic or Estonia. Even if out of EU27, DNB ASA is in the sample as part of the capital exercise of EBA.

¹⁶¹ www.SNL.com

¹⁶² Source ECB MFI Balance Sheets EU27

Table I.10: Geographical repartition of banks in SNL (total assets are given in billion EUR)

	Number of Banks	Total Assets in 2011 (bn EUR)		Number of Banks	Total Assets in 2011 (bn EUR)
BE	7	1,044	LU	3	148
BG	4	7	HU	2	35
CZ	0	0	MT	2	7
DK	28	798	NL	8	2,296
DE	56	5,937	AT	17	669
EE	0	0	PL	6	78
IE	6	442	PT	5	293
GR	5	296	RO	2	7
ES	19	3,244	SI	3	27
FR	7	6,983	SK	1	2
IT	27	2,879	FI	3	106
CY	4	80	SE	5	1,484
LV	1	2	UK	21	7,747
LT	2	2	NO	1	274

Depending on the definition of trading activities considered, the number of banks included in the calibration exercise might differ, since there are differences in the availability of the various items considered in each definition. For example AFS and trading liabilities are less populated than other items.

To get an insight in the banks which are not considered due to lack of data, Table I.2 provides the list of banks which are excluded from definition 1 (HLEG) due to lack of AFS data. The sample reduces from 245 to 185 banks.

Table I.11: 60 banks (average total assets (2006-2011) have no data for the computation of HLEG definition. These banks are located in DK, DE but also in AT, BE, and PL.

	Company Name	Assets in bn EUR		Company Name	Assets in bn EUR
BE	Argenta Bank	32	DE	Kreissparkasse Heilbronn	7
BE	Landbouwkrediet NV	11	DE	Kreissparkasse Köln	24
DK	Djurslands Bank	1	DE	Kreissparkasse Ludwigsburg	9
DK	DLR Kredit A/S	18	DE	Kreissparkasse Waiblingen	7
DK	FIH Erhvervsbank A/S	15	DE	L-Bank Baden-Württemberg	60
DK	Hvidbjerg Bank A/S	0	DE	LBS Baden-Württemberg	10
DK	Jyske Bank	30	DE	LBS Norddeutsche	8
DK	Kreditbanken A/S	0	DE	LBS Westdeutsche	10
DK	Lollands Bank A/S	0	DE	MBS in Potsdam	9
DK	Nordjyske Bank A/S	1	DE	MERKUR BANK KGaA	1
DK	Nykredit Realkredit	168	DE	Münchener Hypothekenbank	35
DK	Østjysk Bank A/S	1	DE	Nassauische Sparkasse	13
DK	Ringkjøbing Landbobank A/S	2	DE	National-Bank AG	4
DK	Salling Bank A/S	0	DE	Sparda-Bank Baden-Württemberg	11
DK	Skjern Bank A/S	1	DE	Sparda-Bank Südwest eG	8
DK	Sparekassen Faaborg A/S	1	DE	Sparkasse Essen	8
DK	Sparekassen Himmerland	1	DE	Sparkasse Hannover	13
DK	Svendborg Sparekasse	0	DE	Sparkasse Herford	5
DK	Sydbank	19	DE	Sparkasse Krefeld	8
DK	Totalbanken A/S	0	DE	Sparkasse Leipzig	9
DK	Vestfyns Bank	0	DE	Sparkasse Münsterland Ost	8
DK	Vestjysk Bank A/S	4	DE	Sparkasse Nürnberg	9
DE	Bausparkasse Mainz	2	DE	Sparkasse Saarbrücken	6
DE	Bayerische Landesbausparkasse	10	DE	Stadtsparkasse Düsseldorf	12
DE	Berliner Volksbank eG	10	DE	Stadtsparkasse München	15
DE	Deutsche Apotheker	38	DE	UmweltBank AG	1
DE	Die Sparkasse Bremen AG	11	DE	Wüstenrot Bank AG	15
DE	Hamburger Sparkasse	36	AT	Raiffeisen Bausparkasse GmbH	9
DE	Kreissparkasse Biberach	6	AT	Raiffeisen-Landesbank Tirol AG	6
DE	Kreissparkasse Göppingen	5	PL	Getin Holding SA	8

APPENDIX B: ADDITIONAL GRAPHS ON SELECTED BANKS

Figure II.1 shows the share of trading activities component for banks selected only under HLEG definition. It shows that their selection is mainly due to the size of their AFS (blue bars). Figure II.2 plots the total amount of trading activities for these banks. The order is given by their total assets.

Figure II.12: Breakdown of HLEG definition 1 trading activities, ordered by descending bank's total assets.

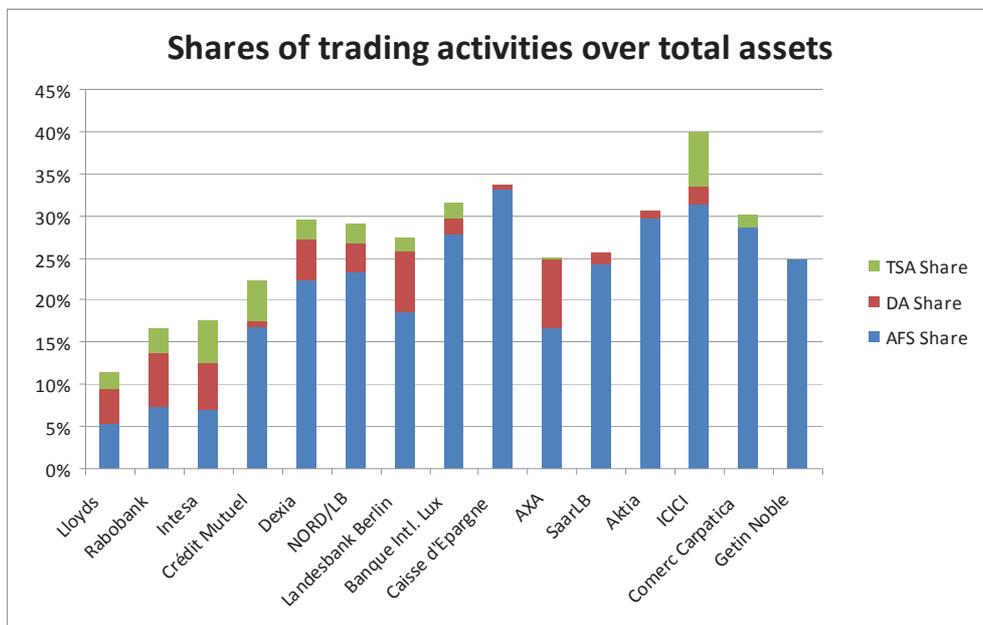
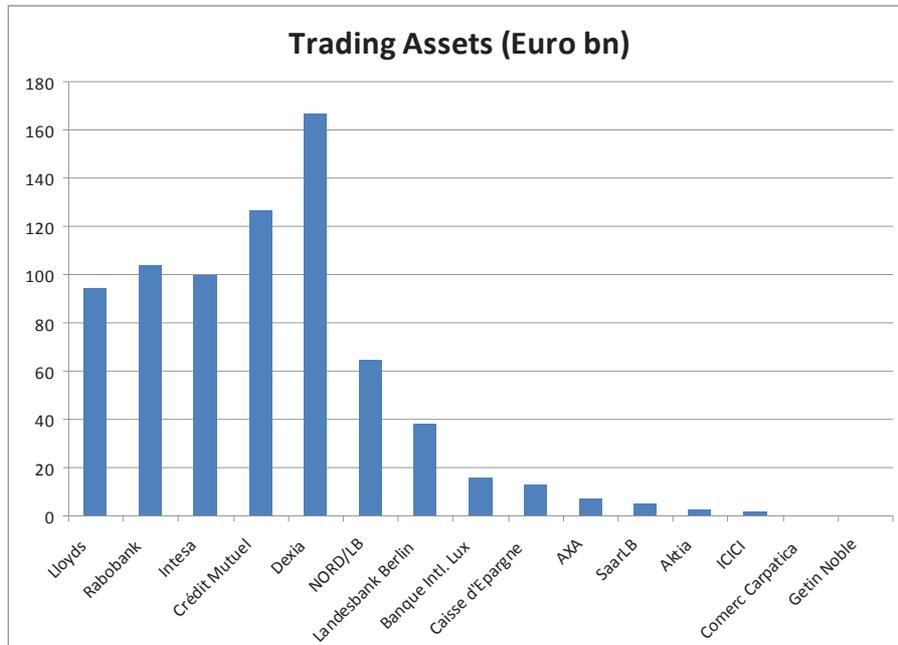


Figure II.2: Size of trading activities (HLEG definition 1) ordered by descending bank's total assets.



APPENDIX C: STABILITY OVER THE TIME WITH RESPECT TO THE PROPOSED THRESHOLDS

Setting hard thresholds could raise problems with respect to the stability of the set of selected banks over the years. Being able to identify those banks which are close to the thresholds (above or below) may help the supervisor to monitor borderline situations. For instance banks closest to the thresholds could discretionally be added by the supervisor to the list of selected banks.

This appendix presents an analysis investigating the stability of selected sample of banks across the years focusing only on those which are “close” to the thresholds. We basically compute the geometric distance of each bank from the two thresholds, and we focus on the 10% banks with lowest distances (above or below the thresholds).¹⁶³

It is worth mentioning that banks which are close to the thresholds considering the six year average, tend to be close to thresholds also for the three year moving averages (see Table III.1-2-3-4). We also observe that many of the banks close to the thresholds are medium sized banks (notably BBVA, which has been recently added to the list of the G-SIBs) that the supervisory authority might want to monitor.

We start from HLEG and we present in Figure III.1 the scatter plots relative to the six year average and also to the three year moving periods. The straight lines in the graphs represent the thresholds chosen under this definition (80 bn EUR in absolute term and 20% for the share).¹⁶⁴

¹⁶³ For each bank we consider the z-score of its absolute and relative trading activities. The z-score is a standardized measure which allows comparing variables with different scales. For each rescaled point we compute its geometric distance from the two rescaled thresholds.

¹⁶⁴ We assume that these thresholds are valid for all our five time frames, and we track the 10% of the banks having the smallest distances over these five average periods.

Figure III.13: 10% banks (red circles) with minimal distance from the thresholds according to HLEG definition 1.

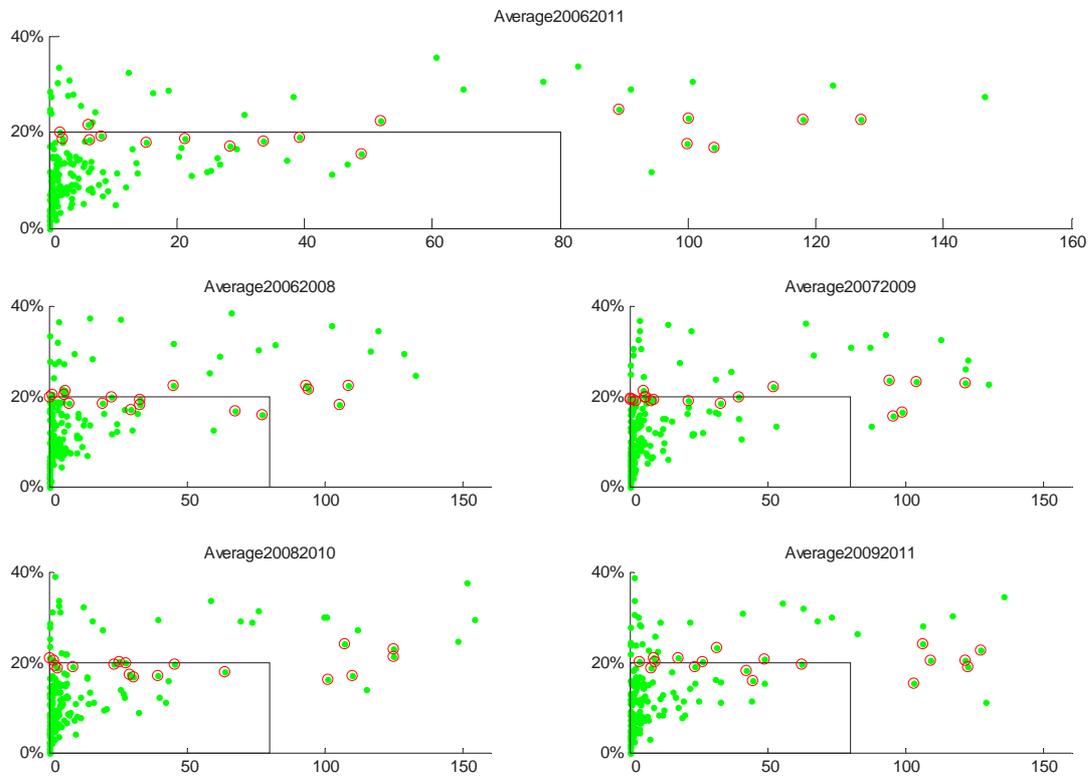


Table III.1 Banks with minimal distance from the thresholds according to Definition 1 appearing in the 2006-2011 average and in at least three other average periods. 1=banks included in the 10% set closest to the thresholds; 0=banks not included in the 10% set closest.

	Average 2006-2011	Average 2006-2008	Average 2007-2009	Average 2008-2010	Average 2009-2011
Allied Irish Banks	1	1	1	1	0
Bayerische Landesbank	1	0	1	1	1
BBVA	1	1	1	1	1
BPI	1	1	1	1	1
CGD	1	1	1	1	1
Danske Bank	1	1	1	1	1
HSH Nordbank	1	1	1	1	0
Intesa	1	1	1	1	1
Monte dei Paschi Siena	1	1	0	1	1
Rabobank Group	1	1	1	1	1
SEB	1	0	1	1	1

Table III.2: Banks with minimal distance from the thresholds according to Definition 2 appearing in the 2006-2011 average and in at least three other average periods. 1=banks included in the 10% set closest to the thresholds; 0=banks not included in the 10% set closest.

	Average 2006-2011	Average 2006-2008	Average 2007-2009	Average 2008-2010	Average 2009-2011
Bayerische Landesbk	1	1	1	1	1
BBVA	1	1	1	1	1
Belfius Banque	1	0	1	1	1
Groupe BPCE	1	0	1	1	1
Handlowy Warszawie	1	1	1	1	1
Intesa	1	1	1	1	1
KBC	1	1	1	1	1
Landesbank BW	1	1	1	1	1
Monte Paschi Siena	1	1	1	1	1
Rabobank	1	1	1	1	1
SEB	1	1	1	1	1
Standard Chartered	1	1	1	1	1
Swedbank	1	1	1	1	1

Table III.3: Banks with minimal distance from the thresholds according to Definition 3 appearing in the 2006-2011 average and in at least three other average periods. 1=banks included in the 10% set closest to the thresholds; 0=banks not included in the 10% set closest.

	Average 2006-2011	Average 2006-2008	Average 2007-2009	Average 2008-2010	Average 2009-2011
Bayerische Landesbk	1	1	1	1	1
BBVA	1	1	1	1	1
Belfius Banque	1	1	1	1	1
HSH Nordbank	1	1	1	1	1
Intesa	1	1	1	1	1
Landesbank Berlin	1	0	1	1	1
Landesbank BW	1	1	1	1	0
Monte Paschi Siena	1	1	1	1	1
NIBC Bank NV	1	0	1	1	1
Rabobank Group	1	1	1	1	1
SEB	1	0	1	1	1
Spar Nord Bank A/S	1	1	1	1	0
Standard Chartered	1	1	0	1	1

Table III.4 Banks with minimal distance from the thresholds according to Definition 4 appearing in the 2006-2011 average and in at least three other average periods. 1=banks included in the 10% set closest to the thresholds; 0=banks not included in the 10% set closest.

	Average 2006-2011	Average 2006-2008	Average 2007-2009	Average 2008-2010	Average 2009-2011
Banco Popolare	1	1	1	1	1
BBVA	1	1	1	1	1
Commerzbank	1	1	1	1	1
Danske Bank	1	1	1	1	1
DZ Bank AG	1	1	1	1	1
Intesa	1	1	1	1	1
KBC	1	0	1	1	1
Landesbank BW	1	1	1	1	1
Nordea	1	1	1	1	1
Portigon AG	1	1	1	1	1
SEB	1	1	1	1	1

Appendix D: Definitions of trading activities with EMIR/FTT corrections

IV.1 Additional definitions and corresponding thresholds

This appendix describes additional definitions developed by Commission Services to take into account some other ongoing Commission legislative initiatives that might impact on the volumes of trading activities, notably EMIR (European Market Infrastructure Regulation), which will promote netting of derivative through CCPs, and FTT (Financial Transaction Tax), which will potentially reduce the size of traded derivatives.

To account for the combined effects of these two initiatives, we assume that only a fraction of the derivatives exposure should be added to the trading estimate.¹⁶⁵¹⁶⁶ The additional definitions that we examine are shown in Table IV.1. We repeat for these additional definitions the same analysis presented in the main text. Results are presented in the following tables and graphs.

Table IV.1: Additional definitions of trading activities to account for EMIR/FTT.

	Definition	Description
2b	$TSA + 35\% DA$	Exclude AFS + EMIR/FTT effect
3b	$(TSA + TSL + 35\% (DA + DL))/2$	Exclude AFS + Gross volumes of securities + EMIR/FTT effect
4b	$ TSA - TSL + 35\% DA - DL $	Exclude AFS + Net volumes + EMIR/FTT effect

¹⁶⁵ To estimate the effect of EMIR, we assume a similar netting reduction of Derivatives Assets as the ones reported on the balance sheet of US commercial banks. The Office of the Comptroller of the Currency (OCC) reported in “OCC’s Quarterly Report on Bank Trading and Derivatives Activities” legally enforceable netting agreements allowed US (commercial) banks to reduce the gross positive fair value of derivatives by around 90%. Using precaution, we estimate that 80% of the derivatives assets will netted out of the balance sheet. Of these netted derivatives, 80% will be cleared through Clearing House due to EMIR. Combining both figure, $80\% * 80\% = 64\%$ will be centrally cleared. Around 35% ($100\% - 64\%$) are expected to remain on the balance sheet. For the FTT initiative we assume that there will be no impact on the securities and a moderate impact on the volumes of derivatives.

Source: Financial Stability Paper http://www.bankofengland.co.uk/publications/Pages/fsr/fs_paper18.aspx

¹⁶⁶ Sensitivity of results to the choice of the parameters reducing the derivative size is discussed in section IV.2 of this annex.

Table IV.2: Proposed thresholds for definitions accounting for EMIR/FTT based on cluster analysis.

	Definition	Cluster-based thresholds		Selected banks	
		Trading Activities (bn EUR)	Share of Trading Activities (% Total Assets)	Number	Share of the sample
2b	TSA + 35%DA	50	10%	36	15%
3b	$(TSA + TSL + 35\%(DA+DL))/2$	50	8%	34	14%
4b	$ TSA - TSL + 35\% DA - DL $	30	8%	31	13%

Table IV.3: HLEG equivalent thresholds for definitions of trading activities to account for EMIR/FTT.

	Definition	HLEG equivalent thresholds		Selected banks	
		Trading Activities (bn EUR)	Share of Trading Activities (% Total Assets)	Number	Share of the sample
2b	TSA + 35%DA	53	10%	36	15%
3b	$(TSA + TSL + 35\%(DA+DL))/2$	49	8%	34	14%
4b	$ TSA - TSL + 35\% DA - DL $	36	8%	25	10%

Figure IV.1: Clusters for definition 2b (HLEG without AFS and including EMIR/FTT effect)

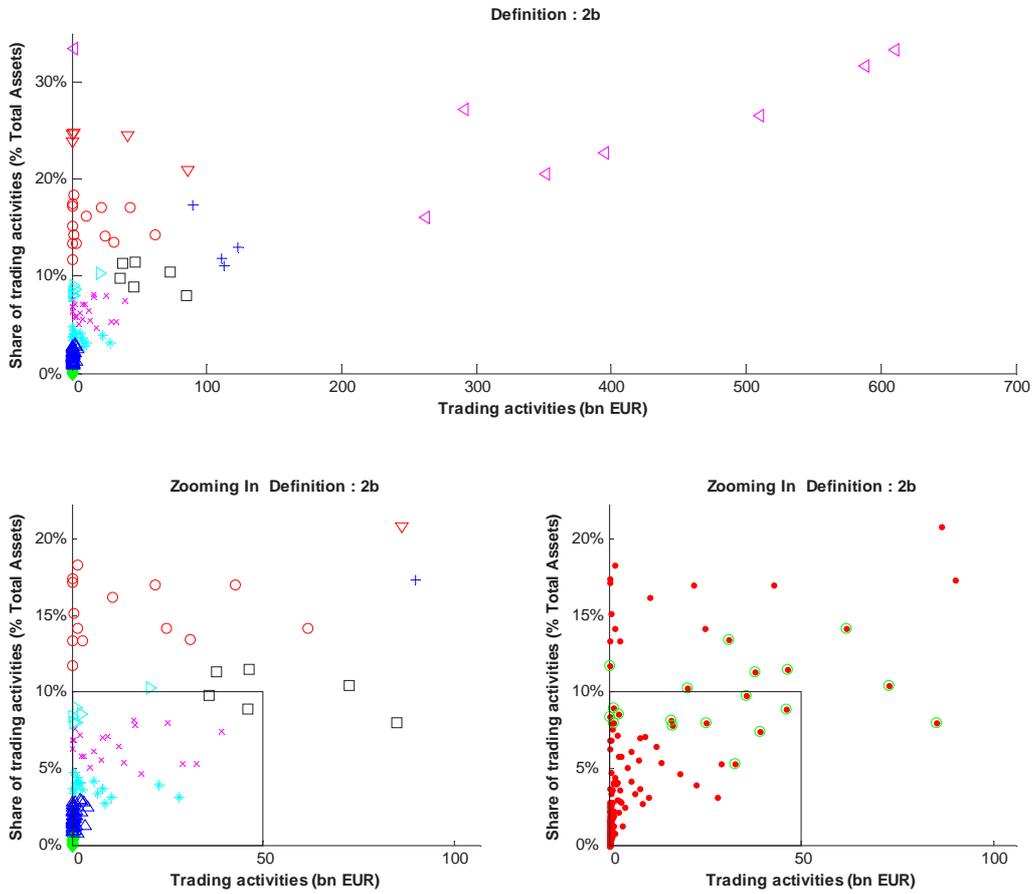


Figure IV.2: Clusters for definition 3b (volumes without AFS and including EMIR/FTT effect). Note: We note that set of 4 banks are circled in Figure 13 (Deka bank, Portigon, DNB ASA, Swedbank). These banks are characterized by a relatively high share of trading activities

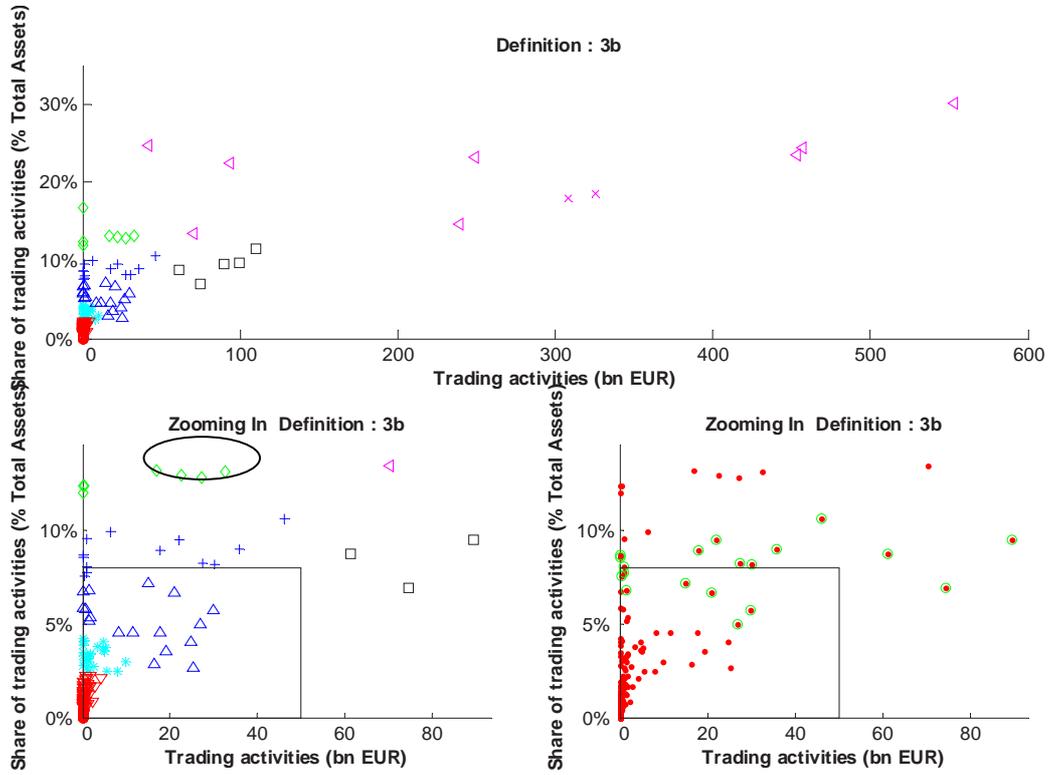
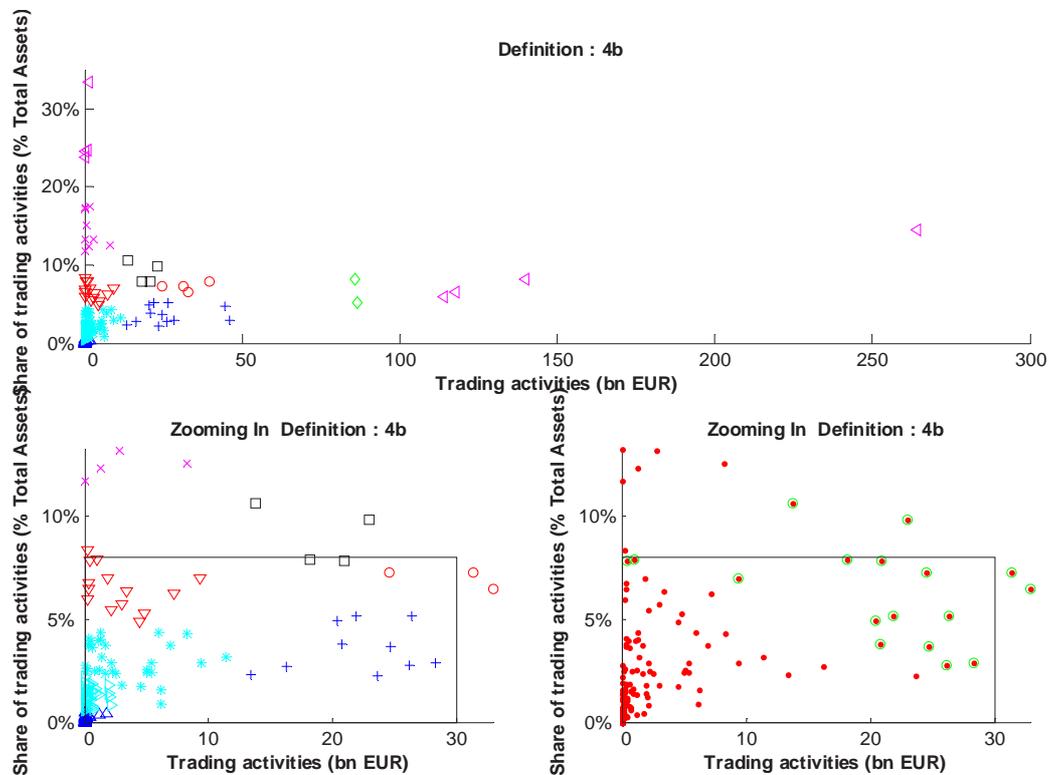


Figure IV.3: Clusters for definition 4b (net volumes without AFS and including EMIR/FTT effect).



Comparing the banks selected through the all 7 definitions we found that:

- The 20 banks systematically selected in the 4 definitions without EMIR/FTT correction (main text) would be also proposed for structural separation using the definitions corrected for EMIR/FTT reforms, with the exception of KBC and Santander which are not selected by definition 4b.
- None of the banks that were never selected by any definition 1, 2, 3 or 4 is selected by any of these additional new definitions.
- G-SIBs are always selected by the definitions with EMIR/FTT correction, except Santander under definition 4b.

Figures IV-4-IV-6 details on the differences between the selected banks with and without EMIR/FTT correction.

Figure IV.4: Comparing definition 2 and 2b.

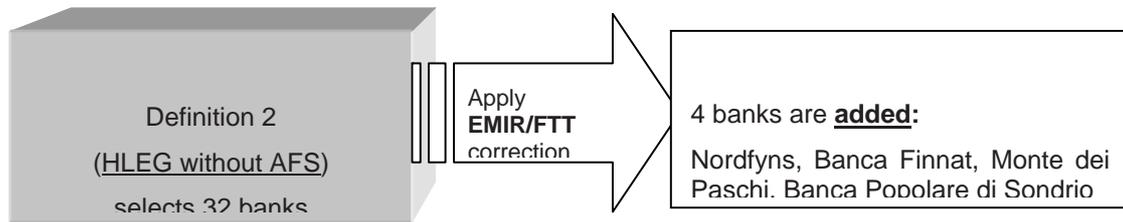


Figure IV.5: Comparing definition 3 and 3b.

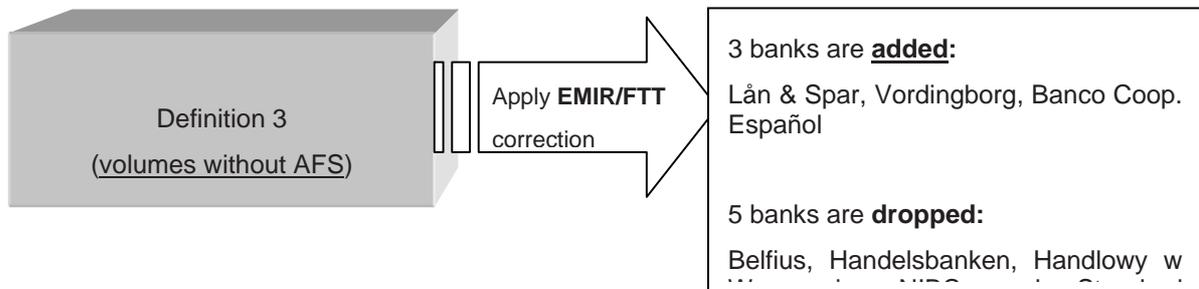
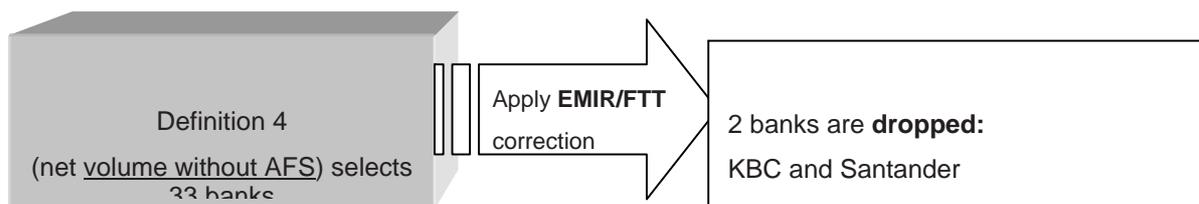


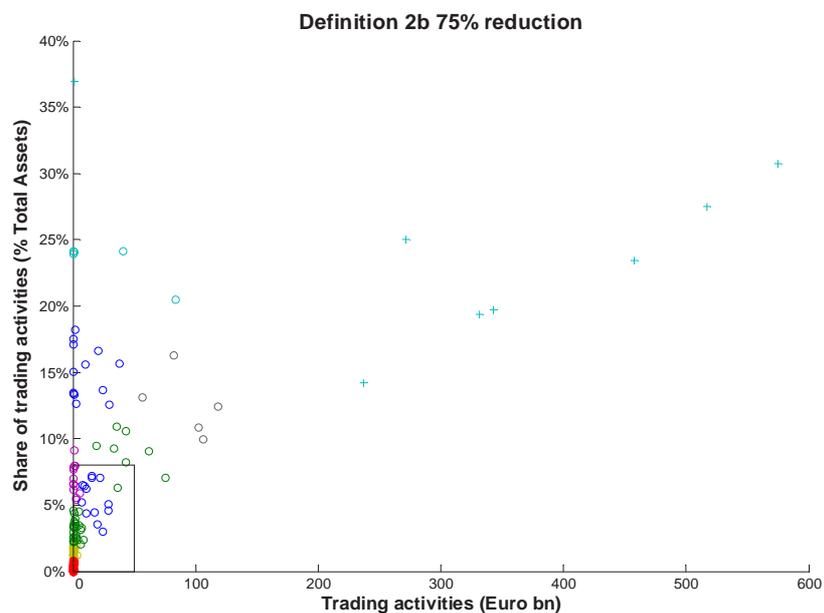
Figure IV.6: Comparing definition 4 and 4b.



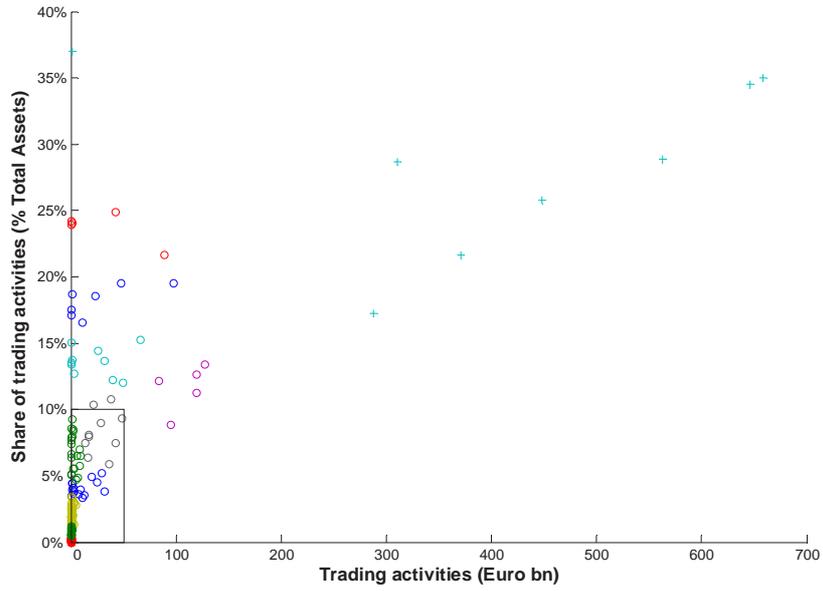
IV.2 SENSITIVITY TO THE PARAMETER CAPTURING EMIR/FTT EFFECTS FOR DEFINITIONS 2B AND 3B

This section describes the sensitivity of the thresholds to the parameter chosen to introduce the effect of EMIR/FTT. We present the results obtained, for definition 2b (HLEG, no AFS and EMIR/FTT) and definition 3b (volumes, no AFS and EMIR/FTT), using two different correction coefficients: 45% and 25% instead of 35%.

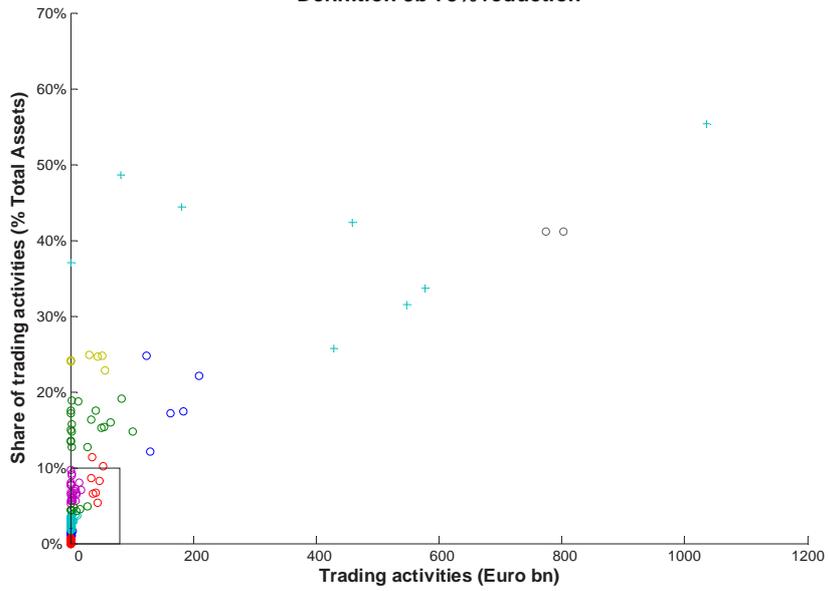
The following graphs show cluster analysis results varying correction coefficients, while Table IV.4 shows the variability of the thresholds.



Definition 2b 55% reduction



Definition 3b 75% reduction



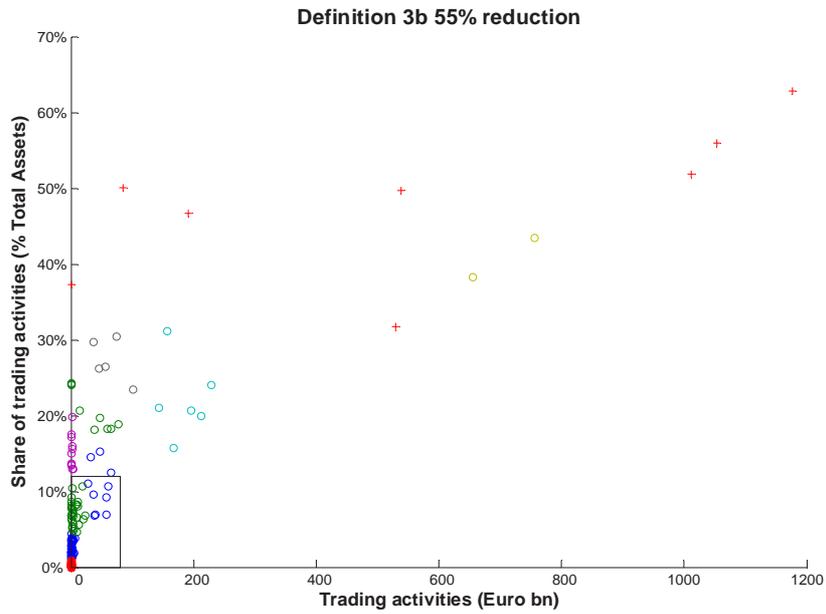


Table IV.4: Sensitivity of the thresholds to the EMIR/FTT correction parameter for definitions 2b and 3b.

