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EUROPEAN  
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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**

## **LIST OF ANNEXES**

**ANNEX A5. Analysis of possible incentives towards trading activities implied by the structure of banks' minimum capital requirements - PAGE 3**

**ANNEX A6. Qualitative assessment of benefits and costs of separating banking activities from deposit-taking entities - PAGE 53**

**ANNEX A7. Strength of separation - PAGE 88**

**ANNEX A8. Trading activities and bank structural separation: possible definitions and calibration of screening - PAGE 119**

**ANNEX A9. Summary of the main findings in literature on economies of scale and scope in the banking sector - PAGE 175**

**ANNEX A10. Quantitative estimation of a part of the costs and benefits of bank structural separation - PAGE 203**

**ANNEX A11. Impact on private costs – bank responses - PAGE 245**

**ANNEX A12. Economy-wide impact of structural separation - PAGE 249**

**ANNEX A13. Shadow banking – Securities finance transactions and transparency - PAGE 254**

**ANNEX A14. Glossary - PAGE 287**

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

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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:

### 9 Possible existence of an incentive towards trading activities

- x 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.
- x Results indicate that even moving to Basel III MCRs could still not eliminate this effect.

### 9 MCR adequacy

- x 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
- x The analysis confirms that the introduction of Basel 2.5<sup>1</sup> rules in 2011 at least partially achieved the goal of substantially increasing the MCRs for some activities.

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<sup>1</sup> 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>

## Table of Contents

<u>EXECUTIVE SUMMARY</u> .....	5
1. <u>INTRODUCTION AND BACKGROUND</u> .....	7
2. <u>THE DATASETS FOR THE PANEL REGRESSION AND FOR THE PRESENTATION OF RESULTS</u> .....	9
3. <u>INVESTIGATING THE RELATIONSHIP BETWEEN BALANCE SHEET COMPOSITION AND MCRS: ESTIMATION OF RISK WEIGHTS VIA PANEL DATA ANALYSIS</u> .....	11
4. <u>DETERMINING THE ASSETS AND INCOME ITEMS TO BE ASSIGNED TO EACH ACTIVITY LINE</u> .....	14
4.1 <u>BALANCE SHEET SPLIT BETWEEN ACTIVITY LINES AND DETERMINATION OF THE MCRS</u> .....	14
4.2 <u>INCOME STATEMENT SPLIT BETWEEN ACTIVITY LINES</u> .....	17
5. <u>RESULTS</u> .....	19
5.1 <u>TOTAL ASSETS, RWAS, RWA DENSITIES AND RETURNS ON ASSETS PER LINE OF ACTIVITY</u> .....	19
5.3 <u>INCOME PER UNIT OF MCRS OR REGULATORY CAPITAL PER LINE OF ACTIVITY</u> .....	26
6. <u>CONCLUSIONS</u> .....	31
<u>APPENDIX A: PANEL ANALYSIS TO ESTIMATE RISK WEIGHTED ASSETS FOR DEPOSIT TAKING AND TRADING ACTIVITIES</u> .....	32
<u>APPENDIX B: ESTIMATION OF THE RETURNS FOR THE TWO BUSINESS LINES</u> .....	34
<u>APPENDIX C: CANDIDATES SAMPLE</u> .....	40
<u>APPENDIX D: ANALYSIS OF THE MCR STRUCTURE FOR THE FULL SAMPLE OF BANKS</u> .....	45
<u>APPENDIX E: CORRECTION OF RWAS</u> .....	50
<u>APPENDIX F: ROA BY LINE OF ACTIVITY AND RELATIONSHIP WITH ROMCR</u> .....	52

## 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.<sup>2</sup> 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 regulations<sup>3</sup> 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,<sup>4</sup> 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.<sup>5</sup> 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.<sup>6</sup>

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

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<sup>2</sup> [http://ec.europa.eu/internal\\_market/bank/docs/high-level\\_expert\\_group/report\\_en.pdf](http://ec.europa.eu/internal_market/bank/docs/high-level_expert_group/report_en.pdf)

<sup>3</sup> 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.

<sup>4</sup> 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

<sup>5</sup> 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.

