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Author: 0080426112
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# Basel regulations and its future impact on return on equity risk and banking.

# Abstract - Thesis Proposal

Following several crises, the Basel Committee of Banking Supervision (BCBS) has revised and implemented different and more strengthened rules related to capital adequacy. The regulations have been modified several times with different frameworks and requirements. Impact on future RoE is vague for the banking system including the fact that the return on equity has been diminished by the post crisis environment, therefore the contribution and impact of regulations intends to strengthen the banks' capital but also presents an impact on the RoE itself. Today, banks have to manage the RoE by cutting costs and adjusting prices. With further adjustments in Basel III, by 2019 the industry will require around 1.1 trillion euro of additional Tier 1 capital, 1.3 trillion euro of short-term. Therefore, regulations have and will have a significant impact on the entire banking system, risk and ALM. There's an urgent need to understand how small and medium size banks will handle future changes or will we move to an era of only medium and big size banks, considering the slow growth environment and further strengthened regulations.

Regulations have their impact on different sides, such as risk, capital, liquidity and others, it is important to understand how exactly it can impact different types of banking, such as retail banking, investment banking and corporate banking. It is clear that all of them will be affected in different ways. It is most likely that certain segments of investment banking will be affected the most, in particular trading and securitization businesses. By further analysing the impact on different businesses and segments, it will be important to consider what business model and adjustments would be undertaken for improvement and higher/stable return for those banks. It is clear that Basel regulations would have a significant impact on RoE but the impact wouldn't be equal among different banks related to their businesses and structure.

The thesis will mainly focus on different aspects that affect the return on equity and risks of the banking system. Together with statistical data and analysis on the actual impact brought by regulations and capital requirement increase. Therefore, some impacts coming from the low profitability environment should be disregarded in order to clearly understand which role is played by regulations.

One of the important changes is the one that affects the risk management, especially in the credit and counterparty risk. It is today acknowledged that lending is more expensive and banks are confronted with higher weights of risk attributed to its assets. This part of the thesis will be mostly focusing on how strongly do regulations affect lending business and is there a positive or rather less optimistic environment in lending business. Regulators are actively participating in the so9called "internal rating model" and can today negotiate and impose its recommendations regarding one or another counterparty in lending business. Obviously there's a positive impact to lower the counterparty risk but the less enthusiastic picture regarding the actual business and how the imposed ratings can be affecting the longer term lending model. The banking future will be definitely closely depending on Basel regulations and regulations are its near and long term future. The main undeniable question remaining would be, would banks be able to totally offset Basel's impact on profitability and if not what could be the long-term solution for mitigation of this impact?

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# Assumptions

The assumptions and criticism related to the current regulatory environment are covering a large spectre of areas that have an important impact on the banking sector. Certainly one of the most important point that cannot remain unnoticed today is the profitability. The question is not concerning here a bankruptcy situation or the worst case scenario where the bank would have to have recourse to its recovery plan but rather to understand how the regulations are evolving and impacting the profitability.

It is required to raise the capital and also the liquidity, they're complementary but in a crisis situation would that be enough if the banks focus mainly on their capital due to requirements? It seems somehow that the liquidity plays the main role in a crisis situation.

In the low profitability environment, the regulators set higher requirements on the capital, pushing the banks to enter into riskier transactions and investments in order to raise their profitability, but most surprisingly, it has become clear today that even by taking higher risk the profit doesn't increase. This would be "breaking" the basic concept of profitability, higher risk doesn't generate higher profit anymore. By setting higher risk requirements and constant raise of capital requirement aren't the regulations creating an environment where systemic risk could come across? Nowadays, the reputational risk is one of the main factors of performance as well, so many banks deliberately enter into riskier strategies and deals in order to achieve the required standards. Therefore, the banks are constraint today to monitor even stronger the main risks but also try to create higher profitability mitigating the high risks as they're no longer guarantee for a high profitability in a low interest rate environment.

Currently, the regulators set a number of requirements and a "single formula solution" or the standardized approach in order to create a uniform benchmark across the financial institutions. But those do not distinguish between the types of businesses, the location country or the type of clients of the bank. The benchmark can provide a certain facility in terms of a standard regulation approach but doesn't it end up comparing "apples and pears"? Also, the interpretation of the reported ratios should be questioned as the reporting is done regularly on monthly and quarterly basis. The banks who are going through a restructuring process or a investing in a long term solutions, will show low levels of profitability with a strategy to grow over the long term. Here again the benchmark cannot compare the strategies withheld in the banks and does not consider the time frame that would be adapted to the process.

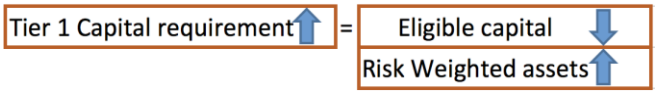
The impact on risk management and strategies, some focus on the capital and liquidity and others focus on how to monitor the main risks, increasing stress testing and risk strategy. The stress test should always be as close as possible to a real possible scenario. While the focus needs to combine both, the capital and liquidity as well as the risk factors and strategy. But here again, is there really a possibility to implement the same framework and principles within all the countries? One of the most important role of Basel regulations, that is usually not listed at first, is the importance of the ratios and straight compliance to those, is to send a signal not only to the regulator

but also and essentially to the market. Mostly relating here to the important reputational risk being considered nowadays very seriously to be ignored. The competitors tend to comply with the new regulations and to implement the frameworks as quickly as possible in order to remain competitive on the market.

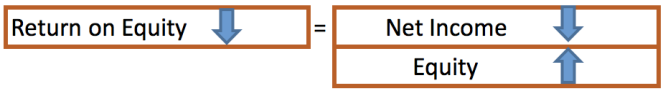
In the past the regulators required to establish an internal model, the so called "Advance Measure Approach" which was focused on the control and monitoring of the credit. The banks which save enough capital were allowed to decrease capital for coverage related to this precise credit. Since then the approach has changed. Also, Basel and local regulators have "an impact" on the lending. Certain loans cannot be given by the decision of local regulators and also can be weighted in relation to the Basel regulations, therefore allowing less income to flow in the business. By pushing the banks to to be even "well-capitalized" it could result in a reduced credit and lending business activity as well as availability or also, increase overall credit cost.

The main assumption would be how to deal with the impact on the return on equity from the minimum capital requirement imposed by the regulations? The implementation of Basel III took place in approximately quarter 3 in 2013. By analysing the RoE of several banks we can assume the direct short term impact on the value creation and RoE. Return on equity simplified:

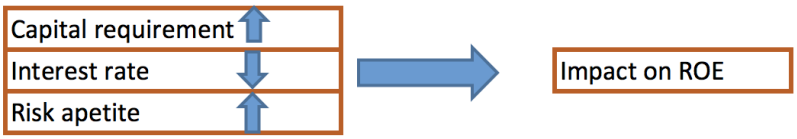
Capital buffer requirement:




Return on equity simplified:




In relation to the 2016 regulations and in the near future, how to be profitable for a bank in a:




Today's low interest rate environment is affecting the performance of financial structures by providing a low income despite a higher risk taking strategies. By raising the required capital attached to the equity, the return on equity is consequently reduced.

