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Basel III: The impact of an increase in regulation in a recession framework

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Abstract

This work project aims to assess the impact of Basel III's proposal in the Portuguese banking sector, a sector experiencing particularly difficult times in a distressed country. The industry is represented by its three largest quoted banking groups, two of them under government intervention. The impact is evaluated through the estimation of the banks' capital ratios through Basel III's expected implementation calendar, through the analysis of the banks' capital needs based on their publicly available information and industry research. The impact will vary depending on the bank; on average, it will result in a decrease in banks' excess capital. Banks will have difficulties to comply if state-owned CoCos are not considered part of regulatory capital. The new standards will penalize those banks with a recent history of poor performance, and decrease the difference between regulatory and equity capital.

Keywords: Banking; Basel; regulation; Portuguese banks.

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1. Introduction

Banks played a massive role in the 2008 global financial crisis. Helped by a regulatory framework that was inadequate at best, ill-considered investments and flawed risk-management systems had negative effects not only on the individual banks but on the economy as a whole. The real side of the economy is particularly sensitive to the banking sector, requiring public entities to enforce rigorous mechanisms to prevent bank failures, thus promoting stability in the financial system and enduring economic growth. In this case, it did not happen as many banks could only be saved with taxpayers' money.

The Basel Committee on Banking Supervision (BCBS, acronyms used in **Exhibit 1**), created in 1974, is a group of national bank supervisory authorities that seeks to improve worldwide supervisory standards. Over the years, the BCBS' importance has grown, becoming the leading supporter of a globally consistent regulatory framework. The BCBS created Basel III[1] global regulatory standards with the goal of increasing banks' resilience. The standards follow the same principles as previous BCBS recommendations, but stand out as imposing stricter limits on leverage, requiring banks to hold considerably more equity and manage their liquidity in a more prudent manner.

This Work Project (WP) is focused on assessing the impact of Basel III's implementation in Portugal. It addresses the three main quoted Portuguese banking groups:

- Banco Comercial Português, S.A. (BCP);

[1] **BCBS**. 2010 (revised 2011). *Basel III: A global framework for more resilient banks and the banking system*. Basel: Bank for International Settlements (BIS). *and* **BCBS**. 2010. *Basel III: International framework for liquidity risk measurement, standards and monitoring*, Basel: BIS.

- Banco Português de Investimentos, S.A. (BPI)

- Espírito Santo Financial Group S.A (ESFG), a Luxembourg-based financial holding company which fully consolidates Banco Espírito Santo S.A. (BES).

Caixa Geral de Depósitos is not included due to being state-owned and, thus, having access to completely different capital sources, independently from the market. Banif - Banco Internacional do Funchal, S.A. (or any other entity from its financial group) is not taken in consideration as it is going through a restructuring that will sharply change its capital position.

Portugal's implementation of Basel III is occurring in the midst of an international Financial Assistance Programme[2]. Due to the Portuguese state's inability to finance its growing debt, the Programme requires banks to keep high capital levels and provides a €12 billion recapitalization facility to be used, if necessary, by banks struggling to comply with regulatory capital requirements through market financing. BCP and BPI are currently using this facility.

Because Portugal is part of the European Union (EU), these standards will not be directly applied by the Bank of Portugal (BoP), the national regulatory authority, but by the European authorities. In order to apply previous regulatory standards, the European Commission (EC) enacted directives that were then transposed to national regulation by the BoP, which had some scope to adapt them to Portuguese market specificities. Basel III is expected to be implemented more uniformly across Europe. The current implementation

[2] **Banco de Portugal**. 2011. *Portugal EU/IMF Financial Assistance Programme 2011-2014*. Lisbon.

proposal from the EC is the 2011 CRD IV package; for the purpose of this WP, we will use its latest version, from May 21, 2012[3]. It includes a regulation proposal (known as the Capital Requirements Regulation: CRR) that is supposed to be enforced directly across Europe, without variance. CRD IV functions as the document applying Basel III, but varies considerably from the BCBS text[4]. Not yet in its final version, changes are still being discussed by European leaders—the BCBS considers it, in some respects, non-compliant with Basel III[5].

With those caveats, we believe the CRD IV proposal most accurately represents the future regulation applying Basel III. It is the only document developed by those entities likely to produce the final text. Therefore, this WP will estimate the impact the package would have on the banks if applied in its current form. The many effects that cannot be estimated using only publicly available information will not be addressed.

We will analyze aforementioned banks' 2012 semiannual reports[6] in order to estimate their capital needs throughout the CRD IV implementation period. We will primarily address equity capital, since other capital instruments have not yet been issued. Liquidity requirements will be described and compared based on current regulations. However,

[3] **Council of the European Union** 2012. *Proposal for a Regulation of the European Parliament and of the Council on prudential requirements for credit institutions and investment firms – Council general approach.* Brussels. *and* **Council of the European Union** 2012. *Proposal for a 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 of the European Parliament and of the Council on the supplementary supervision of credit institutions, insurance undertakings and investment firms in a financial conglomerate – Council general approach.* Brussels.

[4] **James, Benedict, and Andrew Forde**. 2001. *Comparison between Capital Requirements Directive IV and Basel III*. London: Linklaters LLP.

[5] **BCBS**. 2012. *Basel III regulatory consistency assessment (Level 2) Preliminary report: European Union.* Basel: BIS.

[6] The third quarter reports were not used due to their lack of detailed accounting information, this information is essential to estimate the adjustments to capital due to Basel III.

unclear CRD IV definitions in this matter and a lack of bank-provided information prevent reliable numerical estimates of their liquidity positions.

2. European regulatory framework

Three pillars comprise the Basel II accords[7] (the current European regulation follows these accords' framework). The first is the minimum capital requirements, where Basel III introduces considerable modifications. It is this pillar that will be addressed throughout this WP. Pillar two provides supervisors with a framework to assess banks' risk. Pillar three regulates banks' information disclosure to allow market participants to better assess capital adequacy, exposures, and risk management practices.