Definition 2b	35% (baseline)	25%	45%
Threshold Trading Activities (bn EUR)	50	50	50
Threshold Share Trading Activities	10%	8%	10%
Definition 3b	35%	25%	45%
Threshold Trading Activities (bn EUR)	80	80	80
Threshold Share Trading Activities	10%	10%	12%

With respect to the list of banks selected, using the new correction coefficients, the differences with respect to the baseline scenario (35% correction) are:

- For definition 2b
 - o for 25% correction coefficient Raiffeisen-Landesbank Steiermark, Bayerische Landesbank and BBVA (G-SIB bank) are **added**
 - o for 45% correction coefficient only Bayerische Landesbank is **added**
- For definition 3b
 - o for 25% correction coefficient Credito Emiliano, NIBC Bank NV and Bank Handlowy w Warszawie SA are **not selected** and there is no new entry
 - o for 45% correction coefficient only Credito Emiliano is **not selected** while Intesa, Rabobank Group and Lloyds Banking Group are **added**

We conclude by pointing out the the possible effects of EMIR/FTT need to be further investigated whenever more accurate data on their impact would be available.

APPENDIX E: STRUCTURAL INDICATOR ANALYSIS

This appendix presents some statistics on a set of structural indicators that can be computed using balance sheet data. The aim is to show banks in the sample, apportioned into groups depending on their distance from the thresholds behave in terms of such indicators. We focus on the 4 definitions presented in the main text.

For each definition banks in the sample are assigned to four different classes, based on their distance from the thresholds¹⁶⁷. In order to differentiate between selected and non-selected banks the latter are assigned a "negative distance". The four classes are the following:

- ‘**IN Top**’ banks, i.e. 10% of banks in the sample with largest positive distance from the thresholds (i.e. far away from the thresholds and selected).
- 2 groups are identified around the thresholds:
 - 1 slightly above the thresholds’ values is called ‘**IN Borderline**’ and contains the remaining banks proposed for structural reforms but not in the top 10%.
 - 1 slightly below the thresholds’ values is called ‘**OUT Borderline**’ and contains the banks not proposed for this reform¹⁶⁸.

Both groups are small in size (less than ten banking entities) and accounts for roughly 5-10% of the sample. These groups are key elements to assess if the calibrated thresholds for the choice of the listing: they need to make sense and be stable over time.

- ‘**OUT Bottom**’ banks, the rest of the sample, i.e. banks not selected and most distant from the thresholds.

For each definition, the following structural indicators are computed for the four classes above

- 1) Share of RWA for market risk on total RWA
- 2) Number of branches (complexity)
- 3) Non loans assets on total assets
- 4) Adjusted IFRS Tier1 leverage ratio

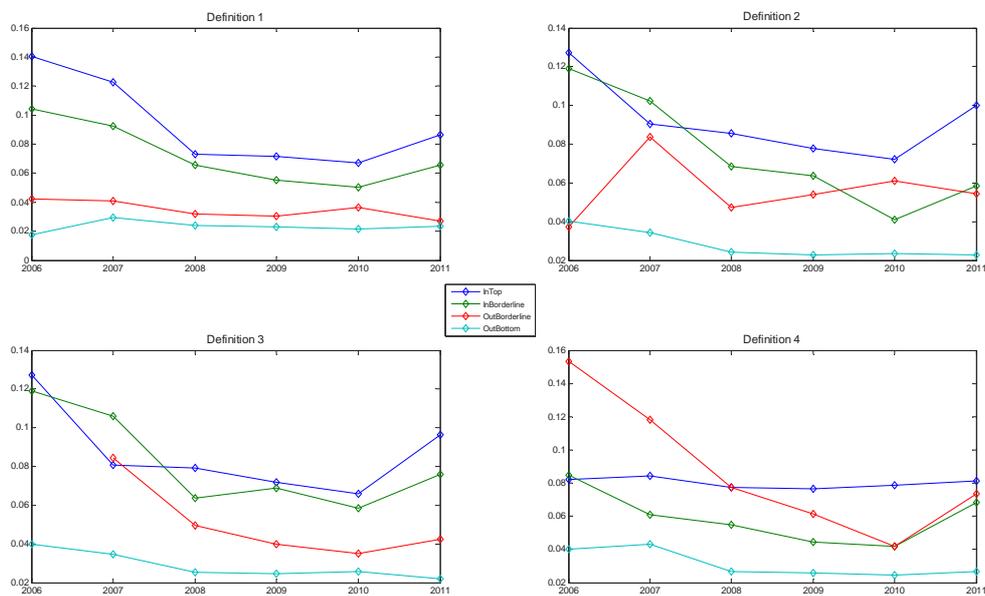
¹⁶⁷ The distance is the same as the one computed in Annex IV and it is computed on the average period 2006-2011. With respect to the analysis presented in Annex IV, the banks close to the thresholds are kept into two distinct classes in order to assess if there exist differences among them in terms of structural indicators or if instead they have very similar behaviour.

¹⁶⁸ The number of banks in OUT Borderline is by choice the same number of banks in IN Borderline’

Share of RWA for market risk on total RWA

The following graphs (VI.1-VI.4) represent the evolution over 2008-2011 of the share of RWA for market risk on total RWA for the various groups of banks defined above under the various definitions.

Figure V.14: RWA shares over total assets median values for the four groups with respect to definition 1-4 over the years

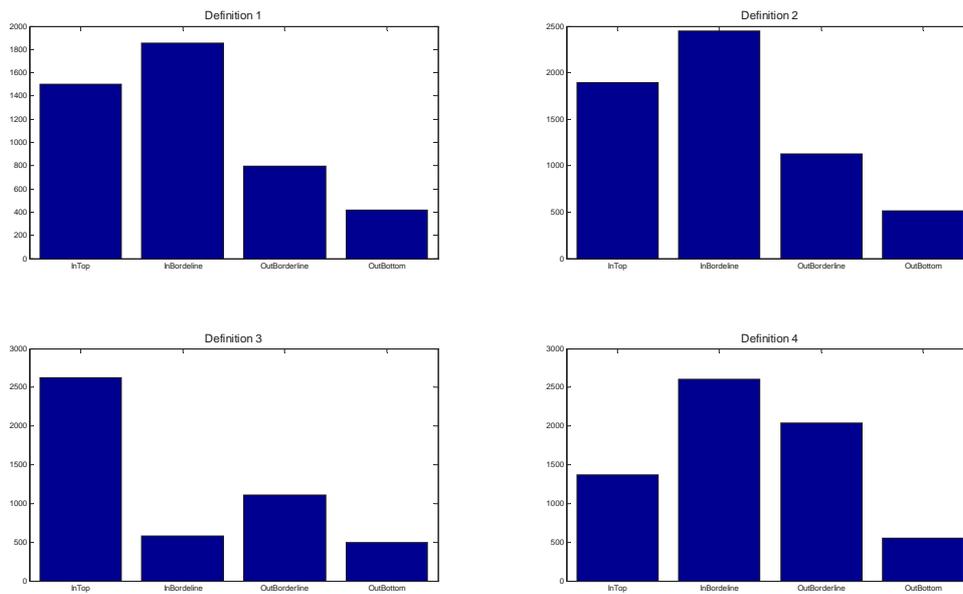


One can observe that the share of RWA for market risk is higher for selected banks. In particular banks that are “IN Top” are systematically more exposed to market risk with respect to definition 1 and, in this case, there is also a clear distinction between “IN Borderline” and “OUT Borderline”. The situation is less clear for the other three definitions where only ‘OUT Bottom’ banks result to be systematically distinguishable.

Complexity

The number of branches is considered in order to proxy the complexity of banking groups. Complexity is here understood as a factor of risk (in case of failure for example). The following graph represent the number of branches grouped by distance from the threshold for each definition.

Figure V.5:Complexity calculated as the number of branches

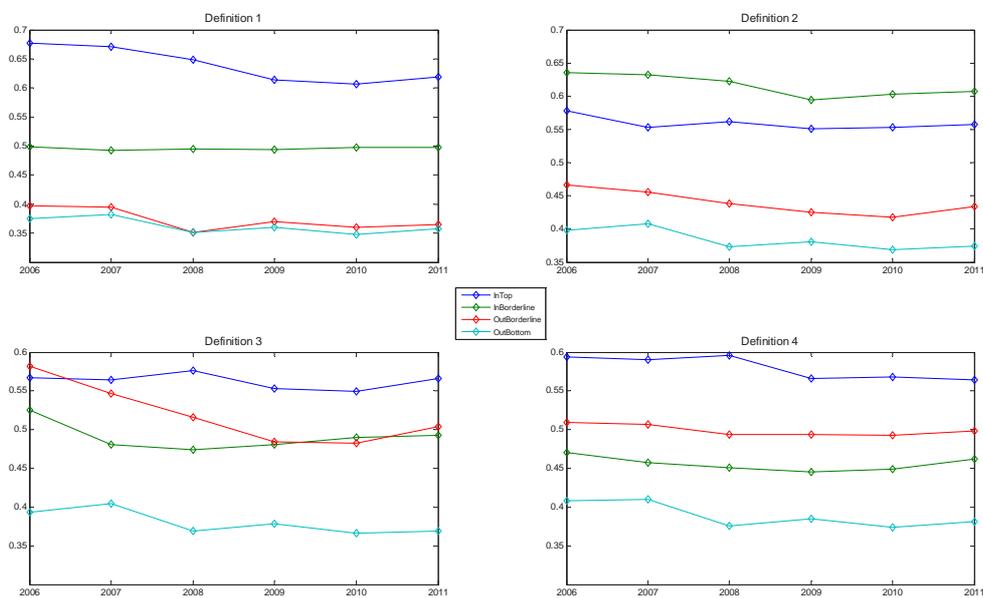


We observe that banks that are above the threshold tend to have more branches except for definition 4 (netting) which excludes some banks with significant number of branches.

Share of non-loans on total assets

The share of non-loans assets measures non-retail banking activities. The following graphs represent the evolution the share of non-loans assets (in %) grouped by distance from the thresholds.

Figure V.9: RWA shares of non-loans over total assets median values for the four groups with respect to definition 1-4 over the years



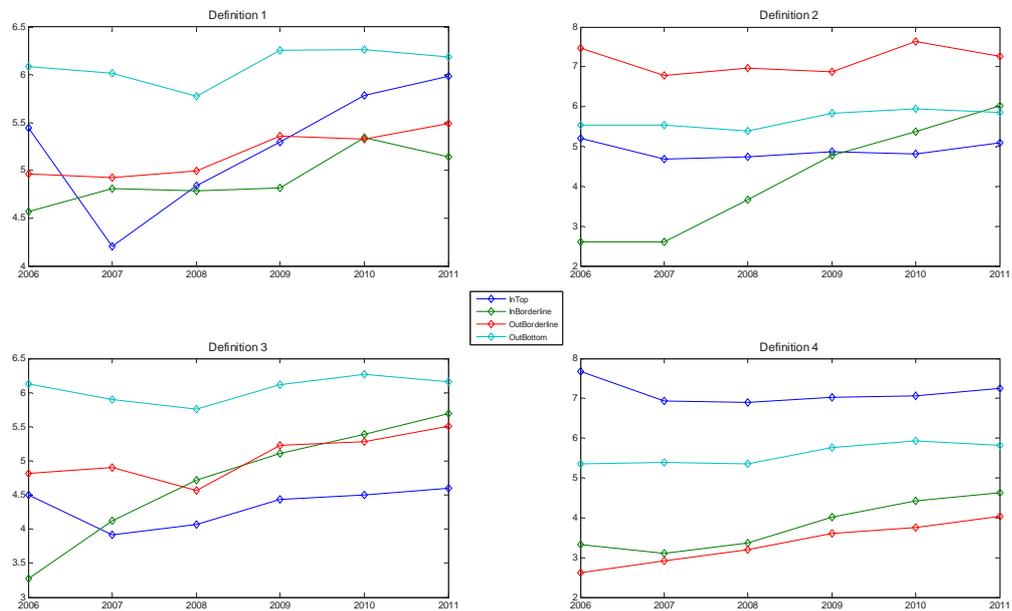
We expect higher values of this ratio for banks doing a lot of trading activities, thus for banks of groups 'IN Top' and 'IN Borderline'. This is the case for definition 1. For definition 2 we have a switch between IN Top and IN Borderline while for definitions 3 and 4 Borderline groups are not clearly separated.

Adjusted IFRS tier 1 leverage ratio

Adjusted IFRS tier 1 leverage ratio corresponds to a simple indicator which is comparable between banks and transparent in its computation for measuring the risk of the banking entities. This ratio is computed by SNL and corresponds to tier 1 capital divided by tangible assets less derivatives liabilities in the attempt to replicate U.S. GAAP standards by roughly netting the derivatives assets against liabilities. The ratio is expected to be at least 4-5% for the banks that are well capitalized.

The following graphs represent the evolution IFRS tier 1 leverage ratio grouped by distance from the thresholds.

FigureV.13: Adjusted IFRS tier 1 leverage ratio median values for the four groups with respect to definition 1-4 over the years



We can observe that, based on this definition,

- ‘OUT Bottom’ group is consistently showing ratio above 5% which indicates low risk.
- Definition 3 show lower values of IFRS tier 1 leverage Ratio for the “IN Top” group while with respect we have a complete different picture.

We conclude this annex highlighting the following:

- “structural” indicators distinguish the group of banks further above the threshold from the others.
- The indicator share of market risk on RWA shows a greater capacity in separating the four groups (IN Top, IN borderline, OUT Borderline and OUT Bottom).
- We tackle complexity of the financial groups considering the number of branches. There is also an increase of complexity within our four groups except for definition 3 (volume).

APPENDIX F: CLUSTER METHODOLOGY FOR THRESHOLDS' CALIBRATION

This appendix briefly presents the main features of the clustering technique used for thresholds identification.

K-means

Statistical clustering is used to assign banks into groups (called clusters) so that banks in the same cluster are “more similar” respectively to the measures TradAct and ShareTradAct than to those in other clusters. The algorithm requires choosing the number of clusters to be built and then it searches for the centroids minimizing the dispersion of points within each cluster.

Clusters are built starting from random centroids in the two dimensional space identified by the indicators and moving the centroid positions so to minimize dispersion among the clusters. In order to assure that the final positions of the clusters do not correspond to a local minimum of the measure of dispersion we proceed as it follows:

T-clustering

For our data such models are insufficient, because they do not account for the presence of outliers, which may occur as noise-like structures or as a small tight group of observations in specific areas of the space. In both cases, the presence of outliers can considerably bias the estimation of the centroids and shape (covariance structure) of the groups and seriously affect the final clustering.

For this reason, we opted for a robust counterpart of the Normal Mixture Modeling known in the literature as Robust Trimmed Clustering TCLUST,

The robustness capacity of TCLUST comes from the trimming approach, i.e. the possibility to leave a proportion of observations, hopefully the most outlying ones, unassigned.

The TCLUST approach is defined through the search of k centers and k shape matrices solving a double minimization problem.

The method has been implemented in Matlab in the framework of the FSDA project

ANNEX A9: SUMMARY OF THE MAIN FINDINGS IN LITERATURE ON ECONOMIES OF SCALE AND SCOPE IN THE BANKING SECTOR

1. INTRODUCTION

Banks have been rapidly increasing in size and scope over the two decades leading up to the financial crisis. For example, Wheelock and Wilson (2011) estimate a five-fold increase in the average size of US banks in terms of inflation-adjusted total assets in the period 1984-2008. Also, many banks diversified and expanded their activities, contrary to non-financial firms, in the years leading up to the financial crisis (Elsas et al. (2009)). There is a significant body of literature on economies of scale and scope trying to explain the reasons why banks have chosen to expand their size and range of activities.

As structural reform sets limits on the activities of banks, this literature contributes to the understanding of efficiency benefits that would be lost as a result of the new requirements. Understanding whether there are efficiency gains from scale and scope, and if so, to what extent, until what level, and for which activities, serves as an important element for this impact assessment for structural reform. Structural reform may interfere with the extent to which banks' activities experience economies or diseconomies of scale and scope, as some options may impose full separation of certain activities. Limits on the organizational complexity and diversification of large financial institutions may have important implications, not only for risks and market valuation of large financial firms, but also for corporations, households and other financial institutions through the supply of financial services, the sources of credit available to borrowers, and the allocative efficiency of capital markets.

There are three critical questions on the structural reform proposal: which banks are subject to structural reform, which activities will need to be separated, and what will be the strength of this separation requirement. These questions are linked with the question of economies of scale and scope. The first question, which banks are subject to structural reform, relates to the literature on scale. Since only relatively large banks are likely to be affected by structural reforms proposals, one needs to assess whether, in particular, economies of scale exist for these levels of assets, or if they are exhausted past a certain size. The second question is directly linked to the diversification benefits and synergies between different bank activities. If there are no real (net) synergies, then the fact that banks engage in both types of activity may be interpreted as resulting from regulatory distortions, such as implicit government subsidies. The third question, on the strength of separation, relates to whether any potential efficiencies of scale and scope will be affected given the strength of separation requirements, and to what extent. Except for the case of full separation, other options impose specific legal, economic, and operational restrictions on deposit-taking entities, but allow banks to continue to offer a broad spectrum of services and obtain any related benefits.

The evidence on economies of scale and scope are ambiguous. Studies by the industry (IIF (2010), the Clearing House, (2011)) find significant economies of scale and scope, arguing that larger and more diversified banks are in a position to realise synergies, and therefore promote safer and more stable banks. As a result, structural reform would be detrimental not only for the bank's shareholders, but also for society. Academic studies, however, are more cautious in their conclusions concerning the existence of economies of scale and, in particular, scope. There is no consensus on the optimal size of banks, and there is no evidence

that they exist for high levels of bank assets. Similarly, on economies of scope, while there is some evidence that there are benefits from loan and geographic diversification, the evidence for other activities is mixed, and there is a large body of literature suggesting that product diversification has detrimental effects (diseconomies of scope) that outweigh any benefits.

This Annex provides a summary of the main findings of the literature on economies of scale and scope in the banking sector. Section 2 discusses economies of scale and section 3 economies of scope. Section 4 discusses the impact of structural reform requirements on these (potential) efficiencies, and Section 5 concludes.

2. ECONOMIES OF SCALE

A firm is said to be operating with increasing returns to scale if it can lower average cost of production by increasing its size. There are several sources of economies of scale. Firstly, economies of scale may arise as larger banks would benefit from spreading overhead costs (reducing unit operating costs). Secondly, economies of scale may be the result of better diversification, as large banks are more likely to achieve wider scope in multiple activities, while at the same time maintaining scale in an individual activity. Similarly, banks might enjoy economies of scale from the diversification of risk obtained from a larger portfolio of loans and a larger base of deposits (i.e. increased ability to better match assets and liabilities due to scale).

The most direct source of economies of scale arises from spreading overhead costs, in particular those associated with information technology. Given that fixed costs are not very significant for some banking activities, economies/dis-economies of scale are unlikely to affect all types of activities in the same way. Activities with high fixed costs include payment systems, market infrastructure, and technology. The Liikanen report (2012) considers scale economies to be more prominent in payment and clearing services (due to the importance of fixed costs) compared to securities underwriting (which requires a more individual assessment of the relevant, individual deal). Also, Humphrey (2009) finds evidence of strong economies of scale for certain traditional banking services, such as the provision and processing of payment transactions. By observing the market structure in certain activities, Gambacorta and van Rixtel (2013) claim that scale (however not necessarily scale economies) is a defining characteristic in banks' capital market activities, as evidenced by the large share of the top 3 players in total trading volumes for cash equities, fixed income, FX, structured products, and listed derivatives.

On the other hand, there are several adverse effects of larger scale. Firstly, there are concerns that as banks get larger their market power increases, and thereby the likelihood that they would abuse their market position becomes greater. Secondly, larger banks may imply larger risks for a country's public finances as they are more likely to benefit from TBTF subsidies. Thirdly, consolidation may lead to credit availability composition effects as smaller banks tend to have stronger relationships with smaller firms. Also, consolidation may be driven by managerial benefits, which increase with a bank's size.

a. ECONOMIES OF SCALE IN EMPIRICAL STUDIES

The estimates on the significance of economies of scale vary significantly. At one extreme, there are some industry studies that claim significant economies of scale. For example, a study by the Clearing House (2011), puts the estimate of economies of scale to around USD

25 to 45 billion annually in the US, by comparing the actual costs of the banks to the costs in a (hypothetical) system under which no bank would be larger than USD 50 billion in assets. They find that the largest benefits are in payment (USD 10-20 billion) and capital markets (trade processing USD 5-15 billion). This study however, is based on a static comparison between institutions without controlling for any underlying differences of the banks.

The results of academic studies are ambiguous on what is the optimal size of banks and in particular on whether there are economies of scale at high levels of bank assets. Early studies have difficulties in establishing significant and substantial economies of scale, at relatively moderate levels of banks size (USD 100 billion). Some recent studies even though provide evidence of economies of scale at high levels of assets they do not show that these dominate the diseconomies of scale (such as higher risk-taking) and do not control for the impact of implicit subsidies. Once implicit subsidies are accounted for, diseconomies of scale arise at relatively moderate levels of bank size. As structural reform would only apply to very large banks, the pertinent question for assessing the impact of the structural reform proposal is whether economies of scale get exhausted, and if so, at what level of bank size as for example it is unlikely that banks in excess of this threshold will be subject to structural reform requirements (see Annex A8 for the discussion on thresholds).

Empirical literature typically explores the cross-sectional efficiency of banks of different sizes at a given point in time. This is achieved by deriving a minimum cost function after first calculating input prices. Then, by applying this to bank data, scale economies are computed from the fitted cost function. An alternative method is to look into the time series efficiency of banks on either side of a bank merger.

b. CROSS SECTIONAL DATA

Early empirical academic analysis based on cross-sectional data has found limited evidence of scale economies which only peak at relatively low levels of assets of USD 10-100 million (see Saunders (1996) and Berger and Mester (1997)). However, more recent work on cross-sectional efficiency based on more recent data and improved methodology find stronger evidence of economies of scale. Wheelock and Wilson (2011), for example, consider that there are both methodological and structural reasons that early work could not detect economies of scale at high levels of assets. Firstly, they consider that the empirical methods used for estimating the cost function use models that do not capture key features of bank production.¹⁶⁹ Secondly, more recent work could find evidence of scale due to regulatory changes that has made it less costly to become larger (such as relaxation of restrictions on geographic branching and product expansion). Thirdly, technological advances may have had a greater impact in recent years (e.g. information processing equipment and software entails relatively high fixed costs and at the same time the costs of acquiring information about potential borrowers, which has been the competitive advantage of smaller banks, has fallen).

Also, Hughes et al. (2001) consider that there is an additional reason for the lack of strong evidence of economies of scale in the early studies. They claim that there is an issue of

¹⁶⁹ For example, the empirical strategy of the initial papers imposed the estimation of parametric cost functions (which are restrictive) and required constructing samples of banks with similar production techniques in order to yield sound estimates. Wheelock and Wilson (2011) improve on the estimation method by using non-parametric model of bank costs which does not require such sampling assumptions. An issue that is harder to address is that the sample size of very large banks is small and the statistical techniques employed are most accurate for average companies in the industry (see De Young, 2010). Therefore inference for large banks may not be very reliable.

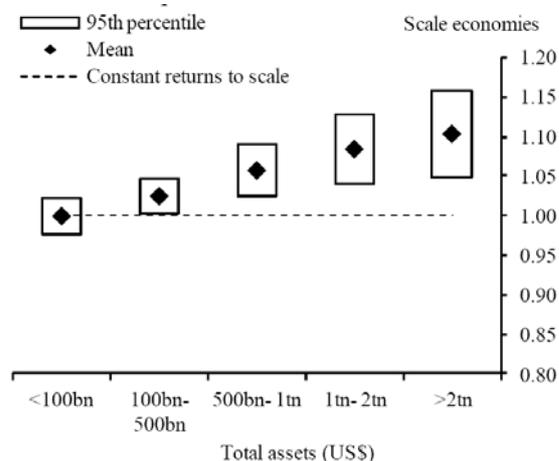
identification in such studies, as managerial inefficiencies related to scale may mask positive economies of scale. This phenomenon would occur if there are two opposing effects: on one hand, a positive effect from scale and, on the other hand, if banks respond to the lower cost by taking on more risk, there would be a second, adverse effect, which is linked to the risk-taking effect if banks spend more resources to manage increased risk. Their work (as well as work by Hughes and Mester (2011)) has taken into account output measures corrected for banks' risk and find evidence of economies of scale at much higher levels, that is, above USD 100 million. Hughes and Mester (2011) under such a setting not only find economies of scale but also that these scale economies may continue to increase with bank size. They also claim that their estimates are not driven by TBTF considerations, as economies of scale apply also to smaller banks too. They find that when a bank changes size there are two beneficial effects: one "pure" size effect and one due to a "change in output mix" (an activity mix that is more consistent with the size of the bank) and claim that the latter effect is slightly greater than the first. However, while their approach allows identifying a scale effect, they do not examine whether this effect outweighs the negative effects of managerial diseconomies (i.e. the second adverse effect) related to size.¹⁷⁰ Furthermore, they acknowledge that TBTF considerations cannot be dismissed as an additional factor in explaining the banks' increasing size.

In contrast with the more recent work on economies of scale that find increasing evidence at higher levels of assets, Haldane (2012), referring to work by Davies and Tracey (2012),¹⁷¹ considers that when taking into account TBTF implicit subsidies, these strong results on the existence of economies of scale disappear. The authors employ credit rating data to adjust the cost of debt by considering only the standalone rating of banks, rather than the rating including government support (see also Annex A4.1 and A4.2 for details on the different credit agency ratings). Through this adjustment, they control for the implicit government subsidy and they find that the banks' funding costs increase with size, lowering the estimates of bank value-added and the measured economies of scale. In particular, they claim that there are no scale economies in a sample of large international banks with assets above USD 100 billion, as shown in the second chart below. Their findings support the claim that efficiency benefits gained from scale are potentially offset by diseconomies arising from the fact that some banks become too large to maintain effective management. Haldane (2012) therefore claims that implicit subsidies may have artificially increased the privately optimal banking scale compared to the optimal level from the social perspective.

¹⁷⁰ Furthermore, from a systemic perspective, they do not address whether the benefits of large size outweigh the potential costs in terms of systemic risk that larger firms may impose.

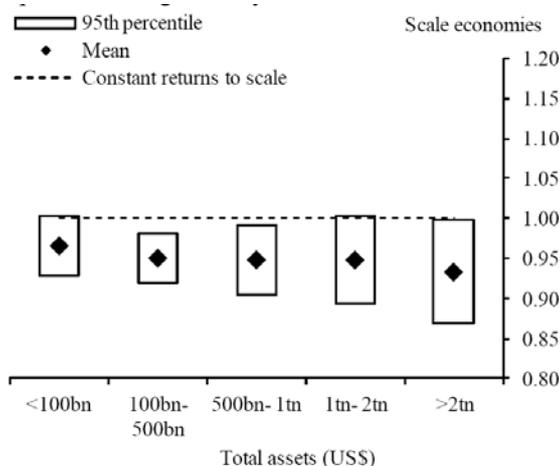
¹⁷¹ See also Davies and Tracey (forthcoming).

Chart 1: Scale economies, from a standard model of bank production (a),(b),(c)



(a) The results are for scale economies estimates over the period 2001 to 2010. A value equal to one, less than one, or greater than one implies constant returns to scale, scale diseconomies, and scale economies, respectively.

Chart 2: Scale economies, adjusting for the implicit subsidies (a),(b),(c)



(b) Total assets have been adjusted to constant year-2010 prices using country level inflation rate data.

(c) Presented results are estimated at the median and interquartile range for each bank in each time period. The scale economies mean is evaluated at the mean of the data.

Source: Davies and Tracey (2012)

Therefore overall, academic studies that find evidence of economies of scale at relatively high level of bank assets identify this effect separately from any diseconomies of scale such as increased risk taking related to higher bank size and from the implicit subsidies.

c. TIME SERIES DATA

There are also a number of studies that look into the efficiency of banks on either side of a bank merger. Such studies do not provide strong evidence of ever-increasing economies of scale (see for example Berger and Humphrey (1997), Berger et al (1999) and De Long (2001)). Berger et al (1999) argues that even if there are some economies of scale, these may have been offset by managerial difficulties in monitoring the larger organizations, conflicts in corporate culture, or problems in integrating systems. Also, Amel et al. (2004) find that mergers may be beneficial up to a relatively small size, and they find little evidence that mergers yield significant gains in efficiency.

Overall, while there appears to be relatively strong evidence for economies of scale at relatively low bank sizes, there is no consensus on the optimal size of banks, and there is no strong evidence that the economies of scale apply at very large bank sizes (for example above \$500 million in assets). This is particularly relevant for the current proposal of structural reform as its provisions only applies to banks above the thresholds as discussed in Annex A8, that is, to very large banks in the EU.

d. DIS-ECONOMIES OF SCALE

Furthermore, even if economies of scale do arise, the question that arises is whether or not these benefits are likely to be passed on to customers (through changes in prices or quality of service because of competitive pressures) and why smaller firms would not be able to form

consortia or outsource some activities to realise similar levels of economies of scale as larger banks. Moreover, as explained above, the literature has identified a number of disadvantages related to increased size that relate to the following:

1. By expanding in scale and scope, banks may be able to raise prices above marginal costs, exploiting their stronger market position (market power). However, the literature on banking sector concentration and prices is not clear-cut, largely because studies on mergers do not always control for the efficiency effects of a merger (see for example Herring and Carmassi (2008) and Berger et al. (1999)).
2. Larger banks are more likely to take higher risks. As explained above, Hughes et al. (2001) claim that there is an adverse effect associated with increased size, the risk-taking effect, if banks spend more resources to manage the increased risk and monitoring costs associated with larger size. Haldane (2009) considers that "at least during this crisis, big banks have if anything been found to be less stable than their smaller counterparts, requiring on average larger-scale support".¹⁷² This may be related to the TBTF status of larger banks. The expectation that some banks benefit from TBTF subsidies provides an incentive to banks to artificially increase their size to benefit from such subsidies. This positive relation between size and implicit subsidy is also documented in the literature (see Annex A4.1 and A4.2). As the implicit subsidies increase for a given bank this also leads to less effective market monitoring of the banks effectively subsidising risk-taking by systemically important financial institutions.
3. Larger banks pose greater systemic risks, and this is likely to imply large risks to a country's public finances. There are a number of studies that find that larger banks pose greater systemic risks. Boyd et al. (2006) show that in countries with more concentrated markets, banks have taken a disproportionate amount of risk, relative to their capital buffer. Boyd and Heitz (2012) estimate that the social cost of too-big-to-fail banks due to increased systemic risk is significantly higher than the benefits due to economies of scale. Also Baele et al. (2007) for a European sample, find that larger and more diversified banks have higher systemic risk. On the other hand, Beck et al. (2006) find evidence that concentrated systems have a lower probability of financial crisis, potentially due to better diversification of risks within large banks, leading to a correspondingly lower probability of failure. Demirgüç-Kunt and Huizinga (2011) distinguish between a banks' absolute size and its systemic size measured with respect to the size of the economy. They conclude that while there may be some benefits from absolute size (returns on assets increase with absolute size, even though bank risk increases), systemic size is unambiguously bad (returns on assets falls with banks liabilities-to-GDP ratio and bank risk is unaffected) meaning that the optimal bank size may be larger for banks in larger economies.
4. Greater consolidation may also have consequences in the composition of companies to which funding is channelled in the real economy. Small banks tend to be better at

¹⁷² Speech given by Andrew Haldane at the Association of Corporate Treasurers, Leeds, Credit is Trust, 14 September 2009, pp 10-11

relationship-lending based on "soft information", such as reliability of the firm's owner versus lending by big banks that is based on "hard information" such as financial statements and credit scoring (Berger et al. (2005)). Therefore, greater consolidation may affect the ability of small firms to secure credit availability.

5. Principal-agency problems, and in particular managerial benefits, may have also led to higher than optimal bank size. Anderson and Joeveer (2012) show that there is stronger evidence of returns to scale to bankers as compared to returns to investors, and that these returns to bankers are particularly strong in banks that have a large share of non-interest income. Also, Hughes et al. (2003) find empirical evidence that bank managers may sacrifice value to build empires (through mergers) and not all consolidation that has taken place is value-enhancing.

3. ECONOMIES OF SCOPE

There is a substantial and diverse literature on the subject and yet lack of unanimous evidence supporting the existence of economies of scope. While there are several source of economies of scope such as revenue and cost economies of scope and risk diversification benefits, there are also important diseconomies of scope. Conflicts of interest between different activity business lines, increased risk-taking and complexity as well as systemic risk and cultural contamination are reported as factors that lead to adverse effects of extending banks' scope of activities. The empirical evidence is a relatively stronger for geographic diversification.

As previously described with regards to economies of scale, if the net benefits of economies of scopes are passed on to customers, the client may benefit from a greater range of products on offer by a single institution, and potentially lower prices. In answering whether or not economies of scope exist, for what activities, and at what levels, one must analyse existing literature. The sections that follow will analyse in further detail examples of evidence for or against the enjoyment of economies of scope when a bank diversifies its activities, domestically through loan and portfolio diversification, and geographically.

a. WHAT ARE THE ECONOMIES OF SCOPE THAT A FINANCIAL INSTITUTION MAY ENJOY?

Economies of scope relate to efficiency gains of diversifying business activities across products and services provided (product diversification), as well as geographical diversification, or a combination of the two. The possibility of a financial institution benefiting from economies of scope is somewhat related to that of scale: as a financial institution grows in size, it may enjoy improved efficiency associated with diversification, and thus, reduced costs of funding.

The sources of economies of scope and therefore underlying reasons for which a bank may choose to diversify their business practices, functions, or products offered can generally be attributed to:

- Revenue economies of scope: clients may place additional value in being able to seek multiple products at a single bank offering diversified services. Additionally, in

providing a service, the bank gains valuable information about their client that may provide process and pecuniary advantages in the provision of other services;

- Cost economies of scope: banks may reduce their operating costs in engaging in a wide range of activities from pooling their resources. Sources of these reductions in costs could be from operating centralised IT and finance systems, for example; and
- Risk diversification: an extension of the cost economies of scope, risk diversification implies that undertaking a wide range of activities (or operating in more geographic areas) with less than perfectly correlated income stream may benefit the overall banking group by diversifying assets and earnings thus rendering them more resilient to shocks, and reducing costs. Also, diversification across activities may lead to a more efficient use of capital for the bank which may be affected by structural reform as under several options the two entities would be required to meet these requirements on a solo basis. The ICB (2011) acknowledges that scope benefits arising from moving excess capital between the different parts of a corporate group may be lost. If there is less than perfect correlation in the capital of these two entities then such separation requirements will increase the capital needs of the banking entities.

Contrastingly, most literature refers to the following drivers of inefficiencies associated with diversified institutions:

1. Conflicts of interest: conflicts of interest between banks' employees and banks' customers when banks engage in several activities may arise in several forms. For example, banks can use the informational advantage they gain from conducting several activities to their own advantage. Also the combination of different banking activities, and therefore of multiple clients and interests provides the opportunity to serve some client categories better to the detriment of others. Potential conflicts between traditional banking and securities underwriting business, for instance, led to the 1930 Glass Steagall Act;
2. Increased complexity: diversification of banks tends to increase their organisational and operational complexity, especially if they are large to begin with, which can increase their risk management costs. This complexity can also lead to reduced transparency, making effective supervision harder and complicating resolution;
3. Increased risk-taking: lower costs of funding due to diversification may contribute to the diversified bank taking on additional and excessive risk. While many studies recognise a certain degree of risk diversification benefits, many note that the expansion of types of activities usually enters the realm of much riskier activities, and in parallel with this expansion, these banks often hold less capital than undiversified banks;
4. Increased systemic risk: while individual activity, and therefore risk diversification, can benefit the single bank, it has been found to contribute to overall systemic risk as

banks typically diversify into each other's' traditional areas. As a result, the financial system as a whole becomes less diversified;

5. Cultural contamination: an increasingly-discussed disadvantage of practicing varied banking activities since the beginning of the financial crisis is the changing of attitudes towards business practices. The transferral of behaviours typical of the trading floor in banking activities into the commercial side causes a lack of confidence in the sector, and is seen as detrimental to the proper, useful functioning of the European economy.

As a result of the above mentioned drivers, benefits of functional and organisational diversification may manifest themselves in having better access to internal capital markets and lower risk, increased supply of financial services, and operational synergies. On the other hand, potential diseconomies of scope could arise from intensification of agency problems between the divisions of the conglomerate and between the conglomerate and its outsiders, bargaining problems and higher regulatory costs, inefficient rent-seeking, increased systemic risk due to negative externalities and more interdependencies and cultural contamination.

b. ECONOMIES OF SCOPE IN THE EMPIRICAL LITERATURE

Empirical literature provides mixed evidence for significant efficiency gains generated by large and diversified banks, very often concluding that there are diseconomies of scope, making it difficult to ascertain the value added of bigger and more varied banks. Much of the existing literature in the field refers to the Diamond (1984) model of banking activity, which provides the theoretical rationale for a bank acting as an intermediary in the financial market. This model, which focuses on deposits and loans, finds that diversification benefits are inherent in the role of the bank as an intermediary (delegated monitor) in this market. Furthermore, banks' activities of providing commitment-based loans and accepting deposits are very similar services. That is, in both cases they provide liquidity on demand to accommodate unpredictable needs. If the two activities' demands for liquidity are imperfectly correlated then the two activities can share the costs of the liquid asset stockpile, or buffer, through a single bank (Kashyap, Rajan, and Stein (2002) and see also Gatev and Strahan (2006)). Overall, while this literature suggests economies of scope between deposit taking and loan provision there is limited evidence of such benefits for other kinds of activity diversification.

Economic literature on the subject of economies of scope is rich. One strand of literature looks directly at the effect of diversification (either activity or geographic) on the market valuation of the specific bank. These studies find the net effect of economies and diseconomies of scope directly from stock market valuations. Other empirical analyses focus specifically on some categories of economies or diseconomies of scope. Therefore they are analysed under the prism of the categories identified in the section above.

c. MARKET VALUATION STUDIES

Without identifying the underlying drivers, the following studies draw links between the degree of operational diversification (either activity or geographic) of the bank and the value

the market places on it. Overall, estimates of such valuation studies, in line with other studies, fail to provide robust evidence on the existence of economies of scope.