The aim is to understand how prudent is this approach in terms of coverage in a period of crisis and how efficient it is to generate or maintain a sufficient level of the return on equity to keep the businesses profitable.

# CHAPTER 1-Introduction, prudential ratios and their implications

## 1.1- Introduction and background of Basel regulations instructions and implementation.

Basel III is following the previous framework Basel II. It started to be implemented in 2013 and was extended to 2019. Different requirements to be implemented throughout the indicated period. It is a set of reform and measures, provided by the Basel Committee on Banking Supervision, in order to stabilize and strengthen the regulation, control and improve risk management of the banking sector. The aim of the measures is to improve the general ability to cover potential shocks, despite the nature, that might occur firm economic or financial stress situation. The instructions are also focused on the improvement of the governance itself and the risk management. In order to provide better frameworks, disclosures and transparency several reforms have been implemented since the Basel II regulations.

Basel III is a tougher environment that is focusing on the micro and macro prudential regulations in periods of stress. Raising integrity and resilience not only on bank individual level but also in the banking sector and so the market risks long term. The complementary approaches are efficient on individual bank level but also on the level of stability of risk in the market.

Basel proposals have as main objectives to strengthen the capital and liquidity globally and to improve the banking sector's to cover and absorb losses in a crisis. In order to achieve these goals, the main regulations are focused on the capital, the liquidity and the risk framework and management.

| Basel III | | |
|---|---|---|
| Capital | Liquidity | Risk |
| Consistency and Transperency<br>Buffers<br>Covers all risks<br>Controls the leverage | LCR - Short term<br>NSFR Long Term | Increased capital derivatives<br>Contigent capital<br>Inter-finance exposures<br>Capital for systemic banks |

*Figure 1*

*LCR: Liquidity coverage Ratio (explained under prudential raitos chapter 1, section 1.2)*
*NSFR: Net Stable Funding Ratio (explained under prudential raitos chapter 1, section 1.2)*

This is a 3 Pillar model, all contributing the financial stability, which is split as follows:

- Pillar 1: The minimum capital and liquidity requirements for credit risk, market risk and operational risk. Respectively to the approaches towards the risks; standardized approach with various Internal Rating Based approaches; Internal VaR models and other alternative standardized approaches.

- Pillar 2: The supervisory review process that is focusing on the framework for banks on their capital allocation (ICAAP) and risk management but also the supervisory framework that focuses on the assessment of risk profiles, internal systems, compliance and supervisory measures.

- Pillar 3: The market discipline that focuses on the disclosures required for banks, such as transparency for the participants on the market and a uniform comparability among different banks.

Following the crisis, the adjustments in the regulations have been necessary and were implemented almost imminently. The aim of the regulations had been initially to contribute to sustainable and balanced growth of the banking sector and to strengthen the international bank regulatory standards. The main focus and key principles of Basel III regulations is based on capital requirement, liquidity and risk management.

The post crisis reforms had substantial progress and the Basel Committee had mostly concentrated on:

- The variability of Risk-Weighted Assets for both banking and trading book. In order to avoid and reduce excessive RWA variations, a policy on the analysis of this has been proposed and a determined follow-up at individual bank's level.
- Reforms on a package relating to Internal ratings-based approaches relating to credit risk and RWA comparability
- Pillar 3 requirements which introduce a consistent pack of templates in order to harmonize disclosures and allow comparability
- Market risk framework standardizing the requirements of market risk models
- Standardized approaches on credit risk, operational risk and market risk.
- Capital requirement and floor reviewed and based on a standardized approach towards the credit risk, operational risk and market risk.

## 1.2- Prudential ratios: capital adequacy ratio, liquidity ratio, NSFR, leverage ratio.

The financial stability of a bank is jugged and valued through their ability to reach the required percentages in respective prudential ratios. Vice versa, the prudential ratios today determine how healthy is the financial stability and are allowing the analysis of it. It is important to determine how reliable are the figures presented by different financial institutions when it comes to comparing big size against smaller size banks as well as strong against weak business. This issue can be checked once comparing the ratios during a period of crisis. Therefore, the prudential ratios are a direct view on how well the banks are funded and consequently allow a larger view on the financial market.

Prudential ratios are used by both banks and regulators in order to maintain the financial stability and provide stability for financial institutions and the market. As the banks play an important role in the economy it is particularly important to provide and ensure the correct funding of the main two pillars: capital and liquidity.

- The Capital requirement focusing on the minimum capital requirement Tier 1 and Tier 2, as well as the conservative buffer of capital and the minimum common equity. All to be implemented throughout 6 years until 2019 reaching a minimum capital that would be 10.5%.

- Liquidity coverage ratio that is targeting over a 100% liquidity in 2019 and a minimum net stable funding ratio standard to be introduced in 2018.

The requirements are tougher than for the precedent Basel II regulations and have set a number of fears throughout the banks especially related to the funding The ratios implementation was extended on a period of almost 6 years, from 2013 to 2019, setting different target percentages and deadlines. In order to allow a smoother transition from prior regulatory requirements.

## The implications

The ratios are that they're set as a single framework for all types of businesses. But a private bank, a commercial bank, a depositary bank or a retail bank are businesses that cannot be benchmarked via the same set of ratios due to the difference in their profit strategies and risk monitoring. It is also important to understand how precise is the interpretation of the ratios as they're reported on monthly, quarterly and yearly ratio which is not allowing for a bigger picture in case of change in the balance sheet.

Basel Committee on Banking Supervision
BANK FOR INTERNATIONAL SETTLEMENTS

**Basel III phase-in arrangements**
(All dates are as of 1 January)

| | Phases | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| Capital | Leverage Ratio | | Parallel run 1 Jan 2013 – 1 Jan 2017 Disclosure starts 1 Jan 2015 | | | | Migration to Pillar 1 | |
| | Minimum Common Equity Capital Ratio | 3.5% | 4.0% | 4.5% | | | | 4.5% |
| | Capital Conservation Buffer | | | | 0.625% | 1.25% | 1.875% | 2.5% |
| | Minimum common equity plus capital conservation buffer | 3.5% | 4.0% | 4.5% | 5.125% | 5.75% | 6.375% | 7.0% |
| | Phase-in of deductions from CET1* | | 20% | 40% | 60% | 80% | 100% | 100% |
| | Minimum Tier 1 Capital | 4.5% | 5.5% | 6.0% | | | | 6.0% |
| | Minimum Total Capital | | 8.0% | | | | | 8.0% |
| | Minimum Total Capital plus conservation buffer | | 8.0% | | 8.625% | 9.25% | 9.875% | 10.5% |
| | Capital instruments that no longer qualify as non-core Tier 1 capital or Tier 2 capital | | Phased out over 10 year horizon beginning 2013 | | | | | |
| Liquidity | Liquidity coverage ratio – minimum requirement | | | 60% | 70% | 80% | 90% | 100% |
| | Net stable funding ratio | | | | | | Introduce minimum standard | |

* Including amounts exceeding the limit for deferred tax assets (DTAs), mortgage servicing rights (MSRs) and financials.
– – transition periods

*Figure 2*

### 1.2.1 Capital adequacy ratio minimum requirement

One of the most important requirements is the capital adequacy ratio, also known as a core measure of the bank's capital. The ratio is a percentage of the weighted assets of the bank. The main role of the ratio is to provide efficiency and stability of the financial market system. The depositors are also protected by the minimum capital.

$$CAR = \frac{(\text{Tier 1 capital} + \text{Tier 2 capital})}{\text{Risk Weighted assets}}$$

Tier 1 capital is covering the losses while the bank continues its banking activities. Common shares and retained earnings must constitute the predominant part of Tier 1. This capital identifies what would be the fair value of the bank.

