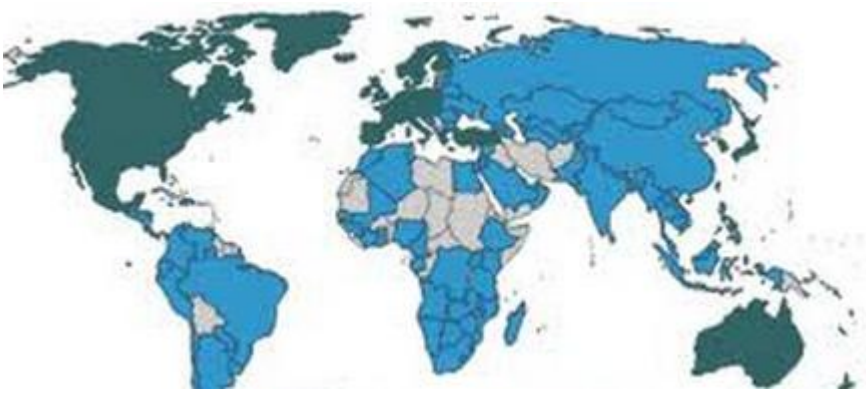
UNIVERSITY OF PIRAEUS

DEPARTMENT OF BANKING AND FINANCIAL MANAGEMENT

BANKING SYSTEM CONCENTRATION AND INSTITUTIONAL ENVIRONMENT



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ABSTRACT

This thesis' purpose is to explore the relationship between banking concentration and institutional framework in a sample of thirty-four countries, members of the OECD, within the time span of 1990 and 2010. It should be noted that few similar research has been conducted in the past. It is found that the institutional framework has a strong and positive effect on banking concentration. Results appear to be consistent with the survivor principal (Yeager (2004), Keeler (1989), Stigler (1958)).

Contents

1. Motivation

Recent financial crisis (2007) has surfaced great concern in banks' excessive size in terms of bank managers' perverse incentives due to government implicit guarantees that manifested in an explicit manner in the form of bail-ins and bail-outs (USA-TARP & Ireland-NAMMA); as well as the costs of resolving this crisis. Related concern has been expressed by regulators and policy makers, to restrain the costs of a future crisis by delving deeper in seeking a solution to keep banks' excessive size into reasonable(affordable and resolvable) levels. The latters' concern is being manifested via exploring concentration and its drivers; both quantitative and qualitative. By qualitative, we mean institutional factors such as property rights, judicial efficiency, enforcement of contracts and anti-trust laws; in other words an institutional framework. We seek to find the sign of the effect of institutional framework on concentration and its statistical significance in a cross-country sample of 34 OECD-member-countries within the time range of 1990 to 2010.

What drives banks to grow? Bank managers claim that growth pursuing strategies occur in order to reach the benefits that economies of scale and scope can provide. This claim can be justified by the growing number of mega-banks during the last two decades. On the other hand, academics generally find small benefits of scale and scope economies (McAllister-McManus (1993), Mitchell-Onvural (1996), Emmons-Gilbert-Yeager (2004), Akhavein (1997), Rhoades (1993), Blair-Herndon (1994)). This contradiction gives rise to a paradox. If scale and scope economies are small, why so many bank organizations are expanding in size and product lines (Yeager (2004), Keeler (1989))?

We discovered that legal and property rights are positively and robustly correlated with concentration. In other words, a friendly institutional environment would likely increase concentration of the banking industry.
In the sections followed, section-2 provides an introductory view of the banking industry, section-3 analyzes recent events from the 2007 financial crisis and it's impact on the banking industry. Section-4 refers to studies regarding bank size in absolute and systemically related terms and the strategies followed by the current banking industry. Section-5 contains previous research, expected results data

collection and empirical analysis. Section-6 contains conclusions and propositions for further inquiry.

2. The role of banks and institutional framework in the economic activity

Banks are the allocators of depositors' funds into the real economy through loans in order to promote growth via the channel of investments. The optimal allocation is being achieved due to the proper gathering of information (Mishkin - The economics of money, banking and financial markets). This verification cost is being compensated by the margin rate. Information gap issues can be mitigated by an efficient institutional framework. An efficient (friendly) institutional framework provides transparency, just anti-trust laws, judicial impartialness and enforcement of contracts; preserving market discipline's swiftness and upholding the interests of both financiers and fiancées. A healthy institutional environment promotes analogous competition that surfaces the most efficient "players" of the industry; since the most efficient participants will either acquire or merge-out their less efficient competitors (T.Yeager-(2004)). A foul institutional environment would imply the existence of "Too Big To Fail" or "Too Big to Discipline" subsidies, as the latter would be able to distort the environment towards their favor, undermining at the global level the social and financial fabric (Demirguc-Kunt-Levine (2000)).

2.1 Bank strategy and risk

The "3-6-3" rule of commercial bankers that was dominant in the 19th and the 20th century has become obsolete. Commercial banks in order to sustain profitability levels were forced to come up with new sources of income apart from the marginal interest related profits that come from traditional banking. The need to sustain profitability; rise to non interest income through service fees. In order to emphasize on the significance of net interest income, should be taken into account that from 1980's to 2003 it "jumped" from 15% to 50% of all operating income due to deregulation (Regulation-Q). As convenient as non-interest income seems as a source it must be disclosed in advance that the reliance of Banks on non-interest activities (Non-Traditional, Non-banking) makes their profitability more volatile (riskier) (De Young-Tara Rice (2004)).

Traditional banking services derive from checking cash management and safe keeping accounts (Insured deposits, deposit boxes working capital loans, leasing syndicate, in formal lines of credit revolving credit loans through commission, commitment and servicing fees). Insurance agency services (annuity contacts) deriving from consumer lending, retail payments and mutual fund sales. Additionally non-traditional bank services such as investment banking. Investment banking activities are intermediary based (security brokerage, underwriting, advising on mergers acquisitions, divestitures, LBOs and REPOs), considered to be a lot riskier than traditional banking activities.

Deregulation and technological advance kick-started the net interest income upswings. The phase out of Regulation-Q (1970), that in the name of financial stability, prohibited all banks from expanding geographically through subsidizing (economy of scope) imposed rate ceilings (price stability) thus preventing uneven competition. Now banks could compete non-bank institutions (Money Market Mutual Funds) on equal footing and claim deposits by offering higher rates (rate wars due to inflation began). In addition technological progress allowed banks to embrace cost efficient services by scale economies. Enhanced IT quality enabled financial institutions to come up with innovative financial instruments (securitization, ABS etc.), improved credit analysis capacity (Credit Risk reduction) and gave space to new sources of fee income to take place (ATMs, Net banking, online payments, credit cards etc).

Through scale economies costs and benefits can be observed on banks. Small banks cannot benefit from scale economies. A critical asset size ($100bn) is required(De Young-Tara Rice (2004)). The clientele is relationship based thus they acquire soft (non quantifiable) info on customers through years of monitoring and tailoring products to the customer needs. Overhead labor costs are significantly higher. Their sources of funds rely heavily on core deposits (less volatile). Large banks grow through consolidations(relatively high-risk activity).Through high volume of fee based activities, cost efficient services (high volumes of standardized products) generate large amounts of fee income from off-balance activities (securitization, underwriting, ABS etc). Thus showing higher accounting performance than small banks (ROE). What needs to be pointed out is that (ROE, ROS, ROA) are not risk adjusted.

Recent empirical studies showed that (net interest income) could improve a bank's profitability but have risky implications on bank's earnings due to the increased volatility. Increased reliance on trading activities are extremely volatile and has analogous effect on the overall bank's returns. Increased focus is associated with declined risk-adjusted performance. Diversification benefits are absent when it comes to different fee-based sources (De Young-Tara Rice (2004)).

Bank size is dictated by business strategies and risk

Business strategies on banking activities are initially separated in two basic categories. Traditional Banking Strategies, attracting household deposits in exchange for interest payments and transaction services, loans and commission fees (Corporate). Non Traditional Strategies, regarding credit card fees, mortgages that banks offer deposit services, selling loans almost right after making them and collect servicing, securitizing and originating fees. Business strategies separate banks by size, scale, earning returns analogous to the risk's induced and strategies that can be practiced regardless the size of the financial institution. Business strategies based on differences in funding sources, product mix, production techniques and geographic focus.

Business strategy groups are categorized by the nature of the activities average asset size and range (R. DeYoung-Tara Rice "How Do Banks Make Money? A Variety of Business Strategies").

Business strategy Groups:	**Assets Average**	**Assets Range**
1.Traditional banking (portfolio of loans, No securitization)	242m$	$10m-$1,7bn
2. Non-Traditional banking (employed by JP Morgan ,Bank of America, Wachovia, Wells Fargo)	$140bn	$590bn-$771bn
3. Private banking	$25bn	$550m-$92bn
4. Agricultural banking	$108m	$4m-$1,2bn
5. Corporate banking	$74bn	$729m-$327bn
6. Community focus	$268m	$8bm-$4bn
7. Transaction services (payment related services etc)	$1,6bn	$160m-$26bn
8. Diversified banking	$1,6bn	$160m-$26bn
9. None of the above		

Low profitability doesn't necessarily "doom" a strategy .On a risk adjusted basis higher and lower return strategies can be financially viable. Very small banks

operate at a disadvantage regardless what strategy do they choose and are likely to be decreased in the future, as long as "critical size" requirement is met. Banks that don't employ a discernible strategy or pure-traditional strategies tend to underperform (De Young-Tara Rice (2004)).

Implications for risk to the safety net & financial stability

Nowadays largest banks engage in a mix of Banking and Non-Banking activities. So complex that are hard to monitor, calculate market value accurately by everyone thus making them opaque and market discipline cannot be exercised (opaqueness through complexity). Traditional banking activities imply operational risk, credit risk through defaulting of loans and liquidity risk duration gap issues through interest rate risk that can result to insolvency. Non-banking activities induce all the traditional banking risks amplified plus price risk (trading activities), counterparty risk (OTC derivatives) and funding risk. New activities make it more difficult to monitor and manage their risks. Through complexity of assets and information asymmetry, opaqueness is derived that reduces market discipline (they cannot punish/reward what investors can't grasp. So they rely on brand names).Regulators' work gets more difficult to assess the overall risk induced. In the US environment regulators used to abide to the "C.A.M.E.L.S" principal.

Capital requirements(if Capital<0 => Bank becomes insolvent)
Asset composition (Diversification of risk)
Management (Competency)
Earnings' flow (Profitability levels)
Liquidity (Duration gap fluctuations due to interest rate changes)
Sensitivity to market risk

Their supervisory work is static, while exposure to risks is continuous and dynamic and sometimes so complex and volatile that even the management can't assess it accurately. If risk management has gotten so complex, regulatory work has to follow (basal risk adjusted capital requirements and imperfections when it comes to risk mispricing and regulatory loop-wholes that resulted in the sub-prime crisis). When a complex financial institution fails, its resolution is very hard, even the estimate of its book value. The Dodd-Frank Act allows FDIC to run the failed financial institution (bridge organization) until total liquidation of its assets occurs.

Through the impeachment of FED CEO A. Greenspan on capital requirements, were abolished for investment banks based on the argument that European financial institutions (Deutsche Bank) is both a commercial and an investment bank and faces no restrictions thus having a comparative advantage towards American institutions.

Money Market Mutual Funds are very unstable and uninsured financial institutions. Shadow banks dependent on the latter. Parent bank holding companies back (sponsor) them up (risk of reputation, risk of runs and liquidity risks). There have been failures in the past (e.g. Lehman Brothers). Lehman Brothers, an investment bank that acted like a depository commercial bank by circumventing the deposit obstacle by continuous REPOs of subprime mortgage securities. When subprime market to burst nobody wanted to REPO, rendering the financial institution insolvent. Complex financial companies threaten financial stability. This resulted to the expansion of safety net ($250000), also guaranteeing securities, loans and savings. The moral hazard issue in this case is the false sense of security that bankers take for granted and might go after high risk investments, since "gains are private & and losses are public" (Calomiris-Emerging Financial Markets)

Restricting activities, a way to reduce costs and risks to the financial system.

U.S. large banks received public financial support (TARP) beyond the traditional safety net. One option is to restrict financial institutions from engaging Non-Banking activities that are difficult to assess, monitor and manage their risks (shadow bank countering). Activities beyond core services (traditional Banking) would be permissible as long as the market, management and regulators can assess, monitor and control the induced risks. The permitted activities for largest banks were commercial and investment banking and asset and wealth management. Dealing and market making ,brokerage services and proprietary trading are considered as extremely volatile and have little in common with core activities and create risks difficult to assess monitor and control thus are prohibited. Customer service is also banned (a bank shorting/longing derivatives to meet duration gap needs) cause it's difficult to discern from proprietary assets is disallowed (Liikanen Report). Unless proprietary trading serves the individual financial institution's duration gap adjustments and it's not applied for commercial purposes (Ring-fencing United Kingdom). By prohibiting the activities mentioned above it could lead to a better market discipline, supervision and regulation and resolution on banks by making them less opaque and complex. By restricting leading banks' activities would lead to banks

at a comparative disadvantage towards European institutions and might lead to forcing them to breaking down ("What Should Banks be Allowed to Do?"Charles S. Morris- 2011).

Banks do more than just intermediation (Deposits-Loans) and their revenues do not occur solely through interest margins. Nowadays the remarkable increase of non interest income at commercial banks is almost 50% of all operating income. Non interest income seems like a total new industry for some banks. Deregulation Technological and financial innovation "kick-started" it. Rebalancing income from interest related to Non interest income renders it more risky (volatile). Income fee can somewhat boost earning at the cost of making them more volatile and benefits from diversifying fee-based activities are absent.