- At one extreme, Laeven and Levine (2007) investigate whether the market valuation of a diversified bank is more or less than the value it would have if the conglomerate were broken into a portfolio of banks each specialising in the interest and non-interest earning activities of the conglomerate (chop-shop approach that compares these entities with similar entities specialising in interest and non-interest income activities). The paper finds for a sample of banks across 43 countries a diversification discount in the conglomerates' valuation, as those banks that engage in multiple activities are valued lower by the market than the individual specialised units. These results suggest that any economies of scope in diversification are not sufficiently large to compensate for the detrimental effects of diversification. Schmid and Walter (2009) find similar results for US financial conglomerates.
- Other studies find that diversification has no material impact on the valuation of a financial conglomerate. Lelyveld and Knot (2009) find for 45 large financial conglomerates (firms that are active in both banking and insurance) in the EU that there is no uniform diversification discount or premium. When the conglomerate is split into a banking unit and an insurance unit, 52% of the sample shows a premium, and 48% show a discount. These effects are significantly variable in magnitude, depending on size, complexity, and risk. They also show that while small conglomerates witness a premium on average, larger conglomerates tend to face a discount. Similarly, DeLong (2001) studies US mergers over the period 1988-1995 and finds that activity-diversifying mergers do not have a positive announcement effect on share prices, contrary to focused mergers.
- At the other extreme, in a study of large international banks from 1996-2008, Elsas et al. (2009) find evidence for a diversification premium. They test how revenue diversification and increasing bank size affects bank value. They show that revenue diversification enhances bank profitability, and in turn higher profitability translates into higher market valuations. They find the diversification effects materialise through an indirect effect on current operating performance and not through direct effects (of examining the interest vs non interest income of the two business units as in Laeven and Levine (2007)). Similarly, Baele et al. (2007), in a European sample, also find a positive relationship between franchise value and diversification.
- There are also a few studies on the effects of geographic diversification on market valuation. Gulamhussen et al. (2010), in an international sample across 56 countries, find that internationally diversified banks trade at a premium. However, they also show that geographic diversification has an inverse U-shape effect on bank value in that increased diversification increases the bank's value, only until a certain threshold, after which it starts to decline. Furthermore, Gulamhussen et al. (2012) show that this overall value enhancement comes at a cost: multinational banks have higher expected probability of default. They show that any positive effect of loan and asset

diversification in the reduction of bank risk is outweighed by the negative effects of skewed incentives and complexity originating in international diversification and the creation of large multinational corporations.

Economies of scope

The empirical literature on economies of scope has focused mostly on the benefits of risk diversification and informational advantages.

d. REVENUE AND COST ECONOMIES OF SCOPE

The works of Diamond (1991), Rajan (1992), Saunders and Walter (1994), and Kashyap et al. (2002), for example, theoretically suggest that banks acquiring information about clients during the process of making loans facilitates the efficient provision of other financial services, including securities underwriting. This positive information-sharing process can also work in the opposite direction, whereby underwriting, brokerage and mutual fund services, and other activities may improve loan-making procedures.

- Drucker and Puri (2005) empirically show for the US that there may be economies of scope to be enjoyed in concurrent lending and equity underwriting from spreading fixed costs of acquiring information. They argue that the concurrent deals could provide benefits for the issuers in lower costs, and the degree of economies of scope enjoyed could be greater for commercial banks than investment banks, given their well-established lending business. These efficiency gains and resultant savings could be particularly pronounced for the issuers who are noninvestment grade-rated. They indicate that beyond an optimal volume of underwriting deals, which is however not specified, the bank would experience diseconomies of scale.
- Other papers suggest that there is a positive reputation effect of mixing different activities. For example Ang and Richardson (1994), Kroszner and Rajan (1994) and Puri (1994) find that commercial banks did not try to mislead the public in investing in poor securities in the years leading up to the Glass-Steagall Act, as the performance of commercial and investment bank issues does not differ.

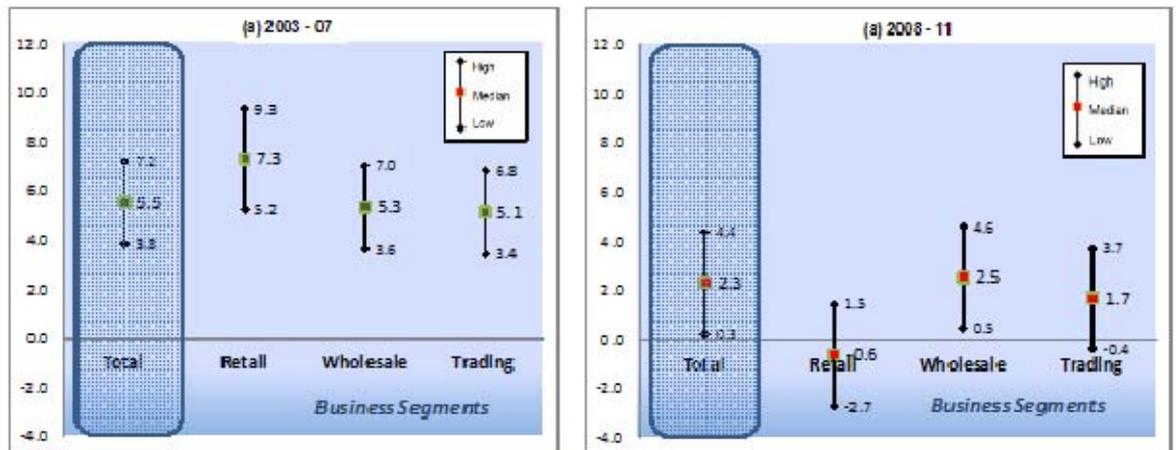
e. RISK DIVERSIFICATION

If the returns of two or more sources of income are less than perfectly correlated, then it is possible to reduce risk through diversification. However, it may be that multinational banks may take on excessive risks (see below).¹⁷³ Overall, there is lack of robust evidence on the effectiveness and the benefits related to risk from activity and geographic diversification. Literature considers two potential sources of risk diversification: activity and geographic.

¹⁷³ Note that this relates not only to activities but also to geographical diversification. For example, international operations might provide bank managers with more possibilities to trade against the bank's interest (see Myers and Rajan (1998)).

Concerning activity diversification, certain papers analyse banks' income sources into interest-based and non-interest based (fee- or commission-based, for example) categories.

- The IMF Staff Discussion Note (2013) finds evidence that a bank benefits from diversifying its business. They find that the returns from the retail section of a sample of seven G-SIBs complement those from wholesale and trading banking in the particularly prosperous times (2003-2007), and vice-versa in economically tougher times (2008-2011).



They claim that the trading banking segment complements retail and wholesale banking via product structuring, hedging, and income enhancements through proprietary risk-taking. Banks may diversify their risk portfolio by maintaining all three business lines. However this might not have a direct impact on the probability of default of different types of banks. For example, an earlier IMF staff discussion note (Ötoker-Robe et al., 2011) shows from data throughout the crisis that the frequency of distress was notably higher for banks that practiced investment and universal banking activities than for commercial banks (likely reflecting more reliance on more volatile sources of funding and balance sheets more sensitive to mark-to-market accounting).

- Some papers underline the value of derivative activities within banks to allow diversification of risk. Brewer et al. (2000) focus on derivatives contracting and find in the US 1985-1992 that those commercial banks that engaged in the interest-rate derivative products markets have greater growth in lending in commercial and industrial loans than those banks that did not. They claim that their results are consistent with the role of banks as delegated monitors as in Diamond (1984): derivatives trading enables banks to increase their reliance on their comparative advantage as delegated monitors, and allows them to hedge their risks, and this leads to a reduction in delegation costs. This reduction in delegation costs, in turn, provides

incentives for banks to increase their lending activities.¹⁷⁴ A similar point is made by Purnanandam's (2007). He shows that banks that make use of derivatives remained more insulated from monetary policy shocks during the period 1986-2003 compared to banks not using derivatives which instead decreased their lending following money supply contractions. Therefore, derivatives may contribute to maintain smooth operating policies in the event of external shock.

- Baele et al. (2007), on a European sample (over the period 1989–2004), find that a higher share of non-interest income in total income affects banks' franchise values positively, reduces idiosyncratic risk, and makes banks safer. Nevertheless, they also find that the systematic risk of banks increases. Similarly, Rossi et al. (2009) examine data on Austrian commercial banks (1997 to 2003) and find that diversification reduces risk, in line with the classical diversification hypothesis. Their results point also to a negative effect of diversification on cost efficiency (as it is associated with higher monitoring costs) but overall diversification increases profit efficiency and reduces banks' risk.
- On the other hand, there is a series of articles (Stiroh (2004a), (2004b) and DeYoung and Roland (2001), for example), that claims that increased diversification leads to increased complexity, and excessive risk-taking, leading to overall higher bank risk (see section 2.2.5 below)
- In terms of geographic diversification, Amihud et al. (2002) study the effect of geographic diversification on risk. They show that cross-border mergers and acquisitions have no net effect on the risk (and returns) of the acquiring banks. They also find this to hold for both total risk and systemic risk as compared to their home market.
- On the other hand, Deng and Elyasiani (2008) find that geographic diversification (using distance metrics within the US only, for BHCs) is associated with risk reduction (and lower stock price variability), along with value enhancement. However, geographic diversification across more remote areas (measured as the distance between the holding company and its branches) is associated with smaller risk reduction. Furthermore, Deng et al. (2007) show that geographic diversification can lead to a funding advantage. They study a sample of over 60 US BHCs from 1994 to 1998 and find that domestic diversification of deposits reduces the bond-yield spread. They also show that medium-sized BHCs experience a greater reduction in bond yield-spread than small-sized and large-sized BHCs, which, they argue, is consistent with TBTF effects in the banking industry.

¹⁷⁴ Smith and Stulz (1985) show that the hedging of interest rate risk can increase firm value by lowering the expected transactions cost of bankruptcy

f. DISECONOMIES OF SCOPE

A number of diseconomies of scope have been identified above. Below we discuss the academic literature on each of these categories. There is an extensive literature discussing, in particular, conflict of interest as well as increased complexity and risk (both in terms of excessive risk-taking and increased systemic risk). Before going in detail in the empirical finding, one should note that, as discussed in the section of economies of scale, studies measuring economies of scope should also take into account the benefits from safety nets. Indeed, economies of scope may arise due to the presence of the implicit subsidy and banks may be tempted to extend their activities in order to benefit from the safety net over all their activities. For example, when publishing their final report, the ICB received very little quantitative evidence of the magnitude of these claimed diversification benefits or customer synergies (ICB 2011). The lack of evidence stems from a difficulty in separating the two effects that may lower the funding costs of universal banks: an implicit government guarantee, and diversification benefits that result in a pecuniary advantage. However, there are no such studies.

g. CONFLICTS OF INTEREST

A conflict of interest in general can arise when an agent is serving two or more interests and has the ability to put one party in a better position at the expense of the other. Conflicts of interest become particularly important with increased scope, as service-providers have clients from distinct or opposing business lines. Conflict of interest may arise among different areas of activities and large literature has focused on universal bank's underwriting activities.

- A conflict of interest may arise in the universal banking model if authorities allowed banks to underwrite their borrowers' capital market issues (Bhattacharya, Boot, and Thakor, 1998). A theoretical paper on combining lending and underwriting is provided by Kanatas and Qi (1998), who assess the conditions needed for the separation of lending and underwriting to be optimal. They suggest that there is a social cost related to the bank's reduced incentive to monitor its borrowers, as credit risk can be shifted to uninformed public investors when the borrower's project is not performing well. The authors show that legal separation of lending and underwriting may improve social welfare if firms recognise the intermediary's subsequent incentive when choosing projects to be funded and there are large social costs associated with the bank's funding of poor-quality projects (for example through an increased likelihood of runs on banks).
- The Glass-Steagall Act prohibited commercial banks from underwriting or dealing in corporate securities to prevent lenders with adverse private information from selling securities of weak firms to an unsuspecting public, to offload credit risk. Studies from underwritings in the period pre- Great Depression (pre GSA) such as Kroszner and Rajan (1994) and Ang and Richardson (1994), however, find no evidence that commercial banks misled the public (by for example comparing the relative performance of securities offered by commercial and independent investment banks). Kroszner and Rajan (1994), however, find evidence that the conflict of interest exist and the market and the affiliates adapt their behaviour (for example the market would

request a "lemons" discount and affiliates have avoided information-intensive securities and focused on better-known firms than investment banks). In addition to these research on the pre GSA period in the US, there are also some recent studies on the UK and Canadian experience (Hebb and Fraser 2002, 2003) which find evidence that commercial and investment bank issues do not differ in performance.

- However, other recent studies such as Johnson and Marietta-Westberg (2009) find evidence of conflicts of interest in relation to underwriting, when it is combined with asset management divisions. They show that universal banks with asset management divisions tend to use asset management funds as vehicles to help them earn more equity underwriting business. Similar results are obtained by Ber et al. (2001), who claim that banks must choose between selling the IPO stocks at a high price, generating a substantial amount of cash, and selling these stocks at a low price, generating good returns for investors. Bessler and Stanzel (2009) study conflicts of interest when the asset management analyst is affiliated with the underwriter of an IPO in a sample of German universal banks. They find that the analysts belonging to the lead underwriter tend to produce inaccurate and positively biased stock recommendations to public.
- Xie (2007) also studies the issue of conflict of interest in relation to securities underwriting and trading. She finds that the negative effect of conflicts of interest dominates the positive benefits of economies of scale and scope in universal banking. This negative effect is weaker in the countries with stronger protection of creditor's rights (higher institutional development, stronger security laws, higher accounting standards) or higher information efficiency of the stock market, as the conflict of interest are less likely. Relating to the question on the strength of the fence, she also finds evidence to support that a subsidiary structure of separation of banking activities would reduce the likelihood of conflicts of interest.
- Fecht et al. (2010) report empirical evidence for the German banking sector that proprietary trading can negatively affect retail customers. Stocks sold to retail customers of the bank underperform compared to other stocks in the bank's proprietary portfolio and other stocks in the households' portfolios. Customer portfolio performance is also significantly worse in banks that do proprietary trading. The authors attribute banks pushing stocks to their customers to the banks avoiding direct and indirect transaction costs, as well as not wanting to disclose their possible informational advantage to the market. They argue that conflicts of interest are at the source of these findings.

h. INCREASED COMPLEXITY

An adverse effect of engaging into more activities is that the institutional complexity increases, increasing the risk management costs.

- Klein & Saidenberg (2010) suggest that the diversification discount found in the literature (see market valuation studies, discussed above) reflects not only industry diversification, but also organisational structure. Potential costs of organisational structure include bureaucratic rigidity and bargaining problems, and these should be distinguished from the pure activity and geographic diversification benefits. The authors show that BHCs with many subsidiaries have lower profits and market valuations than similar BHCs with fewer subsidiaries, and accordingly argue that the cost of managing complex organisations increases with the degree of heterogeneity of the institution's subsidiaries.
- This increased complexity may create problems for market participants and regulators to appropriately value and monitor the banks. Flannery et al. (2010), from pre- and mid-crisis data, argue that complex, diversified banks are seen by many as less transparent than other companies, and so the monitoring of their activities becomes more difficult. Iannotta (2006) analyses the opinions of credit ratings agencies to suggest that the greater complexity of large, diversified banks results in greater opacity. In particular, bank opaqueness increases with size and with the volume of financial assets.
- Increased complexity can also arise from geographic diversification. As explained above, Gulamhussen et al. (2012) show that any positive risk-reducing effect of portfolio and international diversification is outweighed by the negative effects of skewed incentives and complexity originating in the creation of large multinational corporations.

i. EXCESSIVE RISK-TAKING

Banks may benefit from activity and geographic diversification, which could reduce their overall riskiness, but this positive effect may be more than or partially offset by opposing incentives, leading the banks to take on excessive risks. Some studies have underlined the potential of excessive risk-taking in banks as a result of consolidation and expanding activities in new markets.

- While internationalisation, consolidation, and conglomeration offer potential benefits to financial institutions, diversification may also lead to shifts in risk-taking behaviour and the development of new and more sophisticated mechanisms to transfer risk (FSOC 2011). The Financial Stability Oversight Council (FSOC 2011) explain that pre-crisis, supervisors knew that much financial activity had moved from the banking sector to capital markets, but they did not fully appreciate the risks that certain activities posed to the institutions they supervised and to the financial system as a whole.

- De Nicoló et al. (2004) study the risk profile of financial conglomerates¹⁷⁵ compared to other financial institutions in an international sample of banks. In a cross sectional analysis of financial institutions, the authors find that the financial conglomerates exhibited higher levels of risk-taking than smaller, specialised firms. Since they control for any positive effects on risk from diversification, their results suggest that the incentives for firms to take on more risk, including moral hazard-induced incentives, appear to have outweighed the risk reductions that would be achieved through scale or scope economies, or through geographic or product diversification. They consider that this increased risk-taking may be the result of an extension of the safety net to non-bank financial firms if banking and non-banking activities are not effectively ring-fenced.
- Other papers study the effects of combining interest and non-interest activities on risk. Stiroh (2004a), for US community banks, and Stiroh (2004b), for US commercial banks, find that non-interest share of revenue enhances risk and return volatility, and is negatively related to risk-adjusted profits. This result suggests a robust, negative relationship between non-interest income and performance. Some studies have shown that in financial institutions, marginal increases in revenue diversification are not associated with a significant change in performance (DeYoung and Roland, 2001, for example), which may reflect either a change in managerial focus or may represent the endogenous nature of the diversification decision. It is argued that this problem arises as managers may enter businesses where they have little experience or comparative advantage.
- In their study of US financial holding companies, Stiroh and Rumble (2006) find that even though diversification benefits exist, they are more than offset by the increased exposure to more volatile non-interest activities. One proposed reason for this relationship may be that FHC managers have overestimated the benefits of diversification. If managers privately reap the gains of higher profits, but do not bear all the social costs from increased risk, there is indeed scope for risk mismanagement and managerial hubris. Lepetit et al. (2007) find similar results for European banks. Their findings show that banks expanding into trading and fee and commission-earning activities present higher levels of risk and insolvency measures than banks mainly performing deposit-based banking activities. Upon further division of the sample, the study demonstrates that smaller banks may benefit from a degree of decreased risk when they engage in trading activities. Contrastingly, both the overall asset growth and the increased share of non-interest income are positively related to risk for large banks. Other explanations may include empire-building, over-diversification to protect firm-specific human capital, or corporate control problems. One of the proposed justifications for the shift in activity in these banks is the mismanagement and estimation of risk, and managers seeking higher expected.

¹⁷⁵ A financial institution is classified as a conglomerate if its business include at least of the following activities: i) banking, ii) insurance and iii) securities.

- There are also some studies focusing on the effects of securitisation on risk. For example, Nadauld and Sherlund (2009) and Keys et al. (2010) provide evidence to suggest that securitisation encouraged underwriters to relax credit quality standards during the peak of the housing bubble. In particular, the former construct a measure of geographic diversification and concentration to show that the securitisation process, including the assignment of credit ratings, provided incentives for securitising banks to purchase loans of poor credit quality in areas with high rates of house price appreciation. Therefore, they argue that securitisation allowed banks to transfer risk and discouraged banks from devoting as many resources as it normally would to screening and monitoring loans.
- Fang, Ivashina, and Lerner (2013) focus on private equity investments. to carry a high degree of risk, and find US bank-affiliated private equity investments in the period 1978-2009 to be highly procyclical, and worse-performing than those of non-bank affiliated private equity deals over the same period. These investments thus have potential to aggravate any prevailing risk in the system, if bank managers' incentives to grow and maximize utility entail diversifying into private equity investments.

j. INCREASED SYSTEMIC RISK

In addition to excessive risk for the individual banks several papers show that increased diversification may have an adverse effect on systemic risk.

- Wagner (2010) provides a theoretical setting in which diversification of individual institutions deteriorates systemic stability. Diversification, as a "stand-alone" effect, lowers a bank's probability of failure. However, widespread diversification makes banks more similar to each other by exposing them to the same risks, and thus they are more likely to fail simultaneously following a negative shock to the system. In addition to the theoretical framework, he finds evidence indicating that very large banks became increasingly similar in the years leading up to the crisis, and argues that the current level of diversification likely exceeds the optimal level for social welfare. A similar paper is by De Nicoló and Kwast (2002) who claim that while individual banks have become more diversified the systemic risk potential in the financial sector may have increased. They argue that firm interdependencies provide an indicator of systemic risk potential and they measure interdependencies with correlations of stock returns. The authors find that stock return correlations among large and complex banking organisations in the US over the period 1988-99 have increased, which is consistent with greater potential for economic shocks to become agents of systemic risk in the financial sector Baele et al. (2007), find similar results for European banks. De Nicolo et al. (2004), in an international sample of banks, find that complexity resulting from conglomeration and consolidation increases systemic risk.
- Nijksens and Wagner (2010) focus on the effect of trading credit risk transfer instruments (CDSs and CLOs) on banks' risk. They argue that while securitisation

may allow banks to purchase protection in the CDS market to shed idiosyncratic exposure, banks also simultaneously buy other credit risk by selling protection in the CDS market. As a result banks may end up being more correlated with each other and this may amplify the risk of systemic crisis. Their analysis of an international sample of banks between 1996 and 2007 shows that the adoption of risk transfer methods by banks increased their riskiness due to higher systemic risk. The authors conclude that credit risk transfer reduce banks' idiosyncratic risk, but increase systemic risk, by increasing banks' exposure to risk in the system overall.

- Brunnermeier et al. (2012) find evidence for US financial institutions over the period 1986-2008 that banks with higher non-interest income make a greater contribution to systemic risk than those practicing "traditional" banking activities. This suggests that activities that are not linked with deposit taking and lending are associated with a larger contribution to systemic risk. Furthermore, after splitting total non-interest income into (i) trading income and (ii) investment banking and venture capital, they find that both components are roughly equally related to systemic risk.
- FSOC (2011) explains that securitisation has also increased systemic risk even if the creators of ABS did retain a considerable amount of risk on their portfolios. Systemic risk would increase because the regulatory environment allowed creators of ABS to hold less capital than if they had simply held the original assets on their balance sheets. Therefore some activities might contribute disproportionately to systemic risk.
- Focusing on the use of derivatives, Stulz (2010) argues that while derivatives may provide credit protection however those that provide such protection need to have the ability to repay their obligation. When derivatives shift credit risk from banks to less regulated parts of the financial system then credit derivatives could increase systemic risk.

k. CULTURAL CONTAMINATION

An additional concern of combining deposit taking and trading activities is the risk that the trading culture contaminates and dominates over commercial bank culture. The transferral of behaviours typical of the trading floor in banking activities into the commercial side causes a lack of confidence in the sector, and is seen as detrimental to the proper, useful functioning of the European economy. For example, Kay (2012) considers that there has been a systematic and deliberate replacement of a culture based on relationships by one based on trading increasingly characterised by anonymity, and the behaviours which arise from that substitution, which has led to a wide erosion of trust in financial intermediaries and in the financial system as a whole. The Commission's December 2012 8th edition of Consumer Markets Scoreboard shows that consumer trust in the EU banking sector is at an all-time low.

Many proponents of stricter or more banking regulation have noted the negative aspect of cultural impetus and have stressed the importance of re-establishing trust in banks. For example, the European Parliament report on reforming the structure of the EU banking sector

stress the important of reforms to change the banking culture.¹⁷⁶ The rapporteur of the report, European Parliamentarian McCarthy, has said that the customer should trust his banker in the same way he trusts his family doctor and that “piecemeal” legislation will not serve the purpose of changing the culture of banking. She considers that structural reform is a necessary addition to the current reform package. "This separation is necessary if we want to change the culture of the retail side of banks, because the investment banking mentality currently pervades retail banking."¹⁷⁷ Also, in the UK, the House of Parliament has established a Parliamentary Commission on Banking Standards (2013) to make recommendations on how to promote a better culture in the banking system.

I. INDUSTRY AND OTHER STUDIES

In this section we review some studies from the industry examining why banks expand their scope of activity. Some industry studies find significant benefits related to both size and diversification (IIF (2010); The Clearing House (2011, Annex C and D)). Their argument is that larger banks and their scope for achieving greater diversification across business lines and geographies may realise significant synergies, promoting safer, more stable, and ultimately more valuable banks. Continuing this logic, they argue that structural bank regulation initiatives and the separation of business lines would imply costs, not only for banks and their shareholders, but for the economy as a whole.

The Clearing House (2011), an American banking association, estimates for the US that the 26 largest US banks provide an estimated USD 15-35 billion in direct value to customers every year by providing a wide range of activities. They reach this number by analysing the products and services in which banks provide a unique benefit and quantifying the benefit that each subscribing customer receives. The authors acknowledge that this process is an imperfect method, but, in particular, estimate that banks with assets of over USD 500 billion are responsible for USD 10 - 20 billion of the total, not counting "indirect benefits to the economy at large." They suggest that the benefits are found in the four product areas of banking (retail, payments and clearing, commercial, and capital markets), though least of all in retail banking. Within the payments and clearing category of banking activity, securities servicing is seen to be the main source of benefits in product scope that large banks provide, contributing an estimated USD 4-8 billion in related annual benefits.

The Institute of International Finance's (2010) report on systemic risk and systemically important firms finds "considerable real-world evidence" of economies of scale, scope, and diversity among large, international firms with assets in excess of USD 100 billion. They claim that imposing limits on the activities a bank may perform could severely limit the enjoyment of economies of scope and how they pass these on to the customer, however, without quantifying such a loss, and that there is likely to be "no real gain" for financial stability from such an "arbitrary measure."

¹⁷⁶ See <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+REPORT+A7-2013-0231+0+DOC+XML+V0//EN>.

¹⁷⁷ See <http://www.europarl.europa.eu/news/en/pressroom/content/20130318IPR06668/html/Time-for-a-wholesale-restructuring-of-banking>.

Industry estimates of economies of scope and subsequent effects of structural reform also highlight diversification's impact on the risk involved in banks taking part in varied activities. While during the recent financial crisis banks of all types have failed, Barclays Capital (2011) claims that during the period 1988-2009, universal banks defaulted less frequently than retail banks, which in turn defaulted less frequently than investment banks. Santander's response (2011) to the ICB's consultation, however, notes that a retail bank's assets are less volatile in value than for banks dealing with non-interest-earning activities. Other studies (see for example Van Ewijk and Arnold (2012)) argue that traditional relationship banks were better positioned to deal with the financial crisis than diversified transaction-oriented banks. CEPS (2011) provides a review of banks and an overview of their performance over the crisis for a sample of major European banks. The authors conclude that retail banks were the best-performing during the period 2006-2009, with less need for state support, and by continuing to fund the real economy, unlike investment and wholesale banks. Since these banks provide a net benefit to the wider economy and in light of these findings, the authors suggest that the authorities' crisis responses should have increased pressure on banks to operate with less complex business structures, therefore justifying the movement back towards the traditional retail banking model.

Frontier Economics (2013) study the economies of scope for banks engaging into private equity. They argue that that private equity attracts a large range of investors, including banks, and has potential for many advantages for the investors' portfolios. Given the attractiveness of diversifying the portfolio and the possibility of earning greater returns from this diversification, the preservation of private equity activities within the deposit-taking bank may prove advantageous for the bank, as well as the bank's customers. Nevertheless, banks still run serious risks when investing in private equity funds, which have been known to experience substantial losses. For instance, the Finnish Venture Capital Association (2009) states that default rates of private equity-backed companies increases during downturns (which is similar to empirical evidence explained above from Fang et al. (2013)). A systemically important bank bearing the burden of a failing private-equity backed company is extremely dangerous for the company and all the relevant stakeholders, as well as the bank's other customers and the overall financial system.

4. ECONOMIES OF SCALE AND SCOPE AND STRUCTURAL REFORM

If economies of scale and scope are present, will banks be in a position to enjoy them post-structural reform? The answer to this question depends on several parameters. Firstly, as discussed in various sections of this Annex, there is evidence that economies of scale are likely exhausted at levels of assets below the thresholds considered by the Commission. Secondly, concerning economies of scope, there is greater evidence for loan portfolio and geographic diversification effects, which are not affected by the structural reform proposal, while for other types of activity diversification results suggest that diseconomies of scope are likely to outweigh any efficiency. Thirdly, the strength of separation requirements has a direct effect on this relationship. At one extreme, accounting separation allows banks to essentially enjoy the same level of economies of scale and scope. At the other extreme, ownership separation would deprive banks of any economies of scale and scope. Functional separation through subsidiarisation would allow some benefits to be maintained depending on the precise requirements.

An advantage of separation through subsidiarisation is that retail banking operations would be protected from investment banking, while some economies of scale and scope advantages that exist within a group could be maintained. These advantages can be preserved, as the overall banking group can stay the same size, and practice the same activities, provided they meet regulatory requirements on a solo basis. Separation through subsidiarisation can be seen as a driver of "net" economies of scope in a banking group. The ability to allow one line of banking business to fail without disturbing overall business functioning and customer relationships could help address the moral hazard created by bank rescues and therefore the subsidiarisation avoids such diseconomies of scope (see ICB (2011) and CEPS (2012)). Transfers of informational knowledge and cost advantages could be enjoyed depending on the precise requirements associated with subsidiarisation requirements, however some duplication of infrastructure would be necessary and a less efficient use of capital would arise (due to regulatory restrictions).

5. CONCLUSION: ECONOMIES OF SCALE AND SCOPE

Evidence of economies of scale and scope are, at best, mixed. A recurrent problem in the literature is that the presence of implicit subsidies is not typically controlled for, and therefore it is more likely that evidence is found of economies of scale (at relatively larger levels of bank assets) as well as of scope. Furthermore, some studies argue that there are economies of scale or scope but do not comment on the net effect of the economies and diseconomies of scale and scope.

On economies of scale, initial studies have found evidence of such benefits at moderately low levels of assets (USD 100 billion). Given the relatively high thresholds for banks to fall under the requirements of the structural reform proposals, it is likely that the vast majority of these banks will exceed this level of assets. More recent studies that find evidence of higher optimal banking levels either only focus on the positive effects of scale, or do not take into account implicit subsidies (or both).

Concerning economies of scope, the evidence is again mixed. On activity diversification there is some evidence of economies of scope in combining deposit-taking and loan provision, but there is weak evidence that such benefits are significant for other kinds of activity diversification. On the contrary, some activities are likely to lead to conflicts of interest between business lines, increased business complexity, and have an adverse effect on risk-taking and systemic risk. There is a large empirical body of literature suggesting that these diseconomies dominate economies of scope for product diversification. In addition, cultural contamination from investment banking into retail banking has an adverse effect as for example for proprietary trading the bank's aim is to make a profit without providing services to its customers. There is some more positive evidence of economies of scope from geographic diversification. Therefore, while diversification of activity and product lines is mostly associated with significant increases in individual and systemic risk, overall positive effects from diversification are mostly restricted to geographic and loan portfolio diversification.

Given the relatively weak evidence on economies of scale and scope, the business model of large and complex global banking organisations may have been, at least partly, induced by regulatory considerations, rather than inspired by efficiency gains. In this context, obtaining the status of "too big to fail" may have played a role. Therefore, there is lack of evidence on

the existence of sufficiently large efficiency benefits that would make such activity restrictions economically suboptimal or even counterproductive.

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JRC SCIENTIFIC AND POLICY REPORTS

Annex A10 Quantitative Estimation of a part of the Costs and Benefits of Bank Structural Separation

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JRC88531

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EXECUTIVE SUMMARY

This report provides a quantitative contribution on the assessment of costs and benefits in support of the impact assessment of the Banking Structural Reform proposal. The analysis looks at the effects of structural separation on 29 large-sized EU banks which could be affected by the reform according to criteria being proposed for adoption by the Commission.

This report is based on the Systemic Model for Bank Originate Losses (SYMBOL) for the simulation of banking losses and uses balance sheet data for the analysis of allocation of losses and of changes in cost of capital. Policy assumptions and scenarios are provided by DG MARKT.

To estimate the costs and benefits of the structural reform, the balance sheets of the selected sample of banks are separated into a Trading Entity and a Deposit Taking Bank on the basis of publicly available data. Then SYMBOL simulations are run for these separated entities to estimate losses in a financial crisis. Losses are allocated to different private (equity owners and bondholders) and public stakeholders (public finance and Deposit Guarantee Schemes (DGS)/Resolution Funds (RF)) based on available balance sheet data and regulatory scenario assumptions. All simulations assume that Capital Requirements Directive IV (CRD IV) will be implemented and a fully effective bail-in regime will be in place, in line with the Bank Recovery and Resolution Directive Proposal (BRRD). These simulated losses after separation are compared to losses in a baseline without separation for each category of stakeholders.

Separation of banks into a Trading Entity and a Deposit Taking Bank shifts risks and losses towards stakeholders of the Trading Entity as it can no longer rely on capital support from the deposit taking bank to finance its more risky activities. In response, behavioural responses are introduced to the Trading Entities' balance sheets to reduce their riskiness back to that of the original undivided universal banks. The possible balance sheet adjustments include increased capital, reduced activity and reduced riskiness of assets portfolios. A new set of simulations is performed to assess the overall impact of the reform after behavioural responses.

Aggregate benefits are measured as the reduction in gross and excess losses across all banks due to the behavioural response following structural separation. Aggregate costs are measured as reduced revenues of the TE due to the reduced (risk weighted) assets. Distributional effects are estimated, by measuring benefits (costs) for different stakeholders as the reduction (increase) in expected losses in case of a financial crisis before and after structural separation. These changes in expected losses for the different bank creditors and shareholders are used to estimate changes in risk premia, which are added to the costs of holding additional capital and 'loss absorbing capacity' (LAC) to obtain changes in the weighted average cost of capital (WACC) for TEs and DTBs. Possible reduced revenues of the Trading Entities due to behavioural responses are also estimated using an average return on risk weighted assets.

For a financial crisis with losses comparable to the 2008-09 banking crisis, and subject to the caveat that the division of assets and risk-weighted assets between trading and deposit-taking entities and the simulation methodology are uncertain, the simulations show:

- A reduction in gross losses plus recapitalisation needs across all banks in the sample from € 629 bn to a range of €504-583 bn, depending on the behavioural response. The largest loss reductions are the result of reduced activity or risk taking of the banks.
- The amount of losses potentially allocated to bail-in under the BRRD is reduced from € 250 bn to a range of €192-219 bn, mitigating potential financial stability risks and contagion effects.

The impact on banks' funding costs depends on the extent to which changes in expected losses affect risk premia on equity and bonds:

- If changes to expected losses on capital and bonds are not reflected in lower funding costs, the average WACC across all banks in the sample increases by up to 3 bps as the Trading Entities need to hold more capital and Loss Absorbing Capacity (LAC) which increase their WACC by up to 9 bps. For the Deposit Taking Banks: their probability of default and expected losses decrease; however as they cannot decrease their capital and LAC below the minimum requirements, their average WACC will not change.
- If changes in expected losses are fully reflected in risk premia, the average WACC across all banks in the sample decreases (by 1 to 9 bps) as gross losses reduce. The WACC for the Deposit Taking bank is reduced by 4 to 9 bps as it no longer supports the more risky Trading Entity activities. The increase in WACC for the Trading Entities is limited due to the reduced riskiness for bail-inable creditors (following behavioural responses). The behavioural responses however also reduce the return on equity.

The analysis does not find a direct beneficial effect of structural separation on losses to public finances in case of a financial crisis. This is the result of the assumption that both CRDIV and BRRD are considered as fully effective before the introduction of separation, thus leaving limited scope for further reductions in pass-through to the safety net. This assumption implies a conservative estimate of net public finance benefits of the structural reform.

Broader and indirect costs and benefits - through e.g. market liquidity, lending and investment, asset prices and macroeconomic competition effects - may be substantial as the banks concerned play an important role in providing credit to the economy and market liquidity. These effects are not quantified within this report.

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1. INTRODUCTION AND OBJECTIVES

This report provides a contribution on quantification of costs and benefits to the impact assessment of bank structural separation. The analysis is based on the Systemic Model for Bank Originate Losses (SYMBOL)¹⁷⁸ for the simulation of banking losses and on balance sheet data for the analysis of allocation of losses and of changes in cost of capital.

Benefits of the reform are calculated based on overall differences in simulated losses in a financial crisis under scenarios with and without structural separation. Scenarios with separation include the effect of behavioural responses to the reform. Changes in losses are estimated for different public (public finances, safety nets) and private (equity owners, bail-inable bondholders) stakeholders. Costs are obtained by calculating the impact on the Weighted Average Cost of Capital (WACC) due to variations in the balance sheets following behavioural responses to structural separation and the ensuing reduced revenues of the Trading Entities. Variations in the funding costs of equity and bail-inable liabilities following variations in expected losses after the introduction of the reform can also be considered.

Results are subject to the caveat that the division of assets and risk weighted assets between trading and deposit-taking entities, the simulation methodology and the modelled behavioural responses are susceptible to a degree of uncertainty.¹⁷⁹

The analysis is based on the sample of 29 banks which could be affected by the reform according to criteria being proposed by the Commission.¹⁸⁰

Policy assumptions and scenarios to be analyzed are provided by DG MARKT, in particular, this costs-benefit analysis is performed under the assumption that bail-in of liabilities in

¹⁷⁸ The SYMBOL model (SYstemic Model of Banking Originated Losses) has been jointly developed by the JRC, DG MARKT, and academic experts of banking regulation. For technical details see: De Lisa R, Zedda S., Vallascas F., Campolongo F., Marchesi M. (2011), Modelling Deposit Insurance Scheme Losses in a Basel 2 Framework, *Journal of Financial Services Research*, 40(3), 123-141. Using bank balance sheet data as input, the SYMBOL model operates in two steps: 1) estimation of an average default probability for the assets of any individual bank, by means of the features of the Basel FIRB (Foundation Internal Ratings Based) loss distribution function. 2) Monte Carlo simulation of the distribution of aggregate losses on the basis of individual banks' asset default probabilities. See also Appendix C at the end of this report and Appendix 4 to Annex XIII of the Impact Assessment of the Bank Recovery and Resolution Directive: http://ec.europa.eu/internal_market/bank/docs/crisis-management/2012_eu_framework/impact_assessment_final_en.pdf.

¹⁷⁹ See e.g. section 3 for further details on simulation methodology and section 4 for additional details on the estimation of the size and capitalisation of separated entities.

¹⁸⁰ In their report "Trading activities and bank structural separation: possible definitions and calibration of exemption thresholds" Commission Services have proposed different definitions in order to identify different trading activities, such as market making and proprietary trading. The sample analysed in this report is selected based on definition 3, focusing on market and counterparty risk, see section 2 for additional discussion, see Appendix A for a complete list. It should be noted that not all candidate banks would necessarily be separated: the choice of simulating separation for the whole sample seems however the best possible choice in the absence of further details.

resolution is fully used and effective before the structural reform, as foreseen in the BRRD.¹⁸¹ This implies a conservative estimate of net social benefits of the structural reform.¹⁸²

The analysis does not take into account other social and private costs and benefits that might be incurred due to separation such as loss of economies of scope and scale, legal costs, relocation costs, effects on asset pricing and knock-on effects due to reduced market liquidity, reduced conflicts of interest within banks, reduced misallocation of resources, facilitated supervision.¹⁸³

The remainder of the report is structured as follows: in Section 2 the dataset. Section 3 outlines the methodology. Section 4 details how the balance sheet is split between the TE and the DTB upon separation and what adjustments are applied to the data to reflect the impact of the introduction of CRD IV (Basel 3). Section 5 presents the results of the simulations and their translation into costs and benefits. The last section concludes.

Several appendices are enclosed to present detailed figures and technicalities. In Appendices A and B the sample is described. Appendix C describes the SYMBOL model and Appendix D the methodology and adjustments applied for applying SYMBOL to the trading entity. A comparison of historical losses with simulated losses is provided in Appendix E. The estimated share of assets of large banking groups within the EU-27 are summarized in Appendix F.