Tier 2 capital is covering the losses in a situation where the bank has to sell its assets, paying off the creditors, the shareholders and dissolving the business; winding-up situation. This capital is considered as supplementary. The quality of both capitals is to be reviewed for transparency and consistency in order to achieve the correctness of interpretation and adequacy.

Risk weighted assets are the net present value of the debt of third parties that can be divided in various categories of risk assessment: Credit risk; Trading/Market risk; Operational risk.

The capital has to be matched with the level of each risk in each asset in order to avoid insolvency in the case of losses or if an asset loses value. The assessment is usually done by category of various risks related to the assets and most commonly the assets for banks are loans. The risk is considered through the source of repayment and also on the value attributed to the collateral.

Here below the requirements in percentage on each capital. The bank today tries to reach 12.5%, this is a safe buffer in order to maintain enough capital in the case of losses.

| | % | | | |
|---|---|---|---|---|
| | **Common Equity** | **Tier 1** | **Tier 2** | **BIS Capital** |
| **Minimum required** | 4.5 | 6 | 2 | 8 |
| **Conservative buffer** | 7 | 8.5 | 2 | 10.5 |
| **Cyclical buffer** | +0 to -2.5 of loss absorbing capital | | | 10.5-13 |

*Figure 3*

The minimum requirement of 8.5% for the Tier 1 capital was decided in Basel Committee on Banking Supervision, which is believed to cover shock situations. According to reports from Basel, no exact formula was established for the minimum requirement and the decision was taken by agreement.

### CaR - The implications

The main impact will be on banks that are riskier and also for small sized banks. Their RWA would reduce their minimum capital and will always demand for higher equity and common shares in order to reach the minimum. Instead for banks that are on the less risky lending activity, the main concern would be how to generate higher return and income. Therefore, the main implication of the CaR is its almost direct impact on risk appetite, income and equity affecting consequently the return on equity that has to show competitive profitability level to investors.

Also, there's a big incentive by banks to find lower risk assets with some return and leverage them. Is solvency enough to cover losses in a situation of a new crisis? This is one of the main concerns related to the capital and liquidity of a bank.

The increase on the RWA, (the denominator figure), is crucial to mitigate the regulations impact on the portfolio of a bank, though it remains a difficulty to estimate for each bank. The potential increase of the RWA is occurring due to the capital changes under Basel III.

### 1.2.2 Liquidity coverage ratio

Just as the CaR the liquidity coverage ratio remains one of the most important requirements. In 2016 it has to exceed 70% and the target is to exceed 100% by 2019 for all banks. This standard is to ensure that the banks hold liquid assets that can be converted to cash in 30 calendar days in case of an "emergency", this is tested by stress-tests imposed by regulators. Thirty days were wet as timeframe by stress test scenarios, where it is believed that the bank needs approximately 30 days to resolve and take action towards the situation without recourse to the Central Bank.

$$\text{LCR} = \frac{\text{high-quality liquid assets (HQLA)}}{\text{Cash outflow over 30 days (stress scenario)}} \geq 100\%$$

HQLA are the assets that can be liquidated and converted into cash in less the 6 days. In fact some banks sometimes hold only cash excluding even triple or high quality securities in order to achieve the "perfect" LCR percentage and quality.

### LCR - The implications

- The LCR defines how much HQLA banks have to hold; therefore, it is directly affecting banks' ability to lend short-term debt.

- The LCR has a direct impact on the decision of assets structure and also the funding profile of a bank. Therefore, the requirement here becomes decisive in terms of business structure.

- The interpretation might not be totally clear due to timeframe of reporting to the regulators, which is done on monthly, quarterly and yearly basis. This timing is including the "snapshot" of a certain moment and certain momentous structure of the balance sheet without explanation of the ratio. For instance, if a bank holds a long-term strategy and is currently under the process of restructuring, the ratio is not reflecting this core information and could be penalizing the bank's reputation after ratio interpretation.

- The different standards of accounting and reporting (GAAPs and IFRS) could be core as well for the reporting of the LCR.

The LCR involves efforts to create a plan for the banks decision making process, allowing managing its liquidity, which is linked to the capital to cover other risks and statement of income.

### 1.2.3 NSFR: Net stable funding ratio

The net stable funding ratio measures the medium and long term and stable sources of funding of the bank or institution. It is related to various profiles of liquidity of the assets funded and also for certain off balance sheet items such as obligations for example. There should be a minimum amount of funding that should remain stable over one-year horizon and the net ratio should be equal or higher than 100%. The ratio is directly related to factors of liquidity risk of assets

$$\text{NSFR} = \frac{\text{available stable funds over 1 year}}{\text{required stable fund over 1 year}} \geq 100\%$$

### NSFR - The implications

The NSFR may be considered as a compliment to the LCR as it is focusing on the funding for longer term and it is also contributing to the decisions towards the structure of the balance sheet and of the liquidity risk profiles. Although, compared to the liquidity coverage ratio it is a good measure once it is needed to see the long term perspective in the case of restructuring process or long term investment projects. Here it is the case to talk about stability on long term of the possible exposures occurring from the balance sheet and the off balance sheet.

### 1.2.4 Leverage Ratio

The leverage ratio is part of Tier 1 and is the relation between the capital and the exposure of the total average of the assets of the bank and some off balance sheet exposures that includes also derivatives. The ratio is also used in order to measure the level of capital adequacy and to limit or control the level of leveraged capital.

$$\text{Leverage ratio} = \frac{\text{Capital measure}}{\text{Exposure measure}}$$

In relation to the assets of the bank it is important to understand how much the bank is leveraged. If the ratio is high, the bank is more likely to be able to stand in a period of shocks. The requirement for the ratio is a minimum of 3% although it might vary for the size of bank's assets or the type of business. For instance depositary banks must maintain a buffer close to 6% and banks that have over 10 trillion assets mist maintain 5% buffer of Tier 1 leverage buffer. Overall similarly to other ratios, the leverage ratio restrains the excess of leveraging and provides the stability of the financial system.

#### LR - The implications

The "risk insensitive" impact is one of the most important implications related to the ratio. The ratio is "non-risk based" measure and the capital measure under Basel III is a risk based which is not a "unique" risk based measure overall. This may increase the risk-taking strategy of banks to achieve benefits in order to hold more capital.

There's a trade-off observed between taking higher risk and additional loss absorbing capacity. Obviously, increased incentive to take higher risk is more weighted by the increase in the loss absorbing capacity so incentivizing to lend to more stable banks. The banks can take higher risk as the ratio reduces the marginal cost of risk taking.

By analysis, the European banks would increase their RWA to its total assets leading to the leverage ratio being increased by 1.5% to 2% more than if there was no leverage ratio requirement. Moreover, this insignificant increase in the strategy of risk taking is obviously compensated by strong increase in capital positions for banks that are importantly leveraged. The result being a lower probability of shocks for banks that are bound by the leverage ratio requirement.