Pillar one is based on the notion that banks need to hold a minimum ratio of capital to their total Risk Weighted Assets (RWA); the total RWA contain amounts for credit, operational, and market risk. Regarding the banks analyzed, credit risk makes up more than 90% of their RWA. Its calculation consists in multiplying the value of each asset by its corresponding risk weight; the risk weight is higher for riskier assets (e.g. higher for loans to SMEs than for investment-grade sovereign bonds). Risk weights can be estimated using inputs from credit rating agencies and regulatory data (known as the Standardized Method), or using internal supervisor-approved models (known as the Internal-ratings-based [IRB] method).

[7] **BCBS**. 2006. *International Convergence of Capital Measurement and Capital Standards – A Revised Framework – Comprehensive Version*. Basel: BIS. It includes the Basel II accords (released in June 2004) and several smaller BCBS accords.

There are two types of IRB methods: Foundation IRB and Advanced IRB. With Foundation IRB, banks use internal models to estimate Probabilities of Default for specific loans' portfolios, using regulatory data concerning the other necessary parameters to calculate risk weights. Advanced IRB allows banks to calculate risk weights using all the required parameters estimated through their internal models. One advantage of using internal models is that it encourages banks to thoroughly analyze their exposures and to improve their risk management, allowing banks with complex and effective risk management systems to be more levered. Market risk is estimated using Value At Risk models as they consider the impact of market fluctuations on the banks' capital. Operational risk has a broad definition as it arises from failed internal processes, people, or systems, or from external events; it encompasses different risks like those created by possible fraud, accidents or legal risk.

Capital, according to the CRD IV, consists of different types of instruments that are classified according to their loss absorption capabilities: Common Equity Tier 1 (CET1), Additional Tier 1 (AT1) and Tier 2 (T2)—CET1 being the most loss-absorbing instrument, followed by AT1. CET1 is the book value of equity, after several accounting adjustments and considering only common shares. AT1 are perpetual hybrid instruments with non-cumulative distributions which can be converted in equity as needed; T2 is subordinated debt. These instruments have to comply with a set of CRD IV conditions, including being converted to common equity if the bank is considered non-viable. The CRD IV contains, in its regulation, minimum ratios for CET1, Tier 1 (the sum of CET1 and AT1), and capital: the sum of the three types of capital instruments.

In its directive, the CRD IV requires banks to hold two CET1 capital buffers: the capital conservation buffer and the countercyclical buffer. For the purpose of this WP, I will assume that banks have to hold the countercyclical buffer as not holding it severely restricts income distributions. Due to the current European financial crisis, I will assume that banks do not have to hold the countercyclical buffer as it is supposed to only be in effect in times of credit growth.

Besides lower minimum capital ratios, the previous regulation contained different rules regarding the definition of capital: AT1 and T2 were not so loss-absorbing; and, instead of CET1, there was the concept of Core Tier 1 (CT1), which included some preference shares and was computed using different accounting adjustments.

The CRD IV also introduces the requirement that banks hold sufficient capital to comply with a minimum non risk-based leverage ratio of 3%. The ratio is defined as Tier 1 capital divided by the total exposure (assets and off-balance sheet items). This requirement will start to be monitored by the supervisor in 2013, disclosed in 2015, and implemented as a mandatory requirement in 2018. The high level of RWA/Total assets in Portuguese banks means that this ratio will not have an impact on the banks analyzed.

Basel III contains two new liquidity requirements, a completely new feature vis-à-vis Basel II. They will be explained later in this WP, though their impact cannot yet be quantified using public data.

Table 1: Implementation schedule considering the Capital Conservation buffer and ignoring the Countercyclical buffer

	2013	2014	2015	2016	2017	2018	2019
Minimum CET1 + buffer	3.5%	4%	4.5%	5.125%	5.75%	6.375%	7%
Minimum T1 + buffer	4.5%	5.5%	6%	6.625%	7.25%	7.875%	8.5%
Minimum total capital + buffer	8%	8%	8%	8.625%	9.25%	9.875%	10.5%
Phased-in deductions	0%	20%	40%	60%	80%	100%	100%

The implementation schedule concerning the capital ratios is above; the impact of the new accounting deductions is not fully implemented at a given date, but phased-in according to the percentages in Table 1. The accounting adjustments will be explained in detail below, while referring to the specific cases of the banks analyzed. The RWA calculation method will not change significantly with this proposal, and the impact on the banks analyzed will be minimal. Europe follows the CRD III[8], a directive that is already part of the current Portuguese regulation[9] and was fully implemented before June 30, 2012. This directive applies the changes in RWA calculation methods (concerning market risk), as well as other adjustments concerning securitizations and re-securitizations, issued by the BCBS as an answer to the 2008 crisis (known as "Basel 2.5"[10]).

Historically and as exemplified by their response to Basel II and "Basel 2.5", European authorities have lead the world in their implementation of BCBS' proposals as we can see by their track record regarding Basel II and "Basel 2.5", (which are not yet fully implemented in the other major economic bloc, the United States.) However, Basel III's

[8] **The European Parliament and the Council of the European Union**. 2010. *Directive 2010/76/EU of the European Parliament and of the Council of 24 November 2010 amending Directives 2006/48/EC and 2006/49/EC as regards capital requirements for the trading book and for re-securitisations, and the supervisory review of remuneration policies.* Official Journal of the European Union.
[9] **Banco de Portugal**. 2011. *Aviso do Banco de Portugal nº9/2011*.
[10] **BCBS**. 2009. *Revisions to the Basel II market risk framework.* Basel: BIS. *and* **BCBS**. 2009. *Enhancements to the Basel II framework.* Basel: BIS.

implementation has been hampered by several conflicts of interest between and among nations due to the sovereign debt crisis.