Sub-prime crisis (2007-08) is so far considered as the worst occurred since the Great Depression 1929. It should be taken into account that European institutions unlike US differ regarding their operations, tend to be less leveraged (relied on equity markets), rely heavily on traditional banking activities, thus allowed to take control of other companies, since conflict of interests regarding control reasons is not an issue. Regulators are at crossroads regarding the measures that need to be taken from now on. Substantial expansion of safety net may result in exposing taxpayers at a significant wide set of risks.

Countering the moral hazard of "private gains-public loss", two possible solutions are considered. The restriction of activities (non-traditional) or the permanent separating of commercial-investment banking (BIS-Liikanen Report). In simple words, financial institutions should be prevented from reaching size of systemic significance so bail out wouldn't be necessary. Their activities should be as less opaque as possible, in order for CFOs, regulators and outside investors to be able to assess the risks induced by the institutions' and market discipline can be applied efficiently.

2.2 Information & Control

Information, Control and Transaction costs are the primary drivers for economic growth through the channel of optimal fund allocation. Powerful concepts and several puzzles regarding external financing mold the shape of today's financial structure; puzzles such as the misconception about the stocks importance as the most essential source of external financing, the de-emphasis of marketable security issues

(direct finance) as a way of financing for businesses. It pronounces the importance of indirect finance in which businesses raise funds directly from lenders and the banks' leading role in it. Info asymmetry shows the reason of debt's dominance over equity through the importance of collateral use and it's complexity adding the fact that the financial system is one of the most heavily regulated sectors of the economy.

Transaction costs is the most straight forward driver and it's influence on how "restrictions" are being imposed on investors is quite deterrent. Imagine a low-budget investor having 5000$ at his disposal and wishes to invest his money. In any other case we could say that "limited funds have access only to limited number of investments". If the investor tries to offer his money to a broker, "he will not even blink" due to the insignificance of the amount offered. If the latter would insist on investing his money, the only option available for him would be to purchase a certain security that would result in the absence of diversification and large risk exposure. This is where financial institutions (Money Market Funds) take place and reduce transaction costs through scale economies, by taking advantage the low transaction costs and capitalize on it. Money Market Funds buy large blocks of securities; sell them to customers (investors) separately. Through scale economizing and financial and technical innovation, investors get t enjoy the benefits of diversification and low transaction costs and in some cases even check writing rights (for fixed payments); at an agreed fee (Mishkin - The economics of money, banking and financial markets).

Asymmetric information and the financial institutions' importance

If all information was publicly disclosed, all assets would've been priced accurately, the allocation of funds would've been optimal and all credit worthy firms would've gotten financed. "The ideal deviates from the real". Adverse selection takes place before a transaction occurs. In simple words it can be explained as "the problem of telling the good from the bad". It's expressed as credit rationing in the debt markets and as adverse price effect in many other trading activities. Moral hazard after the transaction occurs**.** The information gap between "principals- agents" and the incentive of the latter's misbehaving, often seen as "principal – agent problem" or "free riding" in investing actions.

Tools to ease Adverse Selection

A solution could be the private production and sale of public information (outsourcing). Credit rating agencies gather historical accounting, financial data (screening) and publish their estimation to their subscribers at a price .A great threat

though to credit rating agencies' existence is "free riding". The mimicking of investors' actions that "did their homework" by the "lazy" ones. Thus arbitrage works faster, making the subscribes' worthwhile worthless, leading subscribers to quitting and making credit rating agencies suffer or even cease to exist. Then information asymmetry rises again making markets inefficient resulting to a downward spiral. Government regulation on increasing info disclosure could be implemented in 2 ways. It could both produce information on its own, distinguishing the "good from the bad" and publicly disclose it. This could have severe implications (political costs). Another more practical and viable way is to encourage (force) firms to divulge information about their well-faring. However disclosures such as these don't always work well. There can be circumvention manipulation of accounting data.(e.g. Enron implosion). Scandals like that indicate that government regulation alone is inadequate and the CEOs have immense incentives to withhold true info from investors regarding the value of the firm.

Tools to ease Moral Hazard

Monitoring through audits and periodic checks on the management seems as the most valid solution. The cost of frequent verification is quite high and in some cases even prohibiting.(that's why equity contracts are less attractive than debt contracts). Government regulation on information disclosure, by imposing IFRS, severe penalties and regulatory committees is partly effective because the more "skilled" a manager is towards fraudulent conduct, the less probable is for the government to detect such.

Through collateral pledge "principal agent problem" is reduced. The higher the net worth is, the more firms got to lose, thus managers are less motivated to misbehave and their interests are aligned to the lenders'. In debt contracts appear restrictive covenants that discourage ill – behavior and encourage value adding behavior as well as info disclosure and actions to keep collateral in valuable state. Another "weapon" for creditors against borrowers is the short term maturity of debt. Restrictive covenants without monitoring are meaningless. This is where financial institutions get in and parry most of the moral hazard problems. By making private non-tradable loans, banks get to avoid free riding and enjoy the fruits of information gathering and monitoring by setting a "kicker" added to the cost of capital on interest as compensation.

The "principal agent problem" can also be avoided through venture capital operations. Venture capital funds, pool resources of their partners' and finance incubating entrepreneurs. In exchange they receive equity shares, put people of their own on boards (for monitoring purposes) and claim exclusive rights in any initial or sequent public offering; thus getting unlimited access in an upside scenario. Venture capital funds actions contribute to the overall economy through job creation, growth and in some cases by the import of FDI that improves a country's national competitiveness. In other words we see how debt contracts get to be more desirable than equity contracts due to the lower costs of verification making it easier to raise funds, due to the less frequent monitoring and risk involved. Lenders act as share holders only in times of financial distress.

Why banks dominate emerging financial markets how do we keep them in line?

Banks seem to dominate emerging financial markets because, they are always better informed and more apt to screening and monitoring candidate firms (that's why banks dominate credit markets), thus borrowers are more willing to disclose info in order to get the loan granted. Recently due the to shortage of equity in emerging and developed financial markets, banks have emerged as private equity investors (other wise financing could have come only through retained earnings or debt until a certain leverage ratio). Hence by granting a loan, the bank gets to be the firm's natural monitor resulting in the reduction of information gap and develop long term relationships. How can savers have confidence in their deposits safety? How can they be assured of the banks investment quality and keep them from deposit looting(transition countries RS,CZ)? In other words how do we keep bankers in line? "quis custodiet ipos custodiet"(who guards the guardians). The answer comes through regulation and market based control.

Market based discipline relies on the suppliers of funds ability to monitor (primarily depositors, especially the large ones). A bank can get into trouble if a sufficient number of loans are unable to service. There are two solutions at hand. First portfolio purge seems to be the most valid, by getting rid of the troubled loans at the secondary market, even substituting them if possible. The alternative requires a credit expansion in order to overcome the mortality rate, provided that the effect is temporary and credit rationing doesn't take place. If rumors of depositors losing their money get out, it will most likely result in mass panic and mass withdrawals (bank-runs) rendering the bank insolvent; an even harmful to both depositors, bankers and to

the government as well. Bank-run is considered to be an absolute demo of market discipline, preventing destroying value actions as well as any recovery strategy. In extreme cases even good banks get insolvent through the channel of contagion. Even though the fear of bank might keep the bankers in line, it's often used as means of insurance extortion (safety net) against government officials.

Regulatory discipline, a poor substitute of market based discipline (Calomiris) is set by the government through capital requirements, prudential regulation and licensing procedures. Banks supervisors and regulators lack the ability or the incentive to assess risks and confront bankers by temporizing (forbearance) relying on market participants' swiftness. That may result in more frequent bank runs, but the aggregate costs of bank failures are far higher than those in the past. A recent approach of capital regulation is to address these shortcomings by incorporating a "touch" of market discipline in the regulatory process. It got realized by Sub-debting to institutional investors at a higher yield but with a ceiling (to keep it safe for banks) as a compensation. Government regulators are going t use the yield spreads as an index of identifying weak banks (signaling). Sub-debting shouldn't be perceived as a regulatory replacement, but as an additional source of information and monitoring (Calomiris- Emerging financial markets).

How asymmetric information affects growth and factors financial crises

Research has shown a spread of growth rate between less developed and developed countries. One of the factors is the poor function of the legal system, especially in bankruptcy law. If a creditor ceases to receive payments firstly has to sue the finance and if he wins then he can lean on the collateral. A time consuming process, that by then, collateral might even lose all value. In some places of the world even governments intervene by preventing foreclosures, usually in politically powerful sectors of the economy (agriculture). Governments even use the financial system for direct funding through nationalized banks, whose primary driver isn't profitability last but not least the retarded regulatory framework and weak accounting standards makes investors' work even harder. All the above result to an insufficient, below optimal channeling of funds and consequently to slower economic growth, feeding the growth gap between less developed and developed countries and developed countries.

Major disruptions in financial markets occur through a sharp decline in assets' prices (bubble crash) and failures of prominent non-bank financial institutions.

Whenever a crisis occurs, a disruption in the financial system is followed by an increase in information asymmetry resulting in inefficient channeling of funds ending in a contraction of the economy. There are several factors causing a financial crisis. First an increase in interest rates due to the increase demand for credit or the limited supply of money gives rise to adverse selection through credit rationing, limiting loan access resulting to a recession. Second increased uncertainty may bring failure to prominent financial institutions, thus resulting to a stock market crash and then to a recession due to the reduction of investments. This event may even have a serious impact on firms and banks balance sheets. Therefore the reduction of net worth would make debt service harder if not impossible and might force managers to uptake risky projects that might end up in mass defaults. Balance sheet deterioration may render a bank insolvent and might create a "domino-effect" for other healthy banks as well. Banks may also be affected by sovereign fiscal imbalances by holding government bonds after an "encouraged" by the governments purchase (e.g. Argentine crisis). This loss of mezzanine finance is going to take it's toll on economic activity leading to a recession. Unemployment, poverty, crime rate and ethnic violence are going to rise threatening the social fabric thinness itself.

Institutions of information

Disclosure laws to make issuers of securities criminally liable for committing fraud by withholding facts that are material to the pricing. Adverse selection rises in the absence of severe penalizing when the law fails to provide penalties for fraudulent disclosure, the cost of capital for "good" firms becomes unnecessarily high. US securities act 1933 mandated a prospectus with material risks and financial data (road show-SEC approved). Nowadays they're legally obliged to disclose all info publicly traded companies, over the internet. The case is quite similar in the EU. Some emerging countries have similar laws but aren't consistently applied. Their governments favor the productive ones whenever securities markets work well, an institutional setting supports them by generating critical information.

Independent accounting is one of the most predictive drivers for the size of the stock markets. Audit firms are considered to be the most important institutions of information in financial markets. Through USGAAP and IFRS, modified to suit local conditions, varying from country to country. Written standards seem to be necessary but inefficient condition for a proper accounting system. Factors like the lack of local accounting prowess and rigorous government enforcing gave rise to international

audit corporations (BIG#4) to address of international caliber clients' needs good accounting standards aren't enough to overcome cultural secrecy. For instance, east Asian standards contributed significantly to the ".com" crisis magnitude and in the way it unfolded. Misleading accounting statements prevented authorities and markets to prevent malignant managerial. Conduct on the other side of the podium Scandinavian accounting is considered as the most transparent and accurate.

Credit rating agencies, promote the smooth work of commercial debt markets. There are two types of rating agencies depending on the company's state. Rate of public securities through the process of public information and meetings (moody's, S&P etc.) and the rate of private companies based on gathering information from accumulating reports, history of payments from trade creditors and other sources (Dun & Brad street). Credit rating agencies tend to get as global as possible. Rating bonds of firms in emerging financial markets, takes additional account the sovereign risk through certain ratios (gdp, gdp/capita, inflation, dsr, invxr). Similar attempts have been made by local banks in emerging financial markets.

Stock analysis is biased by optimism. Stock analysts play a significant role in stock markets and seem to be good in finding management ferreting, assessing complex risks and opportunities of the firms they track. Communication and swiftness are of essential. **Financial press** is around every important stock trying to expose any hidden scandal or fraud.

Institutional investors (insurance corps, pension funds MMFs),as financial markets develop, bank tend to play a smaller role in securities markets and encourage the rise of institutional investors. They screen and monitor on behalf of their less informed individual clients. They often invest on private placements, setting a benchmark for public securities. Their primary role is to reduce the cost of IPOs through buying large blocks of securities and trade them; thus adding greatly to markets liquidity. It aids to the reduction of adverse selection and helps firms overcome adverse price effects by reducing the cost of issue.

The opening of institutional investors in equity markets as private equity funds, gives opportunities to new businesses to emerge through venture capital and resulting in expanding access to equity markets for three reasons. First and foremost through buying large blocks of securities, they get to economizes on the physical cost of selling, because whole sale information transmission is cheaper than retail. Second institutional investors maintain contact with investment banks over many successive

issues. Through collaboration, continuity of involvement and the investment bankers strive preserving candor and reputation; more accurate (lower) pricing risk of offering in the market is achieved, enabling private equity funds to firms "from the cradle to the grave" and participate to IPOs and subsequent offerings. Last but not least, the large size of the institutional investors' holdings has also permitted them to play a new role in corporate governance. By obtaining large "chunks" of a firm it automatically provides safety and eligibility to the rest investors. If the management under performs, institutional investors "vote with their feet" (stock dumping).