<sup>6</sup> 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](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 255<sup>7</sup> banks located in the EU27 area having total assets available for 2011.<sup>8</sup> Their total assets as of end 2011 are 34'645 bn EUR for EU27<sup>9</sup> (77% of the EU27 banking sector<sup>10</sup>).

Results in the main text are presented for an “candidates sample” formed of 29 banks which are possible candidates for separation.<sup>11,12</sup> 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.<sup>13</sup>

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<sup>7</sup> 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.

<sup>8</sup> 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.

<sup>9</sup> 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.

<sup>10</sup> <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.

<sup>11</sup> 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.

<sup>12</sup> 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.

<sup>13</sup> 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 75<sup>th</sup> percentile of the total assets in the sample of banks considered by the European Banking Authority in its capital exercise.<sup>14</sup> 30 bn EUR is the size above which banks will be supervised directly by the SSM.

<b>Banks' Buckets</b>	<b>Banks' size (Total Assets)</b>	<b>Average size of a bank in the bucket (average over years) – bn Eur</b>	<b>Number of banks in the sample</b>	<b>Percentage of banks in the sample</b>	<b>Total Assets in the sample (average over years) – bn Eur</b>	<b>Share of total assets in the sample (average over years)</b>
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%
<b>Total</b>		<b>135.8</b>	<b>255</b>	<b>100%</b>	<b>34'645</b>	<b>100%</b>

Source: SNL database and JRC estimates

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

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<sup>14</sup> <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.<sup>15</sup> 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 literature<sup>16</sup>) 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.<sup>17</sup> 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.<sup>18</sup>

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

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)

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<sup>15</sup> 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.

<sup>16</sup> 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).

<sup>17</sup> See Appendix A for more details on the econometric analysis development.

<sup>18</sup> 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.

<sup>19</sup> 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.<sup>20</sup>

	LB	NCL	AMZ	HTM	AFS
	Net loans to banks	Net loans to customers	Assets held at amortized cost	Sec. held to maturity	AFS assets <sup>21</sup>
	(1)	(2)	(3)	(4)	(5)
RWA coefficient	.18	.52	.31	.25 <sup>22</sup>	.39
t-statistic <sup>23</sup>	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 units<sup>24</sup>, 923 observations. St. Errors adjusted for 183 clusters.

<sup>20</sup> 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.

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

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

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

<sup>24</sup> 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.<sup>25</sup>

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 activities<sup>26</sup>
- 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.<sup>27</sup>

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  $\frac{\text{RWAs}_{\text{Deposit Taking Banking}}}{\text{RWAs}_{\text{Total}}}$  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

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

<sup>26</sup> 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.

<sup>27</sup> 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).<sup>28</sup>

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).<sup>29</sup>

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

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<sup>28</sup> 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).

<sup>29</sup> 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.  $\alpha_{\text{basel II}}$  DQG  $\alpha_{\text{basel III}}$  represent receptively the share of assets or RWA computed under Basel2 or Basel 3 scenario.

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

**Table 4:** Scenarios for assessing the effectiveness of equity allocating the minimum capital UHTXLUHPHQW WRGHSRVLW WDNLQJR UWUDGLDQ GWLYLW 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)	$\text{RegCap} E QIS^{CAP}$
	Trading (TE)	$\text{RegCap} (1 - E) QIS^{CAP}$
Basel 3 scenario	Deposit taking (DTB)	$\text{MAX}[RWA_{DT} QIS_{DT}^{RWA} 10.5\%; \alpha_{\text{basel II}} \text{RegCap} QIS^{CAP} E ]$
	Trading (TE)	$\text{MAX}[RWA_{TE} (1 - \alpha_{\text{basel III}}) QIS_{TE}^{RWA} 10.5\%; \alpha_{\text{basel III}} \text{RegCap} QIS^{CAP} (1 - E) ]$
Basel 3 scenario	Deposit taking (DTB)	$\text{MAX}[RWA_{DT} QIS_{DT}^{RWA} 10.5\%; \alpha_{\text{basel II}} \text{RegCap} QIS^{CAP} E ]$
	Trading (TE)	$\text{MAX}[2 RWA_{TE} (1 - \alpha_{\text{basel III}}) QIS_{TE}^{RWA} 10.5\%; \alpha_{\text{basel III}} \text{RegCap} QIS^{CAP} (1 - E) ]$