3. The Portuguese case

Portugal's banking sector utilizes a substantially uniform business model; the market is dominated by commercially focused universal. Obviously, variances between players exist: for example, CGD is state-owned, and Banco Santander Totta is a subsidiary of a large international bank. BCP, BES and BPI are the three largest quoted banks (BES and ESFG belong to the same group) and, together with CGD and Banco Santander Totta, are the five largest Portuguese banks. There are some differences in the business models of the three banks: BES has the most investment banking activities, operating in several countries through its subsidiary BESI, while BCP is mostly a commercial bank. Their loan portfolios also differ, as BES is more exposed to corporates, and BPI to residential mortgages. These banks' geographic exposure is similar as they develop most of their activities in Portugal and are expanding in emerging markets, primarily Angola and Mozambique. Although their emerging markets' subsidiaries are a small part of the banks' total assets, the subsidiaries remain significant due to the high profitability achieved in these countries.

Currently, Portuguese banks hold high numbers of non-performing loans (NPLs), and are experiencing funding difficulties due to the Portuguese state's position, as well as the regulatory pressure resulting from the EU-wide recapitalization exercise and Portugal's

Financial Assistance Programme. Due to the Programme, BoP required banks to hold a 9% CT1 ratio in the end of 2011 and a 10% CT1 ratio by the end of 2012[11].

These banks participated in the EU-wide EBA[12] capital exercise[13], which required banks to have a 9% CT1 ratio on June 30, 2012 after deducting, from their CT1, a buffer related to the prudent valuation of banks' exposures to European Economic Area (EEA) sovereign debt. The buffer is a fixed amount considering unrealized losses and prudent valuation of the banks' EEA sovereign debt exposures on September 30, 2011; it does not consider price movements and changes in each bank's bond portfolio after this date, but it considers impairments related to the sovereign debt (i.e., impairments losses decrease the buffer amount). EBA, in its final report concerning the capital exercise, requires banks to hold a nominal amount of CT1 that corresponds to 9% of their RWA on June 30, 2012, after deducting the previously mentioned buffer; this requirement has the goal of limiting the banks' deleveraging. The capital exercise, done as a complement to the 2011 EU-wide stress test, was considerably simpler than the stress tests as it did not consider scenarios, nor did it analyze the banks' asset quality.

The 9% CT1 requirement (after the deduction of the sovereigns' debt buffer) of the capital exercise was transposed to the Portuguese regulation[14]. Hence, banks had to comply with both the 9% CT1capital exercise requirement and the 10% CT1 BoP requirement (without

[11] **Banco de Portugal**. 2011. *Aviso do Banco de Portugal nº3/2011.*
[12] The European Banking Authority is a European regulatory agency with the goal of harmonizing banking regulation cross the EU; among other activities it conducts stress tests, develops reporting frameworks and elaborates consultation papers on banking regulation matters.
[13] **EBA**. 2011. *EBA recommendation on the creation and supervisory oversight of temporary capital buffers to restore market confidence*. London: EBA. *and* **EBA**. 2012. *Final report on the implementation of Capital Plans following the EBA's 2011 Recommendation on the creation of temporary capital buffers to restore market confidence*. EBA.
[14] **Banco de Portugal**. 2012. *Aviso do Banco de Portugal nº5/2012.*

any buffers). All the banks had to issue capital to comply; BPI—mainly due to its sovereign buffer (€ 1,184 million)—issued €1.5 billion.

In order to manage its capital shortage, BES increased its capital in €1.01 billion by issuing common shares during the first semester of 2012. The issuance caused massive dilution for those shareholders who did not exercise their rights to subscribe new shares in the capital increase; the number of new shares was 175% of the previous shares outstanding. During the same period, ESFG increased its capital in €500 million, issuing 97% of the previous shares outstanding. Despite the capital dilution, this group was able to withstand the more demanding capital requirements without government support measures, an extremely positive situation as it allows the group to save on interest costs and limit state intervention.

BCP had to submit a formal recapitalization plan[15] where the Portuguese state subscribed €3 billion of Contingent Convertibles (CoCos). These securities are debt that automatically convertes into ordinary shares (conversion rate determined by the Minister of Finance) in case of a "trigger" event. They pay semi-annual coupons with an effective annual rate of 8.5% in the first year that increases each year, capping at 10% in the fifth year. CoCos are, according to current regulation, CT1. A "trigger" event includes non-compliance with the minimum regulatory capital ratio, missing a coupon payment, being considered insolvent by the supervisor, not completely repaying the securities within the five-year period, or the failure to fulfill any other condition stated in the recapitalization plan. BCP's plan is to repay €500 million in 2014, €1 billion in 2015, and €1.5 billion in 2016. BCP also increased its capital by €500 million in the third quarter of 2012; this value is not included

[15] **Millenium BCP**. 2012. *Capitalisation Plan –Law 63-A/2008- June 4, 2012*.

in this WP's estimations as the capital increase occurred after June 30, 2012. The capital increase was guaranteed by the state, but the guarantee was not used as private investors subscribed the full amount. The number of new shares issued was 173% of the previous shares outstanding.

BPI submitted a plan similar to BCP's[16] with the amount of state support via CoCos being €1.5 billion. By December 4, 2012 the bank had already repaid €300 million. BPI does not disclose the planned schedule to repay the CoCos; it can be any time before June 2017. During the third quarter of 2012, BPI issued common shares, increasing its capital by €200 million. The number of new shares was 40% of the previous shares outstanding. BPI's capital shortfall was mainly due to the sovereign debt buffer: €1,184 million after impairments. Every quarter BPI discloses how much this buffer would decrease from its September 30, 2011 level if it was recalculated using current market prices. For this WP, the position considered is the one on June 30, 2012, with €1.5 billion CoCos outstanding and before the capital increase.