2.3 The role of the institutional framework

A rise of interest in public policy aspects regarding financial instability , the phenomenal expansion of finance in the real economy due to the rise of wealth; the widening split between savings and investments , the institutionalization of savings and the swelling of public sector deficits have drawn significant concern to the regulators. Their work is being circumvented by technological advance and financial innovation that introduces new products & markets accompanied by new risks to the financial system. There seems to be 8 basic categories in banking regulation. The reintroduction of government safety net, restrictions on banks' asset holdings, the concept of capital requirements; the examination and chartering by the regulatory authority and its assessment on risk management disclosure requirements, consumer protection and the restriction on competition.

Government safety net & deposit insurance

Adverse selection is avoided by making private non-tradable loans, thus bypassing moral hazard issues (Risk Premium). Depositors though lack the info about the quality of these private loans. If the quality of these assets isn't appropriate, it may render a bank insolvent (Bank failure). A bank fails when it's unable to meet it's obligations towards it's depositors and other creditors and so must go out of business. Depositors would have to wait until the assets' liquidation to get their money back or a fraction of it depositors seem reluctant in confiding their money, thus making banks even less viable. This lack of information may even create a bank panic and have a serious impact on the economy. Increased uncertainty may lead to bank runs and through the contagion channel may create a "domino effect" hastening the fail of others. How do we restore confidence in the banking system? In the US for instance, before the FDIC foundation in 1934 there was a average of 2000 bank fails per year.

After the imposition of government safety net of 100000$ (1930-33), "fail-spree" dived to 15 per year.

There are two methods of handling bank failure. First, there is the "payoff Method". The 100000$ insurance limit is cashed to all secured depositors from the insurance premium paid to the FDIC. After the assets' liquidation, the FDIC lines up with the rest of the creditors to lean on their claim, a process that takes time to complete. Typically even the unsecured depositors recover more than 90% of their money. Second there's the "purchase and assumption method", most common manner of the FDICs conduct until 1991 dealing with a failed bank. The FDIC takes over and sees to find a willing merger who assures all of the failed deposits so that no one loses a penny. By providing with subsidizing loans and buying its weaker loans, the FDIC helps its partner. Central banks aid in financial distress as a "lenders of last resort" and the government stands by even the uninsured domestic banks and guarantees their deposits, by funding it or even taking it over in extreme cases.

The concept of government deposit insurance gains unexpected popular spreads throughout the world, resulting to the adoption of seventy countries by the late 90's. Is it a good thing? Research of World Bank has shown that deposit insurance generosity is associated with less stability of the banking sector and higher incidence of banking crises. Negative effects emerge on weak institutional environments (emerging financial markets) due to the absence of the rule of law, ineffective regulation and supervision combines with high corruption that enhances the incentive of risky behavior. It concludes that the adoption of GDI may be exactly the "wrong medicine" for promoting stability and efficiency in the banking system in emerging financial markets (Mishkin-The economics of money banking and financial markets).

Moral hazard, adverse selection and government safety net

Moral hazard derives from the incentives of a party to engage in activities (risky) detrimental to the counterparty. The existence of insurance provides increased incentives for taking risks that might result in insurance (e.g. car insurance). Governments are concerned over the fact that by providing safety net and preventing market discipline (bank runs), management will acquire motives of assuming higher risks, that otherwise wouldn't. Government safety net rises because people are most likely to produce the adverse outcome induced against (bank failure), are the ones that most likely would want to get insured (e.g. bad drivers). Risk loving entrepreneurs

might find bank-industry attractive, to engage in high risk activities or outright crooks that get away with fraud and embezzlement.

Too Big To Fail policy (TBTF)

Bank regulators face a substantially big problem. If a very large bank fails it would create a major disruption in the financial system. So they seem reluctant allow a "Big" bank to fail and cause losses to depositors. The "Continental Illinois" full bail out depicts this problem accurately. Through purchase and assumption, everyone's money was secured, previous share holders lost their equity value and management got fired. Too big to fail policy measures for big banks supposing that the "payoff method" was used, large depositors could have an incentive to monitor closely and "pull out" in case of excessive risk taking. To prevent such losses banks would have no other choice but to conform. Once large depositors get to know the bank's systemic significance they'd lose all incentives to monitor and pull out; because "no matter what" their money's insured. That could result in excessive risk- taking and more frequent bank fails.

Financial consolidation and Government safety net

Financial innovation and consolidation have been preceding regulation at a rapid pace leading to both larger and more complex banking organizations. That leaves regulators with two challenges. First increased in size banks as a result of financial consolidation, amplifying "too big to fail" problem. Banks gain "systemic significance" and the financial system is widely exposed. "The more financial institutions get "too big to fail" treated, the higher the moral hazard is on excessive risk taking reaching critical size, stretching out the fabric of the financial system". Second is the financial consolidation of banks with other (riskier) financial services (underwriting, real estate activities, insurance etc) increasing the incentive of greater risks. Government safety net might need to extend to new activities. Could this be seen as a means of security extortion?

Restrictions on asset holdings and capital requirements

Most depositors are incapable of imposing discipline that might prevent banks from engaging in risky activities (first to move, last to know). Bank regulation restricts banks from holding risky assets (common stock etc) making banks (less volatile) avoid too much risk. It also promotes diversification by limiting the amount

of loans' particular categories or borrowers.(asset bubble), Capital requirements (equity) as means to limit excess of risk."The more the owners' got to lose, the lesser risk are willing to take". By adopting a leverage ratio above 5% and setting a floor of 3%; surpassing it connotes regulatory restrictions. Since the "continental Illinois" incident, regulators have become worried about banks' holdings of risky assets and the increase in off-balance sheet activities.

Off balance sheet activities are mainly consisted by financial trading instruments and generate fee income activities accompanied by a multi-risk exposure. Basel committee on banking supervision (100 countries) in an attempt to fend off this effect, has set a minimum of capital adequacy of 8% or risk weighted assets that are consisted of four categories of securities of assets that their credit risk and liquidity defines the amount of the securities value needed as cash, proportional to the credit rating category it belongs; starting from 0% (cash, oecd-debt-securities), 20% (banking claims), 50%(mortgages & municipal bonds), 100% (loans to consumers and corporate loans) and even 150% for toxic assets. Off balance activities have 100% on open lines of credit, 50% performance related letters f credit, 20% bankers acceptance and so on. A drawback to this endeavor is that Basel-risk-measurements differ from the actual risks, resulting in a regulatory arbitrage.

Regulatory arbitrage is implemented by banks keeping on their books assets that have same risk based capital requirements, but relatively riskier.(e.g. a loan to a BBB firm as a corporate loan) taking off their books low risk assets, such as a loan to a company with a very high credit rating. This "window of opportunity" leads to increased risk taking. To address these short comings, Basel II was invented. In other words the work of regulations' nature is dynamic and never ending.

Bank supervision, chartering and examination

Chartering banks is one method of preventing adverse selection. Through chartering proposals, new banks are screened to prevent undesirable people from controlling them. By allowing regular on-site bank-examinations, regulators get the chance to monitor if a bank complies with capital requirements and restrictions on asset holdings to limit moral hazard ("CAMELS" rating acronym).

Cease and desist orders are actions that will make bank- industry as less attractive as possible to risk loving entrepreneurs. Chartering can be similar to screening on risky asset holdings and capital requirements and restrictive covenants on minimum net worth combined with regular bank exams. a commercial bank

obtains chartering from the comptroller of the currency (Central banks) or the state banking authority (in case of a state bank). For a successful chartering grant, first an application and show of a plan of operations must undergo through examination and pass. Then the regulatory authority evaluates banks' prospects by assessing management quality, expected earnings and initial capital amount (equity). Before the 80s chartering agents typically explored the issue whether a community needed a new bank. Often rejections occurred based on the assumption that the old would be hurt by the new entity's presence (to prevent excessive risk taking of the old ones). Nowadays, this anti-competitive stance has almost come to pass.

After a charter's being granted, it's imperative that the bank files on a quarterly basis "call reports" on assets and liabilities, ownership, foreign exchange, operation affairs to the banking regulatory agencies that's subjected to, regarding the financial institution's financial condition at least once a year. Examiners reserve the right of showing up without notice to prevent "swept under the rug" conduct and check bank's books to see whether the checked up on is complying with asset risk holding terms. If an asset (loan) is proved to be too risky or unlikely to be repaid, the bank can be forced to get rid of it or write it off. In case of insufficient capital, or proved of engaging in a dishonest practices, the financial institution is declared as "problem bank" and is subjected to more frequent exams.

Assessment of risk management

Asset and liability assessment isn't adequate anymore due to the fact that financial innovation has produced new markets and instruments, thus employees make huge bets (trading derivatives) that can render a bank insolvent very rapidly. The change in the financial environment reflected a new focus on risk management by guidelines to examiners towards trading derivatives activities, provided with tools to evaluate risk management systems. A sound risk management must have quality oversight provided by the board of directors and senior management. Secondly adequacy policies and limits for all activities that present significant risks and third, the existence of quality risk management measurements and monitoring systems, and fourth and final, the adequacy of internal controls to prevent fraud or unauthorized activities on part of the employees.

US regulators for instance, try to come up with a model to fit all banks, calculating the risk weighted capital requirements, an attempt proven to be virtually impossible. Thus adopting guidelines can be considered as the next best thing. First,

banks' board of directors establishes internal rate limits. Second, appointing bank officials to manage this risk. Third is the bank's exposure. Last but not least, senior management is required to develop formal risk management policies, implement internal control on monitoring interest rate risks and compliance with the board's directives (Mishkin- The economics of money, banking and financial markets).

Disclosure requirements & Consumer protection

Individual depositors and other creditors aren't motivated to produce private info about the assets of bank quality. To ensure disclosure transparency to the best given possible, regulators impose certain accounting principles (USGAAP, IFRS) regarding a wide range of info that helps markets assess the quality of banks' portfolio and the amount of risk exposure. Public information disclosure can be considered as a significant deterrent of excessive risk taking added the banks' risk management systems' as simple as possible outputs for market discipline purposes.

Restrictions on competition

Increased competition has analogous effect on moral hazard of banks regarding excessive risk taking, due to the declined profitability (a self feeding process). During the first half of the previous century in the US Regulation-Q was forced to protect commercial banks from competition and the "devouring" of each other, by setting restrictions on branching and preventing non-bank financial institutions from entering the banking industry and setting interest rate ceilings on both deposit and lending rates. Through the Glass Steagal Act in 1999, "regulation-Q" phased out by personal request of A. Greenspan CEO of Fed during that period. That lift of "shelter" brought to surface inefficiencies and exposures of a "slacking" banking sector , was followed by intense competition for deposits and "rate wars" broke out that lead to a rise of fees and new area of services(e.g. E-banking) that brought a new set of concerns towards regulators .

Problems and frictions in regulating international banking under a permissive atmosphere

The constant "cat and mouse" game between regulators, supervisors and bankers, the cointegration of domestic and international regulation seems quite challenging. Regulators can supervise banks domestically. It's hard to collaborate with affiliates on "overseas" matters (BCCI incident involving 70 countries). Financial innovation seems to be always a step ahead of regulators. Banks employ people whose main objective is brainstorming on finding "loopholes" to circumvent

regulation and cover illegal conducts in order to look "regulatory friendly". Regulators and supervisors don't have the "know how" nor the resources to keep up with these people; on top of that they have to be 100% accurate on stipulations. Their work is similar to the Olympic anti-doping association; "you first have to locate a substance, assess it and then forbid it". Added to the above, regulators' work finds frictions due to political pressures from lobbies, resulting to a further insufficient work. No matter how hard regulators and supervisors try, there will always be room for error, which bankers are going to capitalize on, resulting to bank crises around the world. That doesn't necessarily mean that regulators are 100% responsible for crises' occurrence.

Banking crises: "See one and you have seen them all"

Deregulation, financial innovation and intense competition combined with deposit reassurance; gave access to new markets and opportunities to widen scope of operations to financial institutions which didn't require the risk management expertise to assess the new risks introduced properly. This access is accompanied by a rapid credit expansion that eventually is going to lead in immense losses. The S&L crisis in the US depicts this situation as accurate as possible. S&Ls had been presented the opportunity of expanding to new markets apart from traditional mortgages to commercial mortgages; which they weren't "prepared" for. Regulators lacked the resources or the incentive to properly monitor these activities efficiently, resulting in immense loan losses. The "swan song" for the S&Ls was the sharp increase of interest rates by Fed to suppress inflation (1979). That followed by a two-year recession. During this period the real estate bubble crashed; resulting to the diminish of net worth (even negative in some cases). Mortgage-loan-service "caved" under the pressure given during that period, resulting in an aggregate of 10$bilion losses.

To sum up, banking crises around the world seem to be having similar if not identical timelines, causes and results. Financial and regulatory emancipation of banks leads to certain bubble crashes, usually in the real estate (USA & Scandinavian countries) or governments' fiscal imbalances (Argentina , Greece , Russia etc) that deteriorate banks' asset balance sheets, leaving big pile of losses behind them. No matter the cause the aftermath is more or less the same leading to mass waves of defaults, rise of unemployment, crime rate and ethnic violence threatening the social fabric's thinness itself.

2.4 Banking capital and benefits from a bank's growth

What are the benefits for a bank to grow? What is the minimum regulated capital amount required to expand? Who sets these requirements? What kind of risks do governments and society take on by letting over-grown banks operate? How moral hazard sublimes expansion in the name of economic growth and prosperity? Is there any extortion based relationship between banks and governments seen through the channel of implicit guarantees and expected support ? How do we counter the effects of moral hazard?