¹⁸¹ This implies that banks are capitalised in line with CRD IV requirements and losses are absorbed by holders of bail-inable debt upon default or undercapitalization. A conservative choice has however been made regarding the amount of bail-inable liabilities effectively used before intervention of a public backstop, in line with the minimum levels required in the draft bank recovery and resolution framework being discussed in trilogue at the time this study was conducted. See section 3.3 for details.

¹⁸² If the structural reform also contributes to facilitating bail-in, part of the benefits found when evaluating the impact of Bank Recovery and Resolution Framework would be attributable to structural reform.

¹⁸³ As the large and complex banks might play an important role in providing credit to the economy and market liquidity, broader and indirect costs and benefits need to be considered in an overall impact assessment as well. These costs include effects on market liquidity, interest rates, asset prices and macroeconomic competition effects. A starting situation with highly indebted and leveraged banks, households, and governments may exacerbate any of these effects as high indebtedness together with lower asset prices and higher risk premia could lead to balance sheet effects. Many of the costs and benefits are extremely hard to quantify either because of their nature (e.g. enhanced resolvability and supervision of banks through transparency), or because of non-negligible cross-linkages and interactions across costs, risks and benefits and behavioural responses (e.g. changing risk taking incentives, new market players entering).

2. THE DATASET

The sample of 29 EU banks used in the simulation exercise (see appendix A and B for a full list and descriptive statistics) is identified based on the methodology presented in the JRC report “*Trading activities and functional structural separation: possible definitions and calibration of de minimis exemption rule*”. In particular the focus is on definition 3 of trading activities introduced in that report.¹⁸⁴ Small-sized bank (assets below 30 bn€) are excluded¹⁸⁵.

It should be noted that possibly not all candidate banks could be subject to separation, and that actual banks selected for separation will depend on the criteria eventually adopted in the legislation. In the absence of further details this seems however a reasonable selection on which to base the exercise.

Total assets of the sample amounts to 22.653 bn€ by end 2011, i.e. roughly 56% of European banks assets (Appendix B). All the banks in the sample are included in the European Banking Authority (EBA) capital exercise sample, excluding one medium-sized bank (Mediobanca).

The source of data for SYMBOL simulations is Bankscope, a proprietary database of banks' financial statements produced by Bureau van Dijk. The inputs needed for SYMBOL simulations are Risk Weighted Assets (RWA), regulatory capital and total assets. SNL Financial data (see Appendix B for descriptive statistics) are used to calculate the split of the balance sheet for each bank, as detailed in Section 3.¹⁸⁶ All data are consolidated as of 2011.

¹⁸⁴ Definition 3 focuses on market and counterparty risk by not considering available for sale securities and including gross volumes of securities and derivatives held for trading (see page 10 of the cited report for a more in-depth discussion). Although the sample of selected banks varies according to the definitions used for selection purposes, definitions 2, 3 and 4 of that report would all involve the same split of trading assets and liabilities for selected banks, so that a single analysis can be considered to cover all these three cases. See also footnote 180.

¹⁸⁵ Due to the limited aggregate assets of these small banks (0.25% of the total sample) simulation results are not materially affected by their exclusion.

¹⁸⁶ The balance sheet data available in Bankscope are not detailed enough to split the banks into the TE and the DTB, for instance Bankscope does not distinguish between derivative for trading and for hedging purposes.

3. METHODOLOGY

The SYMBOL model is used to simulate the losses of the sample of these 29 banks in case of a financial crisis under regulatory scenarios with and without bank structural separation and balance sheet data are used for the analysis of allocation of losses and of changes in cost of capital and revenues. All scenarios assume that CRD IV will be implemented and that an effective bail-in regime as contained in the Bank Recovery and Resolution Directive Proposal (BRRD) will be in place.

3.1. Allocation of assets, RWA and capital

In order to simulate the effects of structural reform, each bank in the sample is separated into a Trading Entity (TE) and a Deposit Taking Bank (DTB) using publicly available balance sheet data. The allocation of assets is based on definition 3 of trading activities presented in the JRC report “*Trading activities and functional structural separation: possible definitions and calibration of de minimis exemption rule*”, which includes securities (excluding loans) and derivatives held for trading.¹⁸⁷

RWA and capital are allocated between the DTB and the TE following the methodology described in the Commission Services report “*Analysis of possible incentives towards trading activities implied by the structure of banks’ minimum capital requirements*”, which is based on obtaining average risk weights for each category of assets using a panel regression, predicting risk weighted assets for each separated entity based on this estimated weights and the allocation from the previous step and obtaining minimum capital requirements based on this predicted risk weighted assets and capital adequacy ratios.¹⁸⁸

Adjustments are introduced to take into account the impact of the introduction of Basel 3 (CRDIV) on RWA, regulatory capital and minimum capital requirements. These are implemented using the average EU results of the 2011 Quantitative Impact Study (QIS) by the EBA. These adjustments imply increased RWA, a more strict definition of regulatory capital, and the introduction of the Capital Conservation Buffer. Regulatory capital is then topped up to 10.5% of RWA to meet the minimum capital requirements of Basel 3.

In this step, the implicit assumption that separation along these lines will effectively be possible is implicitly maintained.¹⁸⁹

¹⁸⁷ For additional details, see page 10 of the mentioned report. The exact procedure for estimating the final balance sheet composition and capitalization of the separated entities is illustrated in section 4.

¹⁸⁸ See section 4 for additional details.

¹⁸⁹ Separation along these lines could be difficult because e.g. legal obstacles to allocating certain assets or liabilities and/or because assets and liabilities could need to be divided in ways which do not allow the accounting identity to be respected in the two separate entities. For example, the amount of deposits could exceed the assets allocated to the DTB.

3.2. Simulation methodology

SYMBOL (SYstemic Model of Banking Originated Losses) is a micro-simulation model¹⁹⁰ which makes use of individual banks' balance sheet and regulatory capital data to simulate banks' losses due to the failure of its obligors and to derive the (aggregated) distribution of losses originated in the banking system. The main idea behind this model is that it is possible to estimate and average Probability of Default (*PD*) of the portfolio of obligors of a bank (the so called *implied* obligors' *PD*) by inverting the Basel FIRB (Foundation Internal Ratings Based) formula for capital requirements.¹⁹¹ The base SYMBOL methodology is used both for the DTB and for the TE, after taking into consideration the difference in confidence for calibration purposes (i.e. inverting the FIRB at 99% and not at 99.9%).^{192,193}

The distributions of systemic losses (both gross and in excess of banks' regulatory capital¹⁹⁴) are then simulated using the SYMBOL model. All simulations are run without contagion effects between the banks in the sample.¹⁹⁵ Adjustments to the final distribution of losses are also made to account for banks assets outside the EU based on detailed unconsolidated balance sheet data, such that losses are reduced proportionally for each banks' estimated share of non-EU subsidiaries.¹⁹⁶ Losses are allocated to equity, bail-inable liabilities, safety-net tools (DGS, RF) and public finances based on available balance sheet data.

To determine financial crisis losses in the *baseline no-reform scenario*, Gross Losses are separately simulated for the TE and the DTB and are then summed to obtain total gross losses of the undivided bank.¹⁹⁷ Total regulatory capital of the undivided bank is used to absorb

¹⁹⁰De Lisa, R., Zedda, S., Vallascas, F., Campolongo, F., and Marchesi, M. *Modeling Deposit Insurance Scheme Losses a Basel II Framework*. Journal of Financial Services Research 40, 3 (2011).

¹⁹¹ See Appendix C for an explanation of the SYMBOL methodology and the calculation of the implied obligor PD.

¹⁹² The base SYMBOL methodology is more concerned with default (i.e. credit) risk than with market risk, to which the TE is more exposed: see Appendix D for additional details on using SYMBOL to simulate losses for the TE.

¹⁹³ The choice of a 99% confidence implies an increase in the riskiness of trading entities, while the choice of ignoring the difference between the holding horizon of trading securities (10 days) and the simulation horizon (1 year) implies a decrease. A precise quantification of the impact of these two drivers was not possible.

¹⁹⁴ Excess losses are those losses not absorbed by regulatory capital. In addition to these excess losses, banks recapitalisation funding needs to meet Basel 3 8% minimum capital requirements are taken into account. This assumes that all banks considered in the sample represent systemic financial stability relevance.

¹⁹⁵ The relevance of contagion through the interbank channel is significantly reduced if bail-in in the context of the Bank Resolution and Recovery Framework is fully effective. For simulating contagion through the bail-in channel, outcomes would be extremely dependent on assumptions about the liability and exposure split due to the sensitivity of the contagion mechanism to the shape of the network matrix and uncertainty about future holdings of bail-inable securities.

¹⁹⁶ The estimated shares of banks activity inside the EU is reported in Appendix D for the largest banks representing 83% of the sample's total assets.

¹⁹⁷ The advantage of taking as a baseline the gross losses of the separately simulated portfolios rather than simulating the undivided bank, is that the gross losses in the scenarios before and after separation are the result of a single set of simulations and are therefore less subject to statistical artefacts and implicit

combined losses of the DTB and TE activities in the baseline scenario; the total bail-in capacity¹⁹⁸ is applied to the undivided bank's Excess Losses after depletion of the capital. This allows calculating the changes in simulated losses affecting the different stakeholders with respect to a baseline where the same two activities are conducted within the same entity.

3.3. Calibration of market behavioural responses

To quantify the effects of separation, a two-step approach is taken. In the first step, simulations are used to estimate Gross Losses, Losses in Excess of Capital and Recapitalization needs¹⁹⁹ for the undivided universal banks as well as separated TEs and DTBs in a systemic crisis of the same magnitude as the recent one.²⁰⁰ The sum of the two distributions of gross losses against the total capital of the two entities represents the baseline situation where the two entities are joined in a single universal bank. Comparison with the results obtained by considering only capital in each separated entity against its own losses give the effect of effects of separation before behavioural response of the TE. This allows estimating the shift in "simulated losses in case of a crisis" across stakeholders as the equity and the bail-in capacity (LAC) can no longer be pooled. Under this approach, the separation does not directly change the overall gross losses in the system but leads to changes in the allocation of losses across stakeholders. Five groups of private stakeholders are considered (DTB shareholders, TE shareholders, DTB bail-inable creditors, TE bail-inable creditors), as well as two safety nets (DGS, RF and public finances)).

These shifts in risks affect risk premia and bank funding costs by changing expected losses of the different stakeholders as activities of the TE are more risky than those of the undivided bank and as capital and bail-in capacity can no longer be pooled with the DTB.. As a result, the separated banks will have incentives to change their balance sheets. These behavioural responses are calibrated such that the riskiness of the TE matches that of the original universal banks before separation.²⁰¹ Note that DTBs cannot adjust their balance sheets as they are constraint by minimum regulatory requirements on the MCR (>10.5% RWA) and the

correlation settings. A simulation in which the undivided bank would be simulated as having one portfolio would implicitly assume a correlation of 1 between the losses in a financial crisis of the DTB portfolio and the TE portfolio (as they are run as one), rather than 0.5 when they are run separately. This makes the tail of the undivided bank much fatter than that of the separately run bank with pooled capital and LAC and it would thus not provide an adequate baseline.

¹⁹⁸ Total loss absorbing capacity is assumed to be equal to 8% Total Assets. This minimum requirement is in line with the minimum amount of private bail-in necessary to trigger intervention of a Resolution Fund in the position on the BRRD of the Council of June 2013 (http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ecofin/137627.pdf). Given that the introduction of a credible bail-in regime would trigger dynamical responses of banks and markets which cannot be fully modelled here, a conservative simplifying assumption is made that all liabilities which could become eligible for bail-in in excess of this limit will be covered by collateral or other guarantees. If more funds will be available for bail-in, losses on public finances and expected losses on bail-inable first bonds might be further reduced with respect to the results presented in the following.

¹⁹⁹ See Appendix C for details of these definitions.

²⁰⁰ See Appendix E for details of this calibration

²⁰¹ These behavioural responses are calibrated on the basis of the FIRB formula (which is also the basis for SYMBOL simulations). The percentile to which capital covers losses at the universal bank is approximated to be the average of that of the DTB (99.9) and the TE (99), weighted with the relative shares of RWA. This is about 99.72.

LAC (>8% TA). Three alternative ways by which the TE can reduce the riskiness to its shareholders and creditors are considered in the analysis:

- Increasing regulatory capital, maintaining the risk weights and total assets at the same level.
- Reducing riskiness while keeping total assets and the regulatory capital constant. In the SYMBOL model this is simulated through a reduction in risk weights (RWA).
- Reducing riskiness through a reduction in total assets, while keeping the risk weight per unit constant and the regulatory capital the same (i.e. reducing leverage).

In the second step, losses are re-simulated taking account of these behavioural responses affecting the balance sheet of the TEs and the effects of separation including behavioural responses can be calculated. Note that behavioural responses are not only redistributing losses but also cause a change in the total amount of losses that need to be absorbed by the system.

In this part, an implicit assumption is made that capital and debt necessary will be available from the markets to recapitalize the separated entities after separation in case they show a shortfall. Assumptions preventing substitution of capital for bail-in capacity are also introduced, in order to keep risk for creditors of the trading entity in line with those of creditors of the universal bank.²⁰²

3.4. Costs and benefits

Costs and benefits of the reform are then calculated based on changes (with respect to the baseline) in estimated losses for different stakeholders in case of a financial crisis and on changes in the Weighted Average Cost of Capital (WACC).²⁰³ Possible reduced revenues of the Trading Entities due to behavioural responses are also estimated using an average return on risk-weighted assets, and the reduction in risk-weighted assets due to behavioural responses.²⁰⁴ The related changes at economy-wide level such as pass-through of variations of DTB's WACC to the cost of capital for borrowing firms and reduced value added in the economy (e.g. market liquidity) are not explicitly calculated.

²⁰² See section 5.2.

²⁰³ It should be noted that not all changes in the distribution of losses necessarily produce a benefit, as losses for some stakeholders might increase following separation (generating a cost), and that not all changes in the cost of capital necessarily produce a cost, as total weighted average cost of capital for some entities might decrease following separation (generating a benefit). It should also be noted that these results are not strictly additive, as variations in losses will translate into variations in the cost of exposed liabilities if we allow risk premia to be influenced by changes in expected losses.

²⁰⁴ Strictly speaking, aggregate benefits are given by the overall reduction in gross and excess losses across all banks due to the behavioural response following structural separation. Lower losses and lower bail-in reduces the risk of contagion and facilitates resolution. Aggregate costs are measured as the overall reduction in revenues of the TE due to the reduced (risk weighted) assets.

Distributional effects are estimated by measuring changes in estimated losses for different stakeholders in case of a financial crisis before and after structural separation.

For the changes in the WACC two scenarios are developed, thus providing a range for the likely WACC effect. One in which risk premia on equity and bail-inable bonds do not reflect changes in expected losses. In this case, changes in WACC are estimated exclusively based on changes in the capital structure of entities following separation. In the second scenario, risk premia are allowed to vary reflecting changes in expected losses in a financial crisis after separation. In this part, implicit assumptions are made that changes in default risk and expected loss evaluated in the case of a financial crisis can be used to estimate changes in risk premia, and that changes in simulated default risk and expected loss (i.e. excluding other factors which are not included in the simulation model employed) are a sufficient proxy to estimate changes in risk premia. Moreover, as we cannot observe and do not have a reliable estimate of risk premia after the introduction of the recovery and resolution framework (which are already partly reflected in market prices of subordinated and senior debt), available data on current risk premia will be used as baseline which may imply a small underestimation of the WACC impact.

4. BALANCE SHEET ALLOCATION UPON SEPARATION

Each bank in the sample is split into a DTB and TE. First, the total assets of the banks are split on the basis of data from SNL (in particular its classification of financial assets and liabilities). In addition, RWA, total regulatory capital and the minimum capital requirement are split between the two entities as described below.

4.1. Allocation of assets

In line with the definitions of trading activities introduced in the abovementioned JRC report, assets allocated to TEs are: Securities Held for Trading (STA) (excluding loans and derivatives) and Derivative Assets Held for Trading (DTA). This split of the balance sheet does not depend on the particular type of trading activity effectively undertaken by each bank.²⁰⁵

The DTB is instead allocated all loans to banks, loans to customers, all other assets held at amortized cost, securities held to maturity, available for sale securities and securities held at fair value (see Table 1).

Remaining total assets (including other assets such as cash) are allocated between the TE and DTB, proportionally to the already allocated SNL financial assets.

Derivatives held for hedging purposes are allocated proportionally to the allocation of RWA based on explicitly allocated classes (see next section).

Table 1 - SNL Financial Assets considered for the allocation following separation.

SNL Balance sheet Items	TE	DTB
Net Loans to Banks (NLB)		X
Net Loans to Customers (NLC)		X
Securities Held at Amortised Cost (SAC)		X
Securities Held to Maturity (STM)		X
Securities Held for Trading (STA) (excluding loans and derivatives held for trading)	X	
Derivative Assets Held for Trading (DTA)	X	
Securities Held at Fair Value (SFV) (excluding loans held at fair value)		X
Available for Sale Securities (SAFS) (excluding loans available for sale)		X
All other assets not explicitly allocated (excluding derivatives held for hedging purposes)	Divided proportionally to explicitly allocated financial assets	
Average Share of Financial Assets	31%	69%

Note: Derivatives Assets Held for Hedging Purposes are split proportionally to Risk Weighted Assets calculated based on other classes (see section 4.2)

²⁰⁵ See footnote 180.

Figures 1 and 2 show the average TE and DTB assets as a share of total assets following the banks split of assets.

The table of Appendix B shows the result of the allocation of total assets for each individual bank in the sample.

Figure 1 - Average TE assets as a share of total assets following structural separation

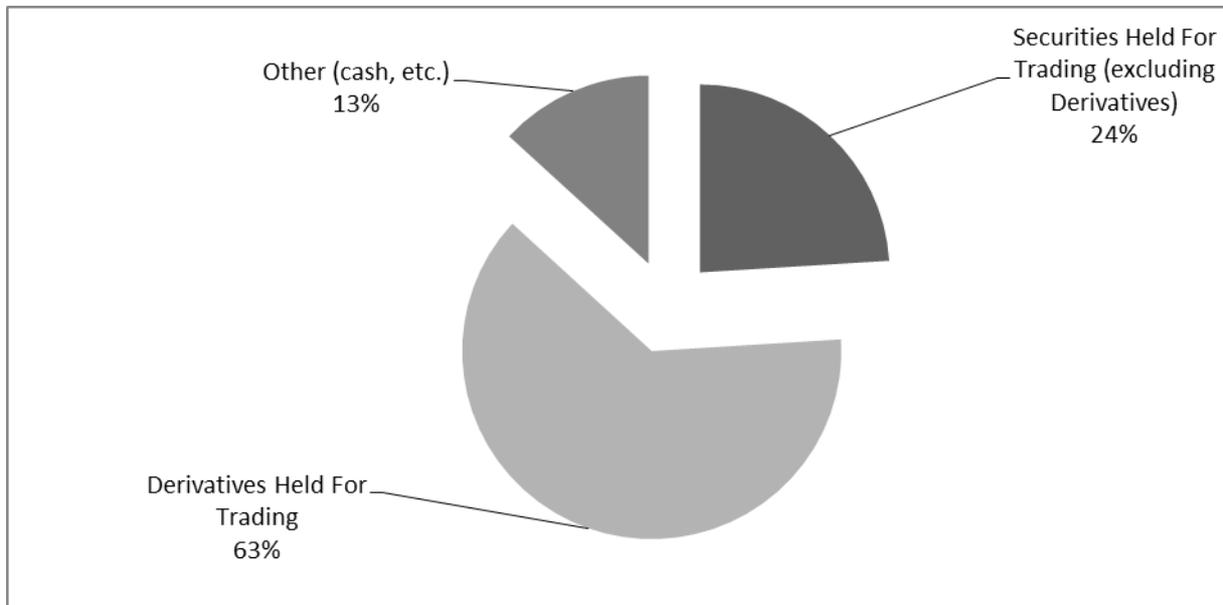
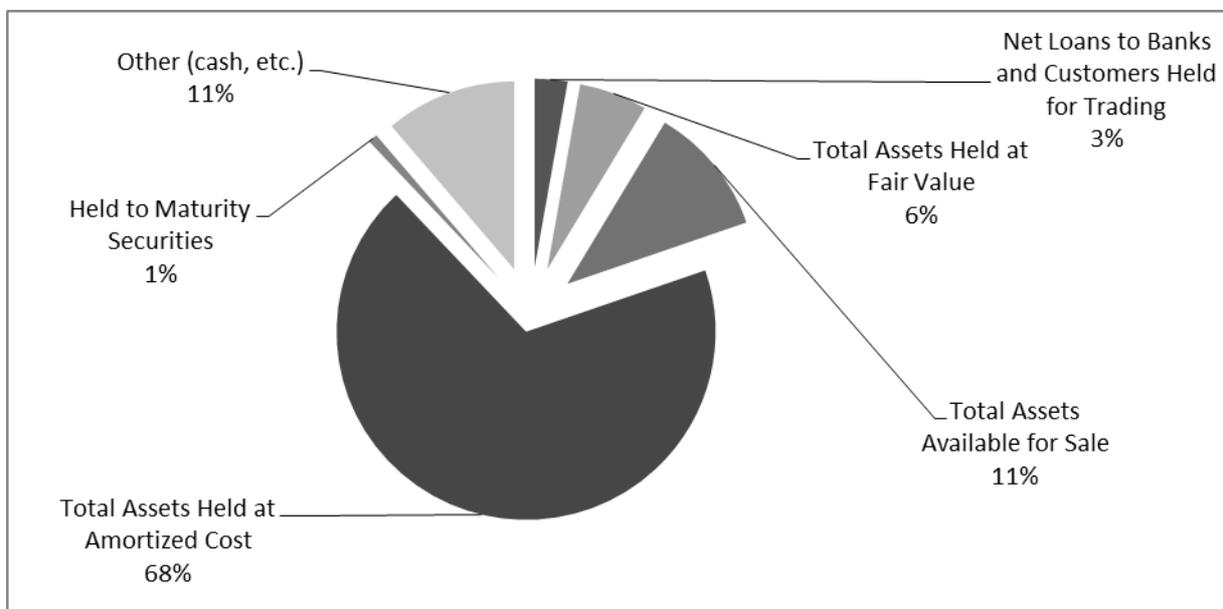


Figure 2 - Average DTB assets as a share of its total assets following structural separation



Source: SNL database and JRC estimates

4.2. Allocation of Risk Weighted Assets and Capital

RWA and capital are allocated between the DTB and the TE following the methodology described in the Commission Services report “*Analysis of possible incentives towards trading activities implied by the structure of banks’ minimum capital requirements*”.

A fixed effects regression model has been estimated allowing assigning risk weights to the different banking activities, as shown in Table 2.

Table 2 - Estimated risk weights across banking activities (EU sample)

	NLB	NLC	SAC	STM	SAFS ²⁰⁶	SFV	STA	DTA+DTL ²⁰⁷	DHA+DHL
RWA coefficient	.18	.52	.31	0 ²⁰⁸	.39	.23	.099	.024	-1.95

Note: NLB = Net Loans to Banks; NLC = Net Loans to Customers; SAC = Securities Held at Amortised Costs; STM = Securities Held to Maturity; SAFS = Available For Sale Securities (excluding loans); SFV = Securities held at Fair Value; STA = Securities (excluding loans) Held For Trading as Assets; DTA= Derivatives Held For Trading as Assets; DTL = Derivatives Held For Trading as Liabilities

These estimated risk weights for the different balance sheet components are used to estimate how the RWA of the original undivided bank should be split between the TEs and the DTBs.²⁰⁹ The total regulatory capital of the two entities under Basel 2 is then apportioned using the obtained split of RWA.

The split Basel 2 RWAs are adjusted to take into account future changes introduced by Basel 3 to RWA definitions and requirements. Average EU results of the 2011 Quantitative Impact Study (QIS)²¹⁰ are employed for the adjustments, as detailed in the table below. The changes are allocated between the DTB and the TE as described below.

²⁰⁶ This variable has a coefficient of 0.17 before the introduction of Basel 2.5 regulation changes in 2011.

²⁰⁷ Following the report “*Analysis of possible incentives towards trading activities implied by the structure of banks’ minimum capital requirements*” the liability side of derivatives is included in the analysis. DTL are Derivative Liabilities Held for Trading and DHL are Derivatives Liabilities Held for Hedging Purposes (DHA).

²⁰⁸ The coefficient obtained from the regression is 0.25, but its t-statistic is so low that it has been set to zero for the purposes of calculating RWAs. See the report cited in the previous note, section 3 and appendix A, for additional details on this procedure.

²⁰⁹ First, estimated RWA are calculated for the TE and the DTB based on these coefficients. These RWAs are then re-normalized to sum to the RWA of the original undivided bank.

²¹⁰ <http://www.eba.europa.eu/documents/10180/87706/EBA-BS-2012-037-FINAL--Results-Basel-III-Monitoring-.pdf/778804a5-8e3e-4073-83df-afd1be0b626e>

Table 3 - Average EU (weighted on total assets) corrections for RWA and regulatory capital from EBA as of 30/06/2011

	G1 Banks	G2 Banks
Relative Change in RWA for the whole bank (%)	21.20	6.90
Relative Change in Regulatory capital for the whole bank (%)	-34.35	-7.76

Source: EBA

Note: In this exercise G1 - Tier 1 Capital > 3 bn€, G2 - Tier 1 Capital <3 bn€

The Basel 3 increase in the RWA is allocated based on a breakdown of the changes in RWA published by EBA²¹¹, reported here in Table 4. In particular, the Table shows the part of the total percentage increase in RWA due to:

- a) the change in RWA following changes in the ‘definition of capital’²¹², which is split proportionally to the share of total assets allocated to the TE and the DTB.
- b) counterparty credit risk, which is allocated to TE for the share due to Credit Valuation adjustment (CVA) and to the DTB for the part due to the higher asset correlation parameter included in the IRB formula.
- c) securitization in the banking book, which is fully allocated to the DTB.
- d) to market risk (including securitisation in the trading book) is fully allocated to the TE.

Table 4 - EBA split of the increase in RWA due to Basel 3 (average %-increase)

Type	Total relative increase in RWA	Part due to definition of capital	CCR banking book	CCR trading book	Securitisation banking book	Trading book
G1	21.2	7.9	1.2	6.9	1.0	4.2
G2	6.9	3.4	2.9		0.2	0.4

Source: EBA

Results are presented in Table 5 both for Basel 2 and for Basel 3.

²¹¹ See footnote 5 for complete reference.

²¹² These effects are not to be confused with those linked to the stricter definition of the quality of capital introduced by Basel 3. The change in the RWA due to the change in the definition of capital measures: (i) the effects of lower RWA for exposures that are included in RWA under Basel 2 but receive a deduction treatment under Basel 3; (ii) the increase in RWA applied to securitisation exposures deducted under the Basel 2 that are risk-weighted at 1250% under Basel 3; (iii) the increase in RWA for exposures that fall below the 10% and 15% limits for CET1 deduction.

Table 5 - Allocation of total RWA between the TEs and the DTBs under Basel 2 and Basel 3

	Basel 2	Basel 3
DTB	91%	79%
TE	9%	21%

The new Basel 3 definition of the quality of capital affect both entities, thus the decrease in the regulatory capital is split proportionally to the capital allocated to the two entities. For banks with adjusted regulatory capital below 10.5% of RWA, the capital is topped up to meet the Basel 3 minimum required capital including the capital conservation buffer (10.5% RWA).

Appendix B shows the result of the allocation of RWA for each individual bank in the sample.

5. RESULTS: COSTS AND BENEFITS

5.1. Simulations of separation before behavioural responses

This section presents the SYMBOL simulation results. As the very severe crisis (with excess losses at the 99.95th percentile) shows most similarity to real state aid figures during the last crisis in terms of banks' losses, all figures and calculations in the tables reflect simulations of a crisis of that severity (see Appendix D).

Table 6 shows gross losses (in row 1) and excess losses (i.e. losses in excess of capital) plus recapitalisation needs²¹³ in row 3, before (column A) and after (column B to D) bank structural separation, before taking into account market behavioural responses.

Table 6 – Effects of separation on distribution of losses for bank sample before market behavioural responses – bn€

Losses	Undivided Bank	Structural Separation <i>before Market Behavioural Responses*</i>		
		Sum TE+DTB	TE	DTB
	A	B=C+D	C	D
1 - Gross Losses and recapitalisation needs	629	625	242	383
2 - Losses on equity	380	339	108	231
3 – Excess Losses and recapitalisation needs encumbering bail-in and resolution	250	286	134	152
4 - Bail-in losses (LAC = 8% TA)	201	196	94	102

The total amount of bank gross losses plus recapitalisation needs are simulated at EUR 629 bn before separation. They are virtually the same after separation EUR 625 bn. These need to be borne by equity, bail-in, safety nets and the public sector. Row 2 and 4 show that losses on equity and – to a lesser extent – losses bail-in losses are lower after separation than for the undivided bank. The simulation results of Table 6 are used as input for Table 7 that shows in more detail the effect on the different bank creditors of the separation.

²¹³ The costs of the recapitalisation of banks to Minimum Capital requirements is considered as all the banks of the sample are assumed to be systemic in case of distress.

5.2. Behavioural responses

As expected, gross losses (plus recapitalisation needs) over total assets are higher for the TE than for the undivided bank and for the DTB they are lower (Table 7). As losses would increase by about 20% (from 2.8% to 3.4% as a share of total liabilities plus equity) for the TEs with respect to the original undivided banks in the absence of any response, it is foreseeable that TEs will be required by the markets to change the structure of their balance sheets in response to separation. The effect of separation is particularly significant on equity, as – compared to the undivided bank- losses on equity in case of a very severe financial crisis would increase by more than 1/3 for the TE, while they would reduce by almost ¼ for the DTB. The effect of separation on bail-in losses is smaller.

Table 7 – Losses for the bank sample for the undivided bank and after separation before market behavioural responses

	Gross losses and recapitalization needs as a share of total liabilities plus total equity	Losses on equity as a share of total equity	Bail-in losses as a share of LAC minus equity
1 – Undivided Bank	2.8%	40.4%	23.0%
2 - DTB	2.5%	31.1%	20.5%
3 – TE	3.4%	55.2%	24.6%

Note: The figures in this table reflect averages across all banks. They should not be compared to the calibration of the required LAC in the BRRD of 8% TA .

As detailed in section 4.2, the TE’s adjusted balance sheets are calibrated so as to pose the same probability of default to creditors as the initial undivided bank posed. It should be noted that also LAC is subject to a behavioural response. LAC is calibrated such that it is at least 8% TA for all banks and LAC on top of equity as a share of TA is at least as high as in the undivided universal bank. The latter condition is to avoid that behavioural responses increasing capital/TA would only substitute bail-in capacity and that capital/TA would be higher than LAC/TA in a number of cases.

Table 8 presents the key data of the original and adjusted balance sheets for the banks.

Table 8 – Key balance sheet data for the undivided bank, the DTB and TE before and after market behavioural responses – bn€

	TA	Regulatory capital (B3)	LAC on top of equity	RWA
1 – Undivided Bank	22,653	939	874	8,945
2 - DTB	15,463	744	495	7,089
3 – TE	7,191	195	381	1,856
4 – TE with increased capital	7,191	322	381	1,856
5 – TE with reduced RWA	7,191	195	392	1,134
6- TE with reduced TA	4,152	195	179	1,134

Note: The behavioural responses of the TE are calibrated such that the probability of default of the TE matches that of the undivided universal bank after the behavioural response.

The actual bank response can be a combination of these illustrative behavioural responses. It would depend inter alia on bank specific characteristics and market specific risk appetite and regulation.

5.3.Simulations of separation after behavioural response

Based on the adjusted balance sheets following the behavioural response, SYMBOL simulations are run to capture the combined effects of the separation on the different stakeholders and the system as a whole.

Table 9 – Losses for bank sample for the undivided banks and after structural separation after market behavioural responses – bn€

Losses	Undivided Bank	Structural Separation <i>after Market Behavioural Responses</i>		
		Sum TE+DTB	TE	DTB
	A	E=F+G	F	G
1 - Gross Losses and recapitalisation needs	629	504-583	121-200	383
2 - % on Equity	60%	61%-63%	61%-67%	60%
3 – Excess Losses and recapitalisation needs encumbering bail-in and resolution	250	192-219	39-67	152

Table 9 shows gross losses (in row 1) and excess losses (i.e. losses in excess of capital - in row 3) plus recapitalisation needs²¹⁴ before (column A) and after (column E to G) bank structural separation taking into account market behavioural responses. (They can be compared to columns B to D of Table 6 showing the effects before market behavioural responses).

Benefits from structural separation can be seen along the following metrics:

- the reduction in the sum of gross losses and recapitalisation needs following structural separation, compared to the situation prior to structural separation. Gross losses can in particular decrease from 629 bn € in column A to as low as 504 bn€ as shown in in column E in row 1. The lower gross losses reflect the reduction in gross losses of the TE following market behavioural responses and will vary according to the type of market behavioural response that will prevail. For the behavioural responses with lower risk (i.e. RWA), the lowest gross losses are generated.²¹⁵ When considering net benefits, the loss in bank revenues on these activities and the related reduced value added in the economy (e.g. market liquidity, provision of credit and capital, etc) needs also to be taken into account (see costs section below);

²¹⁴ The costs of the recapitalisation of banks to Minimum Capital requirements is considered as all the banks of the sample are assumed to be systemic in case of distress.

²¹⁵ For the behavioural response with increased capital in the TE, gross losses for the trading portfolio are the same as in the baseline scenario, but there is a lower recapitalisation need to the MCR due to the higher initial capital.

- the reduction in the sum of excess losses plus recapitalisation needs before application of bail-in compared to the situation prior to structural separation. Excess losses plus recapitalisation needs before bail-in can decrease from 250 bn € in column A to 192 bn € as shown in column E in row 3. This means that the banking system – and in particular the trading activity undertaken by the part of the banking system subject to structural separation – can be expected to become less risky for the rest of the financial system as potential financial stability risks and contagion due to bail-in are reduced. This is due, in particular, both to the reduction in generated risks (i.e. gross losses), and to the fact that a higher share of these losses are absorbed by the shareholders of the TE, as shown in row 2. This means a better alignment of the incentives driving TEs, i.e. a reduction of potential moral hazard by TEs.²¹⁶

Focusing on the resolution process, Table 10 presents how excess losses plus recapitalisation needs before application of bail-in are split between bail-inable creditors and the safety net tools/public finances. Bail-in is assumed to take place up to a Loss Absorbing Capacity (LAC) equal to 8% of Total Assets (in line with the June 2013 Council position²¹⁷ on the BRRD). The LAC considered for bail-in can nonetheless be higher than 8% of Total Assets in case of market behavioural responses: in behavioural response 1, where TEs increase their capital, the LAC is increased by the corresponding amount so that there is no substitution between capital and bail-in-able liabilities and bail-in capacity in excess of capital is unchanged. In line with response 1, in behavioural response 2 and 3, residual LAC (i.e. bail-in capacity in excess of capital) is assumed at least as high as a share of total assets as in the original undivided bank. This ensures that a higher capital ratio to total assets in the behavioural response does not lead to a perverse automatic reduction in the bail-in capacity.²¹⁸

Table 10 – Allocation of excess losses plus recapitalisation needs after market behavioural responses– bn€

Losses	Undivided Bank	Structural Separation <i>after Market Behavioural Responses*</i>		
		Sum TE+DTB	TE	DTB
	A	E=F+G	F	G
1 - Excess Losses and recapitalisation needs before application of bail-in	250	192-219	39-67	152
2 - Bail-in (LAC = 8% TA or higher as per behavioural response)	201	129-149	27-47	102
3 - Excess Losses and recapitalisation needs after application of bail-in (i.e. contingent liabilities on public finances and the safety net tools - DGS and Resolution Fund -)	49	62-70	12-19	50

²¹⁶ In case of efficient capital markets there would not be a social benefit in shifting losses from bail-in bonds to equity. However, as markets are not efficient and spill-over effects and risks of contagion in case of resolution and bail-in of bondholders are likely to remain substantially higher than those of losses on equity.

²¹⁷ See footnote 21.

²¹⁸ This should also be considered part of the behavioural response, as banks may try to keep risk constant for bail-in able bonds holders, as well as for equity holders, as capital is increased towards the 8% TA LAC requirement.

The amount of losses not absorbed by bail-in and potentially affecting the safety net and/or public finances increases. On the one hand, the loss of the ability to pool capital and LAC across the entities implies that they can absorb a lower share of losses. On the other hand, gross losses and excess losses in the system are reduced due to the behavioural responses of the trading banks. While the overall safety net and public finance losses show some increase, the safety net can focus more on the risks stemming from the DTB, while the risks stemming from trading activities are mostly absorbed by the LAC through the application of bail-in.

5.4. Impact on Funding costs

Impacts on the costs of capital are evaluated by looking at variations in Weighted Average Costs of Capital (WACC) due to changes in the structure of the balance sheets of banks after behavioural responses and by **(a)** considering a situation where risk premia do not vary in response to changes in the expected losses in financial crises and **(b)** one where they do vary in response to changes in risk.²¹⁹

In all, as far as costs are concerned, the changes in banks' funding costs post structural separation are in essence due to the following effects.

- (i) Increases in the capital share of total funding by the TE due to behavioural response.
- (ii) Increases in LAC over the 8% TA minimum by the TE due to behavioural response.
- (iii) Changes in the risk premium on equity as markets perceive changes in riskiness and expected losses.
- (iv) Changes in the risk premium on bail-inable bonds as markets perceive change in expected losses.
- (v) Reduced revenues and return on equity due to reduction in TE (risk-weighted) assets.²²⁰

For case **(a)**, where risk premia do not vary, we measure changes in the WACC for the TE and the DTB based on effects (i) and (ii) by multiplying the increases on capital and LAC by the currently observed premiums.

For case **(b)**, where risk premia vary in response to changes in expected losses in case of crisis, in addition to (i) and (ii), we also estimate effects (iii) and (iv) by adjusting risk premiums proportionally to the variation in expected losses.²²¹

²¹⁹ Under a full applicability of the Modigliani-Miller theorem WACC (for the whole banking system) would not change if the risks on the asset side would not change. The allocation of losses across the banking system should equivalently not affect the total funding costs of the banking sector (as long as there is no shift of losses from the private to the public sector, and no change in the total asset portfolio). The increase in funding costs of the TE and the reduction in costs for the DTB should cancel out at unchanged balance sheets. Modigliani, F.; Miller, M., 1958, "The Cost of Capital, Corporation Finance and the Theory of Investment". *American Economic Review* 48, n. 3

²²⁰ Effect (v) does not impact funding costs but is considered in the overall cost assessment.

