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Basel II: Operational Risk Measurement in the Portuguese Banking Sector and an Evaluation of the Quantitive Impacts

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RESUMO/ABSTRACT

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The present work is aimed at understanding the general notion and origin of the New Basel Accord, which intends to attain international bank stability, emphasizing the convergence between regulatory capital and economic capital, applying its risk sensitive methodologies. This work focuses on one of the principal novelties of Basel II – operational risk and its respective methodologies for calculating minimum capital requirements. The New Capital Accord encourages financial institutions to gradually evolve from basic to sophisticated methodologies. Institutions using more sophisticated methods will be rewarded by deductions on the capital allocated for the calculation of the capital ratio. The methodologies associated to operational risk will be applied to a group of national banking institutions. These methodologies are referred to in Pillar I of the New Capital Accord: (i) basic indicator approach, (ii) the standardized approach and (iii) the alternative standardized approach. The purpose of this practical application is to evaluate and quantify the impact due to the introduction of Basel II.

JEL Classification: G14, G21, G28, G32.
Keywords: Basel II, Operational Risk, Regulatory Capital and Economic Capital.

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BASEL II: OPERATIONAL RISK MEASUREMENT IN THE PORTUGUESE BANKING SECTOR AND AN EVALUATION OF THE QUANTITIVE IMPACTS

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Abstract

The present work is aimed at understanding the general notion and origin of the New Basel Accord, which intends to attain international bank stability, emphasizing the convergence between regulatory capital and economic capital, applying its risk sensitive methodologies. This work focuses on one of the principal novelties of Basel II – operational risk and its respective methodologies for calculating minimum capital requirements. The New Capital Accord encourages financial institutions to gradually evolve from basic to sophisticated methodologies. Institutions using more sophisticated methods will be rewarded by deductions on the capital allocated for the calculation of the capital ratio. The methodologies associated to operational risk will be applied to a group of national banking institutions. These methodologies are referred to in Pillar I of the New Capital Accord: (i) basic indicator approach, (ii) the standardized approach and (iii) the alternative standardized approach. The purpose of this practical application is to evaluate and quantify the impact due to the introduction of Basel II.

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Introduction

The present work aims at transmitting a general idea of the New Basel Capital Accord, also known as Basel II, focusing specifically on its main novelty - operational risk.

The main objectives of Basel II are to maintain international stability in the banking system and to create a unique methodology for calculating minimum capital requirements for internationally active banks. With the complex and consecutive transformations in the banking sector, this methodology was adapted to the banking reality, fortifying the minimum capital requirements in financial institutions. With these ongoing transformations in the banking activity, different types of losses began to occur, diverging from the losses due to the traditional risks, consequently appearing operational risk.

This work investigates the benefits of the application of different methodologies introduced by Basel II, for operational risk, in the Portuguese banking sector. We intend to evaluate the impact of a more sophisticated methodology versus a basic one, registering both the advantages and disadvantages.

Basel II, fortifies the minimum capital requirements in financial institutions. These minimum requirements can be calculated through several methodologies and are more sensible to the existing risk in each institution, stimulating more efficient risk management. Basel II, besides the objectives already mentioned, has also introduced the following concepts:

1. Improve risk measurement and management, keeping adequate levels of liquidity, solvency and solidity;
2. Converge regulatory capital and economic capital;

3. Increase the dialogue between the National Supervisor and the financial institutions, referring risk measurements and management; and
4. Increase market discipline, bank transparency and information.

The New Basel Accord aims at converging economic capital and regulatory capital. The use of more sophisticated methods for calculating an institutions risk will be rewarded with less levels of capital (IFB, 2006).

According to Jaime Caruana (2005), the previous President of the Basel Committee, the more risk sensible the methodology is for calculating minimum capital requirements, regulatory capital will be better adjusted to the institutions risks and will be closer to economic capital.

Basel II was implemented on January 1, 2007 in the G10 countries. It is built on three pillars as can be observed in Figure 1 [Insert Figure 1].