4. CRD IV's impact on core capital

In order to estimate the impact of CRD IV on core capital, we have used the banks' balance sheets on June 30, 2012, and other information disclosed in their semiannual reports. Through analysis of the CRD IV proposal and the current regulation[17], we composed a list of the main modifications in the method to calculate the banks' core capital (i.e., the

[16] **Banco BPI**. 2012. *Proposta. Ponto 1 da Ordem de Trabalhos da Assembleia Geral de Accionistas do Banco BPI S.A. de 27 de Junho de 2012. Anexo 1: Plano de Recapitalização.*
[17] **Banco de Portugal**. 2011. *Aviso do Banco de Portugal nº3/2011 and* **Banco de Portugal**. 2010. *Aviso do Banco de Portugal nº6/2010.*

changes from the current CT1 to CRD IV's CET1). This is not an exhaustive list of all changes; it addresses simply those changes we believe to have a greater impact on the banks analyzed[18]. The changes are divided in two sections: in the first, the amounts are deducted outright from CT1 to estimate preliminary CET1; the second section consists of "threshold deductions", where the amounts deducted are only those above a given percentage of adjusted common equity.

The way in which CT1 becomes CET1 is disclosed in **Exhibit 2**, assuming the proposal's full implementation on June 30, 2012, without considering the deductions' phasing-in. Some deductions are only an estimation given the unclear nature of the CRD IV proposal and the lack of bank-disclosed information in their semiannual reports and through their investor relations offices. BES' capital is analyzed as it will be, as detailed below, highly relevant to the estimation of ESFG's CET1.

The "excess of expected IRB losses over existing impairment allowances" is a value that represents the provisions that should have been accounted using the banks' IRB models, but were not considered as the banks calculate their accounting provisions in a different manner. They were already disclosed in the EBA capital exercise and it would stay unchanged if the CRD IV proposal was in use. BES did not participate in the EBA exercise; we assume that its amount regarding this excess will be the same as the one from ESFG as BES congregates the great majority of ESFG's banking activities.

[18] The decision to include this changes and not others was made after analyzing banks' reports and asking the opinion of experienced professionals: BPI Gestão de Activos' Portfolio Managers Carla Fonseca and Tiago Santos; and the sell-side analysts covering these banks: BPI's Carlos Peixoto, BESI's Juan Pablo Lopez and BCP's Rita Silva. The goal is to capture the changes that will have the highest impact in the bank's capital position.

The non-compliant hybrid instruments we refer to are the CoCos, and the €51 million of preference shares BPI still includes in its CT1. The other preference shares issued by the banks are not included in their CT1. The CoCos are clearly not part of CET1 according to the CRD IV proposal as CET1 instruments need to meet all of a set of conditions including: no preferential distributions, and being classified as equity in the balance sheet and loss absorption to the same degree as all other CET1 instruments. BCP's and BPI's CoCos do not comply with these conditions; however, there is the possibility of the regulator issuing an exception to consider these government support measures as part of CET1. Such an exception would change all calculations (**Exhibit 3**).

The full amount of non-controlling interests (NCIs)[19] is currently part of CT1; this would not be the case if the CRD IV proposal were used since it does not consider NCIs in non-financial entities as CET1. The proposal does not disclose if NCIs in insurance undertakings will be considered part of CET1; such a determination will be subject to any new regulation pertaining specifically to both banking and insurance activities. In the WP we assume that NCIs in insurance entities are not included in CET1. The only entity affected by this is ESFG, with 116 € million of NCIs; if a new regulation, allowing NCIs in insurance entities to be included in CET1, appears, ESFG's CET1 will increase by a value up to this amount. We assume that half of the NCIs related to "others" are in banks, and the other half in non-banking entities.

[19] NCIs are the portion of subsidiaries' equity capital that is not owned by their parent corporation. It is included in the consolidated financial group capital, the one analyzed in this WP, as it is available to absorb losses in its subsidiary, which is fully consolidated.

Regarding NCIs in banking subsidiaries, the amounts above the subsidiaries' capital requirements (including the buffers) are not considered as CET1. For example, in a subsidiary with a 10% CET1 and 20% NCI, considering a 7% CET1 minimum for the subsidiary, the minority interest part of the parent company CET1 would be 7/10 of the 20%. The proposal does not disclose any scenario with non-European subsidiaries; it is not possible, due to the scarcity of disclosed information, to calculate every subsidiary's CET1. Our assumption was deducting 20% of the NCIs below € 50 million. Regarding the subsidiaries with larger NCIs, we assumed that the other European banking subsidiaries (BCP's subsidiaries in Poland and Bespar) will have to comply with this proposal (7% CET1), and that their CT1 would decrease 20% to become their new CET1; the NCI share of their excess capital above 7% was deducted. ESFG's NCIs regarding BES in all the years analyzed were deducted using BES' CET1 calculated in the same year; the deduction increased each year until € 1 billion in 2018. Given this value's weight, the necessity to estimate BES CET1, as we have done, is obvious.

The Mozambican BIM—Banco Internacional de Moçambique SA (BCP's subsidiary), is subject to the local regulation which requires an 8% Tier 1; our assumption is that European regulators will allow BCP to consider its NCIs using the local requirement to calculate excess capital; therefore, we deducted the NCIs related to its excess capital. Angola, where all the groups have large subsidiaries, has a simpler regulation that requires only a 12% solvency ratio[20]. Considering the assumption regarding Mozambique, it would make sense to include some NCIs related to Angola, but fewer than in the Mozambican

[20] **Banco Nacional de Angola**. 2011. *Aviso nº 5/201.*

case due to Angola's regulation that does not distinguish between different levels of capital (i.e., Tier 1 and Tier 2). We assumed that European regulators will require banks to deduct the NCI amount related to the excess capital according to the Angolan regulation but, as a simple way of assuming a larger deduction, we have assumed that the share of NCIs to be deducted will be rounded up to one decimal. For example in BES Angola, with a 15.4% solvency ratio, we assume regulators will deduct 30% of the NCI as (15.4-12)/15.4 = 0.22 and 0.22 will be rounded up to 0.3.