Effect (v) is calculated based on currently observed returns on RWA and is relevant for the behavioural responses with reduced RWA.

Table 11 shows effects (i) to (iv) and the total change in the WACC for the DTB (Row 1), the TE under different behavioural responses (Row 2-4) and the range spanned by the weighted averages²²² of the impacts for the two entities across scenarios (Row 5). The first 4 columns of Table 11 (A to D) are based on calculations that are presented and explained in Tables 12 to 15 below.

Column A and B of Table 11 show, respectively, the change in WACC due to the increases in capital and LAC. Tables 12 and 13 provide the underlying calculations. Columns C and D provide the estimated changes in risk premium due to changes in expected losses on equity and first bail-inable bonds (BiB). The calculations for these are presented in Tables 14 and 15. Column E provides the total estimated impact on WACC in case the changes in expected losses on BiB and equity compared to the undivided bank do not affect risk premia. Column F provides the total effects with changes in risk premia on equity and debt due to changes in expected losses.

Results are presented as ranges of point estimates across combinations of behavioural scenarios and cases (i.e. including variations in risk premia or not when calculating WACC). While sensitivity analysis to different starting levels of risk premiums is not included, it should be noted that relative changes would not be much affected by variations in initial risk premia, as these would imply a change both in the absolute variation and in the baseline level.

Without changes in risk premia, the average WACC in the system increases as the TEs need to hold more capital and LAC. The increase in WACC for the TEs is estimated at 9 bps in case of behavioural responses with increased capital and reduced total assets and 0 bps for the behavioural response in which the TE reduces RWA but leaves its liability structure unchanged (column E). The DTB does not need to hold capital or LAC above minimum requirements as its probability of default and expected losses decrease. However, as the DTB cannot decrease its capital and LAC below the minimum requirements, the weighted average WACC across all banks in the sample increases by 2 to 4 bps.

With changes in risk premia, the average WACC across the sample banks decreases (by 1 to 9 bps) as the gross losses go down (column F). The WACC of the DTB is reduced by 4 to 9 basis points as it no longer supports the more risky TE. The reduced expected losses on capital and LAC reduce the risk premia on equity and subordinated debt. For the TEs, the reduced riskiness for bail-inable bonds as a result of the behavioural responses in particular limit the increase in the WACC. In the behavioural response with reduced RWA, the overall WACC for TEs decreases by 8 to 9 bps. This effect is smaller for the behavioural response with reduced total assets, as the bail-in capacity (LAC-capital) is significantly reduced with

²²¹ Costs (i) and (ii) have a direct impact on the TE and DTB WACC. Effects (iii) and (iv) imply a benefit/costs to the banks creditors in case of a financial crisis. The change in the riskiness of the banks' capital and BiB can affect the WACC if markets anticipate it.

²²² Weighted averages are calculated based on relative share of total assets in the final situation. I.e. the weights are 69% and 31% for behavioural responses 1 and 2 and 79% and 21% for behavioural response 3, as resulting from Table 3.

the reduction of total assets.²²³ Estimated reductions for the part related to bail-inable bonds in TEs are due to lower gross losses, the shifting of losses towards capital and reduced pooling (see also Table 15 and its discussion).

The reduction in the WACC of up to 9 bps for the TE in case of a behavioural response with reduced risk weighted assets should be considered together with the accompanying loss of revenues per unit of assets due to the lower RWA. In addition to the change in funding costs, this loss of revenues per unit of assets represents a further ‘cost’. While the reduced RWA concerns both behavioural responses in rows 3 and 4, the effect is particularly important for the behavioural response in row 2 with reduced risk weighted assets as the quantity of total assets and thus the overall funding quantity is unchanged. Lost revenue due to lower RWA should thus be counted in full,²²⁴ whereas for the behavioural response in row 3, RWA, total assets and thus funding needs go down proportionally such that revenues per unit of assets should not change.

The costs estimates are in line with ex-ante expectations and the objectives of the structural separation.

²²³ These estimates of funding costs are broadly consistent with those presented in the UK Government’s impact assessment (IA) for the Financial Services (Banking Reform) Bill. Based on estimates provided by the major UK banks of the likely effect on their funding costs the UK Government uses for the purposes of the IA a range of minus 10 to 0bps for the changes in cost of subordinated, long-term unsecured and short-term unsecured debt in the ring-fenced banks and a range of 0 to 75bps for non-ring-fenced banks. Note that these estimates only apply to 30-35% of overall funding costs, so to compare to WACC impact that should be adjusted accordingly. Moreover, the UK IA does not assume bail-in to be effective in the baseline. This implies that the reduction in funding costs for the DTB is smaller (as it still benefits from implicit subsidies), and the high end of the increase in funding costs for the TE is likely to reflect loss of implicit subsidy. Also the UK IA does not analyse any behavioural responses to the balance sheets. <http://www.official-documents.gov.uk/document/cm85/8545/8545.pdf> (p31-56).

²²⁴ Bain (2013) reports that the 10 largest EU banks had a return on RWA in 2009-2012 of 1.3%. Ranging across years between 0.9% and 1.7% on average. Bain estimates a return of 1.6% to 1.8% is required to cover the costs of capital. Taking a range between 0.9% and 1.8%, the reduction in revenues due to the reduction in RWA in the behavioural response 2 (reduced RWA) can be estimated to be 6-13 bn per year by multiplying the reduction in RWA by the return on RWA. This lower revenue would reduce the margin in case of BR2 by 9 to 18 bps. This may overestimate the actual effect on the profit margin as the marginal return on RWA is likely to be lower than the average return on RWA. Bain (2013) “European Banking Striking the right balance between risk and return” at <http://www.bain.com/publications/articles/european-banking-bain-report.aspx>

Table 11 - Estimated change in WACC in different behavioural responses due to increased capital (A) and LAC (B), changed risk premium due to changed expected losses on BIB (C) and changed risk premium on capital due to changed expected losses (D) (in bps).

	Change in WACC due to :					
	increase in capital (Table 12)	increase in LAC above 8% TA (Table 13)	change in risk premium due to change in expected losses on equity (Table 14)	change in risk premium due to changed expected losses on BIB (Table 15)	Total without changes in risk premia	<i>Total with changes in market risk premia</i>
	A	B	C	D	E=A+B	<i>F=A+B+C+D</i>
1 - DTB	0	0	-8 to -3	-1	0	<i>-9 to -4</i>
2 – TE with increased capital	7	2	<1	-7	9	<i>2 to 3</i>
3 – TE with reduced RWA*	0	0	<1	-9	<1*	<i>-9* to -8</i>
4- TE with reduced TA*	8	1	<1	-4	9	<i>5 to 6</i>
5 – Range (Weighted Averages on TA)	0 to 2	<1	-6 to -2	-4 to -2	0* to 3	<i>-9* to -1</i>

Notes:(*) The reduction in the WACC of up to 9 bps for the TE in case of a behavioural response with reduced total assets or risk weighted assets should be considered together with the accompanying loss of revenues due to the lower risk weighted assets. See the discussion on previous page and in footnote 47.

- The risk premium on senior unsecured debt is assumed at 174 bps; on subordinate debt it is at 307 bps, and the equity risk premium is 700 bps. Therefore, costs of increasing capital while keeping LAC unchanged are 393 bps per unit (difference of risk premium on subordinate debt versus equity risk premium). Costs of increasing LAC are 133 bps per unit (difference of the risk premium on senior debt and subordinate debt).²²⁵ It should be noted that while absolute results would exhibit sensitivity to the particular levels of risk premiums chosen to base the analysis, relative results would not exhibit much variation.

Table 12 shows the estimated change in the weighted average costs of capital (WACC) due to change in the share of capital over total assets following the different behavioural responses. Column C shows capital/TA for the different scenarios. The change in capital/TA due to the behavioural response is given in Column D. Column E shows the costs of the increase in the capital share in total funding on the WACC. The estimated cost of capital is 393 bps reflecting the difference between the risk premium on equity (700 bps) and the risk premium on bail-inable bonds (307) which it replaces.²²⁶

²²⁵ The risk premiums on senior unsecured debt and on subordinated debt reflect estimates for the average for EU large banking group. The underlying data is taken from the EBA Weekly Overview of Liquidity and Funding (WOLF), April 2013. The risk premium on equity is based on the weighted average of the ROE over the period 1999-2011 for France, Germany, UK, Spain, Netherlands, Spain, Belgium and Italy which is 7%. Regulatory requirements reducing leverage tend to also reduce ROE. Source: Federal Reserve Economic Data: <http://research.stlouisfed.org/fred2>, Bank's Return On Equity, Percent, Annual, Not Seasonally Adjusted and AMECO data for GDP at current prices.

²²⁶The minimum LAC of 8% TA is assumed to be achieved by emitting subordinate debt (in addition to equity). This allows calculations with a clear hierarchy of bail-in losses, such that the subordinate debt absorbs all

The effect on WACC for the TE is estimated to be in the range of 0 to 8 bps depending on the behavioural response, while the DTB does not need to hold any capital in excess of the regulatory minimum.

Table 12 - Estimated change in WACC due to increase in capital/TA due to behavioural response

	Total Assets (bn)	Capital (bn)	Capital/TA (%)	Change in Capital/TA due to behavioural response* (%)	Estimated effect on WACC due to change in Capital/TA (bps)
	A	B	C = B/A	D	E = D*393bps
1 - DTB	15,463	744	4.8%	0.0%	0
2 – TE with increased capital	7,191	322	4.5%	1.8%	7
3 – TE with reduced RWA	7,191	195	2.7%	0.0%	0
4- TE with reduced TA	4,152	195	4.7%	2.0%	8

Notes: Costs of additional capital are 393 bps per unit (replacing subordinate debt (BiB) by equity).

*Capital of the TE before behavioural response is EUR 195 bn (2.7%TA), and of the DTB EUR 744 bn (4.8%TA).

Table 13 shows the estimated change in the weighted average costs of capital (WACC) due to LAC held over the minimum required 8% TA following the different behavioural responses. Column C shows the amount of LAC (as a share of total assets) that the banks hold in excess of 8% TA under the different scenarios. Column D shows the costs of this LAC on the WACC. The estimated cost of the LAC is 133 bps reflecting the difference between the risk premium on bail-inable first debt (in the form of subordinated debt) and senior debt which it replaces.

The effect on WACC for the TE is estimated to be in the range of 0 to 2 bps depending on the behavioural response, while the DTB does not need to hold any LAC in excess of the regulatory minimum.

bail-in losses The calculation is conducted as if new capital was replacing residual bail-in capacity, and then by bringing back residual bail-in capacity to the desired level by substituting subordinated debt for senior unsecured debt (see next section): no real substitution of capital for bail-in capacity is considered: This allows to best isolate the two effects and prevents double counting.

Table 13 - Estimated change in WACC due to holding LAC over 8% TA due to behavioural response

	Total Assets (bn)	LAC over 8% TA held due to behavioural response (bn)	LAC over 8% TA as a share of total assets	Estimated change in WACC due to LAC over 8% TA (bps)
	A	B	C = B/A	D = C*133bps
1 - DTB	15,463	0	0	0
2 – TE with increased capital	7,191	127	1.8%	2
3 – TE with reduced RWA	7,191	12	0.2%	0
4- TE with reduced TA	4,152	42	1.0%	1

Note: Costs of additional LAC (BiB) are 133 bps per unit (replacing senior debt by subordinate debt).

Table 14 provides an estimate of changes in the WACC as result of the changed risks for bank capital (either in the form of equity or subordinate debt) after structural reform and behavioural response. In columns A to D the change in expected losses on capital compared to the undivided bank are calculated. If markets anticipate these changes in riskiness, the change in expected losses will be reflected in the risk premia. Column E and F provide a minimum estimate of the risk premium impact (on capital and on the WACC respectively) if the initial risk premium is the risk premium on subordinated debt, while column H and I show the maximum of the range based on an initial risk premium assuming all capital is plain equity.

The effect of a changed risk premium on capital on the WACC for the TE is estimated to be in the range of 0 to 1 bp, as the behavioural responses are calibrated such that the probability of default is equal to that of the undivided bank. While losses on capital increase in the behavioural responses, there is a reduction in the losses per unit of capital because of the increase in total capital. The WACC of the DTB declines due to lower expected losses on equity by 3 to 8 bps, as market risks are allocated to the TE activities and capital pooling is no longer possible.

Table 14 - Estimated change in WACC due to changes in the capital risk premia after behavioural response

Bank	Capital (% TA)	Expected losses on capital (% TA)	Expected losses on capital as a share of total capital	%-change compared to undivided bank	Change in risk premium on capital, compared to undivided bank (bps)	Change in WACC due to capital risk premium change (bps) Minimum	Estimated change in risk premium on capital, compared to undivided bank (bps)	Change in WACC due to capital risk premium change (bps) Maximum
	A	B	C=B/A	$D=(C-\textcircled{1})/\textcircled{1}$	$E=D*307\text{bp}$	$F=E*A$	$H=D*700\text{bp}$	$I=H*A$
1- Undivided Bank	4.1%	1.7%	40% ($\textcircled{1}$)	-	-	-	-	-
2 - DTB	4.8%	1.5%	31%	-23%	-71	-3	-162	-8
3 - TE with increased capital	4.5%	1.9%	41%	3%	8	<1	18	<1
4 - TE with reduced RWA	2.7%	1.1%	42%	3%	8	<1	19	<1
5- TE with reduced TA	4.7%	2.0%	42%	3%	10	<1	22	1

Note: Initial average risk premium on capital is 307 bps in the minimum (assuming capital is at the cost of subordinate debt) and 700 bps in the maximum (assuming plain equity).

Table 15 provides an estimate of changes in the WACC as result of the changed expected losses for first bail-inable bond (BiB) holders after structural reform and behavioural response. In columns A to D the change in expected losses on first bail-inable bonds compared to the undivided bank are calculated. Columns E and F provide the risk premium impact on capital and on the WACC respectively.

The effect of a changed risk premium on bail-inable first debt on the WACC for the TE is estimated to be in the range of -4 to -9 bps depending on the behavioural response. This result is driven by lower gross losses, the increased share of losses that are absorbed by capital and the lower pooling of the LAC (as it is no longer shared across the DTB and the TE of each “group”). The WACC of the DTB is estimated to go down by 1 bp due to the lower expected losses on DTB BiB holders.

Table 15 - Estimated change in WACC due to changes in the risk premium on first bail-inable bonds (BiB) after behavioural response

Bank	Minimum bail-in capacity (excl. capital) (% TA)	Expected losses on BIB (%TA)	Expected losses on BIB as a share of minimum BIB	%-change compared to undivided bank	change in risk premium on BIB, compared to undivided bank (bps)	Change in WACC due to BIB risk premium change (bps)
	A	B	C=B/A (⊙)	D=(C-⊙)/⊙	E=D*307bp	F=E*A
1 – Undivided Bank	3.9%	0.9%	23% (⊙)	-	-	-
2 - DTB	3.2%	0.7%	21%	-11%	-33	-1
3 – TE with increased capital	5.3%	0.7%	12%	-46%	-142	-7
4 – TE with reduced RWA	5.5%	0.5%	10%	-56%	-173	-9
5- TE with reduced TA	4.3%	0.7%	15%	-34%	-104	-4

Note: Initial average risk premium on subordinate debt is 307 bps.

6. CONCLUSIONS

SYMBOL simulations show that the effects of separation and the TEs possible behavioural responses lead to :

- ✓ A reduction in gross losses plus recapitalisation needs across all banks in case of a financial crisis.
- ✓ A reduction of the losses that can fall on bail-inable creditors in line with the BRRD, reducing potential financial stability risks and contagion.

The funding cost impact of the separation and behavioural responses depend on the extent to which changes to expected losses for the different stakeholders affect market risk premia on equity and bonds:

- ✓ If lower expected losses on capital and bonds are not reflected in lower funding costs, the weighted average WACC across all banks in the sample increases by up to 3 bps as the Trading Entities need to hold more capital and Loss Absorbing Capacity (LAC) which increase their WACC by up to 9 bps. The Deposit Taking Banks have an unchanged WACC as they do not need to hold capital or LAC above minimum requirements as their probability of default and expected losses decrease, and they cannot reduce capital or LAC below minimum requirements to lower its WACC.
- ✓ With changes in risk premia, the average WACC across all banks in the sample decreases (by 1 to 9 bps) as gross losses reduce and are partly allocated to the safety net and/or public finances. The WACC for the Deposit Taking bank is reduced by 4 to 9 bps as it no longer supports the more risky Trading Entity activities, while the increase in WACC for the Trading Entities is limited due to the reduced riskiness for bail-inable creditors (following behavioural responses). The reduction in the WACC should be considered together with an accompanying loss of revenues due to the lower RWA.

The analysis does not find a direct beneficial effect of structural separation on losses to public finances. This is the result of the assumption that both CRDIV and bail-in under the BRRD are considered as fully effective before the introduction of separation, thus leaving limited scope for further reductions in pass-through to the safety nets.

In a comprehensive assessment further social and private costs and benefits and macro-economic impacts that cannot be modelled with the SYMBOL model also need to be considered: e.g. loss of economies of scope and scale, legal costs, relocation costs, effects on asset pricing due to reduced liquidity effect, as well as other social and private benefits such as avoiding conflicts of interest, misallocation of resources, facilitating supervision, possible bank lending effect by the DTB.

Appendix section for Annex A10

APPENDIX A: LIST OF BANKS

Table - List of banks in the sample in alphabetical order.

	Institution Name	Label	Country
1	Banca Monte dei Paschi di Siena SpA	MPS	IT
2	Banco Santander SA	Santander	ES
3	Barclays Plc	Barclays	UK
4	Bayerische Landesbank	BayerLB	DE
5	Belfius Banque SA	Belfius	BE
6	BNP Paribas SA	BNPP	FR
7	Commerzbank AG	Commerz	DE
8	Crédit Agricole SA	CA	FR
9	Danske Bank A/S	Danske	DK
10	DekaBank Deutsche Girozentrale	Deka	DE
11	Deutsche Bank AG	Deutsche	DE
12	Deutsche Zentral-Genossenschaftsbank AG	DZG	DE
13	DNB ASA	DNB	NO
14	Groupe BPCE	BPCE	FR
15	HSBC Holdings Plc	HSBC	UK
16	ING Bank NV	ING	NL
17	KBC Group NV	KBC	BE
18	Landesbank Baden-Württemberg	LBBW	DE
19	Landesbank Hessen-Thüringen Girozentrale	LBHT	DE
20	Mediobanca - Banca di Credito Finanziario SpA	Mediobanca	IT
21	Nordea Bank AB	Nordea	SE
22	Portigon AG	Portigon	DE
23	Royal Bank of Scotland Group Plc	RBS	UK
24	Skandinaviska Enskilda Banken AB	SEB	SE
25	Société Générale SA	SocGén	FR
26	Svenska Handelsbanken AB	Svenska	SE
27	Swedbank AB	Swedbank	SE
28	UniCredit SpA	UniCredit	IT
29	Standard Chartered Plc	StdCh	UK

APPENDIX B: SAMPLE STATISTICS BEFORE AND AFTER STRUCTURAL SEPARATION

Table - Summary of split of assets, RWA and capital for the sample in bn€ data as of 2011. Source: Bankscope, SNL and Commission elaboration.

	Universal						DTB			TE						
	Total assets (b€)	31/12/2011 balance sheet		Basel III compliant		Total assets (b€)	31/12/2011 balance sheet		Basel III compliant		Total assets (b€)	31/12/2011 balance sheet		Basel III compliant		
		Reg. Capital (b€)	RWA (b€)	Regulatory Capital (b€)	RWA (b€)		Reg. Capital (b€)	RWA (b€)	Regulatory Capital (b€)	RWA (b€)		Reg. Capital (b€)	RWA (b€)	Regulatory Capital (b€)	RWA (b€)	
1	Banca Monte dei Paschi di Siena	241	11	105	13	127	214	9	103	11	107	27	2	2	2	21
2	BancoSantander SA	1,252	51	566	72	686	1,062	42	547	59	566	189	9	19	12	119
3	Bank DnB A/S	274	11	137	18	174	254	9	127	15	138	20	2	10	4	35
4	Barclays Plc	1,870	50	468	59	566	970	38	411	45	426	899	12	57	15	139
5	BayerischeLandesbank	309	12	118	15	144	258	10	115	13	119	51	2	3	3	24
6	Belfius Bank & Verzekeringen	233	5	53	7	64	196	4	52	6	54	36	1	1	1	11
7	BNP Paribas	1,965	57	614	78	744	1,103	41	520	57	541	862	15	93	21	201
8	BPCE Group	1,138	30	388	52	499	970	25	376	43	412	168	5	12	9	86
9	Commerzbank AG	662	24	237	30	287	500	20	225	24	233	162	4	12	6	53
10	CréditAgricole-SA	1,724	30	274	42	404	1,214	23	250	33	316	509	6	24	9	88
11	Danske Bank A/S	461	14	122	15	148	327	11	113	12	118	133	3	8	3	30
12	DekaBank Deutsche Girozentrale	134	3	25	3	27	94	2	22	3	26	40	0.4	3	0.5	5
13	Deutsche Bank AG	2,164	36	381	48	462	968	26	316	35	329	1,197	10	65	14	132
14	HSBC Holdings Plc	1,975	87	931	119	1,133	1,516	69	860	94	895	459	18	71	25	236
15	ING Bank NV	961	31	330	42	400	865	26	321	35	333	96	5	9	7	67
16	KBC GroepNV	285	13	126	16	153	259	11	124	13	128	26	2	3	3	25
17	Landesbank Baden-Wuerttemberg	373	12	108	14	131	265	9	97	11	100	108	3	11	3	30
18	Landesbank Hessen-ThueringenGirozentrale - HELABA	164	6	57	7	69	124	4	51	6	53	40	1	6	2	16
19	MediobancaSpA	75	5	55	7	67	60	4	52	6	54	16	1	3	1	12
20	Nordde Bank AB (publ)	716	16	185	28	271	479	13	171	22	214	238	3	14	6	57

	Universal						DTB				TE				
	31/12/2011 balance sheet		Basel III compliant		Total assets (b€)	Reg. Capital (b€)	31/12/2011 balance sheet	Basel III compliant		Total assets (b€)	Reg. Capital (b€)	31/12/2011 balance sheet		Basel III compliant	
	Reg. Capital (b€)	RWA (b€)	Regulatory Capital (b€)	RWA (b€)				Reg. Capital (b€)	RWA (b€)			Reg. Capital (b€)	RWA (b€)		
21	Portigon AG	4	48	6	59	109	3	45	5	47	59	1	3	1	12
22	Royal Bank of Scotland Group Plc	48	526	67	636	964	35	451	49	468	839	13	74	17	167
23	Skandinaviska Enskilda Banken AB	8	76	12	113	212	6	72	10	91	53	1	4	2	21
24	Société Générale	27	349	44	423	736	21	306	33	317	446	7	44	11	105
25	Standard Chartered Plc	24	208	27	253	391	20	203	22	210	66	4	6	4	43
26	Svenska Handelsbanken	8	57	14	134	253	7	56	12	113	22	1	1	2	21
27	Swedbank AB	7	55	11	103	178	6	53	9	84	30	1	2	2	18
28	UniCredit SpA	38	460	58	558	789	31	449	49	464	125	6	12	10	93
29	Deutsche Zentral-Genossenschaftsbank AG	8	100	13	121	112	6	92	10	95	294	2	8	3	25
	TOTAL	676	7159	937	8,956	15,442	531	6580	742	7051	7,210	140.4	580	198.5	1892

APPENDIX C: THE SYMBOL MODEL

SYMBOL (SYstemic Model of Banking Originated Losses) is a micro-simulation model²²⁷ which makes use of individual banks' balance sheet data to simulate banks' losses due to the failure of its obligors and to derive the (aggregated) distribution of losses originated in the banking system. The main idea behind this model is that it is possible to estimate and average Probability of Default (*PD*) of the portfolio of obligors of a bank (the so called *implied* obligors' *PD*) by inverting the Basel FIRB (Foundation Internal Ratings Based) formula for capital requirements.

The model is implemented in the following four steps:

1. Estimation of the implied *PD* for the obligors' portfolio of any individual bank by inverting the Basel FIRB capital requirement formula. Under the FIRB approach the total capital can be written as a function of the average obligor's *PD*, of the Loss Given Default *LGD*, of the maturity *T* and of the correlation *R* between the assets of the corresponding obligors (for more details see (De Lisa et al., 2010)):

$$CapRequirement=f(PD, LGD, T, R)$$

Being the capital requirement publicly available and being all the other parameters set to their regulatory average values, the formula can be inverted to numerically estimate the implied *PD*.

2. Generation, via a Monte Carlo simulation, of portfolio losses for individual banks. Once the implied average *PD* are estimated, individual bank losses are generated via a Monte Carlo simulation, taking into account the correlation between the assets of different banks due to the presence of common shocks in the economy. Banks' losses are simulated on the basis of the loss distribution assumed in the Basel FIRB approach²²⁸.
3. The output of the simulation is a matrix of gross losses $L_{i,n}$ where *i* labels the bank and *n* the simulation run. In each run $L_{i,n}$ is compared with the amount of bank's capital Cap_i . If $L_{i,n}$ is lower than Cap_i the bank does not default but could need to recapitalize to a level equal to 8% of its RWA. On the other hand, if $L_{i,n}$ is greater than Cap_i the capital the bank holds is not enough to cover the loss and this implies that the bank is in insolvency, suffering from an excess loss $EL_{i,n}$:

$$EL_{i,n}=(L_{i,n}-Cap_i)_{\{L_{i,n}-Cap_i>=0\}}$$

4. Aggregation of individual banks' $L_{i,n}$, $EL_{i,n}$ and of recapitalization needs to obtain aggregate losses at country/banking system's level.

²²⁷De Lisa, R., Zedda, S., Vallascas, F., Campolongo, F., and Marchesi, M. *Modeling Deposit Insurance Scheme Losses a Basel II Framework*. Journal of Financial Services Research 40, 3 (2011).

²²⁸In the current version of SYMBOL banks' losses are obtained by Monte Carlo sampling from a correlated multivariate normal distribution via Choleski decomposition.

APPENDIX D: THE IMPLIED OBLIGOR PD FOR THE TRADING ENTITIES

As set out in Annex C, the SYMBOL model inverts the FIRB approach (Vasicek) credit risk formula for banks minimum capital requirement to estimate the probabilities of a default of bank obligors as assessed by the bank and the country's banking system regulator. Vasicek²²⁹ shows that the model can also be used to simulate losses on a traded portfolio exposed to market and default risk, subject to the introduction of a correction term for the difference between the maturity of the traded securities and the holding horizon and to a market correlation factor. In addition Vasicek shows that the mark-to-market loss distribution of a traded portfolio would coincide with the standard FIRB loan-loss distribution if the maturity and holding horizon were to coincide.²³⁰

The base SYMBOL methodology, Vasicek formula, can therefore also be used to simulate losses on the portfolio of the TE, subject to some assumptions and conditions. In particular, the issues which need to be addressed are: i) Differences between the confidence levels required for market risk and credit risk; ii) Assumptions and requirements regarding the holding horizon of the securities; iii) treatment of the additional “multiplicative factor” of 3 to 4 to be applied to calculated market risk according to the AIRB framework.

Regarding the first point, given that the Basel accord proposes a target MCR for the market risk which is based on a confidence level of 99%, we perform the inversion of the FIRB formula to recover the riskiness parameter at this level instead of the 99.9% required for credit risk.

Regarding the second point, we introduce the simplifying assumption that the holding period and maturity of the portfolio coincide (thus eliminating the need to consider the adjustments for market correlation and time horizon differences), as it is usually done on the credit side, and that the Basel 3 adjusted MCR is representative of the risk incurred over the whole simulation period.

Regarding the third point, the multiplicative factor of 3, could be interpreted²³¹ as a correction factor for model uncertainty. If this interpretation is adopted, then this can be

²²⁹ Vasicek O. A. “Loan portfolio value”, Risk, December 2002,
http://www.risk.net/data/Pay_per_view/risk/technical/2002/1202_loan.pdf

²³⁰ The common factor which drives the "internal value" of firms would also be driving their "market value" in case they were traded. Under the implicit assumption that all trading risk can be represented as risk on traded credits and bonds, the base mechanism of SYMBOL can be used to simulate a loss distribution based on both default and value risk. It should be noted that, while the standard representation of the Vasicek model does not explicitly model cash flows and operates on a pure net-present value (NPV) logic, their introduction would simply result in a change of the definitions of losses and a shift of the distribution leaving results unchanged. Similar models with additional risk factors or variations of the correlation structure have been proposed several times in the literature: Grundke (2004) proposes an integration of interest rate risk introducing a Vasicek term structure model; Kupiec (2007) introduces credit migration risk associated with different term structures by credit quality, based on the Vasicek interest rate term structure model and Johnston (2008) proposes an extension to pure equity investments considering dividend cash flows and a CAPM-style correlation structure. Grundke, Peter, 2004, “Integrating Interest Rate Risk in Credit Portfolio Models.” *Journal of Risk Finance*, vol 5, no. 2; Kupiec, Paul, 2007, “An Integrated Structural Model for Portfolio Market and Credit Risk.” in *Berlin Conference on the Interaction of Market and Credit Risk*; Johnston, Mark, 2009, “Extending the Basel II Approach to Estimate Capital Requirements for Equity Investments.” *Journal of Banking and Finance*, vol. 33, no. 6.

²³¹ Stahl, Gerhard, 1997, Three cheers. *Risk Magazine*, Vol. 10, pages 67–69

thought as an estimator correction factor. The implied obligor probability of default should therefore be obtained based on the estimated MCR including the correction factor.

Given the above, we use the FIRB standard loss distribution also as a basis for the simulations of losses of the TE after taking into consideration the difference in confidence for calibration purposes (i.e. inverting the FIRB at 99% and not at 99.9%) and without applying any further correction to reported MCRs.²³²

It should be noted that the choice of a 99% confidence implies an increase in the riskiness of trading entities, while the choice of ignoring the difference between the holding horizon of trading securities and the simulation horizon implies a decrease. A precise quantification of the impact of these two drivers was not possible.

²³² Meaning no corrections except those for the switch to Basel III. See section 4 for additional details.

APPENDIX E: SYMBOL SIMULATED LOSSES AND HISTORICAL LOSSES DURING THE RECENT CRISIS

Table A3 present the results of the SYMBOL simulations for the structural separation compared to historical losses of the recent crisis. To estimate the representative loss simulations for all EU banks, simulation results for the sample of 29 banks is divided by its share in total EU assets (about 56%). These simulations differ from those reported in Table 1, Section 1 of Annex XIII of the BRRD IA due to the different methodology required to simulate the effects of the structural separation. As the trading and banking portfolio of the banks are simulated separately, the correlation of losses across these portfolios is reduced from 1 (when they are simulated as a single undivided portfolio), to 0.5 which is the standard setting for the correlation of losses across banks in SYMBOL.²³³

As the very severe crisis (with excess losses at the 99.95th percentile) simulation is the most similar to real state aid figures during the last crisis in terms of banks' losses, also including recapitalization needs, the analysis in this report is developed for that simulation.

²³³ A high correlation of losses across banks implies fatter tails of the loss distribution.

Table A3 - Aggregated losses in EU banking sector simulated with the SYMBOL model under Basel 3 10.5% minimum capital requirements (no contagion) and aggregated EU state aid used in recent crisis between 2008-2012 (€ billion. In brackets: values presented in the BRD IA on the basis of banks' 2009 and data and on state aid used between 2008 and 2010.

	<u>Severe crisis</u> (99.90% ²³⁴)	<u>Very severe crisis</u> (99.95%)	Recent crisis (Data 2008-2012)²³⁵	<u>Extremely severe crisis (99.99%)</u>
Extra-Losses (not absorbed by capital)	44.3 (36.2)	72.6 (79.9)	116.8 (121.2)	172.8 (266.7)
Extra-Losses (not absorbed by capital) + Recapitalisation funding needs to meet 8% MCR	340.8 (295.6)	447.8 (466.7)	439.0+114.6=553.6 (409.0)	750.7 (668.3)

Source: European Commission elaborations

²³⁴ The three SYMBOL-simulated crises can, according to the SYMBOL model, be exceeded but with a very low probability: between 0.1% (99.9% simulation) and 0.01% (99.99% simulation). Under the first simulation there is 0.1% chance that the crisis will be bigger than estimated and the resolution framework will not be able to cope with it. In the second and third case the chances are 0.05% and 0.01% respectively. However, these probabilities are very much dependent on the SYMBOL model specifications and in particular of the accuracy of the probabilities in the Basel FIRB formula. Rather than relying on these probabilities of occurrence of a systemic crisis, the aggregate outcomes of the three considered simulations can be compared to the state aid used during the recent crisis.

²³⁵ State aid for 2008-2011 comes from DG COMP state aid official reports (439.0 billion €): http://ec.europa.eu/competition/state_aid/studies_reports/expenditure.html, Table: [State aid approved \(2008 – Oct 2012\) and state aid used \(2008 – 2011\) in the context of the financial and economic crisis to the financial sector \(2008 - 2011\), in billion Euro](#).

As DG COMP figures are yet not available for 2012, state aid for 2012 is based on DG MARKT elaborations derived from DG ECFIN survey with Member States' via the Economic and Financial Committee.

Note that used state-aid measurement is subject to two kinds of biases: all recapitalization support is included as expenditure (while a part may be considered a financial transaction if it is in exchange of valuable bank shares), and losses in any given year might be unrecognized.

APPENDIX F: ASSETS OF LARGE BANKING GROUPS WITHIN THE EU-27

Table shows the share of total consolidated assets within the EU-27 for the largest EU banking groups included in the simulation exercise. These represent roughly 83% of the total sample’s assets. The second column reports the 2011 total consolidated assets, downloaded from Bankscope, the third column shows estimations of the percentage of these assets within EU-27 borders.

Table A4: Share of activity in the EU-27 for a number of large EU banking groups. Consolidated data from 2011

Bank Name	Country	Total Assets (b€)	Estimated % of total assets inside EU-27
Deutsche Bank AG	DE	2,164	79.31%
HSBC Holdings Plc	UK	1,981	41.05%
BNP Paribas	FR	1,965	85.57%
Barclays Bank Plc	UK	1,818	56.34%
Royal Bank of Scotland Group Plc	UK	1,752	77.96%
Crédit Agricole S.A.	FR	1,724	97.74%
Banco Santander SA	ES	1,252	77.81%
Société Générale	FR	1,181	90.11%
ING Bank NV	NL	961	85.38%
UniCredit SpA	IT	927	93.54%
BPCE SA	FR	796	97.10%
Nordea Bank	SE	716	87.70%
Commerzbank AG	DE	662	97.09%
Danske Bank A/S	DK	460	99.44%
Weighted Average for all banks			79.05%

Source: ECB, Bankscope, European Commission elaborations (*)

ANNEX A11 Selected observations on submitted data templates

Introduction

As one element of input into the impact assessment, the Commission services have invited EU banks to submit data that illustrate the expected impact of stylised structural reform scenarios on the group's balance sheet, profit and loss account and selected other variables. The data request was part of the public consultation between 16 May 2013 and 11 July 2013 and can be retrieved here:

http://ec.europa.eu/internal_market/consultations/2013/banking-structural-reform/docs/data-template_en.xlsx

As structural reform targets large and complex too-important-to-fail banking groups, the Commission services in particular have encouraged data submissions from EU banks with the highest degree of systemic importance. Respondents have been requested as a matter of priority to complete the data request as well as to report underlying assumptions about relevant macroeconomic and other variables.

In that context, banks have been asked to provide information about balance sheet, profit and loss, and selected other variables in a number of different scenarios:

- balance sheet and profit and loss account information, as well as information about selected other variables, at year end 2012;
- simulated group balance sheet and profit and loss by end 2017, assuming in particular the implementation of the Bank Recovery and Resolution Directive and the Capital Requirements Directive IV/Capital Requirements Regulation; and
- simulated end 2017 balance sheet and profit and loss account in the stylised structural reform scenarios specified below and to be implemented by end 2017.

The two structural reform scenarios differ in the activities to be undertaken within a trading entity, as well as with respect to the strength of the separation between the deposit and trading entity.

The two reform scenarios are stylised and simplified and intend to usefully inform the assessment of the set of structural reform options being considered by the Commission services.

Stylised EU structural reform scenario 1 – main features:

- Legal separation of certain trading activities from deposit taking activities within a banking group. Separation to be completed by end-2017.
- Only the following activities are to be excluded from the legally separate deposit entity (exhaustive list): proprietary trading, exposures to venture capital, private equity and hedge funds, and market making.
- The trading entity cannot be a subsidiary of the deposit entity. The deposit entity and the trading entity each have to comply with prudential requirements (including capital, liquidity, leverage and large exposure requirements) on an

individual or subconsolidated level (i.e. in case there are several trading entities within the same corporate group all those entities can be consolidated for prudential requirements; similar principle applies in case there are several deposit entities within the same corporate group).

Stylised EU structural reform scenario 2 – main features:

- Legal separation of certain trading activities from deposit taking activities within a banking group. Separation to be completed by end-2017.
- Only the following activities are to be excluded from the legally separate deposit entity (exhaustive list): All investment banking activity (please specify your definition used).
- The trading entity cannot be a subsidiary of the deposit entity. Completely independent funding and capitalisation of deposit and trading entity. Lending and asset sales between the deposit entity and the trading entity need to take place on a commercial and arm's length basis. The deposit entity and the trading entity each have to comply with prudential requirements (including capital, liquidity, leverage and large exposure requirements) on an individual or subconsolidated level (i.e. in case there are several trading entities within the same corporate group all those entities can be consolidated for prudential requirements; similar principle applies in case there are several deposit entities within the same corporate group). The deposit entity is not allowed to have exposures to financial institutions (including to any trading entity within its own corporate group), except for treasury functions, payments services, and letters of credit. No waivers should be granted. Independent risk management for deposit entity. Independent treasury management for deposit entity. Separate financial and supervisory disclosure requirements should be applied to the deposit entity and the trading entity.

These scenarios are stylised, relatively restrictive and prescriptive and do not correspond to concrete structural reform options and do not prejudge the policy choice to be made by the European Commission at a later stage.

The selected structural reform scenarios are restrictive in terms of exhaustively listing the banking activities that are to be performed by the legally, economically and operationally separate trading entity (limited flexibility to decide about in which entities activities can be performed), to ensure maximum comparability of results across banks.

The specified structural reform scenarios have been designed as being sufficiently distinct, so as to allow the Commission services to appreciate the incremental costs of different structural reform design issues.

High-level findings inferred from submitted data templates

- Very few banking groups submitted data templates. Only six banking groups submitted templates that are sufficiently complete so as to allow detailed cross-bank comparisons. All but one of these six banks have total assets exceeding 1000bn EUR. The outlier bank has total assets around 250bn EUR. The limited

sample of banking groups that provided information does not seem representative and hence does not allow to infer firm conclusions.