Pillar III of the New Basel Accord has the objective to assure better transparency on the financial situation and solvency of the institutions, allowing the market to create a more precise analysis of banks´ profile and risk, applying incentives to fortify financial institutions risk management and levels of capital (IFB, 2006).

In Pillar II, the national supervisor, the Bank of Portugal, has the objective to assure that all national banks have sufficient minimum capital to face all incurred business risks. The national supervisor must also stimulate the development of techniques that improve risk management in banks.

Finally, Pillar I, assures that banking institutions withhold minimum capital requirements, sufficient to cover all existing risks.

According to Chorafas (2005), despite the concept of operational risk only having appeared now, these occurrences, associate to this type of risk, exist for a long time.

Fontnouvelle *et al.* (2003), refers to the importance of operational risk in regulatory capital, referring that the minimum capital requirements for operational risk, in some cases, can exceed the capital requirements for market risk.

There are two versions of the definition of operational risk. The first version, belonging to the BCBS, as expressed in its documents, defines operational risk as the risk of loss resulting from inadequate or failed internal control, human resources and systems or from external events, including legal risk (BCBS, 2006). The second version, expressed by the Bank of Portugal in *Aviso* n.º 3/2006, will have that to converge to the definition in the Basel II framework. This *Aviso* defines operational risk as being the risk of losses as a result of the inadequate or negligent application of internal procedures, human resources and systems or from external causes.

Similarly as what happens to credit risk, financial institutions will also be able to choose between three methods for calculating minimum capital requirements for operational risk, each more sophisticated and risk sensitive (IFB, 2006).

As pointed out by Mori and Harada (2001); Sundmacher (2004); Currie (2004a, 2004b and 2005); and Jobst (2007), with even bigger relevance the BCBS (2006), the calculation of the minimum capital requirements is effectuated by three distinct methods.

The Basic Indicator Approach (BIA), as the name indicates, is the simplest. Capital charge is a fixed percentage of the annual gross income, as indicated by the BCBS. In the standardized approach (TSA), institutions must map their activities in eight distinct Business Lines (BL). In this situation, the annual gross income for each BL is multiplied by a specific β, associated to each activity. Finally, the advanced measurement approach (AMA), institutions will be able to use internal models with capacity to measure operational risk and the minimum capital to be allocated.

With the intention to seek existing information on operational risk, the Risk Management Group (RMG), a specific branch of the BCBS, proceeded to obtaining data from 89 financial institutions from 19 countries in Europe, North and South America, Asia and Australia. The treatment of this data had the objective to gather information concerning operational losses during 2001, the allocation of capital for operational risk, and the expected operational losses associated to each banks BL (RMG, 2003).

With this investigation the RMG concluded that the banking sector is evolving quickly in what relates to the retraction of data for operational risk purposes. On the other hand, financial institutions are still developing methods for properly retrieving this data (RMG, 2003).

Moscadelli (2004) used the data collected by the RMG in 2002, and treated this data statistically. With this work, Moscadelli (2004) obtained a relationship between the average gross income and capital charge for each BL. This contribution by Moscadelli (2004) makes it possible to calculate the average gross income per BL, these values are still difficult obtain in a financial institution´s annual report.

Both authors, Fontnouvelle *et al.* (2003) and Moscadelli (2004), concluded that there exists two obstacles when analyzing operational losses. In first place, the quality of the retracted data can be dubious and in second place, there are operational losses that are not registered by the financial institutions.

Sundmacher (2004) begins his work from the idea that there are advantages to applying a more advanced methodology, meaning that less capital will be allocated for operational risk, as referred by the BCBS. The author questions the situation where a bank generates activities primordially with superior β´s. In this case, the institution will have to allocate more capital when using TSA than the BIA, without having any

incentives in developing advanced models for operational risk. Sundmacher (2004) concluded that there should exist a system of rewards, this is, an incentive for financial institutions to progress and develop advanced methodologies.

As referred before, the use of a more sophisticated method in calculating minimum capital requirements, is rewarded by a lower level of capital to be allocated. Sundmacher (2007) effectuated simulations, estimating the amount of capital to be allocated for the National Australia Bank. Using the banks annual gross income from its annual reports from 2001 to 2004, the author calculated the capital charge for operational risk for both the BIA and TSA. For TSA, Sundmacher (2007) distributed the annual gross income equally into the eight BL, elaborating different scenarios.