Definition of capital

Bank capital (equity) is considered to be the amount of share holders in terms of total assets, that is not required to be paid to anyone. It's existence and purpose is to protect depositors, customers and other creditors from losses; because "the more the owner has to lose, the less probable is going to be for the counterparties to lose their money". It gives stock-holders access to the upside as well as to the downside scenario. It reduces or eliminates the ability to absorb losses. Some instruments with long maturity could offer loss absorbing services (preferred stock). Dividends and interest payments would reduce the loss absorbing ability, though the requirement is not obligatory. It has the lowest priority claim in a bankruptcy scenario; depositors and then other creditors are paid out first under this priority. Stock holders are "the last in line" .

Common equity is considered as the purest form of capital, representing direct ownership. There's no legal obligation to payout dividends. In an insolvency scenario, common equity holders have the lowest claim-priority (residual claim). Preferred stock is more similar to a bond or a loan but is still considered as stock. It represents a fixed claim on assets. An agreed dividend rate is called "redemption value". Preferred share-holders cannot force firms into bankruptcy if dividend isn't paid. Their claim priority ranks higher than common share holders. Dividends can either be cumulative or non-cumulative. Preferred stock's nature has several variations that look either more like a stock or like a debt instrument (sort of junior-debt but NOT!). The difference between Preferred share holders and junior-debt holders is that the latter can enforce bankruptcy if interest payments aren't met.

Equity is divided in two categories, tangible common equity (all assets on Book value) and intangible assets (goodwill etc) (Tangible equity at book value subtracted the liabilities value, preferred equity and intangible assets). The latter are

defined by the difference of assets at Market Value minus the Historic Book Value of assets. It's acquired through many acquisitions of large banks and it can be "written down"(amortized) over time. It usually represents genuine value (e.g. PEPSI brand) only in good times. But "who cares for goodwill in tough times" or even if franchises' value deteriorates?". Thus investors focus solely on tangible equity.

Variations of capital. When is each appropriate?

A key-point about capital is that relevant amount depends on the claim priority in the event of insolvency. For instance Tier1 capital contains a wide spectrum of securities. Governments' first and foremost concern is to protect and reassure depositors, customers and trading counter parties. In times of financial distress dividends get to pile up as retained earnings for "loss buffering " purposes.

How much capital does a bank need?

There is a set of capital requirements being imposed by regulators, rating agencies, investors and through probabilistic complex models. Regulators set a variety of tests for capital adequacy, which banks are legally bound to "pass". If banks fail to meet the tests' standards' expectations, it may even result in seizure. Rating agencies have an important effect on large banks and a minor in smaller ones. The cost of capital is also affected by the rating agencies; "the lower the rating, the greater the demand for collateral or better terms (higher yields)". Banks tend to overlap the regulatory standards and strive to meet the ones set by the rating agencies (stricter). Investors through financial markets view proper capital levels differently. They are concerned for tangible equity in terms of total assets and banks take it into serious account. Common share holders want their bank to be safe but also "crave" for higher risk through employing less capital. Large banks use complex models to forecast their financial condition under different potential scenario with a 0.5% probability of default at any given year. They pronounce the need for more capital than the regulatory suggestion, but more often show less. They can be considered as flawed (too optimistic or skewed), so they often go for toughest capital requirements by keeping additional buffers as "a cushion" for avoiding the breach of minimum requirements' levels.

Why don't banks hold a large amount of capital?

Suppliers of funds ask for higher returns (ROE), seeking compensation for risks of a bank's loan book, investments and operations. The higher the retained earnings are, the lower the profitability is. In order to sustain it, a rise in lending rates,

service fees and a drop in the latter's cost seems inevitable; in the long run ROE drops and Total cost rise. There are several factors that keep ROE from dropping. Explicit and implicit guarantees by the government make additional capital cheaper. Adding capital shifts risk from insurers or government to investing capital. Interest payments are tax deductible for banks (tax-shield) while stock dividends and REPOS aren't. Capital requirements seem like a compromise (trade off) between efficiency and safety. Policy makers and regulators don't wish to add friction (costs) into lending transactions by requiring excess of capital and the banks' share holders have little interest in earning lower ROEs.

Variations of regulatory regimes on capital requirements around the world

Regulatory capital requirements are set by a collaboration of government officials and banking regulators that varies from country to country, who usually operate in a fair degree of independence. In the US for instance, regulatory banking conduct is based on non-numerical factors. Fed, FDIC, OCC have a coordinated minimum requirement standards to avoid regulatory arbitrage (flow of business to entities with loosest standards). In the EU coordination is done at a European level as a whole, though it may require legal and regulatory changes to put directives into effect. In an international level the Basel Committee, associated with the BIS, stipulates regulations that nowadays' banking majority abides to. These principles of reforming the financial system are non-binding unless each countries legal system is compatible with. Broad principles are suggested for the financial system to avoid abrupt actions to raise capital standards which could exacerbate the effect of a credit crunch and avoid future ones.

Currently capital is consisted by Tier1 (T1) and Tier2 (T2). Tier-1 is consisted by common stock and preferred (equity like). Tier-2 is consisted by preferred by (debt like), subordinate debt (sub-debt) securities and accounting reserves. The sum of the above ensures the adequacy of capital available for handling extreme situations. Basel accord deducts intangibles assets (goodwill etc) from the balance sheet and individual national regulators have chosen to fully or partly exclude certain other accounting assets (in the US tax-deferred assets) to help banks in a financial distress scenario in terms of capital adequacy. US regulators consider capital requirements in terms of risk weighted assets (RWAs). Risk weighted assets vary depending on their liquidity, credit, market and overall risk. There are categories that are consisted by risk free instruments (T-Bills, OECD bonds, etc) that require no cash reserves (0%), claims on

other OECD-based banks (20%); mortgages and high credit ranked corporate loans (50%); lower credit rated corporate bonds and loans are and municipal bonds (100%) and several other assets also known as "toxic" (150%). There are also "off balance sheet" activities that are handled in a respective manner (open lines of credit, performance related letters of credit, bankers' acceptance and others). If Tier-1 in terms of risk weighted assets is above 4% the bank is considered "adequately capitalized", 6% "well capitalized", and above that banks keep extra capital as a "buffer". US-regulators implement the use of the leverage ratio (Tier-1 in terms of Total Assets) representing a banks' leverage; absolute and easy to use by all.

It's important to note that capital testing is done exclusive on an "on-balance-sheet" basis. One must consider the implications of "toxic" assets in a balance sheet and their impact on it. Bankers try to estimate the non-performing loans ratio within a range of accordance with the accountants; though regulators push for more conservatism keeping in mind that accounting rules are considerably flexible. Standard testing is not forward looking, so regulators ask for scenario analyses that might end up requiring additional capital due to the adverse hypothetical scenarios. After the 2009 crisis, governments have created an additional layer of capital requirement "stress test" to ensure that banks have sufficient capital to withstand a substantially sharp deterioration of the economy that forecasters anticipated. Since capital standards are asset risk based, operational risk is taken into serious account (Basel II), though US regulators typically ignore it. In other words the "end game" behind all these efforts is the creation of a financial system defined by an effective regulatory review, swift market discipline and transparent accounting ("A Primer on Bank Capital"- Douglas J. Elliot).

What happens if a bank doesn't have enough capital?

If capital requirements fail to meet regulatory standards, distinct penalties await. In the US for instance, the FDICIA stipulates "prompt corrective actions" that are considered to be the cornerstone of regulators' power in enforcing changes on a bank. If a bank is adequately capitalized, it might meet some regulatory constraints (acquisition approval). If the bank fails to achieve an adequate-status, must submit a restoration plan towards its primary regulation authority, convincing enough to receive approval. In case the bank fails to come up with a plan, it's characterized as significantly undercapitalized, facing a higher probability of enforcing the above. In the extreme case of a critically undercapitalized bank, quick steps are needed for

capital restoration, no payment is allowed to sub-debt holders and a 90-day deadline is given to "fix things up" from the FDIC. In this case seizure is imminent (if not inevitable). In order to for seizure-related actions to take place, a bank must be unable to meet its short term obligations or suffer losses to the amount that all equity is depleted, thus there's no possibility for the institution to become adequately capitalized without federal assistance.

How much capital do banks usually carry over the regulatory minimum?

Retained earnings are positively correlated with capital requirements. Demands for important constituencies may force a bank to hold more capital than the regulatory suggestion. The higher the retained earnings are the safer a bank seems, leading to a higher credit rating and consequently to lower cost of capital needed for implementing certain activities and strategies. A bank may be more or less conservative in the level of protection that seeks beyond the minimum needed for external constituencies. In other words, "buffering is prudent". It means less surprises. On the other hand though, the lesser urge for higher buffers in good times might cost severely in bad ones (US banks were far beyond regulatory requirements with capital requirements of 11.5% and leverage ratio of 8%).

Do higher capital requirements make banks suffer?

Higher capital requirements would make banks less rather than more safe. For instance banks avoided some of the effects of existing capital requirements by selling assets to "off balance sheet" entities known as Structured Investments Vehicles (SIVs) that exacerbated the financial crisis. A lower effect of capital requirements constraining banks, introducing additional liquidity management risks that wouldn't have occurred had the assets remained "on balance sheet". Banks could also respond to a more stringent leverage test, by choosing to own riskier assets in order to increase expected return on equity. Apparently, weightings don't adequately reflect true risk. It's either the weights are false or the categories too broad. The imposing of transparent accounting standards to allow rating agencies and capital markets make their own judgment of the risk assumption of banks. To break it down, higher capital requirements are likely going to result in higher interest margins, operating expenses and a decrease in the cost of capital. Higher lending rates are going to pronounce credit rationing issues, decrease loan access and increase service fees. Thus by limiting the access to loans economic activity is going to contract through the channel of investments.

What's the current aggregate opinion on regulatory changes?

The consensus is clear. Minimum capital requirements need to be raised according to Basel II standards. It's needed to promote the building-up of capital buffers that can be drawn in periods of stress, the strengthening of capital quality and the introduction of leverage ratio as a backstop. By raising the quality, consistency and transparency of the capital base through tangible common equity, can have serious implications; such as the deductions of goodwill will directly come out of common equity rather than being applied to the whole Tier-1. Recommendations on the level of tangible common equity are likely to rise. By enhancing risk coverage supplementing capital requirements with leverage testing, it veils significant risks. Banks have the potential and incentives to "game" any system of risk weights given, thus it's difficult for the regulators to negate the loopholes. Banks can also end up highly geared. Leverage-testing could work as a supplement in investment banks since the 2009 crisis started from there. Reducing pro-cyclicality and promoting counter-cyclical buffers, seems well intended for loss absorbing purposes.

Why are policy makers proposing higher capital requirements

Banks couldn't cope with the building up of "on & off balance sheet leverage", the gradual erosion of level and quality of capital base at the same time with inefficient liquidity buffers, the systemic and trading losses nor with the large off balance sheet exposure, that "shadow banking" built up. The crisis was further amplified by the deleveraging pro-cyclical process due to the interconnectedness of the systemic financial institutions through series of complex transactions resulting in a massive contraction of liquidity and credit.

Bankers vs. Regulators (a cat and mouse game)

Will banks find a way evading tougher capital requirements? Certainly, banks will attempt to find legal means to reduce the effect of higher capital requirements, by increasing the use of securitization and moving risks off banks' balance sheets, to other entities. Capital rules spurred the inventions of SIVs. Regulators will try to impose regulatory and accounting rules to counter the SIVs' dependence and banks will attempt to restructure assets of lower-Risk-weighted-categories. In other words regulators will always be "a step behind" bankers. Evasion of regulation comes at a cost. The reliance on internal risk assessment models is a choice too risky for everyone ("A Primer on Bank Capital"-Douglas J. Elliot).

Should capital requirements vary over the business cycle?

Building up in good times seems like a major problem. When asset prices are "bubbling", banks and non-bank financial institutions tend to take heavy exposure. Good times end with a sharp drop in assets' prices (bubble crash) resulting in major losses and credit crunches. Counter cyclical capital requirements is an aggregately favored idea. Increasing in good times, depleting in bad. It would help banks build up capital bases when cost of capital is relatively light, ease credit crunches and pull bank on lending. On the other hand , it is said that by raising capital requirements in good times restrains economic growth. The opportunity cost is larger and might not mitigate credit crunches when bad times come. There's also the disbelief in accounting standards' accuracy especially in times of distress.

"Contingent capital" is it a good idea?

Contingent capital comprises securities that aren't considered as capital by nature (pure debt securities), but for which there's an agreement from the beginning that they will convert into a form of capital if certain "triggers" are met. A swap under certain conditions to re-establish a company that gets into trouble. The problem with contingent capital is that it's very difficult to negotiate in times of distress, since shareholders' bargaining position is weak, resulting in onerous terms.

Proponents see it as a "win-win" situation; a relatively cheap way to provide a buffer of extra capital over and above the regulatory standards. The cost would be relatively low because purchasers would generally buy if only the probability of default is low. Cheaper than selling common stock (for instance 1% instead of 15%), the interest paid on debt security is tax-deductible thus lowering the after tax-cost even further. The incentive behind this is the creation of a liquid market to establish a market price for the contingency that the conversion might occur. What "triggers" would be used to cause the conversion and how? Triggers can be either related to the bank's health or probability of insolvency and have a precise nature based on accounting ratios, regulatory actions on the management (moral hazard implied) or even dependent on a conversion ratio.