**Table 5:** Total assets in the various regulatory scenarios.

Activity	Regulatory scenario	Total Assets (TA)
Deposit taking (DTB)	Basel 2	.7\$
Deposit taking (DTB)	Basel 3	.7\$
Trading (TE)	Basel 2	(1-.7\$)
Trading (TE)	Basel 3	(1-.7\$)

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:<sup>30</sup>

- x The revenue from all loans, securities Held To Maturity, Assets held at Fair Value, securities Available For Sale are allocated to deposit taking activities;
- x Commissions on Loans and credit cards are allocated to deposit taking activities;
- x The revenue attributed to securities and derivatives Held For Trading are completely allocated to trading activities;
- x Taxes are not considered (i.e. pre-tax income is considered), as well as non-recurring expenses, non-recurring revenues and insurance incomes
- x Some comprehensive income elements are included,<sup>31</sup> especially unrealized variations of value of Available For Sale securities (which are allocated to deposit taking activities together with realized gains, as detailed above)
- x 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).<sup>32</sup>

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

<sup>31</sup> 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

<sup>32</sup> 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.<sup>33</sup>

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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.

<sup>33</sup> 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).<sup>34</sup> 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.<sup>35</sup>

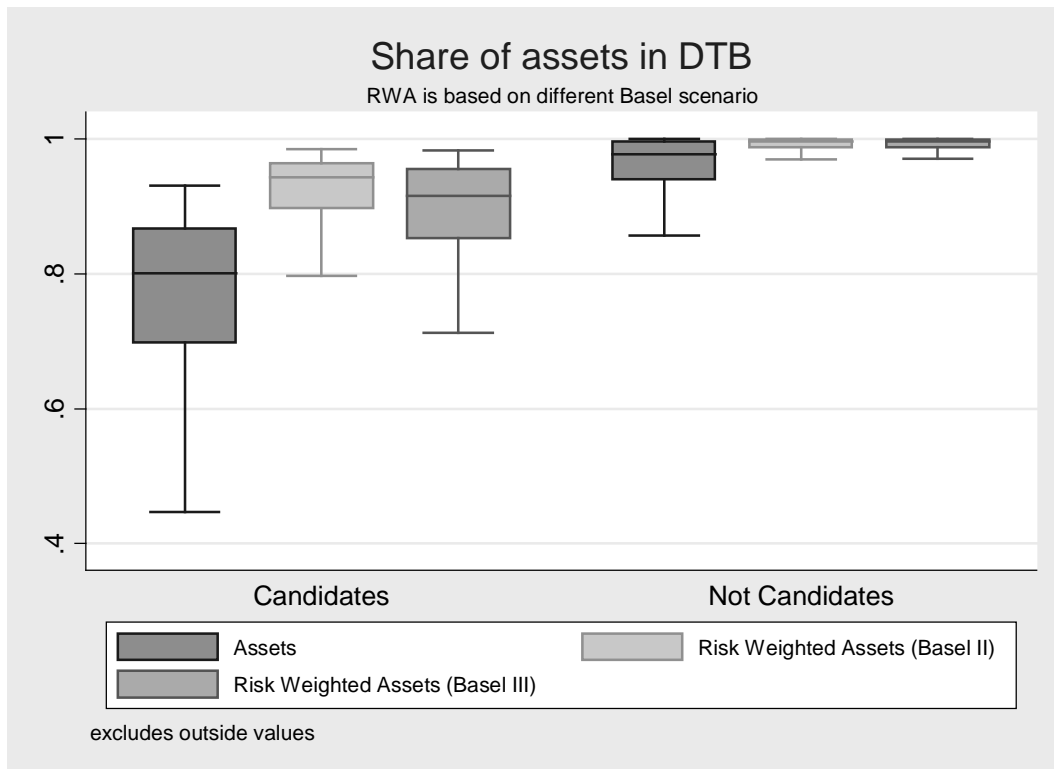
Figure 1 shows that banks that are selected as candidate for structural separation in the calibration exercise tend to have a lower amount of deposit taking activities assets and/or RWAs. This figure also underlines the fact that the shares of RWAs (red boxplots) which are assigned to the deposit taking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

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<sup>34</sup> 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.