- The estimated impact on balance sheet size varies a lot across banking groups. Whereas one bank reports a small balance sheet increase (+1%), most others report single-digit balance sheet percentage reductions, with one outlier bank that reports an expected balance sheet decrease of 25%.
- The estimated size of the trading entity ranges widely across banks within a given structural reform scenario. The trading entity size ranges between 6% and 66% of the group's total balance sheet for scenario 1 and between 7% and 71% for scenario 2.
- Only three banking groups reported the relative importance of proprietary trading. The reported share of proprietary trading in overall trading revenues ranges from a low of 0% to 4% of total trading revenues, which in turn is only a fraction of total revenues.
- The estimated impact of the proposed separation on the profit before taxes bank responses can be divided in three groups. For a first group of banks, the estimated impact amounts to at most a 10% profit reduction. For a second group of banks, the profit reduction is estimated to be around 40%. The impact on profit for a third group (bank) is an outlier, as a loss of 6 to 12 times the annual 2012 profitability is reported. Note: The ICB impact estimate of private costs is 33% of pre-tax profit of UK banks.
- Except for one bank, the pre-tax Return on Equity (RoE) of the deposit-taking entity (DE) is positive and surprisingly high, ranging between 8.4% and 17.2%. The pre-tax RoE of the outlier deposit-taking entity is estimated to be minus 10%. Despite this negative RoE, the DE rating for the outlier bank is estimated to be unaffected by the structural reform scenario.
- The pre-tax RoE of the trading entity (TE) is positive for three banking groups and negative for the other three banking groups. The range hovers between 5.2% and 11% for the first group and between minus 5.3% and minus 35.6% for the second group.
- The rating of the DE is unaffected for the 4 banks that reported rating estimates.
- The rating of the TE is estimated to go down for the four banks that reported rating estimates. Again, results vary a lot across banks. For the first scenario, the downgrades go from 1 notch to 5 notches²³⁶. For the second scenario, the range is 2 notches to 4 notches.

²³⁶ A “notch” is a step in the list of credit ratings, such as going from AA+ to AA in the S&P and Fitch rating scale or from Aa1 to Aa2 in the Moody's rating scale.

- The impact on revenues goes from 0% to minus 6% for the first scenario and from 0% to 16% for the second scenario.
- The importance of investment banking activities other than proprietary trading and market-making is surprisingly small, ranging between 0% and 10% of the group's balance sheet. Proprietary trading and market-making make up for 90% of the balance sheet size of investment banking.
- Impacts on total costs also vary widely across banks. Total costs are estimated to go up for three banking groups. They are estimated to go down for two other banks. The first group reports a range of cost increases of 1% to 9%, whereas the latter group reports decreases of total costs of 2% to 11%.
- Funding costs are estimated to go up with approximately 35% and 20% for two banking groups. Other banks did not report in a format that allows inferring funding cost impact.
- There are numerous inconsistencies in the submissions, both within a given submission and across banks.

ANNEX A12 – ESTIMATING THE IMPACT OF A BANKING SECTOR FUNDING COST INCREASE ON GDP

1. INTRODUCTION AND SUMMARY

This note presents the results of an exercise that quantifies the economic costs to society of an increase in the average funding cost of the EU banking sector, following bank structural reform. Three shocks of different magnitude to banks' funding costs are introduced in a dynamic stochastic general equilibrium (DSGE) model.

At the outset, it should be stressed that any quantitative modelling intrinsically involves simplifications and assumptions, which yields results that are uncertain and imprecise. Given the inherent complexity of modern banking, and given that many social benefits and costs are dynamic in nature (often related to unobservable incentives), the results presented in this Annex should be treated cautiously.

With this caveat in mind, the results show that economic output, as measured by the level of GDP, would decline in the long run by between 0.04% and 0.1% after applying the funding cost increases. These effects are conservative estimates in the sense that the funding cost shocks are assumed to be completely passed through to customers.

2. MODEL DESCRIPTION

The model used in this exercise is a DSGE model with a banking sector. The model belongs to a branch of applied general equilibrium theory that is influential in contemporary macroeconomics. The DSGE methodology attempts to explain aggregate economic phenomena, such as economic growth, business cycles, and the effects of monetary and fiscal policy, on the basis of macroeconomic models derived from microeconomic principles. The model distinguishes between borrowers (entrepreneurs) and savers. Savers divide up their financial wealth into government bonds, bank equity and deposits. In this model government bonds pay a risk free rate. The deposit rate is lower than the risk free rate because of a liquidity premium, i.e. banks charge depositors to make funds available on request. The rate of return on equity includes a risk premium, providing investors with a return above the risk free rate.

The banking system transforms savings of households into loans for entrepreneurs. Decision rules (demand for deposits, demand for capital, loan rates, etc.) are derived from maximising the value of the bank – the present value of bank dividends – subject to a capital requirement constraint. The banks buy labour services from the households, which are partly fixed and partly flexible in proportion to lending activities. Furthermore, the bank pays dividends to its shareholders.

The model shows the macroeconomic effects of permanently increasing (or decreasing) the risk premia for bank capital and/or increasing (or decreasing) the funding cost for deposits. The banking sector is represented by one stylised bank with a simple balance

sheet, where total assets consist of loans (L) and liquid assets (government bonds: B). Total liabilities are the sum of deposits and wholesale funding (D) and bank equity (V^B). The banking sector faces a capital requirement constraint, which is formulated in terms of risk weighted assets:

$$(1) \quad V^B = \Gamma(\omega_L L + \omega_B B)$$

The concept applied is that of a consolidated balance sheet for the banking sector, which provides information about the stock of loans to the non-financial sector, and yields an estimate of the borrowing costs of non-financial corporations (NFC).

The main transmission channel of increasing funding costs is via higher lending rates for firms. An increase in funding cost increases marginal costs for banks. These costs are assumed to be shifted completely onto loan rates (there is a zero mark-up). In addition there is some tightening of the collateral constraint, since the value of capital of NFCs declines, because of the expected decline of dividends.

Higher lending rates and the tightening of the collateral constraint decrease investment and future consumption, and have a marginal effect on employment (since real wages adjust in the long run). In case of an increase in the return on equity (RoE) for banks, domestic households receive a higher return, which affects consumption positively in the short run. However, in the medium to long run this effect is dominated by the increase in the cost of capital. The increase in the deposit rate is modelled via a reduction in the supply of deposits of private households. Reduced savings increases consumption, which also dampens the negative macroeconomic effect in the short run.

3. CALIBRATION AND SCENARIOS TESTED

Before applying any type of shock to the model, the model has to be calibrated to observed data. All parameters describing the non-banking part of the model are taken from Ratto et al. (2009). For the EU Banking sector, the following parameters are applied:

- ratio of tier 1 capital to risk weighted assets: 6%;
- risk weights for the two asset classes are 55% for loans and 5% for government bonds, respectively;
- loan rate: 4.1%;
- return on equity: 10%;
- deposit and wholesale rate: 2.5%.

Three different funding cost shocks are applied to the model. These shocks are based on a collection of information of private costs to banks. The information stem from a survey, where banks were asked to estimate the resulting costs of stylised structural reform scenarios, and model-based estimates of funding cost increases. The latter model estimates come from the SYMBOL model, initially developed to assess the consequences of bank failures in the EU (see Annex A10). To this information was also applied a certain amount of own judgement, in order to reconcile some estimates with others, as the surveyed banks supplied a rather wide range of cost estimates, which often were internally inconsistent (see Annex A11).

The first two shocks are realistic, but still conservative measures of the economic impact of structural reform, as the model assumes that shocks are entirely passed through to customers, with maximum impact as a consequence. The first shock involves increasing the funding cost (the deposit and wholesale funding rates taken together) faced by banks that may fall under the regulation by 5 basis points. The second shock is an increase in the funding cost of 12 basis points, which represents an upper bound, as derived from other analysis in the Impact Assessment on bank structural reform.. This second scenario reflects the upper bound for the cumulative effect of introducing the Bank Recovery and Resolution Directive and implementing structural reform of the banking sector.

For illustrative purposes, the third shock is an extreme event where banks affected by structural reform faces an increase in their funding cost of 25 basis points. Obviously, this is not a realistic scenario. However, it serves to illustrate the linearity of the results within the ranges of increasing funding costs.

These shocks to funding costs only apply to those banks that are affected by the reform. It is assumed that banks affected by structural reform constitute approximately 55% of total banking assets in the EU. This is an estimate based on a threshold calibration exercise, which is part of the Commission’s Impact Assessment on bank structural reform. Yet again this is a conservative estimate, as it implies that the increasing costs apply also to some banks that basically have no or very little trading activity. Thus the shocks that are fed to the model are 2.75, 6.6 and 13.75 basis points, respectively.

4. RESULTS

The increase in the funding rate (weighted average of deposit and wholesale rates) is introduced in the model via a reduction in the supply of funding. The amount of withdrawn funding is calibrated to generate the appropriate long-term increase in the funding rate. Thus, the three shocks to the funding rate are visible in the rightmost columns in Table 1 (2.75 basis points), Table 2 (6.6 basis points), and Table 3 (13.75 basis points). The increase in funding rate is entirely passed through onto the banks’ lending rates (the last line in each table).

Table 1: Increase of funding rate: 5 bp (for 55% of bank assets)

Year	1	2	3	4	10	50	Long Run
GDP	-0.02	-0.02	-0.02	-0.03	-0.04	-0.09	-0.10
Capital stock	0.00	-0.02	-0.03	-0.04	-0.09	-0.21	-0.24
Loan stock	-0.04	-0.10	-0.11	-0.11	-0.14	-0.23	-0.25
Funding rate	-2.60	-1.69	5.04	2.67	2.45	2.70	2.75
Loan rate	-2.43	-1.53	5.19	2.83	2.61	2.84	2.89
Employment	-0.02	-0.02	-0.01	-0.02	-0.01	-0.01	-0.01

Note: Interest rates are deviations from baseline in basis points. The remaining variables are % deviations from baseline.

The long-run impact of the funding cost increase is a decline in the long-run level of GDP of about 0.1%, which is illustrated in the top row of Table 1. The shocks imply a decline in the capital stock and the loan stock. Employment is also affected negatively, but only marginally. From the table one can also infer what the result would be if the

shock was lower, which there are indications of. For example, if the shock is instead 2 basis points, the lowest estimate, the economic impact is approximately 0.04%.

Table 2: Increase of funding rate: 12 bp (for 55% of bank assets)

Year	1	2	3	4	10	50	Long Run
GDP	-0.04	-0.04	-0.05	-0.06	-0.10	-0.22	-0.24
Capital stock	-0.01	-0.04	-0.06	-0.10	-0.22	-0.51	-0.57
Loan stock	-0.10	-0.24	-0.27	-0.26	-0.34	-0.55	-0.59
Funding rate	-6.23	-4.05	12.09	6.41	5.88	6.48	6.60
Loan rate	-5.83	-3.67	12.47	6.79	6.26	6.83	6.95
Employment	-0.06	-0.04	-0.03	-0.04	-0.03	-0.02	-0.02

Note: Interest rates are deviations from baseline in basis points. The remaining variables are % deviations from baseline.

The cumulative effect of introducing both the BRRD and bank structural reform, implying additional private costs, would amount to a decline in GDP of 0.2%. This result is presented in the last cell of the top row in Table 2. The effect on employment remains marginal. The estimated impact of the cumulative effect of both introducing BRRD and bank structural reform does not change much as the impact of BRRD seems to dominate that of bank structural reform.

Table 3: Increase of funding rate: 25 bp (for 55% of bank assets)

Year	1	2	3	4	10	50	Long Run
GDP	-0.08	-0.08	-0.10	-0.13	-0.22	-0.45	-0.50
Capital stock	-0.02	-0.08	-0.13	-0.20	-0.45	-1.06	-1.19
Loan stock	-0.22	-0.50	-0.57	-0.54	-0.71	-1.14	-1.23
Funding rate	-12.98	-8.44	25.18	13.36	12.26	13.50	13.75
Loan rate	-12.14	-7.64	25.97	14.15	13.04	14.22	14.47
Employment	-0.12	-0.08	-0.07	-0.08	-0.07	-0.05	-0.05

Note: Interest rates are deviations from baseline in basis points. The remaining variables are % deviations from baseline.

Given the initial values and the calibration, the outcome of the model is to a large extent linear, which is illustrated in Table 3. When the cumulative shock is five times larger, also the impact on GDP is five times larger. The information in the tables therefore allow for interpolating the results of other shocks within the considered range. Beside the decline in output, both the capital stock and loan stock declines. Also in this more extreme scenario the effect in employment is very limited.

5. COMPARISON OF RESULTS

In this section the derived results are compared with those of the Impact Assessment (IA) published by the UK government at the introduction to Parliament of the Financial Services (Banking Reform) Bill. Although the UK proposal is different from the Commission's, the UK Impact Assessment may serve as a consistency check, both in terms of the size of the shocks and the outcome. The information in the UK IA can be translated to figures that are comparable to those used and derived in this note. However,

this requires making use of additional data sources and making some more or less restrictive assumptions.

According to the modelling approach of the UK government, total private costs for UK banks will range between GBP 1.7-4.4 billion, of which capital costs are in the range of GBP 1.3-2.6 billion, and wholesale funding costs are in the range of GBP 0.07-0.89 billion. The UK IA also considers two other on-going costs: operational costs and costs due to depositor preference, i.e. creditors preferring insured deposits to senior unsecured debt (see Table 3).

Table 3: Breakdown of private costs of ring-fencing, UK proposal

On-going costs, per year	Low	High
Capital	£1.3bn	£2.6bn
Funding	£70m	£890m
Operational	£150m	£530m
Depositor preference	£200m	£380m
Total on-going costs, per year	£1.7bn	£4.4bn

As the balance sheet in the in the DSGE model is simple and scaled down, all costs other than capital costs are bundled together to calculate a comparable shock to be applied in the DSGE model. This bundling of almost all costs and applying them as funding costs in the DSGE framework is of course a crude simplification, which allow for conceptual errors in terms of how the different costs affects a bank and are passed on to customers. Nevertheless, the result is that funding costs would increase in a range of GBP 0.42-1.8 billion, which translates into a funding cost increase between EUR 0.49-2.1 billion (with an average exchange rate for 2013 of 0.853 GBP/EUR).

According to the ECB's consolidated banking statistics, interest expenses were EUR 68.44 billion. Given the assumptions, these would increase to between EUR 68.9-70.5 billion. Applying this range of costs to the total amount of deposits and debt certificates (including bonds), yields a funding cost increase for the domestic banks in the UK in the order of 1-4 basis points. Adjusting the figures by the weight of the affected banks (0.55), imply a chock between 0.52-2.24 basis points. With the DSGE model, this range of shocks yields a decline in GDP of between 0.02%-0.08%.

The Commission's estimates and the UK estimates are comparable, both in terms of magnitude of private costs and the impact on the real economy. The UK IA estimates a reduction in long-run GDP level of 0.04%-0.16%. Note that the UK makes use of a different model to generate their results. They use the NiGEM model, developed by the National Institute of Economic and Social research. NiGEM is an estimated model, which uses a 'New-Keynesian' framework. The model is structured around the national income identity, can accommodate forward looking consumer behaviour, and has many of the characteristics of a DSGE model. Unlike a pure DSGE model, NiGEM is based on estimation using historical data. Even though different estimation techniques and different models have been used, the results are very close to each other.

ANNEX A13 – SHADOW BANKING - SECURITIES FINANCE TRANSACTIONS AND TRANSPARENCY

1. INTRODUCTION

The 2008 crisis was global and financial services were at its heart, revealing inadequacies including regulatory gaps, ineffective supervision, opaque markets and overly-complex products. The crisis highlighted the need to improve regulation and monitoring not only in the traditional banking sector but also in the area of non-bank credit activity, called shadow banking. The shadow banking system can broadly be described as “credit intermediation involving entities and activities (fully or partially) outside the regular banking system”. In practice it includes entities which raise funding with deposit - like characteristics, perform maturity and/or liquidity transformation, allow credit risk transfer or use direct or indirect leverage.

Shadow banking features high on the international agenda. G20 Leaders have asked the Financial Stability Board (FSB) to look into shadow banking in order to identify the main risks and make recommendations. The overarching aim, as reaffirmed on several occasions by the G20, is to eliminate the dark corners in the financial sector that have a potential impact on systemic risk or merely result from regulatory arbitrage and extend regulation and oversight to all systemically important financial institutions, instruments and markets.

Because of its size and close links to the regular banking sector, the shadow banking sector poses a systemic risk. The first factor is size. The latest studies indicate that the aggregate shadow banking assets are about half the size of the regulated banking system. Despite the fact that shadow banking assets have decreased slightly since 2008, the global figure at the end of 2012 was €53 trillion²³⁷. In terms of geographical distribution, the biggest share is concentrated in the United States (around €19.3 trillion) and in Europe (Eurozone with €16.3 trillion and the United Kingdom with around €6.7 trillion). The second factor which increases risks is the high level of interconnectedness between the shadow banking system and the regulated sector, particularly the regulated banking system. Any weakness that is mismanaged or the destabilisation of an important factor in the shadow banking system could trigger a wave of contagion that would affect the sectors subject to the highest prudential standards.

The response to the crisis has been international and coordinated through the G20 and the FSB. The FSB has suggested that as long as such activities and entities remain subject to a lower level of regulation and supervision than the rest of the financial sector, reinforced banking regulation could drive a substantial part of banking activities beyond the boundaries of traditional banking and towards shadow banking. For this reason the FSB under the lead of the G20 initiated at the end of 2011 several work streams aimed at identifying the key risks of the shadow banking system. These work streams include: (i) the interaction between banks and shadow banking entities; (ii) the systemic risks of

²³⁷ Global Shadow Banking Monitoring Report 2013, 14 November 2013, FSB

Money Market Funds (MMFs); (iii) the regulation of other shadow banking entities like hedge funds; (iv) the evaluation of existing securitisation requirements and; (v) the use of Securities Financing Transactions (SFTs) like securities lending and repurchase agreements (repos).

Before the G20 and the FSB looked at the shadow banking system, the hedge funds were singled out as an area of grave concern. In April 2009, the G20 called for the hedge funds and their managers to be registered and properly supervised. Particular attention was given to their use of leverage and counterparty exposures. This is for this reason that the Commission proposed as early as April 2009 a directive on Alternative Investment Fund Managers (AIFM), including managers of hedge funds. The shadow banking regulatory agenda of the Commission has been set out in a Communication adopted in September 2013.

The recent financial crisis has also shown how critical funding liquidity risks can be in shaping the fate of individual institutions and in transmitting contagion across the financial markets. The procyclicality of funding liquidity created by private financial players, especially shadow banking entities, can be disruptive. It helped to fuel the financial bubble with liquidity generated by several forms of asset inflation. The rehypothecation of the collateral to support multiple deals, in particular securities lending and repurchase agreements, allowed for increased liquidity as well as the build-up of hidden leverage and interconnectedness in the system. When confidence in the value of assets, safety of counterparties and investor protection collapsed it created wholesale market runs leading to a sudden deleveraging and/or public safety nets (central bank facilities, etc.).²³⁸ In this context, trust and funding liquidity evaporated and it became impossible for even the biggest and strongest banks to access either short or long-term funding.²³⁹

The FSB recommendations on shadow banking of 29 August 2013 have been formally endorsed at the G20 summit in St Petersburg.²⁴⁰ They cover large areas of the financial system, notably the wide spread use of securities lending and repurchase agreements, also called securities financing transactions (SFTs), and of rehypothecation. These techniques are used by almost all actors in the financial system, be they banks, securities dealers, insurance companies, pension funds or investment funds. SFTs use assets belonging to an entity to obtain funding from or to lend them out to another entity. The main purpose of SFTs is therefore to obtain additional cash or to achieve additional flexibility in carrying out a particular investment strategy. The FSB and G20 have concluded that SFTs have the propensity to increase the built-up of leverage in the financial system as well as to create contagion channels between different financial sectors. This international work on shadow banking comes at a time where the banks are being subject to more stringent rules, including the proposed rules on the structural separation of banking activities. Confronted with this new legislative framework, there is no certainty that banks will not shift parts of their activity into less regulated areas as shadow banking. In order to closely follow market trends regarding entities whose activities qualify as shadow banking, in particular in the area of SFTs, it is necessary to implement transparency requirements that could inform the regulatory authorities about

²³⁸ E.g. EU banks were estimated to have had a shortfall of stable funding of EUR 2.89 trillion in 2010.

²³⁹ *Final report of the High-level Expert Group on structural bank reforms* chaired by E. Liikanen, 2.10.2012.

²⁴⁰ <http://en.g20russia.ru/load/782795034>.

the next steps that would be required to deal with these issues. In this regard, the work undertaken by the FSB gives some precision about the transparency level that is required.

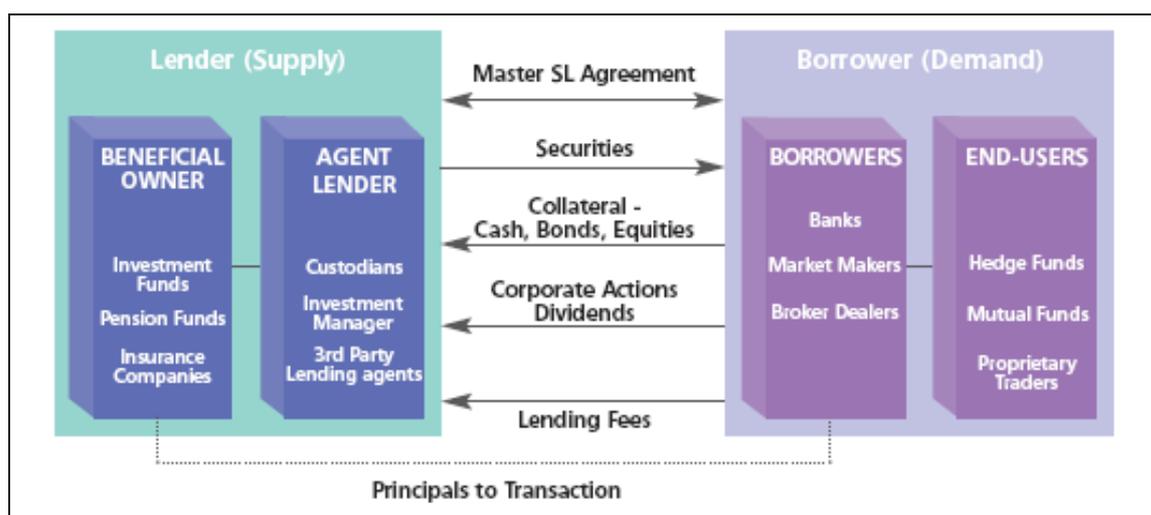
In 2013, the FSB adopted 11 Recommendations to address the risks inherent to securities lending and repurchase agreements. This impact assessment will only touch upon the issues related to the transparency of the SFTs markets and rehypothecation, i.e. Recommendations 1, 2, 5 and 7.

When assessing the transparency of the SFTs markets and rehypothecation, three main themes emerge: (1) the monitoring of the build-up of systemic risks related to SFT transactions in the financial system; (2) the disclosure of the information on such transactions to the investors whose assets are employed in these transactions; and (3) the contractual transparency over rehypothecation activities. EU regulatory authorities lack the necessary data to better monitor the use of SFTs and the risks and the vulnerabilities for the stability of the financial system that they imply. Access to this information will give the possibility to regulators to better design and apply their macro-prudential tools. At the same time the investors are not properly informed whether and to what extent the investment fund, in which they have invested or plan to invest in, has encumbered or intends to encumber investment assets by means of engaging in SFTs and other equivalent financing structures that would create additional risks for the investors. Finally, insufficient contractual transparency makes clients uncertain about the extent to which their assets can be rehypothecated, or about the risks posed by rehypothecation.

2. SECURITIES FINANCING MARKETS IN THE EU

The securities financing markets represent one part of the shadow banking universe. According to the FSB definition, SFTs are considered as a shadow banking activity irrespectively of the entity that is performing such a SFT activity. The following analysis therefore covers all entities that use SFTs.

Economic context



Example of the securities lending case, Source: International Securities Lending Association (ISLA)

SFTs consist of any transaction that uses assets belonging to the counterparty to generate financing means. In practice, this mostly includes lending or borrowing of securities and commodities, repurchase (repo) or reverse repurchase transactions, or buy-sell back or

sell-buy back transactions. All these transactions have similar, even identical, economic effects. The two main differences between repos and securities lending are their different transaction structure and their different purpose. In terms of transaction structure, securities lending occurs when an institutional investor agrees to lend out its securities to another party in return for a fee and collateral, while a repo is the sale of securities together with an agreement for the seller to buy back the securities at a later date. In terms of transaction purpose, securities lending is being driven significantly by a demand to borrow securities (for short selling purposes, trade settlements, etc.) whereas repo is more often driven by a desire to either borrow or lend cash. Market participants rely heavily on bilateral repos for financing. SFTs can be conducted on a bilateral basis, using a triparty agent, via an agent lender or being centrally cleared.

While not being directly associated with a SFT, other financing structures may produce equivalent effects. Those other financing structures include, for example, total return swaps (TRS), collateral swaps or liquidity swaps that are often used interchangeably with classic SFTs by investment funds. For the purpose of reporting to investors, those other financing structures will be included in the scope in addition to the SFTs. With regard to the reporting to competent authorities, the reporting requirement will be limited to SFTs because derivative contracts are already covered by European Market Infrastructure Regulation (EMIR)²⁴¹ reporting obligations.

The EU repo market tripled between 2001 and 2011 from EUR 0.9 trillion to EUR 3.1 trillion.²⁴² The June 2013 market survey²⁴³ of the International Capital Market Association estimated the value of the outstanding repo contracts of the participating 65 institutions at EUR 6.1 trillion and the growth of the market over the preceding six months at 8.6%.²⁴⁴

The 2013 ECB's Euro Money Market survey²⁴⁵ does not provide absolute outstanding levels but provides some statistics relating to the European repo market denominated in euro. There is a relatively high level of concentration in the euro repo market as the top 20 banks represent more than 82% of the total repo activity of the 161 credit institutions surveyed. It is also important to note that 71% of all bilateral euro repo transactions were cleared by central counterparties, compared to 56% in 2012.

There is no publicly available data on securities lending transactions in the EU. Several private data vendors, however, conduct private market surveys on securities lending. According to International Securities Lending Association, global securities lending stands at EUR 1.4 trillion.

Financial institutions responded to collateral scarcities resulting from the shift from unsecured lending by engaging in more collateral management, including optimising the use of available collateral to enhance liquidity, e.g., collateral swaps. An important element in this collateral management is rehypothecation. A Data Explorers survey (from investment banks) is the only data source available that covers the total global amount of

²⁴¹ Regulation (EU) 648/2012 of 4.7.2012.

²⁴² Journal of Financial Market Infrastructure, Autumn 2012

²⁴³ <http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/short-term-markets/Repo-Markets/repo/latest/>

²⁴⁴ This number, however, includes double counting of transactions between the participating institutions and may not represent the real size of the market.

²⁴⁵ <http://www.ecb.europa.eu/pub/pdf/other/euromoneymarketsurvey201311en.pdf?e34259b291b21d9dee4bc45bcc611b95>

rehypothecation. It estimates that securities of EUR 0.4 trillion were subject to rehypothecation in the EU in 2011, while globally it reached EUR 1.2 trillion in 2011. The IMF estimates that globally hedge funds provide an additional EUR 0.6 trillion of securities. This implies a total of EUR 1.8 trillion of collateral available in 2011 (i.e. EUR 0.6 trillion plus EUR 1.2 trillion). Thus, rehypothecation contributed about EUR 2.8 trillion to globally available collateral (EUR 4.6 trillion according to IMF estimates) in 2011. The players facilitating rehypothecation and the beneficiaries of the funding liquidity it gives are concentrated. The 14 major investment banks (G14) accounted for 86% of the rehypothecated collateral at the end of 2011 through their shadow banking activities with MMFs.²⁴⁶ This translated into the financing of more than 30% of the financing of the total liabilities of shadow banking entities between 2007 and 2010.²⁴⁷

Regulatory context

The EU rules on capital requirements²⁴⁸ require supervisory reporting of aggregate data on repo transactions of credit institutions, but existing requirements are not detailed and frequent enough for the purposes of monitoring of financial stability. SFTs involving entities such as investment funds, pension funds and insurance companies are rarely covered by existing supervisory reporting requirements despite the fact that they can give rise to financial stability concerns. Although the Markets in Financial Instruments Directive (MiFID)²⁴⁹ includes a reporting obligation on any transaction in financial instruments, level 2 implementing measures²⁵⁰ exempt securities financing transactions from this reporting requirement (notwithstanding the record-keeping of client orders and transactions).

The provisions regarding the reporting to investors on the use of SFTs and other financing structures are scattered in different places in the Directive on undertakings for collective investment in transferable securities (UCITS)²⁵¹ directive and in the ESMA guidelines on ETFs and other UCITS issues²⁵². Neither SFTs nor other financing structures are defined in the UCITS or Alternative Investment Fund Managers (AIFM)²⁵³ directive but these activities are covered through other definitions and obligations. Overall there is a lack of harmonisation and granularity in the existing reporting standards.

The EU's current regulatory framework does not take account of the systemic issues posed by shadow banking, such as the rehypothecation of collateral. The Financial

²⁴⁶ Credit Swiss, UBS, Goldman Sachs, Morgan Stanley Deutsche Bank, Barclays, Bank of America ML, HSBC and Citi. Source: JP Morgan Cazenove, Global Equity Research, 28.5.2012. JP Morgan figures are not disclosed.

²⁴⁷ JP Morgan Cazenove, Global Equity Research, 25. 5.2012, page 20.

²⁴⁸ Regulation (EU) 575/2013 of 26.6.2013.

²⁴⁹ Directive 2004/39/EC 21.4.2004.

²⁵⁰ Regulation (EC) 1287/2006 of 10.8.2006.

²⁵¹ Directive 2009/65/EC of 13.7.2009.

²⁵² European Securities and Markets Authority's Guidelines for competent authorities and UCITS management companies on ETFs and other UCITS issues of 18/12/2012 ESMA/2012/832EN.

²⁵³ Directive 2011/61/EU of 8.6.2011.

Collateral Directive²⁵⁴ lacks clarity on the operational processes that should be followed where collateral takers decide to reuse securities collateral given using a security interest. Client asset protection is a key feature of the MiFID. Currently under revision,²⁵⁵ it requires the investor's consent for the intermediary's use of its assets, investors can be left unprotected where an intermediary uses a title transfer to use the investor's securities. In essence, the legal framework governing how securities are held and used is currently left to Member States' law. It is composed of a patchwork of national laws. Nevertheless, each of these instruments has a different limited personal and material scope. Together, these measures cover only some of the aspects relevant to how securities are used by financial markets and leave some important gaps and inconsistencies in the regulatory framework, in particular in relation to shadow banking activities.

3. PROBLEM DEFINITION

Driver 1: lack of comprehensive (frequent and granular) data on securities financing transactions

SFTs display structural similarities with banking activities as they can lead to maturity and liquidity transformation and increased leverage, including short-term financing of longer-term assets. They are, therefore, considered as shadow banking activities by the FSB. During the financial crisis, the authorities responsible for the monitoring of financial stability encountered significant difficulties to anticipate the emergence of systemic risks due to the lack of timely and comprehensive data on trends and developments in securities financing markets. Moreover, existing information gaps and lags prevent regulators from identifying the built-up of financial stability risks that would prove detrimental in times of a credit or liquidity crisis. The absence of data also prevents regulators from promptly taking the measures necessary to mitigate the negative effects of a potential crisis. Moreover, the lack of frequent and granular data made it impossible to develop a comprehensive picture across the full range of market participants in these markets, especially on the interactions of the regulated banking sector with shadow banking entities.

The FSB recently published a summary of the available data to regulators on securities lending and repos showing the lack of frequent and granular data on EU securities financing markets.²⁵⁶ Moreover, in a paper published by the European Systemic Risk Board (ESRB), the authors concluded that the information available to EU regulatory authorities was not sufficient for the purpose of monitoring the systemic risks that may arise from SFTs.²⁵⁷ Existing industry data or data collected in other publicly available surveys displays weaknesses in relation to the level of granularity, coverage of instruments and of institutions and their geographic coverage across Member States. This makes it particularly difficult to compare and use the data from different surveys for prudential purposes.

²⁵⁴ Directive 2009/44/EC of 6.5.2009.

²⁵⁵ COM(2011) 656 final and COM(2011) 652 final.

²⁵⁶ FSB, Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos, 29.08.2013.

²⁵⁷ ESRB, Towards a monitoring framework for securities financing transactions, March 2013.

The lack of transparency is most acute with respect to bilateral transactions. In these areas no frequent and granular market data is readily available. Data on securities lending is very limited or not available at all, while information on key indicators for monitoring of the financial stability risks such as haircut levels, remaining maturity of collateral, reuse of collateral, is not typically available.

Driver 2: SFTs create conflicts of interests between the fund managers and the investors

With a volume of assets under management around EUR 9 trillion, investment funds are heavily engaged in SFTs and other financing structures in Europe. The majority of the European investment funds, representing around 70% of the assets under management, operate under the rules of the UCITS Directive while all other funds operate under the AIFMD. Generally, investors choose an investment fund according to its publicly stated investment strategy. This strategy comprises the asset classes in which the fund intends to invest but also the investment techniques that the fund intends to employ. SFTs are currently not presented as being an integral part of an investment strategy. Asset managers argue that SFT are not part of their core strategy and, at best, play an ancillary role. SFTs may, however, have significant impacts on the performance and the risk profile of the fund as they lead to expose the funds to additional risks.

A common feature of all SFT techniques is that they involve exchanging assets belonging to the investment fund with an external counterparty. While sharing similar structures, these techniques are not necessarily used for the same purpose.

1. Securities lending involves a fund lending its investment assets against a "lending fee". The lending proceeds can be used to enhance the return of the fund or to decrease the management fees. Securities borrowing is used by investment funds mainly to cover short positions (mostly relevant for AIFs). Liquidity or collateral swaps often take the same form as classic securities lending transactions.
2. Repos are used by investment funds to generate cash. This cash is then used to finance additional investments of the fund. Repos are used to increase the leverage of the fund. Reverse repos are used by investment funds to lend cash on a secured basis mostly to credit institutions.
3. Other financing structures include for example TRS. With a TRS an investment fund collects the investor's cash and passes it on to a TRS counterparty, usually an investment bank. Although not explicitly mentioned in the FSB recommendations, TRS create the same type of risks as securities lending and repo. TRS are used by managers because they offer exposures to strategies that would be difficult or too costly to implement otherwise.

SFTs are used because they offer managers economic interest or management flexibility. Their use is entirely subject to the manager's discretion which is driven by a motivation that might not necessarily be aligned with the interests of the investors. This could raise principal-agent problems. This agency dilemma may incentivise managers to act to increase their own profit, before and above considerations linked to the interests of their investors.

Conflict of interest may appear in the context of security lending transactions where the fund manager lends investment assets of the fund for a fee and receives collateral as a guarantee in case of default of the borrower. It is common practice for the fund manager

to retain part of the fee. This practice creates a conflict between the interests of the manager and the investors, because as more assets of the fund are lent out or more of the collateral received as guarantee is of bad quality, the higher the lending fees that the manager can expect. On the other hand, high levels of securities lending and collateral of inferior quality increases investors' exposure to risk.

This conflict may be worsened when the manager and its counterparty managing the securities lending program, the agent lender, belong to the same corporate group. In that case, the fund manager may have little ability to negotiate favourable terms for the interests of the fund investors, as it will be confronted with a parent or sister entity that has controlling power over the management company as well (i.e. a banking entity). TRS also involve possible conflict of interests when they are concluded on an intra-group basis. A conflict exists because the banking counterparty has an interest in posting collateral of lower quality as a way to remove these assets from its balance sheet in order to avoid regulatory requirements.

Conflicts of interests are inherent between funds' managers and funds' investors but are more likely to occur in the relative opacity that surrounds the use of SFTs. Especially fund investors are insufficiently informed about the existence of this financing tool or the extent of assets that are encumbered by SFT transactions. The relevant sectorial legislation, UCITS and AIFM directives, do not treat SFTs alike traditional investments of the fund. But like the primary investments of the funds, SFTs change the risk profile of the fund and will often change the fund's investment profile. These changes constitute material information that is needed to assess the risk and reward profile of the fund. However, this information is not properly disclosed to investors or at least not with the sufficient degree of granularity. Fund investors, even the institutional investors like the insurance groups or the pension funds, have therefore little means of assessing whether these transactions are in their interests or not.

Driver 3: Rehypothecation creates risks for clients and for engaging counterparties

For the purpose of this report, “rehypothecation” is defined as any pre-default use of assets collateral by the collateral taker for their own purposes. Rehypothecation is used in bilateral transactions between commercial market participants (i.e. dynamic rehypothecation) and between intermediaries and their clients (i.e. static rehypothecation). When the intermediary or the counterparty exercises its rehypothecation right, the ownership right is replaced with a contractual right to the return of equivalent securities. This is not protected as MiFID only protects a client's ownership rights. Thus, rehypothecation works until bankruptcy; if an intermediary defaults, a client with a contractual claim is an unsecured creditor, whose assets are tied to the insolvency estate and they have to line up with other unsecured creditors.

Static rehypothecation has declined since Lehman's collapse as clients demanded segregation of their securities from the ones owned by their intermediaries or limited the amount of securities that intermediaries could take as collateral. Data from August to November 2008 shows a sudden drop in rehypothecable assets at Morgan Stanley (fall of 69 %), Merrill Lynch (51 %) and Goldman Sachs (30 %).²⁵⁸ However, anecdotal evidence indicates a trend reversing its decline as confidence returns that governments will not allow another major intermediary to fail.

²⁵⁸ D. Duffie, *How Big Banks Fail and What to Do about it*, Princeton University Press, 2011, p. 39.

There are also drivers incentivising dynamic rehypothecation of collateral received from counterparties. In a survey, 76% of respondents agreed that entering or expanding rehypothecation is a key lever to increase trading revenues related to collateral utilisation in the context of collateral scarcity.²⁵⁹ But too much rehypothecation (whether static or dynamic) has the potential to threaten financial stability. Rehypothecation allows securities collateral to be used to create multiple obligations that interconnect different parties. The resulting obligations amount to a multiple of the value of the securities, creating concerns as the chains are opaque and hidden from participants and regulators. Maturity and liquidity mismatches allow for hidden leverage and risks to build that increase as the chain lengthens and more deals are secured using the same collateral.²⁶⁰ In contrast, overall available collateral has declined post-Lehman and the length of the collateral chains has also shortened.²⁶¹

The opacity and legal certainty as to a legal position can undermine confidence in counterparties and magnify a financial crisis. These problems are compounded by the fragmentation and barriers posed by diverging legal frameworks in the internal market. Rehypothecation can deprive clients of their investment and prevent counterparties from exercising rights attached to securities. This is even truer in an internal market context as clients may be unaware of the consequences of rehypothecation.