On the other hand contingent capital can be as good as the triggers chosen. Capital works best when it's large enough to provide a high degree of confidence in the bank's safety. If the banks enter a downward spiral, the contingent capital is only good for loss –absorbing purposes. Investors could ask for a prohibiting high price for (especially if it's badly designed). Others see it as another burden on the banking

system. If the basic capital levels and other rules already produce a safe system, then adding a contingency such as this on top, might create a drag on the profitability without a commensurate increase in safety. There're also moral hazard issues regarding the manipulation of accounting figures that might "trigger" an accidental equity issue (cheaper) ("A Primer on Bank Capital"-Douglas J. Elliot).

Implicit guarantees for bank debt

Governments and central banks are considered as guarantors of last resort for financial institutions. There has been a debate within the OECD committee whether the implicit guarantees can be fully withdrawn under the recent circumstances that have taken place. While many of the emergency guarantees have been withdrawn, market participants are being left with the impression that the governments will be reinstated whenever circumstances make it compelling for policy makers to do so; thus creating a false sense of security. IGs for bank debt have been considered by policy makers too big, too interconnected, too important or too big to fail. For any debtor deemed "Too Big To Fail" results in an increase of debt value compared to the non-Too Big To Fail financial institutions and gain cheaper access in financing relative to the risk they take. An effect recently declined due to the decline in sovereign strength (Sofia Lindh-2012).

Effects of implicit guarantees

Implicit guarantees for banks are considered to be undesirable. The provision of explicit form of government support installed the perception that financial institutions benefit from an implicit guarantee. To counter the distorting concept that implicit guarantees always rescuing banks which distorts the single market should be reduced. Banks and **NOT** tax-payers should be responsible for bearing the costs of the risks they take. Implicit guarantees raise a number of policy issues. There're no charges for implicit guarantees, at least not directly. Underpriced (or even free) guarantees are an invitation to use them and perhaps assume more risk. Some banks benefit more from valuable guarantees than others. Small banks gain less benefit than a big bank with a strong sovereign would. "Size and sovereign credit matter". Implicit guarantees also imply an ongoing transfer of resources to banks, taxes that may be needed to recoup. The peculiar thing with implicit guarantees is that they cannot be put on the fiscal budget. It's rather difficult if not impossible to hold governments accountable for them.

There's also an undesirable link between the value of bank and sovereign debt. Implicit guarantees also imply an undesirable link between the bank's value and sovereign debt, including negative feedbacks from the bank back to the sovereign (Adverse effects). An over-indebted banking system under leveraging pressures is detrimental to domestic real activity growth and tax income, making it harder for the sovereign to service its own debt. Since banks are considered as a significant buyer of government debt, widespread failures would imply shrinkage in the investors' base. Given the risk-weighted-asset changes, OECD-bonds are "risk-free", so the demand for such securities is expected to increase under capital pressure. Bank support measures might require additional fiscal outlays. Explicit or implicit guarantees for bank debt, would increase actual or contingent foreign liabilities.

Banks are significantly exposed towards the risks of sovereign debt. If the price falls, they are going to experience disproportional losses (e.g. Argentine Debt). A decline in the market value of banks' holdings in sovereign debt, corresponds to a reduction in the value of debt as collateral, for raising whole sale funding in the markets as well (in Central Bank funding as well). Central banks apply valuation haircuts on debt securities offered as collateral to a limit, to keep collateral eligible. Sovereign credit ratings work as a "ceiling" for ratings on private domestic debt (PIIGS exception). In other words, implicit and explicit guarantees are dependent on the sovereign debt's viability. Where sovereigns are strong, the negative feedback due to interconnectedness is absent (Sweden, Germany).

Measuring determinants of Implicit guarantees. What needs to be done?

Credit ratings may not always prove to be correct in their assessments. Market participants do take them into account when valuing bank debt. The relationship between credit ratings and funding cost changes over time. Credit ratings' assessments also affect funding in other ways. Explicitly in wholesale and central bank funding operations to decline collateral requirements; and market yield spreads of debt issues. Policy makers strive to de-emphasize the role of external credit ratings and the mechanical reliance on them by market participants.

An alternative way is using the observed yield spreads. Implicit guarantees can be "obtained" through the observations of the market yield spreads for debt securities that have similar characteristics, but issued by issuers that differ only in the extent to which they benefit from implicit guarantees. It shows direct measure of implicit guarantees effect on funding costs. On the other hand, it's difficult (if not impossible)

to identify debt securities with similar comparable characteristics and extracting credit risk and liquidity risk plus not all banks issue bonds in the same currency; thus FX-risk is quite difficult to grasp (so much for measuring). Credit spreads from observed market data become more difficult when there's no appropriate reference security (point of origin) that's considered "credit-risk-free". Credit ratings have overcome this problem to a degree.

In the EU, implicit guarantees for bank debt change noticeably over time; they increased after the 2007 crisis and peaked in 2010, and then receded back on 2007 levels in 2012. Despite the regulators' effort to minimize the perception, some banks of systemic significance benefit from it (TBTF). Implicit guarantees differ from country to country. The number of banks that benefit from implicit guarantees in 2012 largely exceeds the respective of 2011. That shows us that the "UPLIFTING" effect is positively related to the sovereign credibility.

A guarantor's strength is proportional to the guarantee's value. A contingent claim analysis show that the value of a guaranteed debt is positively related to the guarantor's strength and negatively related t the debtor's strength. Guarantor's capacity and willingness t provide support to the bank matters. "Too Big To Fail-banks" also affect implicit guarantees positively. If a bank's size becomes too large; it may become unaffordable to back it up (e.g. Icelandic Bank debt). Empirical analysis on the capital requirements' "UPLIFT" effect show that banks benefit increases from high implicit guarantees. Larger banks tend to benefit more from high implicit guarantees, implying very significant cost funding advantages for the banks that benefit from them. Thus it creates competitive distortions and invites excessive risk taking. To fend off this phenomenon, the OECD committee in financial markets proposes the transpose of implicit and explicit guarantees at a fee. Making a fee in function to the bank's size and risk profile, to motivate banks to "dismantle" in smaller, less complex, interconnected and consequently more resolvable if necessary; raises adverse selection concerns (e.g. car-insurance BAD drivers are going to rush and get insured). In acute and stressed situations, PMs bail out TBTF-FIs by abusing IGs domestically ("Implicit Guarantees for Bank Debt: Where Do We Stand?"-Sophia Lindh-2012).

Competition, risk shifting & public bail out policies

Implicit guarantees strongly increase risk –taking or banks' competitors. Thus public guarantees distort competition in the banking system. There 's no evidence that

public guarantees increase protects banks' risk taking , apart from banks that have more outright public ownership. Publicly guaranteed banks are able to refinance at lighter, more favorable terms than others. In a worst case scenario, creditors would expect to be compensated by the state. Such competitive distortions may undermine financial stability because they provoke higher risk assumption by the publicly guaranteed-banks' competitors. This kind of "back up" pushes the publicly backed banks towards more aggressive strategies (narrowing the rate margins), increasing competition and pushing non-publicly-backed banks in excessive risk taking. Before the recent financial crisis (in many countries) there has been a mass merger wave in the banking system and the result was high concentration of assets in terms of GDP, leading to the increased rise of "Too-big to fail" subsidies. As a consequence, large banks presumably benefit from implicit and explicit guarantees. The aftermath from a potential "bail-out" would be a dull of market discipline's reflexes. Depending on others, would lead to a more fragile financial system in the future.

Banks' post-crisis competitive conduct may not be independent to government intervention during the crisis. Government intervention through open market operations is much more important than government guarantees on publicly owned banks. The competitive distortion induced by government intervention during the last crisis is not easily removed. Even if governments divest their bank ownership swiftly, implicit guarantees may persist and market participants may expect a new intervention in the future. Government bailout guarantees can affect the risk taking of protected banks through the channels of market discipline and chartering values. First public guarantees reduce market discipline because creditors anticipate their banks' bailout; thus the incentives for monitoring risk assumption are lower or the demand for a higher yield. "If depositors are protected by a guarantee, they will punish their bank less for excessive risk taking, hence reducing market discipline". Public guarantees also affect risk-taking behavior through margins and charter values are counter-proportional to the incentives for excessive risk taking. Government bailout guarantees result in higher chartering values for publicly owned banks due to lower refinancing costs; therefore publicly owned banks reduce risk assumption (Gropp-Hakenes-Schnabel-2011).

The effect of government guarantees issued during the current financial crisis, may constitute a threat to the stability of the banking system in the future. The costs of public guarantees are reflected on the competitors' risk taking. Public

disinvestment and discontinuation of government guarantees may prove to be insufficient, "as long as markets continue to expect a bank to be bailed out, competitive distortions may persist." Public guarantees reduce margins and charter values of competitors and non-publicly-owned banks are pushed towards excessive risk taking. Explicit deposit insurance reduces banks risk taking. Explicit deposit insurance reduces banks risk taking (consequently rise moral hazard issues) because it may serve as a device to limit safety net use. Smaller banks verify the proportional relationship among bank size, probability of failure and bail out, while "Too Big To Fail" banks keep on following riskier strategies.

Many believe that deposit insurance has a negative effect on banking stability, public ownership and concentration. As a counter to that some believe that systemic banking crises are less likely to occur in countries with higher concentrated sectors. Initiatives to adopt legal procedures for an orderly resolution of "Too Big To Fail" banks in several countries have been made. It will aid in realigning the incentives of protected banks by reducing competition intensity (margins) resulting in the reduction of excessive risk taking by competitor banks. Some countries started imposing capital surcharges to their top ranked financial institutions as a systemic "slap" (2.5%) as an attempt to "level the field" for smaller banks.

Private vs public bank ownership

Protection of both private and public banks has an effect on the risk assumption of competitors. Market share and public owned competitor banks matter for risk taking. For private banks bailout policy has a decreasing risk effect. Charter values seem to dominate market discipline (inversely for public owned). Public owned are less concerned protecting charter values than private ones. The higher the protection, "the harder the push" is for competitors towards excessive risk taking.

Moral hazard issues due to the banks' expected support

In the past, crises have been averted due to the safety net existence. Governments' capacity and willingness to provide support to an insolvent bank when needed must be viewed with caution. Capacity is positively related to expected support and willingness is positively related to systemic significance of a bank and the repercussion of banking fragility; "the higher the systemic significance of bank, the higher the willingness to support it". A country with strong institutional framework, may restrain excessive risk taking through more effective supervision and market discipline. Absence of support for a bank might be regarded negatively by markets

and public. Conversely in a country with weak institutions, support might be perceived as "rewarding the imprudent"; thus pronouncing moral hazard issues and regarded in a foul manner.

Moral hazard concerns were weaker than governments' capacity and willingness; even more after the crisis eruption, en-synch with market participants' claim that this fear is exaggerated. If governments withhold support to a bank in need; a fear of which seemed to be exaggerated, might develop from a manageable situation to a full blown crisis through the channel of self-fulfilling expectations. A good institutional environment is associated with higher expected support, while a large concentrated banking sector with lower. One should take into serious account the imposing of a "fair" insurance premium for all financial institutions. A "double edged sword" policy that will most likely promote downsizing (lower concentration) of "Too Big To Fail" institutions and on the other hand will most likely be detrimental to the small banks' viability (Angelos A. Antzoulatos-Chris Tsoumas-2013).

3. Regulation, supervision and investors' confidence

3.1 Regulatory and supervisory divergence in RWA practices

The last crisis in 2007 made the need of revisiting risk weighted assets imperative. What are the key concerns derived by calculating practices? Why should risk weighting assets be revisited and what needs to be done to restore lost confidence in the markets? What factors differences around the globe? How d regulators and supervisors see it? How bankers see it? How investors see it? What triggered the last financial crisis? What factors in banking capital made it spur within the banking system? What worked and what didn't within the Basel II framework? What needs to be remedied in order to restore investors' trust? How would it affect aggregate activity (productivity)? At this point strengthening capital adequacy ratios is of the essence. Work needs to be done both on the numerator and the denominator in terms of quality, quantity and transparency to make up for the Basel I "loopholes" and their exposures' impact.

There has been a decade of increasing total assetss and declining risk weighted assets' density (=RWA in terms of Total Assets), due to mass consolidation through expansion and growth in business and geographical terms that was accompanied by a reduction in RWAs and increase in total assets. The shift from Basel I to II enabled banks to benefit more from lower risk weights under the AIRB- approach. Risk

weights could also have been driven down by changes in the business mix, with banks increasing at a relatively faster rate, assets that carry lower risk weights (regulatory arbitrage). The point in the economic cycle (growth/downturn) at which probability of default and risk weighted assets are calculated is also important.

A downturn in the economic cycle could "push" the assets' probability of default up and consequently their risk weights and vice versa. Last but not least, the increased use of collateral may have contributed to the risk weighted density "drop". A host of factors influences a bank's modeling choice and consequently risk weighted assets' calculation. Regulatory framework is considered to be a key factor influencing the latter calculation, depending on the jurisdiction a bank is driven by. The majority of systemically important banks report under Basel II, though it carries important implications for the way assets attract risk weights. On the other side of the Atlantic, banks go for higher ROAs under Basel I regime introduced to the leverage ratio and therefore they have more binding constraint, in creating asset bubbles. In other words RWAd in Europe (Basel ii) is lower than in the US (Basel I).

Why RWAs should be revisited? Risk weighted assets as a concept provides three important functions. Firstly it provides a common measure for bank risks that's mandatory. Risk weighted assets' existence, ensures the proper allocation of assets proportional to the risks assumed and potentially preventing any destabilizing scenarios, such as asset bubbles. Policy makers, bankers and investors rely heavily on capital requirements to assess a bank's "strength" and provide solutions to the previous financial crisis that affects until today. Capital requirements are the key indicator of a banks solvency and resilience. Surcharging new capital buffers for global systemic important banks is based on risk weighted asset regimes.