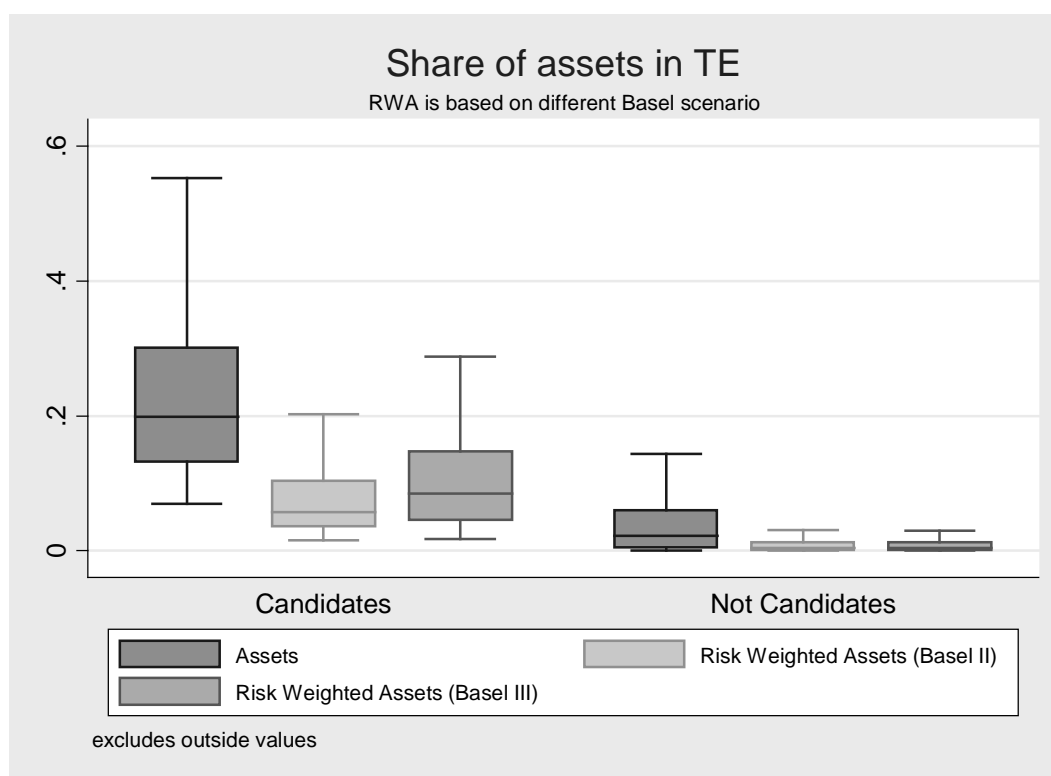
<sup>35</sup> The definitions of outliers employed here is the original introduced by Tukey: 1.5 times the inter-quartile range above or below the 3rd and 1st quartile, respectively.