Problem 1: Regulatory authorities are unable to effectively monitor the use of SFTs

Regulatory authorities have experienced difficulties in monitoring, in a timely and granular manner, the developments in securities financing markets and the relevant risks. These markets are complex, evolve rapidly and involve a variety of participants. Participants range from regulated credit institutions to insurance companies, broker-dealers, asset managers and pension administrators. The recent financial crisis showed that securities financing markets are vulnerable to bank-like runs and fire sales of the underlying collateral, especially when the value of the assets is decreasing (e.g. 2008). Moreover, the assumption that securities financing is always robust even in stressed market conditions proved to be flawed as this led to the formation of interconnections among markets and market participants and the propagation of contagion.

Since SFTs are structured in a variety of ways, it can be difficult to identify the real risks individual market participants incur or pose to financial stability. According to the FSB, the lack of appropriate market transparency left regulatory authorities repeatedly dealing with relatively late-stage market developments that sparked the transmission of systemic risk during the financial crisis. Authorities had a limited overview of the maturity, liquidity and credit risk transformation taking place through SFTs. It was very difficult for them to detect the accumulation of risks and anticipate the consequences of the failure of a systemically important player such as Lehman Brothers International.

In general, SFTs provide funding and thus liquidity to financial markets. Consequently, some of the inherent risks of repos and securities lending transactions are similar to the

²⁵⁹ http://www.rolandberger.ch/media/pdf/Roland_Berger_Collateralized_trading_business_in_new_realities_20121102.pdf

²⁶⁰ BCBS, *Consultative Document on Margin requirements for non-centrally-cleared derivatives*, July 2012, p. 32: “Securities or funds collected as initial margin should not be rehypothecated or reused”.

²⁶¹ IMF, Singh M., *Velocity of Pledged Collateral: Analysis and Implications*, 2011.

risks of bank intermediation. As many shadow banking entities actively participate in SFTs markets, while this activity is not apparent to regulatory authorities, SFTs can contribute to the build-up of leverage and lead to significant systemic risks. For example, SFTs can cause significant maturity and liquidity transformation to take place outside the regulated banking system. This happens when a non-bank is financing long-term assets with short-term SFTs or collateralising less liquid assets in order to obtain liquid funding. In stressed market conditions, the risks related to maturity and liquidity transformation can lead to the default of shadow banking entities, which in turn can negatively impact the banking sector.

In the run-up to the crisis, leverage in securities financing markets was increased because of the low levels of collateralisation (i.e. no or low haircut requirements) combined with often inadequate valuation of the underlying collateral.²⁶² However, after the outbreak of the crisis, market participants started to require higher amounts of collateral given the falling prices of the collateralised assets and funding was withdrawn from the market. Once the value of collateral decreases, SFTs that rely on this collateral may no longer be sustainable and may need to be unwound quickly. Thus, SFTs led to a brusque deleveraging and put additional pressure on leveraged credit institutions relying on SFTs markets. SFTs can further amplify systemic risk through the interconnectedness between financial institutions, especially between banks and shadow banks.

The dynamics of SFTs markets can be impacted by significant risks of fire sales i.e. selling of the collateral received by the borrower following its default. Moreover, fire sales have a pro-cyclical effect on market prices in case of distressed market conditions as they further exacerbate the downward trend. Many of these risks can significantly impact asset quality, counterparty credit risk and the availability of funding in securities financing markets, thus impacting the activities of the regulated banking sectors.

Problem 2: SFTs are used at the detriment of the investor

In an investment fund, investors expect to be exposed to traditional market risk linked to the investment of the fund. The gains or losses that investors realize are expected to be generated by the investment policy that is pursued in accordance with the stated investment strategy of the fund as communicated to and agreed with the investors. SFTs, however, expose the investors to counterparty risk, leverage and liquidity risk that are not part of the stated investment strategy of the fund.

Should the counterparty to a SFT default, the fund is fully exposed to the loss, e.g. the collateral posted with that counterparty or the securities loaned to that counterparty. For example, when a substantial portion of the assets of a fund have been lent out to a single counterparty, the default of this counterparty might put in peril the viability of the fund. It is not uncommon that funds rely on a single counterparty when managing their entire securities lending program. In this case, the default of that counterparty may entail severe losses for investors.

In the case that the cash investments by a fund manager subsequent to a repo transaction cause losses, the fund investor will bear the losses – which will manifest themselves in a lower performance of the fund. In addition, as SFTs encumber the liquidity of the fund, investors might not always be able to redeem their investments as promised in the funds

²⁶² Bank for International Settlements, Committee on the Global Financial System, *The role of margin requirements and haircuts in procyclicality*, March 2010.

redemption policies. Fund managers may be forced to suspend redemptions for the period necessary to unwind the SFT transaction. It has been demonstrated that some funds may encumber up to 100% of their Net Asset Value in such transactions²⁶³, thus undermining their liquidity. According to a study on major providers of exchange traded funds (ETF, a type of "listed" investment fund), 25% of ETFs can have more than 50% of their assets loaned out and 3% had, in 2011, on average more than 90% of their assets on loan.

Securities lending generates additional revenues for the fund through the fee that is earned. These revenues are not always distributed back to fund investors and may be used at the sole discretion of the fund manager. According to the above study realized on European ETFs, the portion of revenues returned to the fund could range from 45% to 70% of gross revenue, with the fund manager and the securities lending agent retaining the balance. Only a few fund managers return 100% of the net revenue. The agent lenders are charging fees amounting to 10% to 40% of the gross revenue. When the fund performs securities lending activities, the investor bears 100% of the risks related to these activities but receives only a fraction of the return that is generated.

Problem 3: Rehypothecation shifts the legal and economic risks in the market

Collateral scarcity and the need for funding liquidity is encouraging rehypothecation of assets instead of simply keeping collateral as insurance against a default. Although the increased use of rehypothecation eases this scarcity, it shifts the legal and economic risks in an already complex financial system from regulated sectors to shadow banking by involving non-financial institutions through repos and securities lending. These risks centre on the difficulty of identifying who is exposed to whom. The failures of Lehman Brothers and Bear Stearns also revealed the risk of runs by investors on large intermediaries due to asset protection concerns about the safety of their property.

This increased reliance on rehypothecation of collateral can contribute to systemic risk, since in times of market stress it motivates counterparties to withdraw their assets if they fear the insolvency of their counterparty or intermediary - events that significantly contributed to the failures of Lehman and Bear Stearns²⁶⁴. This is inter alia since there is the lack of contractual transparency of rehypothecation activities. When assets are rehypothecated, the collateral provider's ownership rights are weakened so that they have only a claim for equivalent securities to be returned by the collateral taker. The failure of a major intermediary caused by a run can then set off a domino effect across the financial system where highly interconnected counterparties are unable to mitigate their exposures to each other or are unable to access the securities they need to secure funding because they are trapped in the insolvent estates of failed intermediaries. Mounting distrust between investors also causes sudden deleveraging as the liquidity given by churn disappears.

Rehypothecation can be seen as a developing threat that will become a major problem again if it remains unaddressed. Despite the dangers demonstrated by Lehman and MF Global, short-term incentives and procyclicality are increasing again, heightening the risk that it could trigger another crisis. The extension of funding liquidity that it gives to the

²⁶³ "Securities lending in physical replication ETFs: a review of providers' practices", Morningstar, August 2012.

²⁶⁴ S. L. Schwarcz, *Distorting Legal Principles*, Duke University School of Law, May 2010, p. 5.

market is dependent on confidence and susceptible to sudden deleveraging with consequences for the real economy.

4. ANALYSIS OF SUBSIDIARITY

Based on the nature of the problems outlined in the above analysis, several major justifications that meet the principle of subsidiarity for action at the EU level become apparent. The majority of SFTs as well as rehypothecation activities are performed on a cross-border basis between entities that often do not have their seats in the same jurisdiction and involve assets and currencies issued in different jurisdictions. Acting at the European level is the minimum to cover SFTs to the greatest extent possible and to allow regulatory authorities at national and EU level to have a comprehensive overview of the SFTs markets across the entire EU. The effectiveness of remedies implemented in an autonomous and uncoordinated way by individual Member States would likely be very low as such remedies would be able to capture just a portion of the market. Furthermore, given the systemic impact of the problems, uncoordinated action may even prove counterproductive because of the risk of data fragmentation and incoherence. Only aggregated data at the European level can give the necessary macroeconomic picture that is required to monitor the use of SFTs.

As regards investment funds, the European fund industry has an important cross-border dimension. The share of cross-border assets for the European investment funds industry as a whole (UCITS and non-UCITS AuM) has risen from 21% in 2001 to 45% in 2012²⁶⁵. This means that around one of two investors buy a fund that is not domiciled in their country of residence. It is therefore important that the investor protection standards are applied evenly across the EU in order to ensure that all European investors benefit from the needed transparency over the use of SFTs..

5. OBJECTIVES

The general objectives are to:

- (1) Ensure financial stability in the internal market by preventing the build-up of systemic risks;
- (2) Increase the protection of investors and clients.

Reaching these general objectives requires the realisation of the following more specific policy objectives:

- (1) Ensure that the systemic risks of the SFT markets are adequately monitored;
- (2) Ensure that SFTs profit to investors first;
- (3) Limit the potential risks for clients and counterparties linked to rehypothecation.

The specific objectives listed above require the attainment of the following operational objective:

²⁶⁵ These numbers are for cross-border funds, i.e. funds defined as generating their assets from more than one market (threshold used is 20%). Lipper "European Fund Market Review", 2012 and 2013 editions.

- (1) Make frequent and granular information on SFT markets available to regulatory authorities;
- (2) Increase the transparency toward the fund investors over the use of SFTs and other financing structures;
- (3) Reduce the uncertainty about the extent to which assets have been rehypothecated.

6. POLICY OPTIONS

In order to meet the first operational objective, the Commission's services have analysed different policy options, such as relying on existing initiatives, improving the scope and frequency of existing market surveys, enhancing regulatory reporting and requiring a SFT reporting to a trade repository.

In order to meet the second operational objective, the Commission's services have analysed policy options related to the implementation of disclosure requirements in various periodical reports that UCITS and AIFs have to produce as well as in the pre-contractual documents such as the fund prospectus.

In order to meet the third operational objective, the Commission's services have analysed four policy options, ranging from no action at EU level, to contractual transparency and to the introduction of a rehypothecation cap.

7. STAKEHOLDER CONSULTATION

The FSB conducted a public consultation²⁶⁶ in November 2012 on relevant problems in SFT markets, inter alia, the lack of transparency. There was broad support for more transparency in the securities lending and repo markets, while many respondents suggested taking into account existing reporting requirements and other available market data. The contributions received in response to the Commission's public consultation on shadow banking and the European Parliament's own-initiative-report also highlight the importance of appropriate measures in this area.²⁶⁷

A public consultation on different UCITS issues was conducted in 2012 and stakeholders were notably asked about the need to increase the transparency requirements. Many industry stakeholders felt that for UCITS funds the transparency issues are adequately addressed by the ESMA guidelines. Many however, also stated that a codification of such transparency rules would facilitate their harmonized implementation.

²⁶⁶ 49 responses were received from trade associations, intermediaries, asset managers, market infrastructures as well as public authorities.

²⁶⁷ Cf. European Commission: Green Paper Shadow Banking, Brussels, 19.3.2012 and European Parliament: Report on Shadow Banking (2012/2115(INI)), A7-03654/2012, 25.10.2012.

8. ANALYSIS OF IMPACT OF DIFFERENT POLICY OPTIONS

Operational objective 1: options aimed at reporting frequent and granular information to regulatory authorities

Option 1.1 Rely on existing initiatives at national level or from the industry side (no action)

This option relies on existing initiatives as well as possible actions at national or industry level. Although some initiatives such as ICMA's semi-annual survey on EU repo market, the ECB's annual euro money market survey or the survey on credit terms and conditions in euro-denominated securities financing markets by the Committee on the Global Financial System and the ESCB, have led to improved SFT transparency, there are still important gaps in the reported indicators and data continuity. These gaps have been identified by the FSB and ESRB, both of which call for a more comprehensive data collection on SFTs.

Indeed, the current initiatives are not broad enough in their coverage to allow for effective monitoring of the systemic risk linked to SFTs: ICMA's survey covers around 61 institutions in 15 European countries, the ECB's survey mainly covers transactions by a constant panel of 104 banks in euro denominated interbank repos. Because of their semi-annual or annual frequency, existing surveys lack continuous data and, in certain circumstances, the data may represent an inaccurate or even misleading source of information (e.g. outdated data, "window-dressing" discrepancies). Moreover, participation in the surveys is voluntary and there are data protection issues with certain indicators (e.g. counterparty identity) which prevent their reporting. Given these critical gaps in the data and as seen during the recent crisis, regulators' ability to understand the risks and react in stressed market conditions is significantly undermined.

Option 1.2 Improve the scope and frequency of existing market surveys

On the benefits side, this option would permit to close, at least partially, some of the gaps in the scope of the existing surveys, thus slightly increasing the transparency compared to Option 1.1. It may also increase the standardisation and streamlining of the processes used by market participants as more actors and transactions will be covered.

Using market surveys, however, makes it difficult to ensure that all relevant participants report the data needed, thus not achieving a sufficient level of transparency of the market activity. As market surveys are essentially periodic, they do not provide a continuous flow of information and increasing their frequency will ultimately increase the reporting costs for participating firms. Although the market surveys could be adapted from one period to another to include new indicators, the successive adaptations will further raise reporting costs and affect comparability of data. Finally, the use of improved market surveys will still allow for some "window dressing" and will not provide regulatory authorities with up-to-date data. Therefore, market survey cannot be used for frequent and timely monitoring purposes.

Option 1.3 Enhance regulatory reporting

Regulatory reporting is a key tool to monitor regulated entities' activities and assess the level of risks linked to SFTs (see also section 3 on regulatory context). This option has a number of benefits compared to Option 1.1 and Option 1.2. It will solve some of the existing shortcomings related to the lack of continuous data, the data protection issues

and the voluntary nature of market surveys since a frequent standardised reporting would be required by law. This option, however, will only cover supervised entities and the extent of its scope will mostly depend on the ability of regulatory authorities to obtain information from non-supervised entities. If not all market participants are captured, the reporting coverage will be incomplete. In any case, the market coverage would be higher than with market surveys. This means that the overall level of transparency would be significantly improved compared to Options 1.1 and 1.2.

There are, however, a number of disadvantages as this option will lead to the fragmentation of reported information among regulatory authorities. This problem would be particularly acute for market regulators and systemic risk regulators, but could also prove significant for prudential regulators of groups of financial entities active in multiple jurisdictions. In addition, regulatory authorities will need to increase their resources to deal with the reported information which would mean a cost increase for the authorities concerned. Moreover, regulated firms will also face increased reporting costs due to the required granularity and higher frequency of the data reporting but these costs are expected to decrease over time because of on-going automation and standardisation of reporting processes and templates.

Option 1.4 Require SFTs reporting to trade repositories

The reporting to trade repositories (TRs) will lead to a substantial increase in the transparency of securities financing markets. Since the information will be collected in a central database, this will facilitate regulators' access to the data and avoid the need to compile individual information from different regulators. It would allow for complete and timely information to be reported (e.g. principal amount, currency, type and value of collateral, the repo rate or lending fee, counterparty, haircut, value date, maturity date), therefore making it possible for regulators to perform a well-timed comprehensive monitoring of the market developments, which is not the case for Options 1.1, 1.2 and 1.3. This option will completely close the current data gaps and the reporting obligation will cover all market participants, regulated or unregulated. The periodic publication of aggregate data by TRs can be an additional benefit as it will improve the overall data available to investors but also for research projects.

There could be one-off investment costs of creating SFTs trade repositories which could be owned and run either by private entities (e.g. existing TRs) or public bodies. These costs could be, however, minimised by using existing structures such as registered TRs, matching facilities, tri-party agents, central counterparties. In terms of operating costs, market participants will incur the cost of handling the SFTs reporting processes to the TRs as well as the fees to the TRs for services provided. This option will therefore incur higher total costs than the ones under Options 1.1 and 1.2 but costs can be reduced to a certain extent by leveraging experience and facilities created through the existing obligation to report derivative instruments to TRs under EMIR. The experience from derivatives reporting shows that the fees might not be particularly high and mainly depend on the biggest firms which will report large numbers of transactions to TRs, thus allowing for economies of scale. It is expected that the Member States with the biggest SFTs markets will be more affected by these measures but they will benefit, as well as the entire Union, from greater monitoring of the systemic risks linked to SFTs markets. This option will however allow for less flexibility to modify the reporting content and it will incur higher costs than in options 1.1 and 1.2.

The overall costs of this measure can be mitigated by allowing smaller market participants to delegate the reporting to their counterparties or third parties. In most cases the delegation will be to bigger institutions with whom small market participants usually have SFTs, and who are better placed (e.g. scale economies) to bear the reporting costs. In order to allow for an accurate reporting, a certain level of standardisation will also be needed, which can be provided by level 2 measures, building on existing initiatives and studies (e.g. EMIR, FSB).

Option 1.5 Require reporting to trade repositories or, if that is not possible, directly to regulators

This option takes into account the possibility that a trade repository may not exist or, in case it does exist, that it may either not be willing or not be able to accept the information reported by the counterparties. This means that, if it is impossible to report SFTs to a trade repository, then the counterparties should report them directly to the relevant regulator.

The cost-benefit analysis for this option is largely identical to the one for the previous option on requiring SFTs reporting to TRs. There will, however, be additional costs for regulators (e.g. ESMA, national competent authorities) to handle the information reported but, at the same time, market participants would not have to pay fees to the services of the TRs. The key additional benefit of this option is that it ensures the effective reporting of SFTs in any event, thus guaranteeing that regulators acquire a comprehensive picture of SFTs markets.

Summary

The preferred policy option that has been chosen is to request that all SFTs are reported to a trade repository, or, if that is not possible, directly to regulators. This option is the most efficient in order to allow early detection of risks building up in the SFT market as it allows gathering data with a higher level of granularity and frequency.

This option is therefore the most indicated to answer to the objective of this regulation, i.e. ensuring financial stability by preventing the build-up of systemic risks in SFT markets.

Each option is rated between "---" (very negative), \approx (neutral) and "+++" (very positive) based on the analysis in the previous sections. The benefits are, however, not quantified in monetary terms, as this is not possible on an ex ante basis. The costs should be understood in a broad sense, not only as compliance costs but also as all the other negative impacts on stakeholders and on the market. This is why we have assessed the options based on the respective ratio of costs to benefits in relative terms. The assessment highlights the policy options which are best placed to reach the related objectives.

Policy options	Impact on stakeholders	Effectiveness	Efficiency
1.1 No action	0	0	0
1.2 Improve the scope and frequency of existing market surveys	(+) Some reporting gaps of existing surveys could be closed, providing regulatory authorities with more market information	(-) No continuous flow of information. (--) Sufficient coverage (in terms of	(--) Regulatory authorities will not avail of comprehensive up-to-date data matching their

	(+) Market participants would not be subjected to reporting obligations	number/significance of market participants) cannot be guaranteed (-) Scope for 'window dressing'. (-) Risk of insufficient standardisation	requirements for frequent and timely monitoring
1.3 Enhance regulatory reporting	(++) Regulatory authorities would obtain continuous data from a wider pool of market participants (-) Increased costs for regulatory authorities (-) (Only) regulated entities have to provide information and bear the reporting costs.	(++) Frequent and standardised data flow (-) Coverage limited to supervised entities. (-) Fragmentation of information among regulatory authorities.	(+) Improved data availability counterbalanced by limitations of coverage of entities, fragmentation of data among authorities and cost increases for authorities and regulated firms.
1.4 Require SFTs reporting to trade repositories	(+++) Regulatory authorities obtain complete and timely market information (--) Market participants have to bear reporting costs. (+) Investors and other stakeholders benefit from the periodic publication of aggregate data	(+++) Complete closure of current data gaps (+) Easy access for regulators	(++) Regulators are enabled to perform well-timed comprehensive market monitoring; there are possibilities to minimise investment costs and reporting costs for small market participants
1.5 Require reporting to trade repositories or, if that is not possible, directly to regulators	(+++) Impact as above in 1.4, but (-) where reporting to trade repositories would not be possible, additional costs for regulators from handling the information reported directly to them.	(+++) As above in 1.4, additionally: (+++) Effective reporting ensured, where reporting to trade repository is not possible	(+++) As above in 1.4., with the additional key benefit that effective reporting is ensured under all circumstances.

Operational objective 2: options aimed at increasing the transparency toward fund investors

Option 2.1 Rely on existing transparency requirements²⁶⁸

Under this option, the initiative would be left to National Competent Authorities (NCA) of the Member States and to the European Securities and Markets Authority (ESMA) to create transparency in the SFT area. NCAs under the umbrella of ESMA have already taken action in this field with the entry into force of guidelines on UCITS funds. Those guidelines require the manager to publish in the UCITS annual report information on the exposures; identity of counterparties as well as type and amount of collateral for SFTs. In addition managers are required to publish the revenues and the costs related to the use of

²⁶⁸See section 10 of this annex, “detailed overview of existing and proposed fund reporting requirements”, to have a detailed picture of the existing SFT reporting requirements in the UCITS and AIFMD frameworks

securities lending and repos. These reporting obligations come on top of what is required by the UCITS directive, notably by the requirements contained in the annexes of the directive.

The reporting requirements toward investors are much less developed in the AIFMD context. The directive itself contains few specifications on SFTs whereas no additional guidelines have been developed up to date. Under the AIFMD the competent authorities have access to a larger amount of information on SFTs than investors.

Impact on investors: The existing UCITS requirements give some general information to the investors but are not granular enough to be able to give a detailed picture. For example the investor has no information on the amount of securities subject to SFTs as a proportion of the fund's Assets under Management (AuM). As such investors are not able to assess the degree of involvement of the fund in this activity and therefore cannot judge the degree of risk that this fund entails. Other information is missing such as concentration data on the collateral or data on the re-use and re-hypothecation of the collateral. The revenue and costs of those transactions are disclosed indistinctively as a gross amount; it is therefore impossible to analyse the breakdown for each type of activity and the source of the costs. The comparability between different investment funds is therefore not optimal.

This issue is further reinforced by the absence of SFT reporting for AIFs. The AIFM directive contains several data that fund managers should disclose to their investors but almost none of them cover the use of SFTs. There is a risk that national legislations diverge in that respect and thus that investor protection standards diverge between Member States.

Impact on managers: The absence of an EU coordinated approach entails the risks that some Member States decide to implement SFT reporting requirements individually and thus in a diverging manner. Fund managers operating cross-border would then need to apply different rules which would potentially increase their reporting costs. More generally ESMA guidelines do not benefit from the same enforcement quality as primary EU legislation because Member States have the option not to apply ESMA guidelines.

The respondents to the UCITS consultation supported the initiative taken by ESMA to increase the transparency of SFTs. The majority of them, being from the industry side or the public side, considers that the ESMA guidelines are in this regard sufficient to address the issue of transparency. Other respondents consider that some legal codification (e.g. through a legal initiative or technical standards) would be necessary in order to ensure a harmonized implementation in the EU.

Option 2.2 Incorporate SFTs and equivalent financing structures reporting into existing ex-post documentation, such as periodical reports required under the UCITS directive or the AIFMD

According to the UCITS Directive, UCITS funds have to produce annual reports containing different financial statements as well as information on the different investments undertaken by the fund. UCITS funds must also produce half-yearly reports containing information on assets and liabilities and more generally on the composition of its portfolio. According to the AIFM Directive, information on AIFs should be disclosed to investors at least on an annual basis or more frequently according to the fund rules. The existing UCITS and AIF reports already do provide some information on the use of

SFTs and could be easily used to incorporate also more detailed regular reporting on the use of SFTs. The data to be reported would correspond to the list proposed by the FSB, such as global data, concentration data, counterparty disclosure or policy on acceptable types of collateral. To increase the awareness of the investor to the revenue that is generated by the SFT and equivalent activity, the reports will have to include detailed information on the costs and returns. In order to ensure complete information of the investors, these information requirements should cover financing structures equivalent to SFTs.

Impact on investors: Ex-post documentation gives insight to the investors on the transactions that the fund has been involved in over the previous reporting period. It is a means for the investors to check the performance of the fund and other indicators regarding the risks or costs. More generally, it gives the possibility to verify that the fund's investment strategy has evolved as announced in the prospectus. Including more detailed data on SFTs, presented in a structured way will enable investors to gain a more comprehensive understanding of these transactions and in particular their implications on the fund risk and reward profile. This will enable the investors to understand whether these transactions create a value added to them and will facilitate the comparison with other similar investment funds. Investors will also be able to identify the proportion of SFT revenue that is returned to the fund and assess the amount of costs related to this activity. In practice it is to be expected that the institutional investors will most probably be interested to have access to this information whereas doubts exist regarding the capabilities of retail investors to grasp the significance of this information. This information could for example be used by institutional investors such as pension funds or insurance companies as part of their due diligence activity when selecting investment funds. These investors could then screen and compare the different investment fund targets at the light of new criteria linked to the SFT activity.

Impact on managers: SFTs are currently labelled by fund managers as an ancillary activity. SFT are not revealed in detailed mostly to avoid disclosing their inherent risks (default of a SFT counterparty, insufficient collateral) but also the pecuniary benefit that these transactions entail for the manager. By introducing enhanced reporting requirements, SFT would become more visible and would de facto be assimilated to the fund's investment strategy. Managers will have to incur some costs for computing this information and passing it on to the investors. Some stakeholders that responded to the FSB consultation²⁶⁹ warned that the additional disclosure will increase the reporting costs which ultimately will increase the fees that investors pay. The costs should not however be overestimated since the additional data will be reported through existing UCITS and AIF reports. In addition part of those data already has to be disclosed under existing rules applying to UCITS and AIFs.

For the funds that are not active in SFTs, the enhanced reporting requirements will have no impacts, whereas the reporting costs will generally increase with the degree of use of SFTs. However, funds that use SFTs very actively usually do so in a standardised manner – in the case of securities lending with agent lenders – for whom reporting is a relatively straightforward task; accordingly recourse to agent lenders will decrease the cost of providing this information. The disclosure of revenue and costs attached to the SFT activity may have an influence on the manager's remuneration. The transparency to investors might increase the pressure on the manager to rebate a larger part of the revenue from SFTs to the investors.

²⁶⁹ 18 European stakeholders responded to the section on transparency to fund investors.

Generally, the industry stakeholders that responded to the FSB consultation and to the Commission consultation on UCITS issues supported the goal of increased disclosure to fund investors. Some stakeholders expressed that transparency standard of SFTs should be harmonised upwards in order to inform investors in an efficient, standardised and comparable way. Within the UCITS context, many stakeholders expressed that there would be merit in making the ESMA guideline requirements mandatory to facilitate their harmonized implementation.

The FSB consultation respondents questioned the usefulness of detailed disclosure on SFTs as they argued that such detailed information may rather confuse than inform retail investors. It should however be recalled that UCITS funds are mostly purchased by institutional investors. It is estimated that around 90% of the UCITS funds AuM are held by institutional investors. Those professional investors have the capability to understand the impacts (such as on the counterparty risk or the liquidity risk) of using SFTs and as indicated previously this new information will be useful in selecting a fund.

In the case of UCITS funds, they did not see the need of such detailed information as SFTs cannot be used to increase fund leverage due to regulatory limitations. Even though the UCITS directive and the ESMA guidelines pose certain limits to the leverage of UCITS funds, there are other major risks created by these measures – in particular counterparty risk - that make disclosure of such measures necessary.

Finally the argument that disclosing SFT information risks providing confidential information to competitors about the positions of the fund has little merit since investment funds are already obliged to disclose on a regular basis all investments and positions they take directly in the market.

Option 2.3 Implement SFT and equivalent financing structures reporting through ex-ante documentation, in the prospectus or equivalent AIF report according to the article 23 of the AIFM directive

Every investment fund, being a UCITS fund or an AIF, is required to produce a prospectus setting out the fund rules and the rules of incorporation. The fund rules usually contain all the information related to the investment strategy that the fund intends to pursue. Those fund rules represent the “contractual obligation” of the fund manager towards the investor. Once the fund is set-up according to those rules, the manager is not allowed to deviate from them. The supervisory authorities, with the help of the depositary of the fund, are responsible to control that managers are acting according to the predefined rules. Under this option, managers would be required to also include the use of SFT as part of the investment strategy they intend to pursue. This could include for example information on the total amount of assets that can be on loan at any point in time, the reasons and goals behind the use of SFTs, the policy of the manager regarding the valuation and management of collateral that is exchanged as part of an SFT, including its re-use or re-investment, the policy regarding the quality and identity of the counterparties and how the revenues and the costs related to those transactions will be shared.

Impact on investors: Investors would have knowledge, prior to their investment, on whether SFTs form part of the investment strategy pursued by a fund. They will be able to measure the expected risk and reward profile linked to this activity. Their ability to compare the investment proposition of different investment funds will increase. In addition, investors will receive increased assurance that managers will not use to a

greater extent than announced in the fund rules. In the case that managers lose money because their SFT transactions exceed the pre-announced limits, investors would be able to invoke the manager's liability for breach of contract. Enhanced disclosure of SFT will also mitigate potential conflict of interests between the fund manager and the fund investors because investors will be reluctant to invest in funds where their interests are neglected.

Impact on managers: Stating in the fund rules the planned activity related to SFTs will restrict the manager's flexibility in using those techniques. Managers will be bound by the predefined strategy enacted in the fund rules. For example they could be limited in their use of repo which could in turn have an effect on the degree of leverage that managers are permitted to use. In practice if the manager wants to change the rules on the use of SFTs, the manager will be first obliged to seek the agreement of the investors. Therefore the manager will no longer have the entire discretion over the use of SFTs. Since the prospectus or other equivalent pre-contractual documents have to be produced only once at the creation of the fund, the introduction of SFT information will not increase the reporting costs. The costs of setting up a prospectus could be slightly increased but this should be seen in conjunction with all the other information that has to figure in the document. As such the cost impacts will be marginal.

Generally, the industry stakeholders felt that fund prospectus should inform the investor in the most objective, transparent and impartial way. A major industry association also suggested that a standard template for securities lending disclosures should be developed for UCITS to incorporate into the prospectus and with a requirement that anything outside of these parameters should be disclosed separately.

Option 2.4 Implement specific reporting requirements for retail investors

Under the Packaged Retail Investment Products (PRIPS) initiative²⁷⁰, fund managers will have to produce a short document aimed at retail investors only. Irrespective of being a structured product, insurance product or an investment fund, investors will have the same information about the products. The information should be presented in a clear, simple and comparable manner so that all retail investors could understand it. Under this option the Key Information Document (KID) for investment funds would contain additional information on the use of SFTs.

Impact on investors: Retail investors would have access to the SFT information through a pre-contractual document that is easy to access and to read. This would raise their awareness that SFTs exist and that they increase the riskiness of the fund. It would however be challenging to present the main risk and reward profile linked to SFTs in a KID that is supposed not to be longer than 2-3 pages and that should already include all the other information related to the fund. The information would need to be reported in a very concise way that would not help the retail investor to understand it. Moreover it could end up being misleading should the information be reported in a too short manner. In addition there is a risk that the core objective of the PRIPS initiative to make all packaged investment products comparable is not reached because SFT reporting would concern investment funds only and not structured products or life insurance investment products.

²⁷⁰ http://ec.europa.eu/internal_market/finservices-retail/docs/investment_products/20120703-proposal_en.pdf

Impact on managers: to the extent that managers already have to produce a KID, this should not create major impacts. Because the KID is equivalent to a pre-contractual document such as the prospectus, the impacts on the manager’s flexibility would be the same as under option 2.3.

The option to introduce SFT disclosure in the KID was not directly tested in the different consultations but some stakeholders expressed doubts as to the usefulness of SFT information for retail investors. The interest of retail investors to know the details of the SFT activity performed by the investment funds is also put into question. It is therefore doubtful that a KID contained SFT information would be of any added value.

Summary

Policy options	Impact on stakeholders	Effectiveness	Efficiency
2.1 No action	0	0	0
2.2 Implement SFT reporting through ex-post documentation	(+) investors benefit from full transparency (-) managers must incur disclosing costs	(+) transparency increases the protection of the investor (+) coherence with FSB	(++) increased transparency at little cost for the manager
2.3 Implement SFT reporting through ex-ante documentation	(+) investors benefit from pre-contractual disclosure (--) managers become fully accountable over the use of SFTs	(+) investors benefit from contractual protection in the case of misuse of SFTs (+) coherence with FSB	(+) increased protection at the price of making SFT a normal activity for the manager
2.4 Implement specific reporting requirements for retail investors	(+) retail investors benefit from preminent SFT information (-) retail investors might lack interest and understanding (≈) little impact in terms of cost for the manager	(-) risk of unclear SFT information (-) risk of undermining comparability of the KID	(--) risk of confusion not compensated by increased benefit for retail investors

Option 1 cannot be retained as it would not address the problem of conflict of interest and unequal treatment of investors. Investors will continue to have less information than the manager, to have no influence on the fund’s activity and to be neglected in revenue sharing arrangements.

Option 2 has the merit to disclose all the SFT activity over the last reporting period so that investors can follow it. Such information will increase their awareness of the use of SFTs. Under option 3, investors have pre-contractual information on the use of SFT so that they can choose each fund according to its stating strategy. Options 2 and 3 are not superior or inferior to each other but are complementary. Option 2 is important for on-going transparency whereas option 3 is important for pre-contractual transparency. As such both options should be retained.

Option 4 has the merit to recognize that retail investors need a particular treatment in the access to the information. But the KID is not the right place to address this concern because it risks undermining the objective to make the KID simple and comparable between all packaged investment products. Moreover it is doubtful that retail investors

will have any interest or understanding for this new information. As such this option cannot be retained.

In order to ensure that investors have sufficient information over the use of SFTs, it is therefore necessary to require disclosure before the investors invest in the fund as well as after the SFTs have been used. The use of SFT, its extent and the eligible counterparties should be identified in both the periodical reports and in the fund's prospectus or equivalent AIF report according to the article 23 of the AIFMD. These information requirements should apply to financing structures equivalent to SFTs in order to ensure complete information of the investors.

Operational objective 3: option aimed at reducing the uncertainty about the extent to which assets have been rehypothecated

Option 3.1 No action

Under this option no specific rules on rehypothecation would be introduced. In this case, the systemic risks related to the uncertainty about the extent to which assets have been rehypothecated would not be fully addressed throughout the EU and the contractual and operational transparency of such activities would remain low, effectively preventing counterparties from properly managing their risk exposure. This implies that when the same securities are being rehypothecated several times, the failure of a counterparty could lead to a race to secure the collateral by multiple parties, as happened in the Lehman and Bear Stearns collapses. This option would not achieve minimum harmonisation of rehypothecation rules within the Union which could allow for better transparency towards clients and engaged counterparties in their cross-border activities.

Option 3.2 Oblige contractual transparency on rehypothecation

This option consists of specific transparency requirements to be met by contractual agreements on rehypothecation as well as requiring the prior express consent to rehypothecation by the counterparty providing collateral. The FSB has developed a similar policy recommendation on sufficient disclosure to clients in relation to rehypothecation of assets.²⁷¹ All Member States also support the need for more transparent rehypothecation.²⁷²

This would fully meet the specific objective 3 by requiring the prior express consent of the providing counterparty to the rehypothecation of the financial instruments it has provided as collateral, ensuring that it is fully aware of the potential risks involved, in particular in the event of default of the receiving counterparty. Furthermore, according to this option, prior to the actual rehypothecation the financial instruments received as collateral have to be transferred to an account opened in the name of the receiving counterparty, which would also help prevent a future crisis scenario, where investors are uncertain about their rights, thus contributing to financial stability. Such rules are consistent with existing market practice in major securities markets in the EU (e.g. rehypothecation undertaken by prime brokers based in the UK).

²⁷¹ FSB, *Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos*, 29.08.2013.

²⁷² Cf. Annex 5, http://ec.europa.eu/internal_market/consultations/2010/securities_en.htm.

The rule concerning the providing counterparty's express consent to rehypothecation would be along the lines of Article 19, MiFID Implementing Directive 2006/73/EC. This approach would be broader than MiFID as it would apply to all counterparties engaging in rehypothecation. It would also cover the providing counterparty who has only a mere contractual right to have equivalent securities returned after rehypothecation ends (MiFID protects only clients' ownership rights). Currently an investment firm may book the securities as its own on its records and, in such a case, they would not be covered by the MiFID client asset protection rules (e.g. rules that impose segregation between the client's and the firm's assets and require that the investment firm uses securities only with the client's express consent). In the MiFID review, the Commission proposed to address this by banning title transfer collateral arrangements with retail clients for the purpose of securing or covering clients' present or future, actual, contingent or prospective obligation.²⁷³ The Alternative Investment Management Association, which represents global hedge funds community, agrees with a prior consent rule as they want to be able to authorise counterparties to rehypothecate their assets in some well-defined circumstances.²⁷⁴

In terms of effectiveness, the proposed option would also ensure that counterparties are enabled to fully manage their exposure. By clarifying that express consent is needed for rehypothecation to take place, the proposed option would prevent non-authorised rehypothecation of assets. The requirement that financial instruments received as collateral have to be transferred to an account opened in the name of the receiving counterparty prior to rehypothecation would supplement the Financial Collateral Directive and is analogous to the FSB Recommendation 7. This would not only rebalance the position of collateral providers, but would reduce systemic risk by preventing excessive rehypothecation and make the rehypothecation chain transparent, thus contributing to the general objective to ensure financial stability.

Option 3.3 Introduce a rehypothecation cap

A cap on the level of rehypothecation would constitute a clear direct restriction on rehypothecation. Such a cap could be introduced along the lines of the cap in the US²⁷⁵ where a limit on the maximum leverage and the amount of collateral that could be rehypothecated could be introduced, e.g., intermediaries could only be allowed to: (1) lend 50% of the purchase price of securities to be deposited as collateral with the respective intermediary; and (2) to rehypothecate clients' securities they hold as collateral up to 140% of the value of the client's liabilities towards the intermediary.

This would prevent excessive levels of rehypothecation by setting it at a constant level and, thus, reduce the uncertainty about the extent to which assets have been rehypothecated. A transparent rehypothecation cap that is constant would, in addition, allow authorities and regulators to monitor the level of endogenous liquidity that is generated by market practices. It would also provide a level playing field within the EU, thus improving the functioning of the Single Market, and globally, notably with the US. The alignment with the US 140% rule would close the regulatory gap between the USA and the EU that leaves market participants the opportunity for arbitrage. For example, when Lehman Brothers went bankrupt many US hedge funds found themselves with

²⁷³ COM(2011) 656 final, 20.10.2011.