These Angolan and Mozambican banks did not release semiannual reports; thus, the deductions were estimated using the 2011 reports as a proxy for the 2012 semiannual reports. BES Angola is an exception to this as, on December 10, 2012, its 2011 report had not been released, thus we have used its 2010 report as a proxy. Because of the use of different reports, the scarce African regulations and, especially, the lack of knowledge about European regulators' future decisions regarding these issues, these estimates are inaccurate.

Revaluation reserves, related to unrealized losses in the banks' available-for-sale (AFS) portfolio and cash flow hedge[21], are currently added back (net of associated DTAs: deferred tax assets) to capital to calculate CT1. The CRD IV does not allow this; hence we have subtracted these net reserves from each bank's CT1. All the banks were penalized, especially BPI (€ 845 million) due to their large portfolio of Portuguese bonds with

[21] AFS portfolio is a portfolio of securities where its gains and losses are only recognized as revenues or expenses when the security is sold, reaches maturity, is impaired or disposed of in another manner. Its unrecognized gains and losses are recorded as revaluation reserves, part of shareholder's equity. Cash flow hedge relates to the use of derivatives in hedging the banks' exposures, mainly the mismatches related to their exposures to interests rates in the two sides of the Balance sheet.

enormous unrealized losses. During the second half of 2012, a period not considered due to the lack of other data, these unrealized losses decreased significantly. This will have a positive impact in BPI's capital ratio as the deductions are phased-in; it impacts both the unrealized losses deduction (consequently, all the threshold deductions) and the DTAs deduction. Possible decreases in unrealized losses after June 30, 2012 are not included in the WP conclusions, though they are analyzed in **Exhibit 4**.

Deferred tax assets (DTAs)[22] are included in CT1 but, under the CRD IV proposal, they will receive a different treatment depending on their origin. There are three main types of DTAs in CRD IV, but Portuguese banks do not disclose their DTAs according to these types. Thus, we had to assume their division among the different types, and this estimation will not perfectly correspond to the actual values. The DTAs that do not rely on future profitability are, according to their definition in CRD IV, completely different from most of the large DTA items in the banks analyzed; as such, they will not be considered. DTAs that rely on future probability and arise from temporary differences are explained later as they are part of the "threshold deductions".

Those DTAs that rely on future profitability and do not arise from temporary differences are completely deducted from capital. They may be reduced, with some exceptions, by the amount of associated deferred tax liabilities (DTLs) if they are generated in the same country and the country's tax authority allows their offset. Banks do not disclose their DTAs and DTLs according to the country in which they were generated. We assumed that

[22] DTAs are assets that may be used to reduce future income tax expenses. Its inclusion in regulatory capital arises from the assumption that banks will have future taxable profits where they can use these DTAs.

each DTA item can be deducted by the DTL that relates to the same item, bar the exceptions disclosed in the CRD IV. This is not a perfect assumption as it can misrepresent the reality by being biased in the favor of banks with more geographically diversified businesses and banks that aggregate more items of DTAs and DTLs in their reports. It is possible that we are overestimating these banks' CET1, as we can be underestimating these banks' deduction related to DTAs by offsetting its value by an excessive amount of DTLs. As these DTAs arise mainly from tax losses brought forward, the bank with the highest level was BCP, also the bank with the worst recent results.

Authorities currently allow the inclusion of the defined benefit pension "corridor" (the highest of 10% of the fund's assets or liabilities)[23] in CT1, as well as 25% of the 2008 actuarial deviations[24] (regarding the assets which were not transferred to the Social Security). These items are added back to capital after being deducted as part of "other comprehensive income". The CRD IV proposal does not allow such exceptions; therefore we have subtracted these items from CT1.

Following the previously mentioned deductions, it was necessary to calculate a preliminary CET1 value in order to estimate the remaining deductions required to compute the banks' CET1. The preliminary CET1 is the CT1 after all the previously mentioned deductions. If the CRD IV proposal was in force, banks would have to deduct a portion of "DTAs that rely on future probability and arise from temporary differences" from capital; the deduction

[23] The "corridor" is a formerly used method to recognize actuarial deviations in defined benefit pension funds. Even after banks stopped using it in their accounting practices, the BoP allows its use for regulatory capital purposes. In practice, it means that banks currently have a higher regulatory capital as all of the banks analyzed have negative actuarial deviations exceeding the "corridor".

[24] **Banco de Portugal**. 2008. *Aviso do Banco de Portugal nº11/2008*

would be the difference, if positive, between the item's value and 10% of the banks' preliminary CET1. These DTAs arise from items that receive different accounting and tax treatments resulting in the possibility that the company will pay fewer taxes in the future; they were offset by associated DTLs using the same method as the other previously mentioned DTAs.

The difference, if positive, between significant (higher than 10%) investments in financial institutions and 10% of the preliminary CET1 was also deducted. BCP has a large investment in an insurance entity (€ 341 million in Milleniumbcp Ageas Grupo Segurador, S.G.P.S., S.A.) that we deducted as any other participation in financial entities. If new regulation concerning companies with both banking and insurance activities is issued, this can change. In this case, the positive impact on BCP's capital would be noteworthy.

The value of the two previously mentioned items that was not deducted from the preliminary CET1 will be summed. The difference, if positive, between the result of the aforementioned sum and 15% of the preliminary CET1 will be deducted from the preliminary CET1.