**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



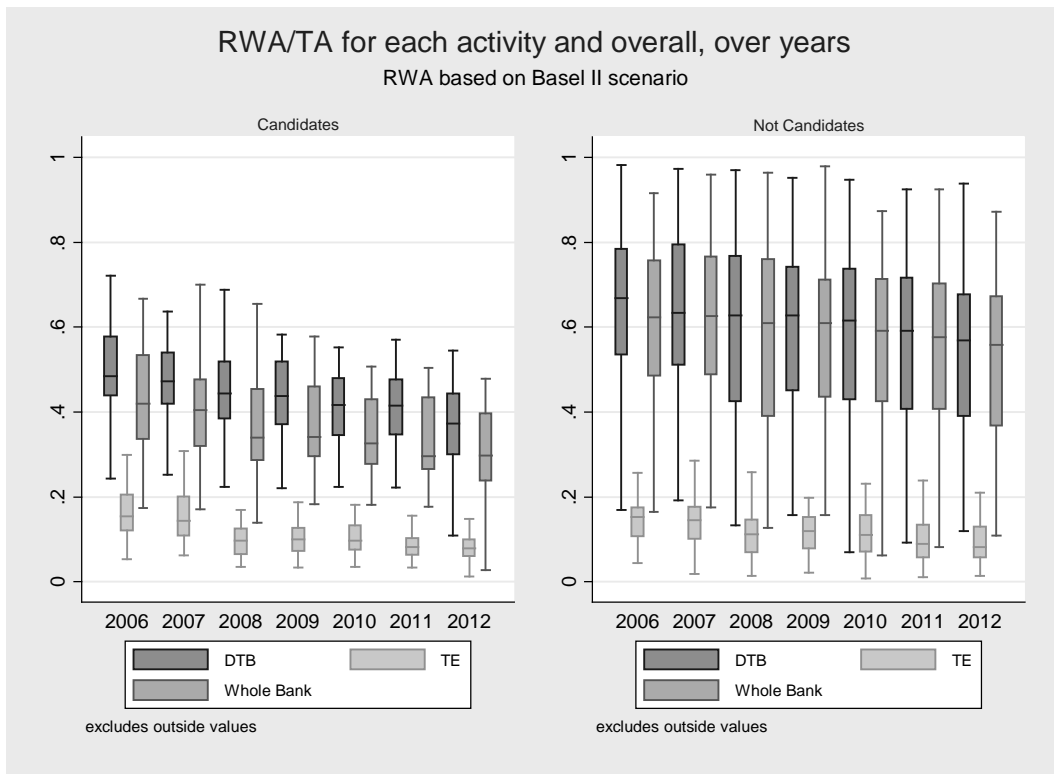
Source: SNL database and JRC estimates

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.<sup>36</sup>

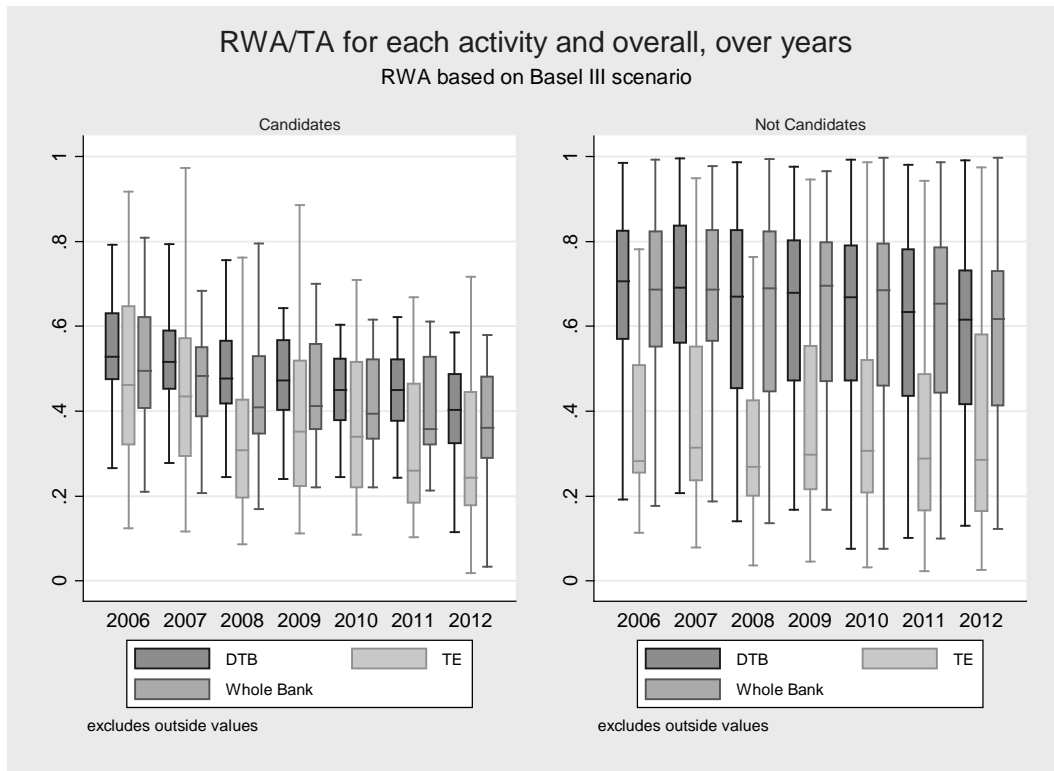
<sup>36</sup> It should be noted that, as some banks have a “whole bank” density which is 1 or very close to it (as per their balance sheet), the RWA density for the commercial activities will come out as larger than one if the density for the trading activities will be lower than the density for the “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