This author concluded that the financial incentive to evolve from the BIA to the TSA was minimum. Of the three elaborated scenes, only in one situation existed benefits in evolving from the BIA to TSA, differing from the concept that the application of a more sophisticated method consumes less capital.

The remainder of the paper is organized as follows. Section 2 presents the methodologies for calculating the minimum capital requirements for operational risk. The third section referrers to the empirical application of the methodologies developed by the BCBS and the concluding remarks are provided in the last section.

Methodology

Basic Indicator Approach

According to BCBS (2006), the capital requirements for operational risk must be equal to the average over three years of a fixed percentage of the annual Gross Income (GI) denoted as α. GI is defined as net interest income plus net non-interest income.

After concluding the Quantitative Impact Studies (QIS), the Basel Committee fixed α as 15%. The BIA is expressed by the following equation:

$$K_{BIA} = GI \times \alpha \quad (1)$$

where:

K_{BIA} = the capital charge under the Basic Indicator Approach;

GI = annual gross income, where positive, over the previous three years; and

α = 15%.

The BIA does not consist of any specific criteria to eligible for applying, however, banks are encouraged to comply with the committee´s guidance on *Sound Practices for the Management and Supervision of Operational Risk* (February of 2003) (BSBC, 2006).

The Standardized Approach and Alternative Standardized Approach

The Standardized Approach

As stipulated by the BCBS (2006), this method foresees that banks´ activities are mapped into eight specific BL. Each BL is assigned a factor denoted as β, as can be observed in Table 1 [Insert Table 1].

The factor β for each BL was previously defined by the Basel Committee, and reflects historical operational losses. The capital charge for TSA is the sum of the GI of each BL multiplied by its respective β. TSA can be expressed by the following equation:

$$K_{TSA} = \sum \left(GI_i \times \beta_i \right) \quad (2)$$

where:

K_{TSA} = the capital charge under the Standardized Approach;

GI_i = annual gross income in a given year, as defined above in the BIA, for each of the eight BL, where *i*= 1, 2, 3… 8; and

β_i = a fixed percentage, set by the Committee for each of the eight business lines, where *i*= 1, 2, 3… 8.

The Alternative Standardized Approach

The Alternative Standardized Approach (ASA) is similar to TSA, except for the treatment given to two BL: retail and commercial banking. For these BL the variable GI is substituted by the variable Loans and Advances (LA), which can be retracted from the banks´ annual reports. The values of LA associated to retail banking and commercial banking are multiplied by a fixed factor *m* (3.5%) and then multiplied by there respective *β*´s, 12% and 15%. It is permitted to join the two BL applying a *β* of 15%. The capital charge can be expressed by the following equation:

$$K_{ASA} = \sum \left(GI_i \times \beta_i\right) + \left(LA_{RB/CB} \times m \times \beta_{RB/CB}\right) \quad (3)$$

where:

K_{ASA} = the capital charge under the Alternative Standardized Approach;

GI_i = annual gross income in a given year, as defined above in the BIA, for each of the eight BL, where *i*= 1, 2, 3… 8;

β_i = a fixed percentage, set by the Committee for each of the eight business lines, where *i*= 1, 2, 3… 8;

$\beta_{i/RB/CB}$ = a fixed percentage, set by the Committee for each BL, retail banking and commercial banking, where *i*= 1, 2, 3…8;

$LA_{RB/CB}$ = loans and advances (average of the last three years) for retail and commercial banking; and

m = 3,5%.

For both TSA and ASA it is of great importance to classify an institutions activities in there respective BL as shown in Table 2 [Insert 2 Table].

Advanced Measurement Approach

This last method foresees that financial institutions elaborate an internal operational risk measurement system using quantitative a qualitative criteria. Institutions will calculate capital charge as the sum of expected losses (EL) and unexpected losses.