# CHAPTER 2 – Basel III impact

## 2.1 Analysis of the impact of regulations on banking business today.

There has been a lot of criticism and fear overall related to Basel III before its implementation. The reduced profitability, the higher requirements and other various direct impact on the individual banks and the financial system. All this aligned with predictions of a safer system and a reduced risk on individual level for banks allowing to avoid systemic collapse. But still many questions and fears are persisting today in relation to the coverage that the requirements are able to provide. There's uncertainty that banks would be able to cover their losses with the required capital buffer in the case of the crisis of the market, the interactivity of the banks is evident and their strategies today seems to be similar one to another. Also, if the small banks would be "crowded out" it leads to observe the fact that the "too big to fail" is still an ongoing concern.

It seems that regulators across the world have different focus, some are more capital and liquidity buffers oriented and other more on the coverage of risk management and stress testing. But those two components have to be aligned in order to achieve the set goals and strategy of the financial institution. The discrepancies on the international level lead to differences in the implementation and could lead to some regulators to set even higher and more severe regulations than Basel III due to interpretation.

Higher capital ratio and liquidity have the below main impacts on the business:

- Deposits: promote the collection of deposits (corporate and retail), in order to reduce the cost of liquidity buffer.
- Lending activity*: higher interest rate on loans in order to price the equity spread and the cost of the liquidity buffer. The risk in the cost of equity should be reduced as the leverage is also reduced.
- Securitization: Securitize or/and sell assets would be incentivized in order to reduce the cost of funding and also meet the regulatory requirements.
- "Crowding out": For some banks that are small size banks or banks that have a less solid business, in the case of negative profitability, many would exit the financial market (mid-term and long term impact).

The main quantitative impacts are focused on capital and funding but split between the impact on individual bank and the financial system overall. Obviously, the impact is different across the types of banks and has direct impact on the products costs and adjustment of the balance sheet management and lending activity. The increase impact on the capital is leading to a reduction of the eligible capital. Together with the increase of the RWA of a banks, the combination of those two factors are causing first of all a negative impact on the return on equity. The business model will also change fundamentally and there's a possibility of smaller banks to be crowded out.

** the impact on the lending activity is covered under Chapter 2, section 2.3*

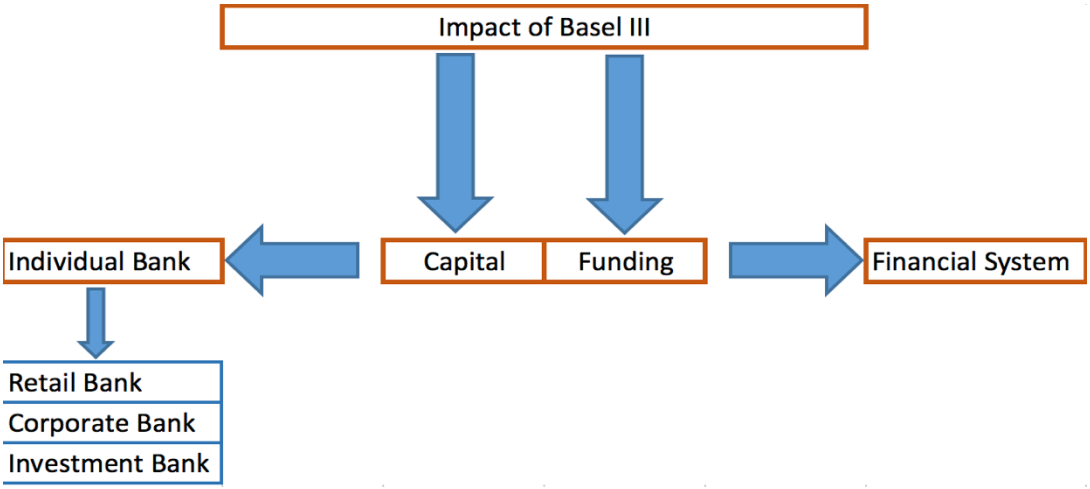



*Figure 4*

Impacts on the individual level:

- RoE: The increase in the capital requirement and the cost of funding under the regulatory requirements will implement pressure on operating capacity of a bank and will most probably have impact on how the bank will organize its business structure. The returns for investors would decrease due to the need of achievement of buffers in various ratios and provide lower returns also due to the low interest rate environment.

- Banks which are smaller size or simply weaker will probably be "crowded out". Once there are adverse conditions and intense regulatory requirements, smaller and weaker banks will have issues with raising the required capital and funding. This would result in a decrease of competition overall and will change the business models such as we know today.

- Legal organization will change due to increase supervisory on trading of different type of investments from M&A to portfolios management leading to a reorganisation of entities of a bank.

- A change in in the demand for funding (short term and long term) will follow the requirement of liquid ratios that would impact the short and long term nature of funding and liquidity itself. Most probably, financial institutions would move away from short term funding with a consequence on the price of funding and the margins having a direct impact on the asset and liability management. Here again the structure of the balance sheet is changing.

Impacts on the financial system overall:

- The investor appetite will be reduced towards bank equity and debt. Same as on the individual level, the RoE and profitability of the financial system overall will likely be reduced significantly. Investors would be less attracted by debt and equity as the dividends will also likely be reduced in order to achieve the capital buffers. The evidence of such behaviours could be seen in the investors' perception of the cost that is related to the new capital issuance and the interbank lending rates.

- Possible risk reduction of a systemic banking crisis? The main requirements are those to achieve liquidity buffers in order to make the banks as most solvent as possible and to provide reduced risk on the individual bank level which should consequently reduce the connection between the banks. But in a crisis situation does the regulation cover completely the losses? The "too big to fail" question is still persisting today.

- Impact on the lending activity's capacity that would be reduced due to significantly increased capital and liquidity requirements and despite the extended implementation timeframe. If the impact would not be direct on the lending activity itself, it might though be indirect through the cost of provision of the lending.

- International differences and "arbitrage" due to inconsistency of implementation of the requirements. The implementation depends on jurisdictions which are different across the world and their mode of implementation will also be different. In the past, differences and arbitrage were observed in the implementation of Basel I and II. This may play a significant role in the stability and transparency of the financial system.

It is also important to note the qualitative impacts that include the reputational impact, as the banks perceive their compliance as a competitive advantage on the market and a way to demonstrate their transparency. Another important part is the risk management of the financial institutions. The supervision of regulators will be more constraining in terms of internal models and ratings for credit risk for instance, the regulators will have the authority to determine and adjust the risk weight of certain credit lines. Banks that will not comply with the required adjustments to be done in terms of risk management will find them with higher scrutiny and supervision.

Mostly it seems that one of the main impact that is causing the issue is the implementation of a unique formula for various ratios that would apply to all banks, although it is ending up by comparing pears and apples as banks have different size, business, strategy, models and locations. Therefore, each bank has its own approach and behaviour towards the regulation changes, some of them will have more difficulty in achieving the requirements and most importantly be profitable. Some of the banks might be crowded out in the longer term. One thing remains certain is that the regulations will lead to a change in the financial system and will shape the new financial market.