After application of all mentioned deductions, we obtain the CET1; to calculate the CET1 ratio one has to divide CET1 by the RWA. The impacts of CRD IV on these banks' RWA should be minimal and they should mainly address the exposures related to market activities and (re)securitizations. This analysis is made using banks' semiannual reports; banks' information regarding these matters is always scarce and even more so in the interim

reports as they are not required to hold the same information as in their annual reports.[25] As a simplified way to model the impact of this increase in RWA on the banks' capital positions, we increased banks' RWA regarding (re)securitizations and market risk to 50%; this increase's impact is residual, between 4 and 15 basis points on the CET1 ratio. This value is not included in the final results as it was calculated in a non-accurate way and analysts expect it to be even smaller.

5. Banks capital position under CRD IV

Table 2: BCP and BPI's Core Equity Tier 1 ratios under CRD IV (values in € million)

Phased-in Deductions		**BCP**: RWA = 55,934				**BPI**: RWA = 25,410			
		No CoCos		Accepted	As planned	No CoCos		Accepted	As planned
2013		3.327	6,0%	11,4%	6,9%	2.140	8,5%	14,5%	11,5%
2014	20%	2.858	5,1%	10,7%	6,9%	1.751	7,0%	13,1%	11,1%
2015	40%	2.390	4,3%	10,0%	7,9%	1.362	5,4%	11,7%	10,6%
2016	60%	1.921	3,5%	9,3%	9,7%	973	3,9%	10,4%	10,1%
2017	80%	1.453	2,6%	8,6%	8,9%	585	2,3%	9,0%	9,1%
2018	100%	984	1,8%	8,0%	8,1%	196	0,8%	7,6%	7,5%

The table above shows BCP's and BPI's CET1 ratios during the phase-in period; BPI's higher deductions are the result of its higher unrealized losses in the AFS portfolio. The results (except the column "as planned") are based on the assumption of a constant balance sheet, i.e., no capital generation and no changes in RWA. The column "accepted" addresses the possibility that the regulator will issue an exception declaring instruments issued as part of government support measures as CET1. In order to achieve the ratios in this column, the state would have to maintain its "investment" in the banks throughout the period, assuming the CoCos conversion in new shares worth, as book value, the CoCos' current value.

[25] **Banco de Portugal**. 2007. *Aviso do Banco de Portugal nº10/2007.*

In the column "as planned" we assume, regarding BCP, the exact fulfillment of the schedule disclosed in its recapitalization plan; it includes the € 500 million capital increase in 2012 (already completed) and the planned CoCos' repayments: € 500 million in 2014, €1 billion in 2015 and €1.5 billion in 2016. We assume BCP to generate exactly the capital needed to make these repayments; this will not likely be achieved without a new capital increase. The failure or success of this future capital increase will determine if the state gets a shareholder position in BCP, which can happen either through a new support measure or through the CoCos conversion that will occur if they are not completely repaid until June 2017.

BCP is in an extremely poor position, as it has five years to generate € 3 billion of capital to repay its CoCos, and it has recently recorded losses. If the bank improves the quality of its credit portfolio and becomes profitable, it could seek to issue more equity in order to comply with its capital requirements. However, this will be difficult to achieve. We believe that the most probable outcome regarding BCP is an extension of the state's intervention, through either the CoCos' conversion or through new measures.

In the case of BPI, the column "as planned" shows the € 200 million capital increase and € 300 million CoCos repayments during the second half of 2012; we assume the uniform repayment of the €1.2 billion CoCos outstanding, beginning on January 1, 2013. BPI will need to generate, on average, € 267 million of capital per year in order to repay the CoCos before June 2017, a daunting amount in the current environment. However, given the bank's profitability and excluding unforeseen events, BPI should not have any problem doing a capital increase. If both banks behave as displayed in the "as planned" column, they

will be in a good position, without any equity capital needs. This case does not consider banks' capital generation after June 30, 2017; thus, with more than 2.5 years of capital generation, these banks can have a considerable amount of excess capital above the 7% CET1 minimum planned to be enforced in 2019.

BPI will need to generate close to € 267 million per year to repay its CoCos within the agreed timeframe. If this is achieved, BPI should have no difficulty complying with the CET1 minimum. Recently, BPI has been profitable; therefore, in case of need, it should be possible to increase its capital. If BPI performs in line with the above-mentioned "as planned" case, they will have to start issuing AT1 and T2 instruments in 2017. However, if the bank continues to record profits, they could also use an early issuance to convey a positive sign to the market.

Table 3: BES and ESFG's Core Equity Tier 1 ratios under CRD IV (values in € million)

Phased In Deductions		**BES**: RWA = 64,906		**ESFG**: RWA = 67,855	
2013		6.633	10,4%	6.367	9,5%
2014	20%	6.438	10,1%	5.881	8,8%
2015	40%	6.243	9,8%	5.395	8,1%
2016	60%	6.048	9,5%	4.909	7,4%
2017	80%	5.853	9,2%	4.423	6,6%
2018	100%	5.658	8,9%	3.937	5,9%

The results in the table above are based on the assumption of a constant balance sheet, i.e., no capital generation and no changes in RWA. To cope with a 7% CET1 minimum, ESFG will need to generate close to € 626 million until the end of 2018; this should be feasible to achieve organically within the time frame for an institution of this size. As previously mentioned, the NCIs related to excess capital in banking subsidiaries do not count for a bank's CET1; ESFG has close to € 1 billion deducted from its capital due to BES' excess capital attributed to NCIs. At first sight it appears that if ESFG seeks to increase its CET1

ratio it could simply manage it by reducing BES capital (e.g., BES paying extraordinary dividends or repurchasing some of its own shares), thereby decreasing the deduction related to BES' excess capital allocated to NCIs. In reality, this action would not work as it would reduce ESFG's NCIs (that appear in the previous CT1 and in the CET1) related to BES by the same amount; the group cannot increase its capital ratio by decreasing the capital ratio of one of its subsidiaries.

If the CRD IV package were fully implemented, BES' excess capital would be higher than it is today due to the 7% CET1 minimum being considerably lower than the current 10% CT1 minimum; CRD IV's deductions have a smaller impact than this decrease in the minimum core capital ratio.