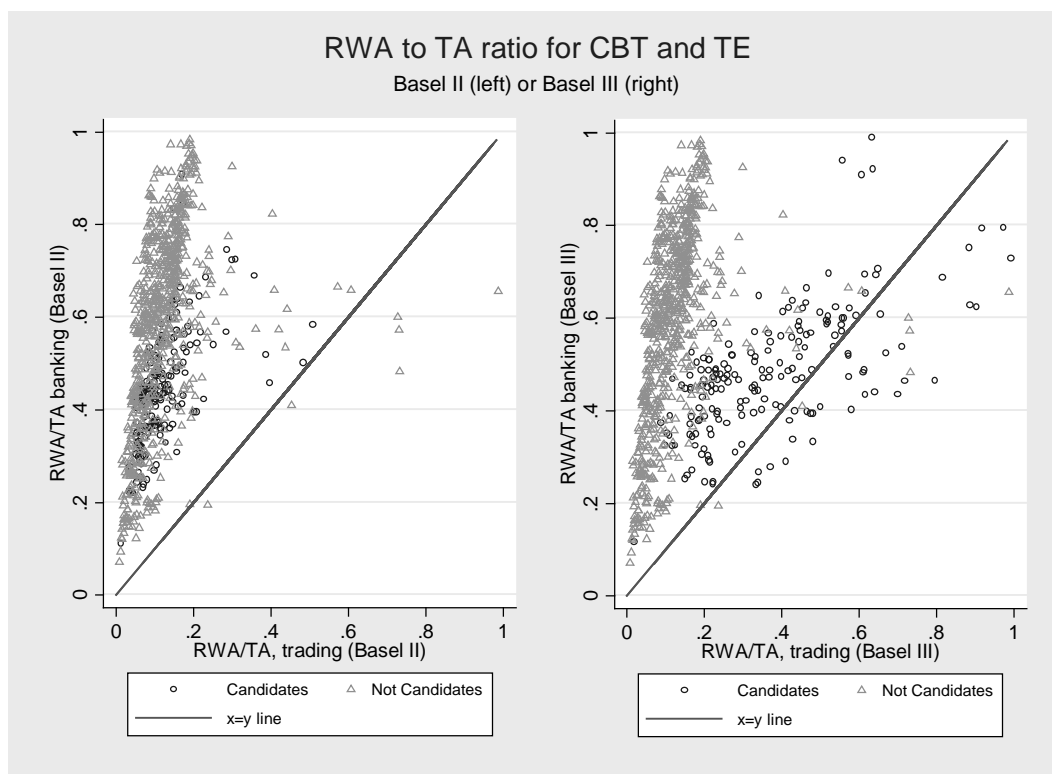


Source: SNL database and JRC estimates

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”.<sup>37</sup> By observing the figure it seems possible to conclude that:

- x Deposit taking activities seem less profitable per unit of nominal value compared to trading,
- x In 2008, when extreme losses were incurred, deposit taking activities performed similarly to trading activities for banks proposed for structural reform,
- x 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.

<sup>37</sup> 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*.<sup>38</sup> 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:

- x 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).
- x Under Basel 3 the difference would be reduced but it could still on average be not negligible.
- x 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.<sup>39</sup>

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<sup>38</sup> 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.

<sup>39</sup> 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





























































































































































































































































































































































































































































































































































































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
<b>CRR</b> Credit institutions	<b>Scope:</b> SFTs. <b>Data elements and frequency:</b> aggregate data and annual or semi-annual or quarterly frequency.		
<b>MIFID</b> Investment firms	<b>Scope:</b> any transaction in financial instruments, except SFTs. <b>Data elements and frequency:</b> highest level of granularity and frequency.		
<b>EMIR</b> Counterparty of a transaction.			<b>Scope:</b> any OTC derivative transaction, including total return swaps. <b>Data elements and frequency:</b> highest level of granularity and