## 2.2 Analysis of the impact on lending activity

The most obvious direct impact of Basel III is the increase of the cost of lending. As the increase in the common equity of Tier 1 capital, capital buffer and the liquidity buffer are having an impact on the return on equity for all banks, leading to higher margins on the rates between their products besides cost cutting and other measures. Long term financing might be restricted or limited in some cases and the resources of the bank will be allocated to "top" clients. The main lending will be focused on real estate sector for both households and commercials and less to any other types of lending. The increase in capital requirements result in reduction in the growth of the lending activity but results are varying across sectors and type of banking. Well capitalized banks would tend to decrease their lending activity while under capitalized banks would tend to increase it.

Impact on different types of banking of the lending activity is reflected in the change in rates on loans due to capital, liquidity and funding requirements under Basel III. Mostly the effectiveness of the business and the lending activity would highly depend on the asset and liability management of the bank. Higher interest rate on loans are determined on the type of those loans.

Example of retail and corporate banking loan rate adjustments:

| | | Cost | | | |
|---|---|---|---|---|---|
| | | Capital | Liquidity | Funding | Total |
| Retail banking | ST loans | ↑ | ↑ | ↑ | ↑ |
| | Mortgages | ↑ | ↑ | ↑ | ↑ |
| | Other | ↑ | ↑ | ↑ | ↑ |
| Corporate banking | ST Loans | ↑ | ↑ | ↑ | ↑ |
| | LT Loans | ↑ | ↑ | ↑ | ↑ |
| | Other lending | ↑ | - | - | ↑ |

*Figure 5*

↑ *Cost over 50 bp.*

↑ *Cost under 50 bp.*

Retail banking: has the most significant effect due to its lower capital ratios in comparison to wholesale banks. ST retail loans will have significant increase in costs with over 50 basis points. The effect can be explained by the direct increase of the prudential ratios with high risk weights and liquidity coverage ratio increase. On the other hand, the LT retail loans will also require higher liquidity funding which directly contributes to higher costs. A certain number of banks will have to pass those increased costs to their clients within the higher margin model for the product.

Corporate banking: same as for retail banking, corporate banking will be impacted by the same prudential measures. Affecting primarily the standard corporate products, so as demonstrated on the figure 3, the ST and LT loans will see their rates increase by less the 50 basis points, for committed products. On the other side, the uncommitted loans to financial institutions and corporates will grow by over 50 basis points. The corporate lending market is more sensitive, which would lead many banks to be unable to fully cover the cost increase. If so, the profitability will reduce and less capital would be given for the business line. The main hit will fall on higher risk products for instance on structured or trade finance.

To conclude on the lending activity, it is obvious that in response to achieve step by step higher capital buffers, banks reduce lending activity temporarily and increase loan rates. The most significant effects are associated to retail and corporate banking, followed by secured lending to households. As once argued by the Modigliani-Miller theorem, for given assets the bank's funding does not affect the total cost of funds and should therefore not affect the credits. Although, as observed in current regulatory environment, the increase capital requirements do have an impact on the lending activity.

## 2.3 Analysis of the impact on risk management

The main concern for the risk management is that Basel III doesn't have a standard for the risk management framework. It also does not distinguish between structure, size, risk profile of the banking organization. Having the "single formula" approach towards all type of banks and sizes, which doesn't allow the risk management to access their risks in the same way and especially achieve the required buffers and ratios. Yet, it is one of the most important factors on the bank's individual level, to be able to implement a proper models and processes to mitigate and improve the risk management framework. The success of risk management in a bank will be focused on financial modelling, analytics, and stress-testing, which will provide transparency that allows the financial market to assess risk profiles and on its turn the capital adequacy. Under new regulations banks have to review their risk management and risk approach in order to assess the weight profile of their assets, to control liquidity, to successfully pursue the lending activity, to improve their control on the operational level and to mitigate the market and trading risk.

The result of regulations will now bring the financial management to work together with risk management as both will have significant influence on the achievement of the requirements and profitability. The main implications for risk management would be:

- Risk management has to be integrated into the decision making process of the strategy and business plan.
- Risk-adjusted performance and capital measures have to be assessed correctly.
- Risk profile must be monitored and communicated between financial and risk management.
- In terms of operational efficiency, risk activity approaches must be similar for opportunities measurement.
- The data should be clear and simplified.
- Risk management and financial management should take into consideration controls from both sides, including, financial analysis, reporting, business decision and record keeping.

After analysing reaction of professionals of risk management, it seems that business models today have shifted to an extremely surprising outcome. It seems that businesses with low risk and businesses with high risks are penalized equally. Leading to the most incredible outcome:

High risk profile does not anymore necessarily provide higher profits, which is breaking the "basic rule" of risk profile towards the profitability. The implication of the affirmation is proving the low profitability environment and is strengthening even more the impact of the low return on equity if combining regulations and banks trying to achieve sufficient capital without taking high risks as they do not necessarily provide higher income. Might there be a systemic risk possibility if all banks are under the same constraints?

It is specific to Basel III that a significant number of banks believe that it might harm the banking system by increasing systemic risk and reducing or even limiting the credit availability.

### *2.3.1 Liquidity risk*

The introduction of the liquidity coverage ratio requires all banks to hold significantly liquid and low-yielding assets to meet the ratio's requirement, this has a negative impact on profitability.

It is the liquidity risk function to get the control over the stock of liquid assets in order to comply with the liquidity requirements under Basel III. Some banks hold only cash or highly tradable assets that can be quickly converted to cash. The funding profile of banks is changing; long term funding will prevail over short term funding. This type of funding might not be provided by institutional investors that are usually seeking to decrease their holdings in the financial sector.

In order to control the optimal level of liquidity the LCR and the NSFR ratios have been established. Nevertheless, it is important to distinguish between two types of liquidity risks:

- Funding liquidity: the ability of the bank to generate funds by deploying assets on its balance sheet in order to meet its financial obligations on a short term period. The liquidity of a bank is determined by its holdings of cash or highly liquid assets that could be quickly converted on the market, the position also depends on the funding structure of the entity and the type of the liabilities that must be covered on a specific time frame.

- Market liquidity: the ability of a bank or other agent to be able to execute various transactions on the financial markets without causing any significant changes in prices. The market liquidity can cause spread and contagion of the entire system.

This two types have to be considered while assessing the liquidity risk. The previous financial crisis occurred due to significant failures also in the management of liquidity risk, therefore today this is one of the main aspect considered in order to regulate the banking system.

The Basel III liquidity framework incorporates several important measures that will enhance the resilience of banks to short-term liquidity shocks, better align their funding models with their risk preferences and incorporate liquidity risk into product pricing. In response to these standards, banks will be required to improve their practices for liquidity-risk management. Although the new liquidity rules will result in higher costs, they will undoubtedly produce a net bennet to society by reducing the probability and impact of devastating financial crises. Thus, they complement other aspects of the global regulatory reform agenda to make the financial system more resilient.

### *2.3.2 Credit risk*

Credit risk is probably the most "serious" of all risks in banking as it might be a direct potential loss if the borrower would be unable to repay the loan. The sources of loss may be different and their prediction would highly depend on the internal risk assessment model. Excessive and insufficient regulators are usually believed to be the main reasons of inefficient risk management in banking systems which makes regulators to implement a regulated framework in order to achieve efficiency.