²⁷⁴ FSB consultation on Strengthening Oversight and Regulation of Shadow Banking, 18.11.2012.

²⁷⁵ FSB consultations on Strengthening Oversight and Regulation of Shadow Banking, 18.11.2012.

significant exposure to Lehman Brother International Europe as their prime brokerage agreements were structured to permit client-asset transfer to the prime brokerage's UK subsidiary.

In terms of fundamental rights, this option could have a negative impact on the right to property (Article 17 Charter of Fundamental Rights), as the rehypothecation cap would also cover collateral provided under title transfer arrangements. In this situation, the collateral taker becomes the securities owner for the duration of repo/securities lending transaction and as such the collateral taker is entitled to dispose of its ownership right, which the rehypothecation cap would limit. The Alternative Investment Management Association considers that it would be inappropriate to introduce harmonised rules which set a limit on rehypothecation.²⁷⁶ However, individual rights would have to be considered against the cumulative impact of the collective behaviour of market participants if a majority engages in rehypothecation, leading to a build-up of hidden leverage and generating chains of contagion in the system that can threaten the overall economy. In these circumstances, it may be justified to impose limits.

This option also has a potential negative macro-economic impact. Despite the fact that a constant maximum would prevent rehypothecation from being pro-cyclical and prevent future liquidity bubbles being created by this market practice, it could lead to a reduction in an important source of liquidity and funding for financial intermediaries. The reduction of the liquidity available in the EU financial system in terms of collateral available from 2007 to 2011 was the result of two different dynamics: (1) a reduction in high quality collateral due to the EU debt crisis; and (2) a reduction of the velocity of collateral i.e. the number of times the same collateral has been reused in the system. A rehypothecation cap could negatively impact the repo and securities lending markets, which are an important tool for funding, collateral management and secured lending and could adversely affect economic growth. Finding a sustainable velocity rate would require better data on levels of rehypothecation in the market. In the current absence of this data, retaining this option would lead to an arbitrary cap being chosen and could impact the markets and economy disproportionately. Therefore this option should not be retained at present.

Option 3.4 Introduce a duty for intermediaries to offer a contractual rehypothecation cap

This option consists of allowing rehypothecation for assets taken as collateral for the value of the client's or counterparties actual obligation plus a reasonable haircut contractually agreed by the parties. This option would not align EU rules with those of the US but it might give the parties the ability to negotiate a haircut equivalent to the 40% one used in the US. By prescribing that the parties could not overrule the obligation to set a cap by contract, transparency around rehypothecation and thus client asset protection would be enhanced. As discussions with stakeholders have shown, such contractual rehypothecation arrangements are likely to be ineffective in reducing the uncertainty of rehypothecation as a contractual rehypothecation cap is common market practice and usually oscillates between 100% and 150% of client's indebtedness. This option would therefore have a very limited impact.

²⁷⁶ FSB consultations on Strengthening Oversight and Regulation of Shadow Banking, 18/11/2012

Summary

The proposed policy option is option 3.2, i.e. specific transparency requirements to be met by contractual agreements on rehypothecation, prior express consent by the counterparty providing collateral and a requirement to transfer financial instruments received as collateral to an account opened in the name of the receiving counterparty.

This approach is the most efficient and proportionate in order to make counterparties fully aware of the potential risk exposure of their collateralised assets, to enable them to fully manage risk exposure and make efficient use of their assets. This option is therefore the most appropriate to answer to the objective of this regulation.

Policy options	Impact on stakeholders	Effectiveness	Efficiency
3.1 No action	0	0	0
3.2 Oblige contractual transparency on rehypothecation	(++) Collateral providers are aware of their exposure in case of rehypothecation (++) Counterparties benefit from greater transparency	(+) Consent rule helps prevent non-authorised rehypothecation (+) Transparency enables counterparties to fully manage their risks (+) Coherence with FSB and Financial Collateral Directive	(++) Enhanced protection of collateral provided and limitation of opaque collateral chains.
3.3 Introduce a rehypothecation cap	(-) Intermediaries' scope for providing collateralised loans and for rehypothecating collateral obtained is limited	(+) A constant cap would effectively limit rehypothecation (+) The regulatory gap with the US would be closed and a level playing field would be provided. (-) The introduction of a cap limits fundamental rights (property rights) (--) The cap could adversely affect macro-economic liquidity and funding, if not set at the right level.	(-) In the absence of reliable data, at present the benefits are outweighed by possible risks to economic growth.
Option 3.4 Introduce a duty for intermediaries to offer a contractual rehypothecation cap	(+) The parties are enabled to negotiate a haircut on collateral	(≈) Effect depends on result of negotiations.	(≈) Very limited impact

9. THE RETAINED POLICY OPTIONS AND THEIR IMPACTS

The retained policy options

In order to increase the transparency over the use of SFTs, a combination of different measures is necessary.

In order to enhance the supervisory monitoring over the use of SFTs, each counterparty will have to report SFTs to a trade repository (option 1.5). The use of SFTs raises also questions linked to investor protection standards. Investors are often unaware of the use that is made of these techniques and even less of the risks that are created. In order to increase the awareness of the investors in investment funds, the fund reporting will have to be enhanced: at the level of the periodic reporting and at the level of the pre-contractual documents (options 2.2 and 2.3). To complete the policy toolkit, it is also necessary to implement new rules on rehypothecation. These new rules should ensure that all counterparties providing collateral have given their prior express consent to rehypothecation of the financial instruments concerned and that these financial instruments are transferred to an account opened in the name of the receiving counterparty before rehypothecation can take place (option 3).

All retained options taken together will ensure that the shadow banking activity of using SFTs is properly supervised and regulated. The SFT practice will not be prohibited nor limited by specific restrictions but be more transparent. As such the retained options are not expected to create structural impacts on the SFT market. The retained options will increase the reporting costs for the counterparties but this increase will be outweighed by the benefits of having greater transparency for the competent authorities, clients, investors and society at large.

Impact on SMEs

The requirement to report SFTs to trade repositories is not expected to have any impact on SMEs as they do not participate in SFT markets. The indirect costs related to additional reporting costs for financial companies would be negligible.

The strengthening of the provisions to better deal with the risks of investment funds will increase investor protection standards for all investors, including SMEs. SMEs, as retail investors and other corporates of larger size, may use investment funds to realize certain placements. Enhancing the transparency requirements could help SMEs to select investment funds that minimize their use of SFTs and therefore their overall risk. As such the risks that SMEs face in investing in investment funds could decrease.

SME-clients of financial intermediaries will benefit from the rules on express consent and increased transparency to be met by rehypothecation agreements, which increase the protection of the financial instruments they may provide as collateral.

Social impact

To the extent that the proposed policies will help contain the effects of future financial crises on the real economy, they will also help reduce the social costs of those crises (e.g. unemployment).

Regarding the impacts on the asset management sector's employment, should the assets under management be maintained at current levels, no further impact would be expected.

Environmental impact

Nothing would suggest that the proposed policy will have any direct or indirect impacts on environmental issues.

Impact on Member States

The reporting of SFTs to trade repositories is expected to be similar to the existing reporting framework for trade repositories for OTC derivatives under EMIR. This would limit the impact to Member States, national competent authorities and ESMA.

The creation of new rules will require the national competent authorities (NCA) of the Member States to check their implementation. As some of those rules are already applied through the ESMA guidelines, this should not require any additional substantial work regarding the UCITS funds. Additional supervision work will however be needed as regards the AIFs but no material impact is expected since those funds are already under close scrutiny through the application of the AIFM Directive and its reporting requirements.

Some additional burdens might impact ESMA that could be required to harmonize the supervision process. ESMA will also have to be involved in the usual complaint resolution that arises in the application of single market law. Regarding the opinion of Member States on possible issues on compliance with any new requirement, no specific views have yet been expressed.

The rehypothecation requirements would not significantly impact Member States. National competent authorities would be required to enforce these rules at national level.

Impact on third countries

No impacts on third countries are expected for the obligation to report SFTs to trade repository. Only entities based in the EU would be subject to this obligation.

The new reporting requirements in the asset management sector will have to be implemented by managers domiciled in third countries when they market or manage AIFs in the EU. The AIFM directive has introduced the same reporting requirements to all AIFs that are marketed in the EU territory so the third country managers have to respect the EU rules when marketing non-EU AIFs in the EU. This principle will be the same as regards the new SFT reporting requirements. Because UCITS funds are domiciled and managed in the EU, no impact is expected for third countries.

The rehypothecation requirements would cover also counterparties established in third countries, when they rehypothecate collateral provided by an EU entity. Therefore, third country counterparties would have to respect these rules.

10. MONITORING AND EVALUATION

Ex-post evaluation of all new legislative measures is a priority for the Commission. Evaluations are planned about 4 years after the implementation deadline of each measure. The forthcoming legislation will also be subject to a complete evaluation in order to assess, among other things, how effective and efficient it has been in terms of achieving

the objectives presented in this report and to decide whether new measures or amendments are needed.

The following indicators can be used to monitor the first and third specific objectives on increased transparency of SFTs towards regulatory authorities and reduced uncertainty on rehypothecation: [1] size of different segments of SFT markets, level of interconnectedness and market concentration, average maturity of SFTs and leverage; and [2] size of rehypothecation activities and collateral velocity. It is important to note that data on rehypothecation encompasses SFTs and other collateral-based activities such as collateral provision for derivative contracts.

In terms of indicators and sources of information that could be used to monitor the second objective of increasing fund's transparency, data collected by the NCAs as part of the authorisation process and their ongoing supervision task can be used. It is also possible to access directly the different periodical reports and prospectuses on internet. As such a sample of different funds can be assembled to perform a detailed monitoring exercise. This analysis could assess how the funds are communicating to their investors and how important is their use of SFTs.

As regards the international dimension of the policy measures, the FSB plans to conduct a peer review of the implementation of their recommendations in the different jurisdictions. The European Commission will closely monitor this review in order to ensure that the recommendations have been evenly applied by all G20 Member States.

11. ADDITIONAL INFORMATION

Overview of existing reporting requirements

The below table provides a general overview of the different reporting obligations that exist in the financial legislation on SFTs and equivalent measures.

	Reporting to competent authorities	Reporting to investors	Reporting to trade repositories
CRR Credit institutions	Scope: SFTs. Data elements and frequency: aggregate data and annual or semi-annual or quarterly frequency.		
MIFID Investment firms	Scope: any transaction in financial instruments, except SFTs. Data elements and frequency: highest level of granularity and frequency.		
EMIR Counterparty of a transaction.			Scope: any OTC derivative transaction, including total return swaps. Data elements and frequency: highest level of granularity and

			frequency.
UCITS Mutual funds	Equivalent as investor reporting except for the use of derivatives where the types, risks and applicable limits must be reported	<u>Annual and semi-annual reports</u> Scope: general scope including broadly derivatives and other techniques such as SFT, no granular disclosure Data elements (included in ESMA guidelines): exposure, identity of counterparties, collateral, revenue <u>Prospectus</u> Scope: same as above Data elements (included in ESMA guidelines): intention to use them, revenue agreement, risk description	
AIFMD Alternative investment funds	Scope: covers partially some SFTs and some other financing transactions Data elements: information on sources of leverage, including names of counterparties, value of collateral or reuse of assets Data frequency: depends on the size and varies from quarterly to annually	<u>Annual report</u> Scope: securities lending Data elements: exposure, revenue <u>Prospectus</u> Scope: all assets and techniques Data elements: collateral and reuse arrangement, risk description	

Detailed overview of existing and proposed fund reporting requirements

UCITS directive

The provisions regarding the reporting to investors over the use of SFTs and other financing structures are scattered in different places in the UCITS directive and in the ESMA guidelines on ETFs and other UCITS issues.

Neither SFTs nor TRS are defined in the UCITS directive. What generally covers securities lending and repos is the broad concept of Efficient Portfolio Management (EPM) technique. EPM techniques are defined according to their objectives: reduction of risk, reduction of costs or generation of additional income (Art. 11 Eligible Asset Directive). This implies that the scope of EPM techniques is flexible and depends on the interpretation that every manager makes of the concept. In practice it is however commonly admitted that securities lending and repos form an integral part of the EPM techniques. Practices that are economically equivalent to securities lending or repos, the other financing structures, can be considered as well as EPM techniques. This includes for example the liquidity swap (change the liquidity profile of the fund) or the collateral swap (exchange of fund's assets).

UCITS funds may also invest in all kind of Financial Derivative Instruments (FDI) that have equivalent characteristics as SFTs. These instruments have in common that they are not used for the primary purpose of investing the assets of the funds but for pursuing some other objectives. For example in the case of Total Return Swap (TRS) the objective is to get exposure to strategies that would be difficult or too costly to implement. For that reason certain FDI could also fall under the scope of "other financing structures".

The new reporting requirements that are proposed are indicated in italic in the below table.

Periodic report	Prospetus
<p><u>Exiting requirements</u></p> <p>UCITS Directive, Annex I Schedule B, Point VII:</p> <p>Details, by category of transaction within the meaning of Article 51 carried out by the UCITS during the reference period, of the resulting amount of commitments.</p> <p><u>ESMA guidelines:</u></p> <ul style="list-style-type: none"> • the exposure obtained through EPM • the identity of the counterparty(ies) • the type and amount of collateral • the revenues together with the direct and indirect operational costs and fees incurred. <p><u>Proposed add-ons</u></p> <p><i>Specification of the details that have to be reported. This will include the information contained in ESMA guidelines plus all the following information:</i></p> <ul style="list-style-type: none"> • <i>global data: amount of securities on loan and total amount of assets engaged in each type of SFT</i> • <i>concentration data: top 10 counterparties for each type of SFT</i> • <i>aggregate transaction data: type and quality of collateral, maturity tenor, currency of the collateral, country of domicile, settlement and clearing (tri-party, central counterparty, bilateral)</i> • <i>data on re-use: share of collateral that is re-used, cash collateral re-investments, information on any restrictions</i> • <i>safekeeping methods: number of custodians, legal chain (segregated accounts or pooled accounts)</i> • <i>data on returns and costs: breakdown between the fund manager, the investors and the agent lender</i> <p><i>In addition these provisions will cover equally all transactions that have the same economic profile, namely the SFTs and the other financing structures such as the TRS, the collateral or the liquidity swaps.</i></p>	<p><u>Exiting requirements</u></p> <p>UCITS Directive, Annex I Schedule A, Point 1.15:</p> <p>Indication of any techniques and instruments or borrowing powers which may be used</p> <p><u>ESMA guidelines:</u></p> <ul style="list-style-type: none"> • Information of investors over the intention to use EPM, including a description of the risks (counterparty risk, conflict of interest) and the impacts on the UCITS performance • Disclosure of the policy regarding the costs/fees that may be deducted from the revenues and the identities of the entities to which the costs/fees are paid • information on the underlying strategy and composition of the investment portfolio or index in the case of TRS <p><u>Proposed add-ons</u></p> <p><i>Specification of the details that have to be introduced in the prospectus. The prospectus is a pre-contractual document that is binding to the manager. Therefore it gives confidence to the investors that the fund will respect the pre-defined investment limits. In that regard the idea is to treat SFTs and other equivalent structures as a normal investment activity in the prospectus:</i></p> <ul style="list-style-type: none"> • <i>General description of the SFTs and the rationale for their use</i> • <i>Reporting on the max proportion of the portfolio that can be subject to such techniques and the types of assets that can be subject to it</i> • <i>Criteria used to select counterparties</i> • <i>Policy on collateral valuation and safekeeping</i> • <i>Description of the incurred risks, including risks linked to collateral management, operational, liquidity, counterparty custody, legal risks</i> • <i>Revenue sharing agreement between fund manager, investors and third parties</i>

AIFM directive

As under UCITS, neither SFTs nor other financing structures are defined, directly or indirectly, in the AIFM directive. General provisions are set out in the main directive and in the delegated regulation. AIFs are otherwise subject to national rules.

Periodic report	Propesctus
<p><u>Exiting requirements</u></p> <p>AIFM delegated regulation, Art. 104</p> <ul style="list-style-type: none"> • Amounts due to counterparties for collateral on return of securities loaned • Fee income from securities loaned <p><u>Proposed add-ons</u></p> <p><i>Same information as UCITS</i></p>	<p><u>Exiting requirements</u></p> <p>AIFM Directive, Art. 23</p> <p>Types of assets, techniques, associated risks, applicable investment restrictions, sources of leverage, collateral and asset reuse arrangement</p> <p><u>Proposed add-ons</u></p> <p><i>Same information as UCITS</i></p>

FSB recommendations

	FSB Recommendations	EU response
1	Authorities should collect more granular data on securities lending and repo exposures amongst large international financial institutions with high urgency. Such efforts should to the maximum possible extent leverage existing international initiatives such as the FSB Data Gaps Initiative, taking into account the enhancements suggested in this document.	Creation of a Trade Repository
2	Trade-level (flow) data and regular snapshots of outstanding balances (position/stock data) for repo markets should be collected. Regular snapshots of outstanding balances should also be collected for securities lending markets and further work should be carried out on the practicality and meaningfulness of collecting trade-level data. Such data should be collected frequently and with a high level of granularity, and should also capitalise on opportunities to leverage existing data collection infrastructure that resides in clearing agents, central securities depositories (CSDs) and/or central counterparties (CCPs). National/regional authorities should decide the most appropriate way to collect such data, depending on their market structure, and building on existing data collection processes and market infrastructure where appropriate. Trade repositories are likely to be an effective way to collect comprehensive repo and securities lending market data. Regulatory reporting may also be a viable alternative approach.	Creation of a Trade Repository
3	The total national/regional data for both repos and securities lending on a monthly basis should be aggregated by the FSB which will provide global trends of securities financing markets (e.g. market size, collateral composition, haircuts, tenors). The FSB should set standards and processes for data collection and aggregation at the global level to ensure consistent data collection by national/regional authorities and to minimise double-counting at the global level.	To be implemented by the FSB
4	The Enhanced Disclosure Task Force (EDTF) should work to improve public disclosure for financial institutions' securities lending, repo and wider collateral management activities, taking into consideration the items noted above.	To be followed by the EDTF
5	Authorities should review reporting requirements for fund managers to end-investors against the FSB's proposal, and consider whether any gaps need to be addressed.	To be implemented now within the investment fund frameworks set out in the UCITS and AIFM

		Directives
6	Regulatory authorities for non-bank entities that engage in securities lending (including securities lenders and their agents) should implement regulatory regimes meeting the minimum standards for cash collateral reinvestment in their jurisdictions to limit liquidity risks arising from such activities.	To be followed later following more assessment
7	<p>Authorities should ensure that regulations governing re-hypothecation of client assets address the following principles:</p> <ul style="list-style-type: none"> • Financial intermediaries should provide sufficient disclosure to clients in relation to re-hypothecation of assets so that clients can understand their exposures in the event of a failure of the intermediary; • In jurisdictions where client assets may be re-hypothecated for the purpose of financing client long positions and covering short positions, they should not be re-hypothecated for the purpose of financing the own-account activities of the intermediary; and • Only entities subject to adequate regulation of liquidity risk should be allowed to engage in the re-hypothecation of client assets. 	Contractual transparency to be implemented now. The other provisions to be followed later following more assessment
8	An appropriate expert group on client asset protection should examine possible harmonisation of client asset rules with respect to re-hypothecation, taking account of the systemic risk implications of the legal, operational, and economic character of re-hypothecation.	Expert group to be set up
9	Authorities should adopt minimum regulatory standards for collateral valuation and management for all securities lending and repo market participants.	To be followed later following more assessment
10	Authorities should evaluate, with a view to mitigating systemic risks, the costs and benefits of proposals to introduce CCPs in their inter-dealer repo markets where CCPs do not exist. Where CCPs exist, authorities should consider the pros and cons of broadening participation, in particular of important funding providers in the repo market.	To be followed later following more assessment
11	Changes to bankruptcy law treatment and development of Repo Resolution Authorities (RRAs) may be viable theoretical options but should not be prioritised for further work at this stage due to significant difficulties in implementation.	To be considered at a later stage

ANNEX 14: GLOSSARY OF TERMS

ABS - Asset Backed Security - Asset backed securities are securities backed by a pool of receivables. Investors generally only bear the risk arising from these receivables and are generally insulated from the credit risk of the respective (former) owner of the assets (originator/seller). The receivables of the underlying portfolio that is securitised generate interest and principal payments. These payments as well as potential losses that may occur in case the underlying obligors of the securitised assets do not serve their obligations, are distributed to investors according to certain rules (« the structure »). Hence, the investors in ABS have to focus on both the underlying risk of the securitised portfolio and the rules that determine which consequences investors have to face in case a certain event occurs. Typically, the securitised assets are referenced by various notes with different risk profiles, and hence, ratings. The fact that different notes have different risk profiles, though they all reference the same underlying portfolio, is based on the respective aforementioned transaction structure. This in principle can enable investors to satisfy their individual risk appetite and needs. ABS allows for a broad band of flexibility in terms of asset classes being securitised and structures being applied.

BU - Banking Union - The Banking Union in the broad sense includes a single legal and regulatory framework for all EU banks, a single bank supervisor, a single bank recovery and resolution mechanism (authority and fund), including provisions to bail in creditors efficiently and effectively when needed, and a single deposit guarantee scheme. The justification for a banking union in a monetary union are financial stability, efficiency of financial intermediation, and the effective and uniform transmission of monetary policy throughout all member states. Banking Union implies that the creditworthiness of a national sovereign be decoupled from the creditworthiness of the banks in its jurisdiction. It is designed to break the link between ailing banks and indebted governments. The goal is to avoid the strain which is put on public finances when banks need rescuing, and, at the same time, to reduce banks' exposure to increasing risks in public debt. Banking Union is based on a single rulebook for financial regulation, common to all 28 members of the Single Market.

BCBS – The Basel Committee on Banking Supervision is the primary global standard-setter for the prudential regulation of banks and provides a forum for cooperation on banking supervisory matters. It is a committee of banking supervisory authorities that was established by the central bank governors of the Group of Ten countries in 1974. It provides a forum for regular cooperation on banking supervisory matters.

BRRD - Bank Recovery and Resolution Directive - is a Commission's proposal for a Directive on crisis prevention, management and resolution that assigns to the EBA the task to develop a wide range of Binding Technical Standards, Guidelines and reports on key areas of recovery and resolution, with the aim of ensuring effective and consistent procedures across the European Union, in particular with respect to cross-border financial institutions.

CRD IV/CRR - Capital Requirements - EU rules on capital requirements for credit institutions and investment firms putting in place a comprehensive and risk-sensitive framework and to foster enhanced risk management amongst financial institutions.

Collateral - Collateral is an asset or third party commitment that is used by the collateral provider to secure an obligation to the collateral taker. Collateral arrangements may take different legal forms. Collateral may be obtained using the method of title transfer or pledge. It may be forfeited in the event of a default. It includes all sorts of legal arrangements giving additional security to a creditor, e.g. pledge, lien, repo.

Collateral management - granting, verifying, and giving advice on collateral transactions in order to reduce credit risk in unsecured financial transactions.

Competent authority - Any organization that has the legally delegated or invested authority, capacity, or power to perform a designated function. In the context of structural reform, it refers to the body which is in charge of bank supervision.

Default - An event stipulated in an agreement as constituting a default. Generally, such events relate to a failure to complete a transfer of funds or securities in accordance with the terms and rules of the contract in question. A failure to pay or deliver on the due date, a breach of agreement and the opening of insolvency proceedings may all constitute such events.

Directive - A directive is a legislative act of the European Union, which requires Member States to achieve a particular result without dictating the means of achieving that result. A Directive therefore needs to be transposed into national law contrary to regulation that have direct applicability.

DFA - Dodd Frank Act - The Dodd–Frank Wall Street Reform and Consumer Protection Act became law in the United States in 2010, introducing reforms to financial Regulation.

EBA – European Banking Authority - The European Banking Authority is an independent EU Authority which works to ensure effective and consistent prudential regulation and supervision across the European banking sector. See **ESA**

ECB - European Central Bank is the central bank for the euro and administers the monetary policy of the Eurozone, which consists of 18 EU member states. It is one of the world's most important central banks and is one of the seven institutions of the European Union (EU) listed in the Treaty on the Functioning of the European Union (TFEU). The capital stock of the bank is owned by the central banks of all 28 EU member states.

EIOPA – European Insurance and Occupational Pensions Authority is part of the European System of Financial Supervision consisting of three European Supervisory Authorities (ESA) and the European Systemic Risk Board (ESRB). It is an independent advisory body to the European Parliament, the Council of the EU and the European Commission. EIOPA's core responsibilities are to support the stability of the financial system, transparency of markets and financial products as well as the protection of insurance policyholders, pension scheme members and beneficiaries. See **ESA**.

EESC – European Economic and Social Committee is a consultative EU Committee established in 1958. It is a consultative assembly composed of employers (employers' organisations), employees (trade unions) and representatives of various other interests.

ESAs – European Supervisory Authorities - European Securities and Markets Authority (ESMA); European Banking Agency (EBA); and European Insurance and Occupational Pensions Authority (EIOPA) - created in January 2011 with a mandate to contribute to financial stability and improve the functioning of the internal market by creating an integrated supervisory framework.

ESMA - European Securities and Markets Authority - Successor body of CESR, continuing work in the securities and markets area as an independent agency and also with the other two former level three committees. See **ESA**.

ESRB - European Systemic Risk Board - European Systemic Risk Board was set up in response to the de Larosière group's proposals, in the wake of the financial crisis. This independent body has responsibility for the macro-prudential oversight of the EU.

Financial instrument - A financial instrument is an asset or evidence of the ownership of an asset, or a contractual agreement between two parties to receive or deliver another financial instrument.

FSB - Financial Stability Board - Established to coordinate at the international level the work of national financial authorities and international standard setting bodies and to develop and promote the implementation of effective regulatory, supervisory and other financial sector policies. It brings together national authorities responsible for financial stability in significant international financial centres, international financial institutions, sector-specific international groupings of regulators and supervisors, and committees of central bank experts.

G8 – The countries of Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States.

G20 – The Group of Twenty Finance Ministers and Central Bank Governors. The G-20 is made up of the finance ministers and central bank governors of 19 countries: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, Republic of Korea, Turkey, United Kingdom, United States of America. The European Union, who is represented by the rotating Council presidency and the European Central Bank, is the 20th member of the G-20.

Government intervention – can take place through amongst others taxation (subsidisation), regulation, or the setting up of institutions. Basic justifications for government intervention are (i) to correct market failures, e.g. those due to positive or negative externalities, asymmetric information, and coordination failures; (ii) to guard against abuse of market power, thus keeping markets competitive (e.g. competition policy); (iii) to redistribute income, through taxes and subsidies; (iv) to keep the system honest by creating and enforcing rules of the game (e.g. Libor); and (v) to protect taxpayer interests when public money is spent or put at risk.

Hedging - Hedging is the practice of offsetting an entity's exposure by taking another opposite position, in order to minimise unwanted risk. This can also be done by offsetting positions in different instruments and markets.

HFT - High frequency trading - High frequency trading is a type of electronic trading that is often characterised by holding positions very briefly in order to profit from short term opportunities. High frequency traders use algorithmic trading to conduct their business.

IFRS –International Financial Reporting Standards are designed as a common global language for business affairs so that company accounts are understandable and comparable across international boundaries. They are a consequence of growing international shareholding and trade and are particularly important for companies that have dealings in several countries.

Leverage - The “leverage ratio” is defined in Article 4(86) on the CRR IV proposal as the relative size of an institution's assets, off-balance sheet obligations and contingent obligations to pay or to deliver or to provide collateral, including obligations from received funding, made commitments, derivatives or repurchase agreements, but excluding obligations which can only be enforced during the liquidation of an institution, compared to that institution’s own funds.

Liquidity –

Liquidity defies a simple definition. **Market liquidity** is generally referred to as the ability to buy or sell an asset at short notice with little impact on its price. Funding liquidity describes the ability to raise cash either by borrowing or via the sale of an asset (which again depends on market liquidity). Market liquidity is a complex concept that is used to qualify market and instruments traded on these markets. It aims at reflecting how easy or difficult it is to buy or sell an asset, usually without affecting the price significantly. Market liquidity is a function of both volume and volatility. Market liquidity is positively correlated to volume and negatively correlated to volatility. A stock is said to be liquid if an investor can move a high volume in or out of the market without materially moving the price of that stock. If the stock price moves in response to investment or disinvestments, the stock becomes more volatile. Financial institutions provide **funding liquidity** through, for example, interbank lending, and they provide market liquidity to securities markets, for instance through market-making activity. The conditions under which these intermediaries can fund their balance sheets, in turn, depend on the willingness of other market participants to provide funding or market liquidity. Thus, liquidity is to a large degree endogenous. A funding shortage (illiquidity) arises when it is prohibitively expensive to (i) borrow more funds (low funding liquidity) and/or (ii) sell assets (low market liquidity). Funding liquidity may dry up due to maturity mismatch, high margins/haircut, roll-over risk, redemption risk, etc. Market liquidity may be low due to fire sale discounts or depressed sales prices. Funding illiquidity and market illiquidity interact in times of crisis and explain why liquidity can suddenly evaporate (cause a funding shortage). The two liquidity concepts do not exist in a vacuum. They are influenced by the level of confidence and risk appetite in the financial system, and by the financial soundness of other financial firms.

Long Position - A “long position” refers to the buying of a security with an expectation that the security will rise in value.

Market efficiency - Market efficiency refers to the extent to which prices in a market fully reflect all information available to investors. If a market is efficient, then no investors should have more information than any other investor, and they should not be able to systematically predict price changes better than other investors.

Market failures – refer to economic situations when the market (made up of private actors and when left on their own without government intervention) does not provide a good or service efficiently even though economic benefits outweigh economic costs. This happens when the private benefits (or costs) are not equal to the public benefits (or costs). Market failure is an economic concept, not a political one. Market failures justify state intervention. The main types of market failures are (i) externalities/spill-overs: Positive (R&D, training) or negative (environmental pollution, bank failures); (ii) imperfect/asymmetric information (SME financing, financial market freezes, etc.); (iii) coordination failures (standard setting, subsidy races, depositor runs); (iv) abuse of dominant positions; and (v) public good provisioning (defence, legal system, etc.).

Market fragmentation - Market fragmentation typically refers to the fact that rules and/or market conditions vary across countries and/or markets for similar services. It is the opposite of market integration.

Market integrity - Market integrity is the fair and safe operation of markets, without misleading information or inside trades, so that investors can have confidence and be sufficiently protected.

Market maker - A market maker is a firm that will buy and sell a particular security on a regular and continuous basis by posting or executing orders at publicly quoted bid-ask prices.

Market making - Market making is the purchase and sale of financial instruments (government bonds, corporate bonds, equities, derivatives, etc.) for own account at prices defined by the market maker, on the basis of a commitment to provide market liquidity on a regular and on-going basis.

MiFID - Markets in Financial Instruments Directive is a EU law that provides harmonised regulation for investment services across the 31 member states of the European Economic Area (the 28 Member States of the European Union plus Iceland, Norway and Liechtenstein). The main objectives of the Directive are to increase competition and consumer protection in investment services. As of the effective date, 1 November 2007, it replaced the Investment Services Directive.

MTF - Multilateral Trading Facility is an electronic system which facilitates the exchange of securities between counterparties. The securities may include derivatives and instruments which do not have a main market, as well as traditional securities.

Negative externalities - A negative externality in economics and finance is usually a cost incurred by a party that is outside of the decision or transaction of another party. For example, pollution and traffic jams are externalities of a person's private decision to

drive a car to work. Negative externalities are an important type of market failure which justify government intervention (e.g. taxation).

OECD – Organisation for Economic Co-operation and Development is an international economic organisation of 34 countries founded in 1961 to stimulate economic progress and world trade. It is a forum of countries committed to democracy and the market economy, providing a platform to compare policy experiences, seek answers to common problems, identify good practices and co-ordinate domestic and international policies of its members.

OTC - Over the Counter - Over the counter, or OTC, trading is a method of trading that does not take place on an organised venue such as a regulated market or an MTF. It can take various shapes from bilateral trading to trading done via more organised arrangements (such as systematic internalisers and broker networks).

Principle of proportionality - Similarly to the principle of subsidiarity, the principle of proportionality regulates the exercise of powers by the European Union. It seeks to set actions taken by the institutions of the Union within specified bounds. Under this rule, the involvement of the institutions must be limited to what is necessary to achieve the objectives of the Treaties. In other words, the content and form of the action must be in keeping with the aim pursued. The principle of proportionality is laid down in Article 5 of the Treaty on European Union. The criteria for applying it is set out in the Protocol (No 2) on the application of the principles of subsidiarity and proportionality annexed to the Treaties.

PE - Private equity is an asset class consisting of equity instruments provided to firms that are not publicly traded on an exchange. Private equity is about buying stakes in businesses, transforming business and then realising the value created by selling or floating the business.

Procyclicality - A condition of positive correlation between the value of a good, a service or an economic indicator and the state of the economy. The value of the good, service or indicator tends to move in the same direction as the economy, growing when the economy grows and declining when the economy declines. The term is generally used to refer to the mutually reinforcing mechanisms through which the financial system can amplify business fluctuations and possibly cause or exacerbate financial instability. These 'positive feedback' mechanisms are particularly disruptive and apparent during an economic downturn.

Proprietary trading - Proprietary trading is the purchase and sale of financial instruments for own account with the intent to profit from subsequent price changes.

Regulation - A regulation is a form of legislation that has direct legal effect on being passed in the European Union.

Regulatory arbitrage - Regulatory arbitrage is exploiting differences in the regulatory situation in different jurisdictions or markets in order to make a profit.

Regulated market - Regulated market is a multilateral system which brings together or facilitates the bringing together of multiple third-party buying and selling interests in financial instruments in a way that results in a contract. Examples are traditional stock exchanges such as the Frankfurt and London Stock Exchanges.

Rehypothecation - Any pre-default use of financial collateral by the collateral taker for its own purposes.

Repo/Repurchase agreement - A 'repurchase agreement' is economically similar to a secured loan, with the 'repo buyer' (effectively the money lender) receiving securities as collateral to protect him against the default by the 'repo seller' (effectively, the borrower of money). Legally, a 'repo,' can be defined as a collateral arrangement in which the 'repo seller' transfers ownership of securities sold to the 'repo buyer' for an amount of cash (the purchase price) at moment T, while the 'repo buyer' agrees to sell and transfer equivalent securities at a future moment T+x for a certain amount of money, including an interest component (the repurchase price).

Risk premium - The risk premium is the return that investors require above the amount that a similar but otherwise 'risk-free' asset promises. A risk-free asset is a theoretical asset that would never default. So the risk premium is the amount that an investor wants to be paid for taking credit and/or market risk.

Sanction - A penalty, either administrative or criminal, imposed as punishment.

SFT - Securities financing transactions - This is the general terms for financing transactions backed by securities collateral such as repo, securities lending or any transaction having an equivalent economic effect and posing similar risks, in particular buy/sell back transactions.

Securities lending/Securities lending agreement - In securities lending, the economic purpose is to temporarily obtain a specific security for certain purposes, e.g. to facilitate settlement of a trade or to facilitate delivery of a short sale. Legally, a 'securities lending agreement', can be defined as a transaction in which the 'securities borrower' borrows specific assets from 'securities lender' in exchange for a fee and collateral at moment T. The parties agree to return the lent securities and the collateral on maturity.

Securitisation - Asset backed securities are securities backed by a pool of receivables. Investors only bear the risk arising from these receivables and are generally insulated from the credit risk of the respective (former) owner of the assets (originator/seller). The receivables of the underlying portfolio that is securitised generate interest and principal payments. See ABS.

SIFIs - Systemically important financial institution is a bank, insurance company, or other financial institution whose failure might trigger a financial crisis.

Single rulebook - The single rulebook is the concept of a single set of rules for all Member States of the union so that there is no possibility of regulatory arbitrage between the different markets.

SMEs - Small and medium sized enterprises - On 6 May 2003 the Commission adopted Recommendation 2003/361/EC regarding the Small and medium sized enterprise definition. While 'micro' sized enterprises have fewer than 10 employees, small have less than 50, and medium have less than 250.

Shadow banking system - Defined by the FSB as 'the system of credit intermediation that involves entities and activities outside the regular banking system' or, in short, 'non-bank credit intermediation'. Experience from the financial crisis demonstrates that capacity for some non-bank entities and transactions to operate on a large scale in ways create bank-like risks to financial stability (long-term credit extension based on short-term funding and leverage).

Short Position - refers to the selling of a security with an expectation that the security will fall in value.

SSM - Single Supervisory Mechanism is a mechanism through which, per the European Commission's proposal, the European Central Bank (ECB) shall assume ultimate responsibility for specific supervisory tasks related to the financial stability of the biggest and most important Eurozone based banks.

SRM - Single Resolution Mechanism has been designed to complement the Single Supervisory Mechanism (SSM) which, once operational in late 2014, will see the European Central Bank (ECB) directly supervise banks in the euro area and in other Member States which decide to join the Banking Union. SRM would ensure that – not withstanding stronger supervision - if a bank subject to the SSM faced serious difficulties, its resolution could be managed efficiently with minimal costs to taxpayers and the real economy.

Subsidiarisation – Subsidiarisation in the context of structural reform requires the trading entity and the deposit entity to maintain self-standing reserves of capital and of loss-absorbing debt, as well as to comply with other prudential and legal requirements on an individual, sub-consolidated or consolidated basis. Subsidiarisation provides a degree of independence and to some extent also insulates the deposit entity from shocks and losses.

Systemic failure - A systemic failure refers either to the failure of a whole market or market segment, or the failure of a significant entity that could cause a large number of failures as a result.

TEC – Treaty of the European Community

TFEU – Treaty on the functioning of the European Union

Trade repository - Means a legal person that centrally collects and maintains the records of certain transactions.

Trading venue - A Trading venue is an official venue where securities are exchanged; it includes MTFs and regulated markets (e.g. typical stock exchanges).

UCITS – The Undertakings for Collective Investment in Transferable Securities, Directive 2001/107/EC and 2001/108/EC (UCITS) are a set of European Union Directives that aim to allow collective investment schemes to operate freely throughout the EU on the basis of a single authorisation from one member state. In practice many EU member nations have imposed additional regulatory requirements that have impeded free operation with the effect of protecting local asset managers.

Underwriting - Securities underwriting is a typical investment banking activity in which banks raise investment capital from investors on behalf of corporations and governments that are issuing securities (both equity and debt securities) in return for a fee. It is a way of selling newly issued securities, such as stocks or bonds, to investors.

Venture capital - Venture capital (VC) is that part of private equity that entails finance provided to early-stage, high-potential and possibly, high-growth start-up companies. This commonly covers the seed to expansion stages of investment.

Volatility - Volatility refers to the change in value of an instrument in a period of time. This includes rises and falls in value, and shows how far away from the current price the value could change, usually expressed as a percentage.

Volcker Rule – The "Volcker Rule" refers to Section 619 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. See **Dodd Frank Act**.