The following equation expresses how to calculate capital charge under de AMA:

$$K_{AMA} = \sum (EL + UL) \tag{4}$$

where:

K_{AMA} = the capital charge under the Advanced Measurement Approach;

EL = Expected Losses; and

UL = Unexpected Losses.

Empirical Results

Although the Portuguese economy has grown at moderate levels, the banking sector continues to register a quick expansion. The continuous expansion in the Portuguese banking sector is due to, essentially, to the growth in loans and advances. This growth in the banking sector was accompanied by higher solvency levels and greater levels of bank return (Relatório de Estabilidade Financeira, 2006).

The methodologies used for calculating capital charge for operational risk was applied to seven, well known financial institutions in Portugal:

1. Banco Espírito Santo (BES);

2. Banco Internacional do Funchal (BANIF);
3. Banco Português de Investimentos (BPI);
4. Caixa Geral de Depósitos (CGD);
5. Millenium BCP (BCP);
6. Montepio Geral (MG); and
7. Sistema Integrado Crédito Agrícola Mútuo (SICAM).

Due to the impossibility of retraction of internal data on operational losses, as referred by authors such as Rowe (2004), Currie (2005) and Sundmacher (2007), the AMA will not be applied to these banks in the Portuguese sector.

The value of the GI was extracted from the banks´ annual reports between 2002 and 2006, as can be observed in Table 3 [Insert Table 3].

BCP leads with the highest GI, attaining 2.703.700 thousands of euros in 2006, distinguishing itself from the remaining institutions. CGD and BES rank second and third positions. Ranking last is BANIF with a GI of 194.909 thousands of euros, in 2006.

As referred in the previous chapter, GI is the average of the last three years when positive. For example, the GI for 2007 is the average GI during 2004, 2005 and 2006, as can be observed in Table 4 [Insert Table 4]. At this point it is possible to calculate capital charge for the BIA and TSA.

For the ASA we must first extract the values for LA from the annual reports and calculate the average of the last three years for both retail and commercial banking.

As observed in Table 5 [Insert Table 5], BCP leads with 57.912.000 thousands of euros in LA, while CGD and BES rank, once again, second and third. Ranking last, as observed with GI is BANIF. The ranking in this table is similar to the ranking of GI with the exception of MG and SICAM which invert position. The data in Table 6 [Insert

Table 6] shows the average of the last three years of LA. At this point it is also possible to calculate capital charge of these Portuguese institutions using the ASA.

Basic Indicator Approach

In accordance with the BCBS (2006) and the *Aviso* n.º 9/2007 of the Bank of Portugal, the capital charge using equation 1 from the previous chapter was applied, resulting the data in Table 7 [Insert Table 7].

This Table shows the capital charge for the seven Portuguese banks using the BIA. With this analysis we can easily observe a linear relation between GI and capital charge, due to the fact that capital charge is a fixed percentage of GI. We can verify that BCP will allocate the most capital for operational risk with 367,450 thousands of euros in 2007. Ranking in last place is BANIF, allocating 27,047 thousands of euros in 2007.

The Standardized Approach

To apply this methodology financial institutions must map there activities accordingly into eight BL as pointed out in the previous chapter. GI will also have to be divided into each BL, every fraction being multiplied by a fixed percentage β as defined for every BL. Capital charge is equal to the sum of multiplication between the eight fractioned GI and there respective β´s.

Basel II introduced some difficulties into the banking sector, that is, banks were not prepared for more advanced methodologies. In this section we face the obstacle of the majority of institutions not having the necessary information in there annual reports for analysis. The decomposition of GI per BL, that is, the classification of activities per BL as introduced by Basel II is still not complete in many institutions.

In the study elaborated by Moscadelli (2004), the author concluded on the decomposition of GI per BL as seen in Table 8 [Insert Table 8], he concluded these results having based himself on data retrieved from the RMG. This contribution by Moscadelli (2004), makes it possible to calculate, in average terms, the fraction of an institutions GI belonging to each BL and simultaneously calculating capital charge for operational risk for TSA and ASA.

As a result of the application of equation 2, we deduced Table 9 [Insert Table 9], with the capital charge to be allocated according to TSA.