The high amount of excess CET1 capital allows for the possibility of BES not issuing as much AT1 and T2 instruments as the 1.5% and 2%, respectively, presented in the package as these instruments can be substituted by higher quality capital. This also allows future income distribution to shareholders if AT1 and T2 instruments can be issued at a reasonable cost. In the case of no capital generation, ESFG would have to start issuing AT1 and T2 instruments in 2016 and BES in 2017. However, it is probable that they will start issuing earlier as a means to convey an image of a healthy financial group to the market. Issuing this kind of instruments will be close to impossible for BCP standalone, thus the most probable outcome is its continued reliance on some sort of state intervention, maybe a state guarantee concerning these instruments' issuance.

The new deductions are made under the principle of a lack of confidence regarding the banks' future performances, as it can be seen by the deduction of DTAs that rely on future profitability. Thus, the CRD IV penalizes the banks with the worst recent performance, not just considering their profitability related to net income but also other items not included in net income, e.g., unrealized losses in the AFS portfolio, and negative actuarial deviations. This makes sense and is decreasing the variance between regulatory capital and equity capital. The deduction regarding NCIs penalizes groups with large, not fully owned, subsidiaries, as these subsidiaries usually have large amounts of capital above the regulatory minimum, and the portion of this amount related to NCIs will be deducted.

6. Liquidity requirements

Basel III introduces two new liquidity requirements with the goal of making banks less dependent on short-term interbank funding. This type of funding is extremely sensitive to systemic shocks as observed in the recent financial crisis; in the case of the banks analyzed, temporary measures from the European Central Bank (ECB) are currently replacing this funding source.

Basel III's long-term liquidity requirement is the Net Stable Funding Ratio (NSFR); it requires banks to have a higher amount of stable funding than long-term weighted assets (including off-balance sheet commitments). Long-term is defined as more than one year, and lower weights are given to shorter maturity assets and liabilities. This ratio is not in its final form and its parameters are being reviewed by the BCBS; it is not included in the CRD IV as an obligation, but it is slated for implementation in 2018.

The CRD IV proposal establishes the Liquidity Coverage Ratio (LCR), a liquidity requirement, to be introduced in 2015, concerning the need to match highly liquid assets with liquidity outflows during a stressed 30-day period. Systemic and idiosyncratic stresses are considered in the computation of the ratio in a way that replicates what would happen in a crisis like the recent one.

The LCR is presented in detail in the CRD IV but it is not in its final form and includes ambiguous definitions. For instance, liquid transferable assets receive different treatments depending on whether they are of "high liquidity and credit quality" or "extremely high liquidity and credit quality"; no cutoff credit rating is given to determine this. Deposits that are "part of an established relationship making withdrawal highly unlikely" receive a lower weight as a liquidity outflow. A bank's liquidity is impossible to define given such definitions.

Current Portuguese regulation does not contain requirements similar to the previously mentioned ratios. BoP regulation regarding liquidity[26] requires that banks report, every month, their detailed liquidity position to the supervisor. The maps that banks fill are detailed: each type of exposure is divided by maturity, allocating the values to six different maturity ranges. Unfortunately, this is not publicly available data. The BoP can request that banks meet the liquidity requirements it sees as appropriate on a case-by-case basis. Moreover, it recommends banks hold at least 15% of their deposits and other resources with a maturity below one month in the following liquid assets: cash, deposits in the BoP and in "safe" banks (determined using credit ratings).

[26] **Banco de Portugal**. 2009. *Instrução nº 13/2009. and* **Banco de Portugal**. 2009. *Anexo à instrução nº 13/2009.*

The European authorities, and even the BCBS[27], can still review the LCR and, undoubtedly, have to issue some clarification regarding the definition of liquid assets and liquidity outflows. The Portuguese banks' position will only be known at the time of the enforcement of the mandatory disclosure requirements regarding liquidity.

7. Conclusion

In this study, we carried out an estimate of the impact of the new Basel III rules on the Portuguese banking system. We analyzed the four main privately owned banks (BCP, BES, BPI and ESFG) and excluded the Government-owned CGD due to its easy access to state capital.

In order to study the impact of the new capital-related Basel III rules, we calculated the banks' core capital ratios using the new rules and analyzed the factors that cause them to be different from their current core capital ratios. The impact of Basel III's liquidity rules could not be estimated due to their vague definitions and lack of bank-disclosed information.

On average, Basel III will have a minor impact on these banks' capital as the increase in deductions to core capital is balanced with the decrease in the requirement of a minimum core capital ratio—from 10% to 7%—though there are large differences between banks.

Disregarding the classification of CoCos as capital or not, BPI suffers the largest impact (a decrease between 6.9% and 7.7% of its core capital ratio); this is mostly due to its hefty unrealized losses on June 30^{t}, 2012. Disregarding its CoCos, the decrease in BCP's core

[27] **Ingves, Stefan**. 2012. *Current focus of the Basel Committee: Raising the bar*. Panama City: BIS.

capital ratio is between 3.4% and 4.2%, mainly due to its recent negative results. The possible exception of considering CoCos as CET1 capital is significant to both banks as, if there is no exception, they will not comply with the minimum capital ratios in the case of no capital generation. If they generate the required capital to repay CoCos according to their capitalization plans, they will be able to comply with the minimum capital ratios.

The decrease of ESFG's core capital ratio is 3.6%, largely due to BES' NCIs. The decrease of BES' capital ratio is 1.5%, less than the 3% decrease in the minimum core capital ratio; thus, BES' excess core capital will increase under Basel III. We believe this group should have no difficulties complying with Basel III's minimum capital requirements.