Regulatory capital framework is a non-stopping work; since the constant increasing bank sophistication and financial innovation makes banks finding "loopholes" on regulatory capital, avoiding it's limitations. Focus has been shifted towards the denominator (RWAs). Regulators, credit rating agencies and investors have expressed their concerns for the need to focus on risk weighted assets concept. Market participants moved away from the regulatory measures and focused more on the capital measures that better reflect loss absorbing abilities. Basel III sees to correct deficiencies in the numerator by setting a stricter definition of capital, but it seems that the markets' concern is leaning towards the denominator.

What are the key concerns about risk weighted assets? Regulators, bankers and market participants have expressed doubts about the adequacy, consistency, transparency and comparability of capital. A market distrust in the reliability of risk weight assets may result in a recalculation(downwards) and disregard of capital ratios and lean towards a more absolute and simple measure like the leverage ratio (Tier1 in terms of Total assets). Most bank comparisons rely on capital requirements but similar capital requirements may "mask" different risk levels, or different measuring approaches. Banks converge towards the most "favorable" regulatory framework. That's going to lead investors in demanding higher capital requirements to compensate for the low reliability of the denominator (RWAs) and ask for higher yields.

Banking performance in certain geographical location, under certain capital requirements is driven by the regulatory and accounting framework, the economic cycle's phase, business model, portfolio composition and probability of default. This is where the credit rating agencies take advantage of the shortcomings of the regulatory capital, as they incorporate quantitative and qualitative measures (asset mix, business model etc) that vary across time and regions. Is it prudent letting outsiders capitalize on these short comings and gain influence to the degree that's necessary to incorporate their assessments on the legal and regulatory framework? To assess a banks' risk assumption apart from the use of the leverage ratio, risk weighted-density (=RWA in terms of Total Assets) should be taken into serious account. Having the leverage ratio as a "backstop", the lower density the better it used to be. Lately this perception has changed "180 degrees", claiming that the higher risk weight density is, the more reliable and prudent risk management is and the less likely is the optimization (manipulation) of risk weighted capital requirements.

As far as regulators concern reliability and accuracy regarding capital ratios has brought questions regarding risk understatements due to the on and off balance sheet activities, thus tail risk isn't captured regarding extreme case scenarios. Reported capital adequacy ratios can substantially overstate a bank's capital "strength" and send wrong signals to market participants. What needs to be taken into account is that capital ratio alone isn't a reliable indicator of resilience to stressful situations and not "allowing room" for recovery or resolution practices.

RWAs as a percentage of total assets have trended down despite the heightened risk environment (risk weighted density decreases) can be attributed to

"model changes, data cleaning" and geographical jurisdiction. It can be said that a lower risk weighted density could be considered as "managerial imprudence and recklessness" since all deposits are insured.

In terms of pro-cyclicality, risk weighted assets which rely on credit rating agencies are mostly based on historical parameters may be understated in good times and overstated in bad. Probability of default should be calculated within the cycle's duration rather as "point in time". Calculation of "RWA"s may strengthen capital requirements, reducing as banks deleverage of increase in good times. Thus in times of crisis, situation gets exacerbated and in good times asset bubbles build up.

Some banks are concerned whether lowest risk weights could benefit from them, due to a competitive advantage (lower capital requirements) and "market time" equity. Globally systemic important banks that would be surcharged in terms of RWAs could result some banks getting favored over others. The least "conservative" banks could gain "ground" (market share) which could threaten global financial stability through the channel of interconnectedness. Another concern of banks is the variety of implementation of regulation and supervision related to RWA-practices across jurisdictions. Hence some banks get more lenient treatment than others (Le Leslé-Avramova-2012).

Investors on the other hand have been left with the task of comparing capital ratios and deciding which financial institution is the safest. Due to the fact that RWA-definition is subjective and varies from bank to bank and across jurisdictions, through different methodologies; thus risk management may result in distrust among regulators, bankers and investors. This may result in a sort of "confidence" crisis that eventually no bank finds funding, resulting in a liquidity crisis (2007 crisis). To address poor liquidity management, supervisors came up with two measures. The first measure (LCR) demanded that a bank had to be resilient enough to remain liquid for the first 30days of a liquidity shock manifestation. LCR (Liquidity Coverage Ratio) is a ratio that's the product of high quality liquid assets in terms of a month's liabilities; a test that only very few banks managed to pass. In a wider time basis, the NFSR(Net Financial Stability Ratio) ratio was invented similar to the previous one but on a year basis. A measure seemed to be inappropriate and very tough to implement due to the fact that banks couldn't efficiently manage their liquidity status in the short term.

Investors go for simple, tangible and objective measures. Pricing risk formulae seems to be very complex and confusing, that not just supervisors but even bankers

themselves cannot accurately assess total risk exposure of a certain bank. Things get even more complicated when banks have branches and subsidiaries in different jurisdictions where the most convenient models given the jurisdiction are selected to implement. This brings even greater frustration to the markets, thus risk weighted measures are discarded and rely solely on leverage ratios that are considered to be more simple and absolute.

Divergence in RWA calculations and therefore in risk-weighted-density could be easily attributed to the variety of regulatory practices and banks' internal modeling approaches depending dependent on the portfolio composition and geographical position. Some banks with less complex portfolios go for the "Basel II SA", while others more complex (GSIBs) go for the "Basel II F-IRB/ A-IRB" or even a combination of the latter two.

Supervisory, accounting, and legal framework also matters. Supervisors are left with the task of understanding each jurisdiction's risk environment and consequently validate and monitor banks' internal models. Each internal risk model is defined by the risk management strategy, apetite and the modeling risks involved. From an accounting point of view, some financial institutions report under IFRS or US-GAAP or both; thus making comparability even worse.

In a "micro" point of view, risk-weight calculations (Risk weight-density) are also defined by the business model implementation given the economic cycles' phase. Asset mix is defined by the geography, business lines and probability of default carrying within the cycle defined by the banks' business model. One should have into mind each jurisdictions legal framework in terms of judicial efficiency use of collateral and contract enforcement; regarding lending practices, handling non performing loans and provisioning practices have their part in defining risk-weight density as well.

In order to make a change in the RWA-framework, pillars I,I,III and banks' internal risk management practices must be revisited as well. Minimum floors can be introduced at different levels within the IRB formula, or risk-weighted assets or capital ratios and their effectiveness could depend on their objectives. Increasing floors on the IRB approach could reduce it's attractiveness against the standardized approach and encourage banks to be more conservative. This would encourage banks to calculate the probability of default during the cycle to ensure that tail risks have been taken into account.

On RWAs' minimum floors on asset classes should be introduced to avoid asset bubbles. A safe guard must be imposed on capital requirements at a relative amount of the capital required under Basel I regime. Regulators must encourage lending further to small and medium enterprises rather than allowing regulatory arbitrage. In accordance with the macro-prudential policies, risk-weights should "move" in order to limit or foster insufficient growth of certain asset classes within the cycle and could additionally be used to target emerging risk from assets' exposure (bubbles). For IRB banks, a multiplicative scalar for the sector under consideration could be applied t internal model outputs, hence risk weights wouldn't stay constant but could be adjusting to divert or attract capital on certain assets classes (Le Leslé-Avramova-2012).

The possibility of returning to the Basel II (Standardized Approach) must be considered strongly. It's simple, "monitor friendly" and still allows for market risk sensitivity. On the other hand, it goes against all efforts f promoting IRB systems and to allow sophisticated globally important banks to shift away from crude methods. It increases the reliance on credit ratings agencies, especially in times of the agencies being questioned in terms of objectivity and reliability. Differentiation is substantially limited in some asset classes (e.g. mortgages are all the same). It removes all incentive of banks developing good risk management and to get penalized asset exposures, even though they're properly priced and entail social benefits; and above all it's more expensive since capital requirements on corporate and mortgage exposures are increased.

The risk based approach (RBA) is completely suppressed and the reliance's burden fall upon the leverage ratio's efficiency. Apart from the fact that leverage ratio can be simple and easy to calculate, it offers a safeguard against any model's errors and any attempt of bankers' "gaming" the system since it ceases to exist, plus it puts a ceiling on the accumulation of "low risk" or ""zero risk" assets. On the other hand, it cannot grasp fully the risk of the assets individually and properly within the same class because some assets are safer than others. As a consequence, excessive capital is demanded.

Another extreme proposition is to allow banks to rely purely on A-IRB and remove any floor constraints. Theoretically banks could have to come up with the most sufficient model possible to survive on their own. In practice not all shareholders

and managers acquire the proper know how nor the incentive to ensure risk-weights' sufficiency, so unlimited discretion may prove unwarranted.

Supervisors can always rely on pillar I to correct risk-weights at any particular institution based on its business model or on excessive deviation from analogous practices or even additional buffer to ease modeling risk exposure. Thus supervisors should be able to build in additional capital through higher risk weights on assets deemed to be riskier. Vigilance from their part is needed to ensure banks models' efficiency and recommend remedial actions if necessary. Convergence regarding transparency through accounting practices is essential. Supervisory work must be globally coordinated to address the need of globally expanded banks regarding their compliance to international standards across all jurisdictions. Another practical solution could be the consisting of supervisory teams with parts from various jurisdictions when examining an individual bank.

To ensure market discipline's swiftness, banks' disclosures should be more detailed on a quarterly basis regarding the risk weighted assets' composition, broken down by geography. Methodology of risk weighted assets and capital should be accompanied by common sense. Basel I & II floors must be disclosed as well. Banks could also become more extrovert by arranging meetings with analysts and investors, explaining and updating model or RWA related changes. Auditors must be granted with unlimited access to confidential information, making reports on risk apetite in a qualitative and quantitative manner. Banks should introduce to their internal models a more "economic" approach for measuring capital and managing risk, developing their models in a manner that they get to be forward looking and better grasping tail risks. Even if that doesn't occur and sophisticated (globally important) banks return to the standardized approach, the increase in capital requirements would be traded off by the improved confidence of the investors ("Interim results of the EBA review of the consistency of risk-weighted assets. Top-down assessment of the banking book"-2013).

To sum things up RWAs as a concept is most well intended, but it's been poorly implemented followed by serious aftermath. Supervisors and regulators are at crossroads since there is no easy solution at hand. A "one size fits all" set of RWAs cannot exist since different parts of the world experience different phases of the economic cycle. Know-how and cultural risk-based apetite varies around the world. Defining RWAs seems to be a vigilant job from the regulators and supervisors part

timely grasping risks and their gravity properly. In a "macro" point of view RWA practice of GSIBs has converging into a point that only minor (domestic) factors keep them from total alignment, dependent on any given jurisdiction legal and institutional framework.

3.2 Risks and challenges in banks' financing patterns

Funding sources and strategies of banks have altered. As the financial crisis unfolded liquidity became a scarce good and deposits to a lesser extent. Central bank money was available throughout the financial crisis, since it's early stages. The first immediate reaction of banks was the shift from wholesale funding to more stable sources. Deposits gained ground albeit the increasing competitive conditions, making banks invest more in customer relations. Increased interest on retail deposits hurt traditional banks' by reducing their potential share of the market.

Given the extent of funding restrictions central banks and governments collaborated to alleviate the funding gap. Central banks focused on short term funding while governments explicitly guaranteed the safety of the deposits. Well intended actions, but not enough. As a result liquidity returned into central banks' deposit facilities or recycled in the overnight market. Given the existed long term constraints, had significant impact on banks' funding structures. Banks shifted to short term funding sources, highly concerned on day to day developments, making them extremely sensitive.

On an aggregate basis, behavior is a serious lagging factor towards the normalization of funding, inhibiting long term commitments. Several banks conceded that central banks' and governments' actions were of key importance in preventing a full blown collapse of the banking system. Governments' measures altered the "field" between healthy and less healthy financial institutions. Banks' usual issuance activities were being crowded out by government guaranteed activities, resulting to a home bias rise. Banks got more introvert, focusing on domestic markets, renewing funding structures towards that way by building strong domestic (usually) investor base. The recent financial crises events have led to changes in banks' funding patterns at a domestic yet at a global level (Changes in bank financing patterns", Eurosystem-2012). ("Basel III", ECB Financial Stability Review" 2010)

Categories in bank funding

Interbank funding has substantially fallen in terms of total assets from the third quarter of 2008. There's been a shift towards domestic liabilities, especially in the

largest countries of the Euro-zone. Evidence showed increased activity through credit counterparties, a decline in the unsecured money market and a rise in wholesale activities in secured and secured funding but still significantly lower than the pre-crisis levels. Through banks' shift towards retail sources of funds (deposits) at longer maturities and a contraction in lending, signaling the latter's "pulling back" as a defensive tactic by building up a strong high quality liquid asset base to withstand "tougher" times that might occur in the near future. Growing reliance on retail funding is going to increase competition for deposits thus narrowing margins trading off profitability for a decrease in volatility. Due to the persistence of "trust issues" among market participants, it resulted in a 50% dive in debt securities since the 2006 peak followed by a substantial increase in the cost of funds and in the overall maturity for bank debt and securitization activity falling sharply after 2008 "Lehman Brothers" collapse.

The gap that wholesale and cross-border inter-bank markets left behind, fell temporary on central banks' "backs". As a result a significant increase in funding through LTROs has occurred comparing to pre-crisis levels. In order to ease market sentiment and restore confidence central banks are providing liquidity to banks by broadening collateral quality. In terms of capital, regulatory requirements have relatively remained stable, though there've been pressures in raising core equity and narrowing risk weight-base for loss absorbing purposes. There have been considerations on the implications on bank funding changes. By increasing the importance of secured (collateralized) funding for both wholesale and central bank funding, it will most like impact asset composition on banks' balance sheet. Eventually collateralization limits will pose constraints on banks' balance sheet growth resulting to downward spirals.