In this case, the ranking of capital charge per institution is identical to the one of the BIA, that is, BCP continues to rank first place and BANIF ranks last. This is due to the fact that the decomposition of GI per BL is identical for all the financial institutions, as Moscadelli (2004) pointed out, in reality this is not so linear, bank activities can differ significantly from institution to institution.

Alternative Standard Approach

In this methodology, such as in the previous one, financial institutions must classify there activities accordingly into the eight BL. This methodology differs from previous one in what respects retail and commercial banking. For these two BL, GI will be substituted by the value of LA associated to these two BL. Similar to what happened in TSA, in this approach we notice that LA are not divided into BL in banks´ annual reports, being therefore used for this effect the results obtained by Moscadelli (2004) for GI, as decomposed in Table 8. As can be observed in the Table, the combined weight of GI for retail and commercial banking is 54,4%. This reference was used to distinguish the fraction of LA for both retail and commercial banking. This decomposition of LA may not be a rigorous representation of reality but significant divergences are not

expected. Table 10 [Insert Table 10] represents the values referring to 54.4% of the initial value obtained for LA for every institution.

Appling equation 3 results in Table 11 [Insert Table 11], which represents capital charge for the ASA.

As can be observed in Table 11, capital charge for the ASA results in a ranking similar to TSA, with the exception of MG and SICAM, which invert positions. This is due to the fact that MG has a greater amount of LA than SICAM.

This occurred because an independent variable (LA) was introduced to the equation. The more independent variables are introduced to the equations used to calculate minimum capital requirements, capital charge begins to converge with the banking reality. Basic methodologies, based in fixed values, result in capital charges which may not be a clear image of the operational risk existing in a bank.

Results Analysis

As can be observed, the results of the application of the three methodologies, BIA, TSA and ASA are presented in Table 12 [Insert Table 12], we verify that the impact in progressing from BIA to TSA is identical in all the institutions. This occurrence is due to the fact of the decomposition of GI, being identical for every institution. We can observe a decrease of approximately 3.20% in capital charge in using TSA. The ASA showed that the introduction of LA to the equation had significant results in the various institutions. Specifically, BCP, BES and SICAM, decreased there capital charge, varying from 5% to 16%. The inverse situation also occurs, the cases of BPI, MG and BANIF showed an increase in capital charge which varies from 1% to 22%. The case of CGD is peculiar, capital charge starts by decreasing in 2005 and then increases in 2006

and 2007. Another analysis also evidenced here, is the option of an institution progressing directly from BIA to the ASA. This analysis shows that this option is favorable to all the financial institutions, with the exception of BPI and MG. BPI would have an increase in capital charge of about 1%, which is insignificant. The case of MG is more severe, the increase in capital charge would reach 18% in 2007. Maintaining TSA in this case is more advantageous for MG. The increases in capital charge of BPI and MG are due to the introduction of the variable LA. The remaining institutions showed significant reductions in capital, in some cases, as for example SICAM, the decrease reached 18.5%.

Concluding Remarks

Basel I satisfied its initial objectives during many years, guaranteeing financial stability of the international banking system. However, the fast transformation in the banking sector requested that Basel I revised its framework. The New Capital Accord, Basel II, came to fortify minimum capital requirements in financial institutions, improving the levels of solvency and solidity of each institution.

In the present work, beyond the application of the methodologies for operational risk, we verified the axiom that is constantly referred to in the Basel Framework and studies elaborated by other authors. This axiom is based on the fact that the application of an advanced or sophisticated methodology will benefit a bank, decreasing capital charge for operational risk.

According to the elaborated analysis in the previous chapter and considering the results pointed out by Moscadelli (2004), we verify that, when abdicating of the BIA and adopting TSA, the financial institutions will benefit of a capital charge reduction of,

approximately, 3.2%. This conclusion was similar to the one Sundmacher (2007) obtained, opting for TSA over the BIA, capital charge will decrease although insignificantly.

On the other hand, we must be conscious that these results will depend on the activities dominated by each institution. As Sundmacher (2004) referred in his study, an institution that dominates BL with greater β´s , for example, 18%, will allocate more capital in an advanced methodology, being more advantageous applying the BIA, which has an α of 15%. The opposite may also occur, when institutions dominate BL with smaller β´s, for example, 12%. In this last situation, the institution will allocate less capital using TSA.