The possibility that a common entity will supervise European banks is currently being discussed, and there have been developments regarding this "banking union" indicating its implementation in 2014[28]. This could accelerate the issuance of the CRD IV's final text, including detailed liquidity ratios, as it seems European countries are finding some common ground in their discussions regarding banking supervision. The "banking union" could also contribute to greater uniformity in the calculation of banks' capital; e.g., the risk weights assigned to exposures through banks' internal models as these risk weights vary widely between southern and northern Europe. We believe that a "banking union" would have a positive impact on the banks analyzed.

Further studies could evaluate the impact of Basel III taking into consideration future scenarios regarding the Portuguese economy and credit portfolios' quality.

[28] **Council of the European Union** 2012. *Council agrees position on bank supervision.* Brussels.

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Appendices

Exhibit 1

Table 4: Acronyms

BCBS	Basel Committee on Banking Supervision
WP	Work Project
BCP	Banco Comercial Português, S.A.
BPI	Banco Português de Investimentos, S.A.
ESFG	Espírito Santo Financial Group S.A
BES	Banco Espírito Santo S.A.
EU	European Union
BoP	Bank of Portugal
EC	European Comission
BIS	Bank for International Settlements
RWA	Risk Weighted Assets
IRB	Internal-ratings-based
CRD	*Capital Requirements Directive*
CET1	Common Equity Tier 1
AT1	Additional Tier 1
T2	Tier 2
CT1	Core Tier 1
CGD	Caixa Geral de Depósitos
EEA	European Economic Area
NPLs	Non-performing loans
EBA	European Banking Authority
CoCos	Contingent convertibles
NCIs	Non-controlling interests
AFS	Available-for-sale
DTAs	Deferred tax assets
DTLs	Deferred tax liabilities
ECB	European Central Bank
NSFR	Net Stable Funding Ratio
LCR	Liquidity Coverage Ratio

Exhibit 2

Table 5: From CT1 to CET1 without an exception regarding CoCos

(€ million)	BCP	BES	BPI	ESFG
Current CT1	6.738	6.708	3.691	6.442
Excess of expected IRB losses over existing impairment allowances	-411	-75	0	-75
Non-compliant hybrid instruments included in CT1	-3.000	0	-1.551	0
Minority interests in non-banking entities or non-CET1 instruments	0	-92	-8	-376
Excess of minority banking interests above the regulatory minimum	-154	-159	-158	-1.094
Negative AFS and cash flow hedging reserves added back to CT1	-199	-131	-845	-74
DTAs that rely on future profitability	-475	-64	-104	-89
Defined benefit pension deficit	-320	-194	-149	-194
Preliminary CET1	2.178	5.992	877	4.539
DTAs: rely on future profitability and arise from temporary differences	1.105	697	630	709
Excess above 10% of Preliminary CET1 -> deduction	-888	-98	-543	-255
Significant investments in financial institutions	415	536	183	574
Excess above 10% of Preliminary CET1 -> deduction	-197	0	-95	-120
Sum of non-deducted DTAs (temp. Diff.) and significant investments	436	1.135	175	908
Excess above 15% of Preliminary CET1 -> deduction	-109	-236	-44	-227
Common Equity Tier I	984	5.658	196	3.937

Exhibit 3

Table 6: From CT1 to CET1 with an exception regarding CoCos

(€ million)	BCP	BES	BPI	ESFG
Current CT1	6.738	6.708	3.691	6.442
Excess of expected IRB losses over existing impairment allowances	-411	-75	0	-75
Non-compliant hybrid instruments included in CT1	0	0	-51	0
Minority interests in non-banking entities or non-CET1 instruments	0	-92	-8	-376
Excess of minority banking interests above the regulatory minimum	-154	-159	-158	-1.094
Negative AFS and cash flow hedging reserves added back to CT1	-199	-131	-845	-74
DTAs that rely on future profitability	-475	-64	-104	-89
Defined benefit pension deficit	-320	-194	-149	-194
Preliminary CET1	5.178	5.992	2.377	4.539
DTAs: rely on future profitability and arise from temporary differences	1.105	697	630	709
Excess above 10% of Preliminary CET1 -> deduction	-588	-98	-393	-255
Significant investments in financial institutions	415	536	183	574
Excess above 10% of Preliminary CET1 -> deduction	0	0	0	-120
Sum of non-deducted DTAs (temp. Diff.) and significant investments	932	1.135	420	908
Excess above 15% of Preliminary CET1 -> deduction	-156	-236	-64	-227
Common Equity Tier I	4.434	5.658	1.921	3.937

Exhibit 4

Table 7: BPI's capital ratios depending on its unrealized losses (values in € million).

As planned							
Phased In		Base case		No losses in Portuguese bonds		No AFS/Cash Flow hedge losses	
Deductions		**BPI**: RWA = 25,410		**BPI**: RWA = 25,410		**BPI**: RWA = 25,410	
2013		2.907	11,5%	2.907	11,5%	2.907	11,5%
2014	20%	2.785	11,1%	2.887	11,5%	3.048	12,1%
2015	40%	2.662	10,6%	2.868	11,4%	3.188	12,7%
2016	60%	2.540	10,1%	2.848	11,3%	3.329	13,2%
2017	80%	2.285	9,1%	2.695	10,7%	3.337	13,2%
2018	100%	1.896	7,5%	2.409	9,6%	3.211	12,7%

As displayed in the table above, if BPI recovers from its current unrealized losses concerning securities in the AFS portfolio and cash flow hedge, it would have a large amount of excess capital; the recovery of the Portuguese bonds' prices is essential to this.

The column "No losses in Portuguese bonds" takes into consideration, as the only change from the base case, no unrealized losses in the Portuguese bonds in the AFS portfolio. There is a large position in interest rate derivatives and no information about their underlying assets; thus, we assume none are directly related to Portuguese bonds. We assume that DTAs generated by unrealized losses in Portuguese bonds are the same percentage as in the whole AFS portfolio, close to 30% of the associated losses.