The revised Importance of collateral and liquidity management in terms of internal transfer pricing practices (ITP)

REPO's range has narrowed substantially (only Government guaranteed-bonds pass) resulting in constraints on haircuts, maturity rating and collateral liquidity. Collateral management is considered as the key element for liquidity and funding management. Banks now have greater incentives to accelerate investments in their collateral management and monitoring infrastructure. Some banks have increased their reserves of eligible assets in order to secure central bank funding, while others increase collateral management centralization to optimize collateral and

liquidity flows between entities on a cross-border basis. Central banks' actions on loosening eligibility criteria for REPOs, allowed the maximum use of collateral and securitizing portfolio for MROs.

Tightened liquidity positions will rectify past flaws in internal transfer pricing practices such as low interest rates and liquidity premium. Cost of funds was internally greatly underpriced, business units were getting subsidiaries motivated to take higher risks by increasing leverage and maximizing volume use of funds due to the underpriced liquidity, given a false sense of relatively unconstrained liquidity abundance. The main driver behind this was intense competition for market share gain. As an outcome of this false sense of liquidity abundance, overly optimistic assumptions were made in unwinding trades, cross-subsidizing of activities by providing inaccurately backstop of credit lines. More attention's being paid to internal transfer pricing practices. Increased cost of internal liquidity through broadening criteria in terms of type of funding, nature of business lines, location and the type of internal counterparty; decisions that made a significant amount of banks leaving it to senior management.

Large banks still got the ability to issue their own debt securities, while smaller banks cannot due to the fact that costs are relatively prohibiting for them. During the current financial crisis, confidence in banks eroded. Investors became more averse to risk, thus non-bank financial institutions faced significant liquidity issues while banks started extracting deposits from the latter. Bank debt is negatively affected with decreasing net issuance and maturities. Investors demand for more and more of short termed instruments. The covered bonds market has dried up in several countries. Secured and unsecured bonds have to compete with government guaranteed instruments that have been recently crowding them out. Covered and uncovered debt and investor base related are key factors in determining whether funding markets are going to reopen.

Hurdles and challenges for restarting markets for bank funding

Firstly, government guaranteed funding was primarily intended to help rekindle the issuance of bank debt. Covered debt issuance was quite successful while uncovered debt was being excessively expensive and crowded out by the latter. Covered debt sublimed sovereign risk more accepted by risk averse investors. Uncovered debt sublimed credit risk, thus it was more expensive attracting a more speculative amount of the investor base. Secondly in order to regain investors'

confidence, emphasis has been given on the reassurance of banks' balance sheet health through simple and transparent secured structures of covered bonds to reopen securitizations' market and eventually restoring liquidity to these markets. Last but not least the deleveraging process and the drying up of funding markets may also have banks' balance sheet growth restricted and consequently limiting access to loans. An effect quite counter-productive, that's going to negatively impact(increase) the probability of default of retail and corporate counterparties hence eventually leading to a downward spiral. As banks' credit quality deteriorates customer base feedback to banks' balance sheet further constraints as well as the ability of the latter of self funding. That leaves banks' with a set of certain challenges.

By increasing retail deposit share in order to strengthen banks' overall funding structure is not considered as a panacea for preventing runs, no one can ensure the avoidance of massive outflows, thus deposit guarantee is essential. Maturity risk can be mitigated by lengthening the maturity of funding whenever possible no matter the type. In other words the best antidote against bank run prevention is ensuring investors' confidence by ensuring banks' asset, governance and risk management quality. It's important for banks to define their own "exit" strategies from government support. Banks should improve the know-how and monitoring of their investor base and debt issuance, by tightening relationships with large counterparties; a key determinant that's going to provide soft information, in order to prevent future stresses through better management of liquidity positions and eventually provide banks roll-over of funding. Recent financial crisis has showed geographical diversification of investor base is essential, since domestic investors appear to be less "flighty" due to the fact that the latter appear to grasp better the local economic outlook of domestic banks ("Report on Risks and Vulnerabilities of the European Banking System", EBA-2012).

Potential implications on financial stability demand for further consideration by the regulatory authority.

The sovereign debt crises further conditioned banks' funding strategies in some countries. It's difficult, yet premature to distinguish between a difficult (persistent) and a temporary nature, as long as sovereign debt strains and market malfunctions haven't been yet overcome. Regulators are taking initiatives, aiming particularly at avoiding a repeat of the financial crisis, by conditioning banks' funding patterns in a more resilient manner and rising concerns regarding financial stability.

The decreasing reliance on Inter-Bank and wholesale funding combined with the introvert shift of banks towards domestic more stable sources of funds, would appear to contribute to overall stability. Policy concerns have been raised regarding the increasing importance of secured against unsecured funding. A predominance of secured (collateralized) for both wholesale and central bank funding may limit banks' lending activity , impact balance sheet composition going forward. Securitization market's revival seems essential regarding liquidity. All the above combined would affect the speed and the extent of central bank funding regressing to pre-crisis levels.

The growing importance of credit counterparties is generally seen as a contributing factor towards enhancing financial stability and limiting credit counterparty risk, promoting transparency and efficiency by allowing multilaterally netted exposures. On the other hand credit counterparty risk could potentially concentrate risk in a systemic credit event, subject to robust risk management.

Greater reliance on retail funding sources can be seen quite positively in increasing Banking sector's resilience and overall stability. International banking groups focus on local retail sources resulting in decentralizing funding and liquidity management. Financial autonomy of subsidiaries is welcome for control and monitoring by local regulatory and supervisory, promoting self sufficiency. Though it's not certain whether intra-group contagion is limited and centralization of liquidity management raises moral hazard issues. Retail funding should be perceived as a positive, more efficient source, though excessive competition (interest rate wars) could undermine financial stability in the banking sector.

Regulation is an important driver of bank funding behavior in terms of capital and liquidity. Basel III rules aims towards ensuring banks self capacity to build liquidity buffers and stable funding to reduce funding liquidity risk. Market led move towards high quality liquid assets is mainly regulatory driven, affecting banks' strategies and assets holding mix. The sign of the regulatory impact on stress testing, MRO bidding behavior and money markets as well as unsecured funding is yet unknown. Since banks are going to need to substitute short term with long term maturities it will most likely make them further converge towards Basel III liquidity standards (LCR, NFSR).

On the other hand one could claim that regulatory constraints would seem counter -productive, since excessive reliance on stable sources of funds would lead to unsustainable high costs, thus limiting balance sheet growth to a greater extent prior

to the financial crises. Banks are going to tighten lending standards due to the deteriorating economic outlook, strengthen their capital and liquidity positions. Hence only large banks would be able to gain access in the financial markets contributing in further concentration, undermining the financial stability's fabric itself.

The financial crisis altered banks' and supervisor's opinion on the importance of a robust liquidity management framework and its monitoring regarding currency exposures and mismatch of maturities on financial stability. Importance of banks' reviews and it's impact on collateral eligibility for central bank funding, makes the bank system going forward more resilient. Financial stability and monetary policy functions of central bank funding, need to adjust towards current trends in bank funding that prove to be persistent. Regarding financial stability concerns, surveillance activities should follow closer vulnerabilities in liquidity management and central bank funding practices.

Banks' funding structure was solely responsible for the financial crisis' depth and scope, due to the excessive exposure to wholesale funding. When the wholesale market collapsed it was mathematically pre-determined that banks' were next to follow. This event pushed the global banking system into reshaping. Banks' became introvert by shifting towards more stable sources of funds, by restricting lending and strengthening capital levels and high quality liquid assets base for tougher times to come. Banks' business and funding models in order to fend off counterparty risk, became more nationally oriented, since cross-border interbank markets were almost completely shut down, raising elements of home bias.

By reorienting towards domestic retail deposits, banks sought after stability at the expense of profitability until the investor sentiment is restored to pre crisis levels. By having large banks competing for retail deposits, smaller traditional banks that couldn't at this period access funding markets due to prohibiting costs, suffer by losing significant market share on retail deposits contributing to further concentration. In order to go forward, banks have to rectify of past mistakes regarding false internal liquidity pricing practices and rearranging business and funding models to a less profitable but more secure manner, until market confidence is restored and securitizing and wholesale markets restart at a new, more efficient and prudent basis ("Report on Risks and Vulnerabilities of the European Banking System" EBA-2012).

4. Benefits and risks of large banks

Why do banks go after growth pursuing strategies? Bankers claim that the main objective behind the balance sheet expanding trend is to reach economies of scale and scope, justifying the boom in mega-banks' number the last two decades. Academia on the other hand, finds little benefits of such economies. This contradiction creates a paradox. If scale and joint product mix economies are insignificant, why do banks keep on growing? This paradox implies that banks' primary driver for growth is not the attaining of economies of scale and scope but rather the establishment of a broader, more massive revenue base that would offer higher returns and greater diversification (Keeler-1989). How could the institutional environment affect or justify bank size and consequently concentration? A healthy institutional environment should provide analogous competition and thus the "survivors" in any given industry would "weed-out" their less efficient competitors (Stigler-1958). A foul institutional environment would imply the existence of "Too Big To Fail" or "Too Big To Discipline" financial entities.

4.1 Large banks, a toll on economic development or a curable side effect?

Are large banks a necessity or just an output of our own negligence? Does higher concentration undermine competition's efficiency and consequently financial stability of the banking industry? Does the fact that market discipline didn't keep large financial institutions in check, justifies the need for a revised and updated regulation? Last several decades banks have relentlessly increased their size. Many financial institutions have become very large in absolute terms as well as in relationship to their absolute economies. During the recent financial crisis, it has become apparent that large bank size can imply analogous risks to a country's public finances. An overall doubt is being cast on the need of very large banks (especially in small countries. Financial crises via didn't market discipline should have kept "Too Big To Fail" institutions in check but it didn't. Inadequate corporate governance enabled managers to pursue high growth strategies at the shareholders' expense; thus providing support for the need of greater regulation.

An obvious solution to ease the risk exposure of public finance posed by the large banks would either be the split up of activities (similar to the Volcker rule), either the encouraged downsize by imposing size caps on merges(US-Dodd Frank Act- no mergers allowed if total liabilities exceeded 10% of the industry). It is less

clear whether systemic size is associated with other costs or benefits. It should be examined whether large banks have different performance in terms of risk and return, considering the difference in their business models regarding activity-mix and funding strategies and investigate the fact whether market discipline is being applied to a different degree comparing to smaller banks.

Return on assets (ROA) is positively related with absolute size and inversely with systemic size. Bank risk is positively correlated with absolute size but seems significantly unaffected by systemic size. Absolute size represents the trade-off between risk and return, where systemic size reduces returns without a clear impact on risk. It's increase may have a small negative impact on the latter. Banks located in larger countries may have larger optimal size, where optimal size is defined by the most beneficial trade off relationship between risk and return.

In regards of banks business models, large banks obtain a larger share of their income via non interest income and fees, while smaller banks earn relatively small share of their income through non interest income. Large banks hold a relatively smaller share of total assets in the form of loans rather than securities, attracting a relatively large share of short term funding via wholesale deposits; hence being active in capital markets on both sides of their balance sheets, tendencies not exclusive for systemically significant large banks. Generally a banks' interest cost appears to be positive related to it's systemic significance, but the latter shows a negative relationship with ROA, but size in excess seems to be having distorting effects on market discipline. If a large financial institution is deemed "Too Big To Fail", it may enjoy lighter financing costs through implicit or explicit guarantees, a competition distorting phenomenon.

Do depositors exert market discipline on banks? It seems that in the US, riskier thrifts pay higher interest rates and attract smaller amounts of wholesale (uninsured) relative to total deposits prior to failure. Market discipline by uninsured depositors may be ineffective due to the fact that riskier banks are being bale to increase their share of uninsured deposits. Spreads on subordinate debt reflect bank risk, following policy changes increasing the probability of default in the US; but it seems to be relatively insensitive in the EU due to the safety net implicit perception by the investors.

We need to clarify the difference between "too big to fail" and "too big to save" financial institutions. In countries where their public finance appear to be

tighter, “too big to fail” financial institutions get over-disciplined by the markets by increasing their cost of funds. “Too big to fail” banks’ interest cost appears to be more sensitive towards risk and capitalization rate. “Too big to save” financial institutions appear to be more sensitive towards the same factors. By using as proxy for risk funding cost sensitivity seems to be inversely related to systemic size and unrelated to absolute size. On a systemic size basis, there has been evidence that systemically large banks may become “too big to save”, but no evidence of reduced market discipline on “too big to fail” banks due to their larger absolute size.

Large bank size is desirable because banks’ managements’ decisions are leading to considerable growth the last 2 decades globally, satisfying their personal agendas most unclear if it’s always at the shareholders’ best interest. Banks managers’ status is positively affected by bank size (empire building motivation). Growth may increase return on equity (ROE) in relatively large economies at the cost of additional risk; though it may have opposite effects in relatively smaller economies. One must consider the fact that inadequate corporate structures may empower management to pursue high growth (risky) strategies at the share holders’ expense.

How does size affect cost of funds’ sensitivity to several indicators of risk? Sensitivity increases with systemic size thus showing enhanced market discipline. An international sample reveals that enhanced market discipline is absent in the light of absolute size. Greater discipline on large systemic banks is being exerted on “too big to save” institutions, offsetting “too big to fail” subsidies. The inverse relationship of profitability and cost of funds suggests that’s it’s not in shareholders’ best interest for a bank to gain systemic significance due to the decreased marginal profitability in terms of additional risk reflected in the liabilities’ rates, also verified by the inverse relationship between market to book ratio and systemic size (Demirgüç-Kunt-Huizinga (2011)).