The reporting to regulators, the risks attributed to the weight of assets has different criteria. The weights are differently allocated to the type of counterparty from lowest to highest risk profiles:

- institutional - corporate - private

The maturity of those is split from short term to long term with respective low risk to high risk profile. Also, collaterals are playing a major role with commitments and haircuts which decrease the risk of certain credit lines.

In the first pillar of Basel III is allowing banks to choose their method in measuring the RWA and covering their credit risk:

- The standard approach: banks may use the ratings provided by rating agencies in order to value their borrowers into several classes. The capital required is 8% out of the total exposure. Unfortunately, this approach and Basel regulations do not solve the issue of the weighting risk. Banks encountered losses from AAA rated by external agencies leading to a crisis and later on, as most of them followed this structure this ended up brining a sovereign crisis. Thus underlying that the standard approach does not solve the issue of default despite the rating.

- The internal rating based model (IRB): a model that banks decide to use and has the components: PD= Probability of default; LGD=Loss given default; EAD=Exposure at default and M=the maturity. This is a model that uses a well know formula to obtain the Expected Loss:
  **EL = PD * EAD * LGD**
  This determines the capital that should be held in order to cover for a potential credit loss.

Internal rating models are used to value the risk profile of credit lines but the regulator intervenes on the decision of the risk profile of certain credit lines. Which on one side might be a good incentive for the bank to review its internal rating model approach and on the other hand to reject lots of potential opportunities that could lead into profits. Low risk or risk free profile subjects do default as well, as shown by the previous crisis, the ratings are not always able to predict a systemic risk. If all banks apply the same approach and strategy this would reduce the lending business and in consequence have significant impact on the macroeconomic level.

### *2.3.3 Operational risk*

Under Basel III, significant measures and efforts are taken to measure the operational risk. The operational risk is defined by BCBS as a risk of loss resulting from inadequate or ineffective internal processes and procedures, people and systems or even from external events. In order to estimate the operational risk, it is required to calculate the frequency of losses and the size of operational losses. In order to correctly assess the risk, the bank needs to take into account the incidents incurred per year, this obviously exclude the probability of an important loss from operations due to the fact that this probability is very low. This makes it very difficult to estimate the loss probability from operational risk. Basel III requirements are focused on capital and liquidity, but those two could not be achieved if there's no adequate operational risk management.

### *2.3.4 Market risk*

The main implication of Basel III on market risk is mostly addresses to banks that have significant trading activity on the market and therefore are more directly exposed to the market risk. Basel III refines the scope of the covered positions, increase the risk sensitivity to the requirements of capital and increases transparency through various disclosures.

The key elements of the revised market risk framework of Basel III are the following:

- Distinguishing between regulatory trading and banking book, a revised policy has been created in order to reduce incentives of arbitrage related to regulatory capital requirements between the two regulatory books. There're strict limits related to transfer of various instruments from one book to the other. A list of instrument is provided to be in the trading book and banks must comply.
- Revision of the internal models approach by capturing coherent and comprehensive models that would replace the VaR and the stressed VaR with one single expected shortfall that would consider losses above a confidence level contrary to VaR. Also the approval process for the model is changed, together with efficient modelling of the Profit and Loss accounts accuracy. Some constraints such as diversification recognition benefits on hedging and portfolio would be implemented.
- Revision of standardized approach that should allow better balance between standardised and internal model approaches. The standardised "bucker risk" weights within each class of risk has been now calibrated to stressed market conditions using the expected shortfall method. One of the most important points is the reliance on the sensitivities of risk such as capital charges calculations, input data, pricing and models.

BY implementing those adjustments to the management of market risk, BCBS has encouraged the reduction of capital impact for a lower capital requirement than previously. The RWAs have also reduced. The framework does not take into account adjustments that might take place in the next years.

# CHAPTER 3 - Data analysis of regulations' impact on RoE

Basel III has reshaped significantly the banking system and banks individually. Although the financial stability is at the moment improved there're still fragile points and remains to potential shocks. Below are mentioned the main positive and negative developments occurred under Basel III.

| Developments | |
|---|---|
| Positive | Negative |
| Low level of systemic stress measures | ROE and profitability are weeak |
| High capital and liquidity buffers | Bank restructuring incomplete |
| Balance sheet "clean up" | Global risk: potential systemic risk |
| Positive macro impact | Increased cost of funding |

The main focus in this section is on the return on equity that has been significantly impacted since the implementation of capital requirements. It seems that banks will take a considerable time period to only partially offset the increased buffers. The profitability is also weak, which is also due to the low interest rate environment and increase requirements. Once the capital requirement was implemented, the capital buffer began to be increase and in parallel the return on equity for Euro area started to drop.

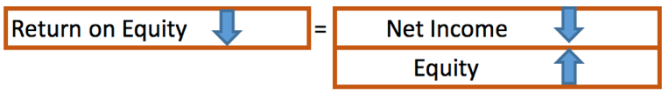
The main impact on RoE comes from the capital and liquidity requirement. The new key capital ratio is set at 4.5%, more than double the current 2%. In addition, there is a new buffer of 2.5%. The estimate of capital requirements under Basel III was that it could reduce the return on equity for banks in Europe by approximately 4% as a direct compensation for the requirement to reach the new capital buffer and also compensate for low profitability.

It is important to note that this average decrease in RoE will be reached throughout the years of Basel III implementation, starting in 2013 until 2019. Instead the LCR will require from banks to hold cash and liquid assets in the short term while NSFR will focus on longer horizon liquidity buffer. For banks that are currently not at the regulatory "level" this will enhance high costs and might further require market capital increase.

## 3.1 Impact on RoE in the EU

Investor returns will likely decrease at a time when firms need to encourage enhanced investment to rebuild and restore buffers. This as a cost of new capital requirement that took place in 2013 and 2014. The highest increase being in 2014 and therefore many banks in Europe showed a significant decrease in their return on equity and this trend will be persistent gradually until 2019.

Mainly, the impact on RoE is related to two factors profitability (income) and regulations (increase of capital and increase of funding):




Income - Low profitability:

The main challenge for EU banks it currently related to a quit long period of low profitability in the banking system. Recently the profitability has recovered but is still remaining at extremely low levels. The average return on equity for Europe is around 5.8% in 2015 while the average cost of capital in Europe is around 9%. This is a negative gap between the return on equity and the cost of equity which is present since the 2008 financial crisis. Moreover, it is currently not believed that European banks would finally make a real recovery for their profitability in the short term. The same is shown in the low valuations on the market in the euro area for banks. There's a general market scepticism related to banks' profits and although banks might only partially reflect the challenges in the euro area by restoring their business structure and profitability adjustments in the post crisis environment. One of the main factors of the low profitability is the low interest rate environment and low nominal growth. Low profitability environment is generating low or even negative income on individual bank level and therefore negatively impacting the return on equity.

Regulations – Increase of capital and funding requirement:

- Capital: The extent of capital from higher capital ratios to target ratios is significantly sensitive. For instance, 4,5% for core Tier 1 and 6% for entire Tier 1 including the required 2,5% conservative buffer. Considering 1% of supplementary buffer, the banking sector should reach around 9% core Tier 1 and 11% all Tier 1. All banks try to hold more than the required capital but the main issue is that some are able to hold 1% and other 3% or even 4%. If additional requirements are imposed on large banks.