In the last methodology, ASA, we verified diversified results, the introduction of the variable LA influenced capital charge to increase or decrease in comparison to TSA. We also verified that in the majority of the banks, progressing from BIA to ASA is, in general, advantageous, that is, less volume of capital to allocate.

The contribute of this work consisted on evaluating the benefits of the use of a more sophisticated methodology set out by the Basel Committee for each one of the seven Portuguese banking institutions. As referred previously, progressing from BIA to TSA is beneficial for all institutions, the second choice, progressing directly from BIA to ASA is equally favorable. The use of the more advanced methodologies TSA and ASA are limited to the mapping of banks´ activities, which as we can observe in there annual reports are still in need of some structuring.

In what says respect to the application of the ASA, institutions will have to evaluate its situations better. In the case of four institutions, CGD, BPI, MG and Banif, it is preferable to remain in TSA, especially in the case of MG where capital charge increases, approximately 22%. On the other hand, BCP, BES and SICAM benefited

with the application of the ASA, SICAM benefited with a decrease of approximately 16%. In the case of progressing directly from BIA to ASA, institutions can save up to 18,5% of capital, which is the case of SICAM, however, they can lose up to 18%, such as MG.

As Currie (2004b) referred in her work, significant increases in capital charge can have negative consequences in institutions, that is, they may desire to increase the general level of prices which can result in a credit crunch.

Although there have been significant progresses in recent years, Holmes (2003) refers that there are still obstacles when analyzing operational risk. First, operational risk is very hard to be correctly quantified. Second, while credit risk can easily be identified, it is difficult to evaluate if all operational risk situations have been included. In third place, certain risks can lose there relevance in an institution throughout time. Finally, the difficulty in validating a good method of calculating capital charge decreases its own reliability.

Currie (2005) refers that the greatest obstacle in operational risk is that, non-measurable factors cannot be controlled and that quality cannot be measured, therefore, cannot be controlled.

Throughout the years, Basel II will undergo various changes, improving every detail. Information for analysis will become easier to retrieve from annual reports due to the rigidness of both the Supervisory Review Process and Market Discipline. In this perspective, it is important to analyze the advanced methodologies (AMA) and conclude on there impacts on financial institutions.

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Appendices

Figure 1. Basel II Pillars

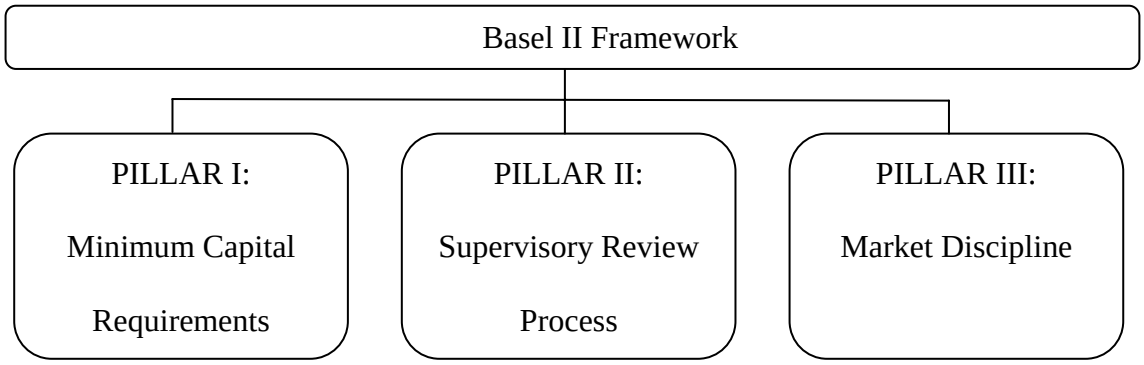

Table 1. Business Lines and β Factors

BL	***β***
Corporate Finance (β_1)	18%
Trading and Sales (β_2)	18%
Retail Banking (β_3)	12%
Commercial Banking (β_4)	15%
Payment and Settlement (β_5)	18%
Agency Services (β_6)	15%
Asset Management (β_7)	12%
Retail Brokerage (β_8)	12%