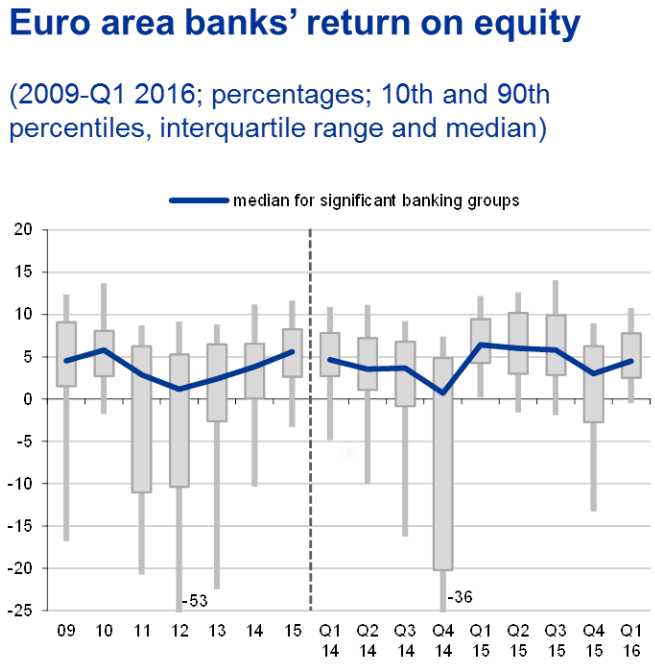
- Funding: It is estimated that the liquidity coverage ratio (short term funding) shortfall would be around 1 trillion euro, this number is around 40% of the average liquidity that banks are holding in Europe today. Instead the net stable funding ratio (long term funding) shortfall is about the double of the short term, which is around 15% of available funding in Europe. Both ratios are related, if the banks will build a stable long term funding this would help them achieve the short term liquidity requirements.

A large number of banks have already put reached the required capital ratio and are currently working on the imposed liquidity and leverage regulation. The long term funding (NSFR) is generally costlier than the short term funding, due to the time premia. But prior crisis shows that sometimes it is a good trade-off between profitability against resilience.

The graph below shows a significant drop of the return on equity in quarter 4, 2014 due to the capital requirements that was required to be increased in 2014. Quarter for is mainly impacted due to the year-end reporting to regulators therefore there's a significant drop in the last quarter of 2014.

The main concern in the relation between return on equity and the cost of equity that has been a negative relation since the 2008 financial crisis. The tendency since 2008 is an increase in the RoE* and a decrease of CoE** but the relation is still negative.

There's an increase in RoE between 2012 and 2013 but a significant drop between 2013 and 2014 which is explained by the capital requirements. The cost of funding is increasing in the year 2014. The latest observation is that RoE and CoE are stil a negative relation but are getting closer to a positive relation where RoE would finally be higher than CoE, unfortunately as Basel III regulations are still not finalized and are ongoing until 2019, most probably the relation would remain negative also due to low profitability environment and low interest rates in the Euro area.



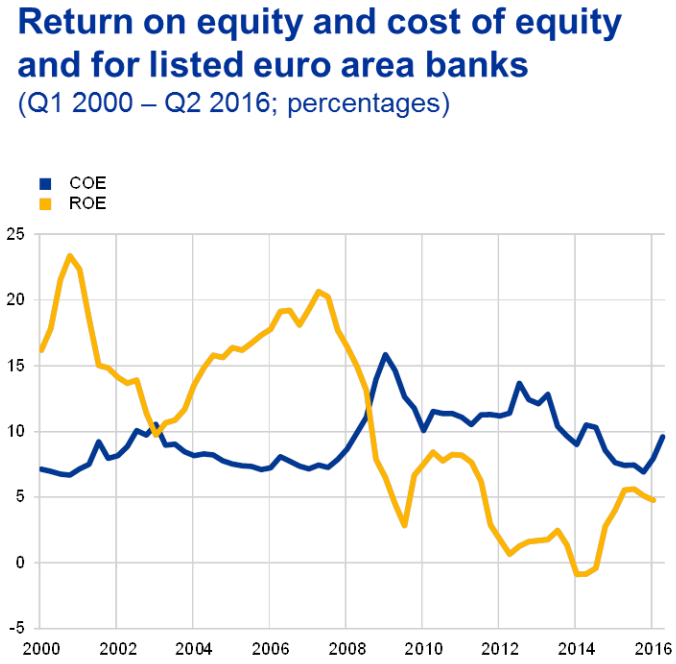




*Figure 6*

**RoE-return on equity*
***CoE-cost of equit*

The impact of regulatory capital and funding are significant for the return on equity. It is quite a paradox when successful compliance and achievement of the requirements is on the reputational side and safety while on the other hand banks are truly fighting in order to obtain higher return on equity to show to the investors.

- Low interest environment will have different impact on margins depending on different banks type and their ability to reprice their deposits or their interest rate of their assets. For instance, in 2016 few private banks have opted for minor but negative interest rates on deposits higher than a determined amount. This decision came after careful observation of competitors in the same banking segment. The strategies related to types and sizes of banks would be highly aligned between those players.

- Smaller banks have been less prepared to the requirements than big banks. AS small banks will not be able to take high costs of implementation and at the same time achieve the required capital buffers or they would achieve it much later than bigger banks. Here again the separation between different size of banks is unavailable and is probably again falling into the "too big to fail".

- The new regulatory environment and the financial crisis have a significant impact on banking activities and business models. Before the crisis, the levels of banks profitability were seriously boosted by leverage and relatively cheap funding. In some situations, high risk taking was convenient to generate stable and growing revenues. This is not the case today, due to high funding costs and an imposed leverage ratio.

Overall, the changes in the regulatory requirements and banks' behaviour have impacted previously profitable and flowering business strategies. Also, due to weaker financial market and macroeconomic conditions the profitability is even more limited to increase, with lower financial performances across banks since the crisis. The way back to sustainable profitability will highly depend on banks' ability to adapt their business to the new financial and regulatory environments.

# CHAPTER 4 – Response to regulatory changes

## 4.1 Banks' response to the regulations

Banks have various responses in order to mitigate the impact of the regulations, those are split between:

- Strategic: a review of structure of business, a potential change in the holding structure and various business units.
- Tactical: the funding might reach a long-term perspective; the pricing might become more risk-sensitive. Different asset and liability management approach, change in the loan rate and a restructuring of the balance sheet and off balance sheet items.
- Operational: the optimization of risk weighted assets through deeper analysis, the credit rating models and approvals would become more severe in order to avoid any possible shock.

Their decision making behaviour would vary in relation to:

- Type of business: retail, corporate, depositary, commercial, investment and private banking
- Country
- Size of bank

In the regulatory environment, banks have to deal and mitigate the impact of the capital ratio. Various measures are taken in order to mitigate the impacts. There's an active management of the balance sheet as the strategy and the asset and liability management is changing. There's also an establishment of hedging strategies.

The fact that the requirement of capital is driving investment in the capital management and portfolio management, banks review the actual trades and consider external protection through hedging, restructuring of organization or creation of structured vehicles in order to minimize the risk exposure in relation to the market.

The internal rating-based credit risk approach and market risk approach are constantly improved and assessed for better methodologies. There're additional capital ratios that emphasise any possible inefficiency in already existing internal model approaches that determine the market risk and the credit risk RWAs. This gives a unique opportunity to review all the methods, data, inputs and systems in order to improve the mitigation of various risks that could arise also from the methodologies.

In order to improve the RoE, banks would need to:

- Increase: deposits (not an easy task to achieve) and fee income
- Reduce: RWAs, operating expenses, equity capital and provision of loan losses

Four key elements of banks' focus:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Financial Effeciency** | Use Excess capital | Effecient use of HQLA | Efficient use of eligible funding | Offeset/netting positions if possible | Optimal use of capital |
| **Portfolio Optimization** | Sell intensive capital positions | Optimal hedging | Improve collateral | Restructure positions | Book Assets based securiteis into banking book |
| **Operational improvements** | Electronic trading | Front and back office head count | Effecient execution | Efficient risk systems | IT investment |
| **Data quality improvements and models** | Data quality in trading book | Revision of stessed VaR model | Internal risk models optimization | Credit risk models with deeper control and efficient models | Reporting figures effeciency |

*Figure 7*

A significant number of testing is ongoing within banks, including credit risk rating models and market risk models. There's a significant participation of local regulators to the decision making in the credit rating internally. Some professional are enthusiastic towards the participation of the regulators motivating their enthusiasm by the accuracy of the credit rating, while other professionals are more sceptical to the regulators' participation as many lending activity is now having higher risk profile and control. The response of the banks towards the credit rating is to establish internal models that would best respond to the lending activity, risk mitigation and to the local regulators.

Already, banks are trying to apply effective management of the RoE in the new environment by cost cutting and adjusting their prices. The restructuring of the balance sheet is one of the core responses in order to improve the quality of the capital in order to get enough eligible capital and at the same time reduce the capital needs that are directly arising from the regulatory requirements. Here one of the core points would be the efficiency of the asset and liability management in order to achieve margins that would cover the capital for the life of a transaction in order to avoid the potential risk.

The adjustment of business model that would create both capital and liquidity. The adjustments of business models are different depending on the type of bank. The business model should be efficient and have products that would compensate for the capital buffer. Some business lines should also be thought about. Unfortunately, these changes could offset only partially the impact of Basel III on RoE.

# Conclusion

Basel III introduces an important shift in the capital and liquidity in order to enhance a safe financial system. Many elements though remain not finalized and the date of final adjustments and implementation is a long term perspective (2019). The regulations have driven market and competition pressure on financial institutions which are nowadays going through a considerable number of adjustments and restructuring. It is incredibly important for financial institutions to comply as quickly as possible with Basel III regulations in order to be competitive on the market and act competitively in the post crisis low profitability and strict regulatory environment.

A lot of criticism has been attributed to Basel III, most importantly its impact on the return on equity, its role in slowing the market while it is already struggling with low profitability. Also, it seems that it is creating barriers of entrance and crowding out which will most likely reduce competition and enhance larger banks to take control of the market and be more profitable. This seems to be tending to a banking monopoly for large banks which are definitely more advantaged by those regulations, bringing into the light the same old "too big to fail". It also seems that regulations imposed worldwide cannot be perfectly harmonized due to obvious differences in the financial sector worldwide.

Unfortunately, this is not the only issue of the current regulatory environment. In fact, players are fearing a potential "danger" of a systemic risk and crisis. Past confirms the exactitude of this affirmation. Today, many structures are concerned about the low profitability environment and the requirements of Basel III, which by the wish of creating safer markets is on the other hand creating difficulties for the economic growth. Many banks today do not really understand the riskiness of their assets and are miss leaded in the calculation of RWAs. In response, BCBS, by redefining a new capital does not solve the issue of attributing correct weight of risk to assets, in fact, this shows that risk weights might be completely arbitrary. The whole financial system is trying to boost their ratios without solving the problem of arbitrage in the regulations. The Basel III introduces an important shift in the capital and liquidity in order to enhance a safe financial system. Many elements though remain not finalized and the date of final adjustments and implementation is a long term perspective (2019). Also often it is a mistake to take the leverage ratio as supplement to the capital ratio, in fact they're not, they're equivalent unless the capital is not measured on RWA but rather on the total of assets. There's more objectivity in the leverage ratio than in the "risk adjusted capital ratio". It seems that this system is depending on a certain cyclical time period which distinguishes between worse and better times making it subjective in identifying those. How exactly would the capital buffer be able to cover losses with an estimated figure required in stress or in stable times? This seems to be impossible.

In other words, it seems that the banking sector is a cyclical sector and it is nearly impossible if not completely to change this already observed fact. So the regulators should avoid creating tendency in banking system which took place under Basel II. Although, Basel III increase the capital and liquidity buffers which are elements to be considered in the main pillars to avoid a financial crisis and create financial stability. It seems that Basel III did

not deal with the main issues occurred in the crisis under Basel II, still allowing banks to use internal models for regulatory capital calculation, allowance to rely on rating agencies that contributed heavily to the previous crisis and finally continuing to undertake rules that seem advantaging certain banks due to a single framework approach disregarding the difference among the banks. This seems to be a discriminatory created environment.

Basel III is not just another framework of control on financial institutions in a post-crisis system. It is a significant flow of regulation that are currently fundamentally changing the era of profitability of banking. Banks should react instantly! By complying with the regulations, by enhancing their generation of returns and profits ability and even further "re-think" their business in the future.

Certainly, Basel III has it pros and its cons but potentially just as the previous Basel II it might be replaced by a new Basel IV. Once the pro-cyclicality of the financial system will take control and a potential crisis would make it necessary to adjust the current regulations to new situations and criteria which are now least expected and trusted to be avoided. But here again, what would be the impact on the return on equity and banking? And most importantly, are we going to constantly find increased regulations for a safer environment but as a trade-off banks would again have to see its profitability and equity shrink?

## List of figures



## List of abbreviations

| | |
|---|---|
| BCBS | Basel Committee of Banking Supervision |
| RoE | Return on Equity |
| CoE | Cost of Equity |
| CaR | Capital Adequacy Ratio |
| LCR | Liquidity Coverage Ratio |
| NSFR | Net Stable Funding Ratio |
| RWA | Risk Weighted Assets |
| VaR | Value at risk |
| HQLA | Highly Qualified Liquid Assets |
| GAAP | Generally Accepted Accounting Principles |
| IFRS | International Financial Reporting Standards |
| PD | Probability of default |
| LGD | Loss given default |
| EAD | Exposure at default |
| M | Maturity |
| EL | Expected Loss |

## Acknowledgements

## Interviews:

The interviews were held with professionals working for Credit Suisse (Luxembourg).

The professionals are highly qualified seniors in various departments related to different tasks performed in line with Basel requirements:

- Regulatory reporting team: in charge of the reporting to the regulators of various reports including the ratios reporting.

- Credit risk management team: in charge of credit risk

- Risk control team: in charge of market risk, liquidity risk, reputational risk and operational risk.

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