Source: BCBS (2006)

Table 2. Mapping of Business Lines

BL	Activity Groups
Corporate Finance	1. Mergers and acquisitions, underwriting, privatisations, securitisation, research, debt (government, high yield), equity, syndications, IPO, secondary private placements
Trading and Sales	1. Fixed income, equity, foreign exchanges, commodities, credit, funding, own position securities, lending and repos, brokerage, debt, prime brokerage
Retail Banking	1. Retail lending and deposits, banking services, trust and estates 2. Private lending and deposits, banking services, trust and estates, investment advice 3. Merchant/commercial/corporate cards, private labels and retail
Commercial Banking	1. Project finance, real estate, export finance, trade finance, factoring, leasing, lending, guarantees, bills of exchange
Payment and Settlement	1. Payments and collections, funds transfer, clearing and settlement
Agency Services	1. Escrow, depository receipts, securities lending (customers) corporate actions 2. Issuer and paying agents
Asset Management	1. Pooled, segregated, retail, institutional, closed, open, private equity 2. Pooled, segregated, retail, institutional, closed, open
Retail Brokerage	1. Execution and full service

Source: BCBS (2006)

Table 3. Annual Gross Income

	2002	2003	2004	2005	2006
BCP	2.353.000	2.674.500	2.242.400	2.402.900	2.703.700
CGD	1.992.880	1.880.102	1.941.284	1.772.738	2.093.611
BES	1.354.000	1.432.200	1.431.000	1.537.700	1.704.800
BPI	751.000	774.900	809.800	898.800	1.018.100
SICAM	364.724	380.832	396.075	394.854	432.584
MG	311.658	294.064	306.662	347.198	367.949
BANIF	142.600	151.096	162.674	183.354	194.909

Values in Thousands of Euros.

Table 4. Three Year Average of Gross Income

	2005	2006	2007
BCP	2.423.300	2.439.933	2.449.667
CGD	1.938.089	1.864.708	1.935.878
BES	1.405.733	1.466.967	1.557.833
BPI	778.567	827.833	908.900
SICAM	380.544	390.587	407.838
MG	304.128	315.975	340.603
BANIF	152.123	165.708	180.312

Values in Thousands of Euros.

Table 5. Loans and Advances

	2002	2003	2004	2005	2006
BCP	45.451.000	49.177.000	49.939.000	54.038.000	57.912.000
CGD	45.204.000	45.006.000	46.619.000	49.936.000	57.268.000
BES	25.795.000	26.042.000	28.487.000	31.662.000	35.752.000
BPI	19.738.000	20.690.100	21.958.900	24.409.200	28.263.000
MG	9.970.119	10.141.287	10.653.708	12.415.395	13.660.648
SICAM	6.136.246	6.334.263	6.581.144	6.863.579	6.965.977
BANIF	3.948.239	4.184.365	3.715.532	4.685.195	5.342.949

Values in Thousands of Euros.

Table 6. Three Year Average of Loans and Advances

	2005	2006	2007
BCP	48.189.000	51.051.333	53.963.000
CGD	45.609.667	47.187.000	51.274.333
BES	26.774.667	28.730.333	31.967.000
BPI	20.795.667	22.352.733	24.877.033
MG	10.255.038	11.070.130	12.243.250
SICAM	6.350.551	6.592.995	6.803.567
BANIF	3.949.379	4.195.031	4.581.225

Values in Thousands of Euros.

Table 7. Capital Charge for BIA

	2005	2006	2007
BCP	363.495	365.990	367.450
CGD	290.713	279.706	290.382
BES	210.860	220.045	233.675
BPI	116.785	124.175	136.335
SICAM	57.082	58.588	61.176
MG	45.619	47.396	51.090
BANIF	22.819	24.856	27.047

Values in Thousands of Euros.

Table 8. Fraction of Gross Income per BL

BL	% PB
Corporate Finance	10,6%
Trading and Sales	17,3%
Retail Banking	36,0%
Commercial Banking	18,4%
Payment and Settlement	3,0%
Agency Services	3,8%
Asset Management	4,6%
Retail Brokerage	6,4%

Table 9. Capital Charge for TSA

	2005	2006	2007
BCP	351.904	354.320	355.733
CGD	281.443	270.787	281.122
BES	204.136	213.028	226.224
BPI	113.061	120.215	131.988
SICAM	55.261	56.720	59.225
MG	44.165	45.885	49.461
BANIF	22.091	24.064	26.184

Values in Thousands of Euros.

Table 10. LA for Retail and Commercial Banking

	2005	2006	2007
BCP	26.214.816	27.771.925	29.355.872
CGD	24.811.659	25.669.728	27.893.237
BES	14.565.419	15.629.301	17.390.048
BPI	11.312.843	12.159.887	13.533.106
MG	5.578.741	6.022.151	6.660.328
SICAM	3.454.700	3.586.589	3.701.140
BANIF	2.148.462	2.282.097	2.492.187

Values in Thousands of Euros.

Table 11. Capital Charge for ASA

	2005	2006	2007
BCP	318.098	327.511	336.552
CGD	274.596	273.636	290.610
BES	181.157	191.303	207.314
BPI	117.375	125.490	138.737
MG	51.938	55.148	60.332
SICAM	46.477	47.918	49.804
BANIF	22.608	24.332	26.512

Values in Thousands of Euros.

Table 12. Results Analysis

		Capital Charge		
		2005	**2006**	**2007**
BCP	**BIA**	363.495	365.990	367.450
	TSA	351.904	354.320	355.733
	ASA	318.098	327.511	336.552
CGD	**BIA**	290.713	279.706	290.382
	TSA	281.443	270.787	281.122
	ASA	274.596	273.636	290.610
BES	**BIA**	210.860	220.045	233.675
	TSA	204.136	213.028	226.224
	ASA	181.157	191.303	207.314
BPI	**BIA**	116.785	124.175	136.335
	TSA	113.061	120.215	131.988
	ASA	117.375	125.490	138.737
SICAM	**BIA**	57.082	58.588	61.176
	TSA	55.261	56.720	59.225
	ASA	46.477	47.918	49.804
MG	**BIA**	45.619	47.396	51.090
	TSA	44.165	45.885	49.461
	ASA	51.938	55.148	60.332
BANIF	**BIA**	22.819	24.856	27.047
	TSA	22.091	24.064	26.184
	ASA	22.608	24.332	26.512

Values in Thousands of Euros.

		Percentage Variation		
		2005	**2006**	**2007**
BCP	**BIA/TSA**	-3,19%	-3,19%	-3,19%
	TSA/ ASA	-9,61%	-7,57%	-5,39%
	BIA/ ASA	-12,49%	-10,51%	-8,41%
CGD	**BIA/TSA**	-3,19%	-3,19%	-3,19%
	TSA/ ASA	-2,43%	1,05%	3,38%
	BIA/ ASA	-5,54%	-2,17%	0,08%
BES	**BIA/TSA**	-3,19%	-3,19%	-3,19%
	TSA/ ASA	-11,26%	-10,20%	-8,36%
	BIA/ ASA	-14,09%	-13,06%	-11,28%
BPI	**BIA/TSA**	-3,19%	-3,19%	-3,19%
	TSA/ ASA	3,82%	4,39%	5,11%
	BIA/ ASA	0,51%	1,06%	1,76%
SICAM	**BIA/TSA**	-3,19%	-3,19%	-3,19%
	TSA/ ASA	-15,90%	-15,52%	-15,91%
	BIA/ ASA	-18,58%	-18,21%	-18,59%
MG	**BIA/TSA**	-3,19%	-3,19%	-3,19%
	TSA/ ASA	17,60%	20,19%	21,98%
	BIA/ ASA	13,85%	16,36%	18,09%
BANIF	**BIA/TSA**	-3,19%	-3,19%	-3,19%
	TSA/ ASA	2,34%	1,11%	1,25%
	BIA/ ASA	-0,92%	-2,11%	-1,98%