Several studies have verified that bank managers sacrifice value for empire building. It’s been estimated in the 1990s that the optimal bank size is around 25billion dollars. Commercial banks in North America with asset size exceeding 50billion of dollars experience higher operating costs than smaller classes. Today’s large banks’ size exceeds 1trillion dollars, a level far beyond the technological optimal point. Large bank holding companies have a diversification advantage, but greater diversification doesn’t necessary imply smaller overall risk exposure, as they tend to operate at lower capital ratios. Benefits of scale economies are hard to

distinguish due to the fact that bank size goes hand in hand with risk increase and complexity. Other studies also consider risk return implications due to the combining of traditional and investment banking activities. Banks with either substantially higher non-traditional activities, proxied by the share of non interest income in terms of total income or more volatile funding structures, proxied by wholesale funding share in terms of total short term funding, appear to be riskier. The latter two proxies seem to be positively related to bank size, while systemic size is not considered as a determinant of banking activity and financial patterns.

Why today's systemically important banks ever became so large? Should bank growth & systemically large size be left to market discipline or regulation? It's been shown in studies that the optimal banking size form a technological point of view is being vastly surpassed. Optimal size is determined by the most efficient trade-off between risk and return and it is positively related with country size. Market discipline does exist in the light of systemic size, but it's ineffective in terms of higher cost of funds in preventing systemic-build ups. In the absence of market discipline, regulatory intervention appears to be called for. Incentives of banks getting discouraged of becoming systemically large; either by imposing higher capital requirements (systemic premium), taxation of "bank levies" on their liabilities or even coming up with feasible resolution schemes to avoid spill-overs and negate "too big to fail"-phenomena. An alternative approach could be forcing large banks downsize or split up their activities. Reforms are also needed in corporate governance to ensure market discipline and incentivize managers primarily keeping their banks safe rather than pursuing high growth strategies at the shareholders' expense.

Some argue that concentration will intensify market power thus stymie competition and efficiency. Scale economies drive mergers and acquisitions, implying that concentration goes hand in hand with technological improvement. In terms of stability, concentration may augment size, market power and profitability, by enhancing diversification, creating greater incentives for secure banks to avoid excessive risk taking. Bigger, politically connected banks may become more leveraged (taking on greater risks) and rely on policy makers to help when an adverse shock occurs in terms of solvency and profitability. Large politically influential banks, via lobbying may shape policies and regulations influencing banking activities, as well as tax-systems, anti-trust legislation, governing institutions towards their interests, not always in the overall benefit of the economy. Excessive inefficient

competition (dull market discipline) and contestability may create an unstable environment; therefore policy makers are concerned about bank concentration's impact on bank stability critical and subsequently to the political economy; arranging the proper shape of a broad array of policies, regulations and institutions.

Concentrated, powerful banks may argue against granting deposit insurance; due to the equalizing role for the smaller competitors and against restrictions on the scope of abilities in regards of global finance. Seek to stymie stock market development by either pushing for higher tax on capital gains or discouraging regulators act in favor of small investor property rights and accounting transparency in order to boost profitability for large clients. Seek to control "unruly" markets by weakening anti-trust laws and relevant policies that promotes competition due to the fact that banks thrive in asymmetric information environments. Concentrated powerful banks also influence the formation of policies and regulations, thus hindering political integrity and tax compliance. Bank concentration is strongly linked with financial sectors' development and efficiency. In terms of stock market liquidity and restrictions on activities, bank concentration is negatively associated. Countries that allow banks to engage in a wide range of activities, tend to have high relatively levels of bank concentration. Publicly owned banks tend to dominate the banking landscape and international trade openness ("Competition, Concentration and Stability in the Banking Sector", OECD Policy Roundtables 2010).

It's unclear whether the lack of restrictions would lead to high bank concentration. Powerful banks lobby to prevent restrictions on their activities. In political integrity's defense, evidence reveal a strong positive relationship between the latter and bank concentration, indicating that politically integrate countries have nothing to fear against lobbying; thus bank concentration is the product of an efficiently competitive environment. To strengthen the argument, evidence of negative relationship between bank concentration and the possibility of bank crisis have been found, yet not robust. International comparisons suggest that higher bank concentration is not closely associated with the banking sector in terms of efficiency, fragility, competition, financial development and a broad range of institutional indicators, thus casting doubt on the bank concentration usefulness as proxy for competition and contestability.

Bank concentration is not robustly related to financial sector policy, except for banking restrictions justified by the fact that the concentrated bank sectors face too

many restrictions on banking activities. It's rather unclear whether the lack of restrictions would lead to highly concentrated banking systems (powerful banks) suggesting that banks' lobbying is not playing a decisive role in the rise of concentration. Bank concentration is negatively associated with deposit insurance generosity and taxation on personal and interest related income; though the results are not robust. There appears to be a strong link with industrial competition, referring to negative sign of market domination, effective anti-trust laws and business competitiveness. Bank concentration appears to be generally positively related to political integrity, rule of law, tax compliance, outsiders' rights and accounting transparency ; leading to the conclusion that higher bank concentration is associated with lower levels of corruption, but (conversely) positively associated with the interests of powerful banks. There is no strong link between bank concentration and fragility, but deposit insurance is significantly positively correlated with the latter.

Once a threshold is reached, an increase in the competition level would tend to increase risk taking incentives and the probability of default. The fact whether competition is negatively associated with stability remains inconclusive; though it's positively correlated with risk and negatively correlated with charter value. Cross country evidence shows that concentration is not a good proxy for competition and the reason behind the positive relationship of stability with competition and concentration is most likely attributed to better diversification.

If appropriate regulation and supervision are in place, competition does not necessarily have to be negatively correlated with stability. Badly designed regulatory and supervisory frameworks can undermine stability. Regulation should be seen as the function of market conditions, regulatory tools efficiency and bank risks' sensitivity by market structure. Effects of size and structure on stability may be separate from their effects on competition. By permitting large financial institutions to exist might not necessarily lead to lower competition, due to the fact that they seem to take on more risk on their portfolios; there are reputational concerns by the presence of private costs of management failure and improper regulation. A properly designed regulation can help in mitigating the problem of risky conduct. A mal-designed regulation as well as implicit guarantees can worsen banks' incentives on risk taking. Thus not market structure solely matters for banking stability. Appropriate regulatory and supervisory framework seems equally important. Last but not least factors like

market discipline efficiency, proper internal pricing of risk and provisioning as well as healthy agent behavior are crucial (Demirguc-Kunt-Levine- (2000)).

4.2 Bank strategies and performance

From the performance-efficiency perspective

Banks make money many through a variety of ways. Traditional banks employ traditional banking strategies, attracting retail deposits in exchange for interest payments and transaction services and earning a profit by the profit interest margins derived from lending t businesses. Other banks employ nontraditional strategies, such as credit card banks or mortgage banks that offer few depositor services, sell off most of their loans soon after making them, and earn profits from the fees charged for originating, securitizing, and servicing the latter. This range of business strategies is a relatively new development in the U.S. banking industry, made possible by deregulation, advances in financial instruments and information technology.

Business strategies should be seen as a multivariate function, based on differences in product mix, funding sources, geographic focus, production techniques and other dimensions. That doesn't exclude the fact that that bank size can have implications for strategic choice and financial performance. It is misperceived that banks of different sizes often do different things in different ways; thus size is a poor proxy for strategy. It is arbitrarily and falsely assumed that a bank's size always works in a constricting manner when it comes to the choice of a business model; hence two banks of the same size always use the same strategy. Results under this premise can be quite misleading.

Studies have shown substantial differences in profitability and risk across the various banking strategy groups. Low profitability does not necessarily doom a banking strategy. High average return strategies like corporate banking tend to generate high amounts of risk, while low average return strategies like community banking tend to generate less risk. Therefore on a risk-adjusted basis, both high-return and low-return strategies may be financially viable. Evidence have found that very small banks operate at a financial disadvantage regardless of their competitive strategy; suggesting that the number of very small (community) banks is likely to continue to decline in the future. That does not necessarily mean that the very small banks' strategies are ineffective, due to the fact that small banks' business strategies are financially viable when practiced by larger than the average size of smaller banks; emphasizing the fact that attaining size is not just a driver of competition but a

necessity for survival. Thus the evidence is consistent with Stigler's concept of integration hypothesis; "banks pursue growth not solely for cost efficiency reasons, but also for making sub-optimal management deviations less costly".

The recent financial crisis revealed substantial vulnerabilities.

Smaller domestically owned banks are relatively more vulnerable to liquidity risk; while large cross-border banks are more susceptible to solvency risk due to excessive leverage. Results support Basel III regulations on structural liquidity and leverage, but suggest that emphasis on leverage should be given regarding systemically important financial institutions. Macro-economic and monetary conditions seem to be related with the likelihood of bank failure, providing an introduction of macro-prudential approach to banking regulation.

The recent global financial crisis raised questions on risk management adequacy and triggered a deep regulatory and supervisory revision especially on governing issues, such as liquidity and capital buffers. On the international level, regulatory initiatives have been taken on a micro-prudential approach; regarding liquidity standards for internationally active banks, binding leverage ratios and the revision of Basel III capital requirements. Macro-prudential measures should be complementary implemented to safeguard the financial stability at the systemic level

Individual bank decisions regarding the size of liquidity and capital buffers were not commensurate (in the run up of the crisis) with risk taking; decisions suboptimal from a social perspective. The perception that the costs of bank failures spanned beyond the interest of their direct share holders, resulting in side effects in the credit markets and network of externalities in the financial system. Background studies carried out in the context of Basel III proposals. Stricter regulation on liquidity and leverage were more like to ameliorate the probability of a bank crisis occurrence. Banks with higher asset liquidity, stronger reliance on retail deposits and larger capital buffers; were less vulnerable to failure during the recent financial crisis.

Systemically global important financial institutions were found extremely challenging to resolve due to the complexity of business lines and legal structures, the cross-border operations entailing differences in bank insolvency frameworks and difficult fiscal considerations. The relative role of liquidity and capital buffers for banks; financial soundness is most likely to differ systemically across two bank types. Global banks tend to benefit from the imperfect co-movement of monetary and macro-economic conditions across geographic regions, exploiting internal capital

markets to reshuffle liquidity and capital among business units. Thus they tend to enjoy a more stable funding base due to flight to safety in times of market distress. Therefore optimal decisions regarding risk management are likely to differ among two bank types.

Contrary to expectations; the average structural liquidity in the run up of the global financial crisis using the NFSR ratio, revealed levels close to the Basel III recommendations. A wide dispersion in structural liquidity was found across banks and a mild increase in structural liquidity mismatches during the recent financial crisis was driven by global banks displaying thinner capital buffers and wider gaps between leverage ratios and Basel risk-weighted assets.

In the run up of the recent financial crisis, banks with weaker structural liquidity and higher leverage ratios, were more vulnerable to failure. The average effects of stronger structural liquidity and capital buffers on bank failure probability were not large. On the other hand, benefits of stronger buffers appear substantial for banks located at the lower extreme of the distribution. Systematic differences were found in the relative importance of liquidity and leverage for financial stability across bank groups. Global banks were more susceptible to failure due to excessive leverage; while domestic banks were more likely to fail due to weaker structural liquidity and overreliance on short term wholesale funding (more volatile). From the financial stability perspective, evidence indicates that regulation on capital for large banks is likely to be relevant.

Banks perform pro-active risk management and higher risk is associated with stronger capital and liquidity buffers. Banks that during the pre-crisis period were engaging in more aggressive, riskier strategies (growth rate used as a proxy), were more likely to fail afterwards. Macro-economic conditions were found to affect the probability of default, suggesting that banks failed to internalize risk stemming from overheated economic activity and exuberant asset prices.

Banks exhibiting weaker structural liquidity and high leverage during the pre-crisis period, were more vulnerable to subsequent failure. Marginal stability gains are associated with stronger liquidity and capital buffers, do not appear to be large for the average bank but seem substantial for weaker financial institutions. Evidence on systematic differences across bank types shows that smaller banks are more susceptible to failure due to liquidity issues. On the other hand large banks typically failed on insufficient buffers.

Implications on financial stability

From a financial stability point of view, regulatory and supervisory emphasis should be placed on ensuring capital buffers of systemically important financial institutions commensurate for their risk apetite. Bank risk during the recent crisis is associated with increased financial vulnerability and decisions are associated with liquidity and capital buffers that were not commensurate with the underlying risks; hence resulting in excessive moral hazard issues. Country specific macro-economic conditions also played a role in the likelihood of bank failure. Banks failed to properly internalize the associated risks in their individual decision making processes. Thus more intrusive regulations entail efficiency costs, associated with financial stability gains, implying the need of a macro-prudential approach.

5. Empirical research and results

5.1 Previous research and expected results

What drives banks to grow? Bank managers claim that the primary driver behind growth pursuing strategies is cost efficiency achieve via scale and scope economies. Despite the growing mega-bank concentration, academics find small benefits of scale and scope economies. Regression analysis reveals that deregulation of branching and activities restrictions played a significant role in allowing banks exploit economies of scale and scope. Size related benefits to a bank come from sources other than cost efficiencies. A host of regulatory changes have swept through the banking systems over the last two decades including branching deregulation and financial modernization.

There's an explicit assumption that constrains on bank branching and activities prevented the full exploitation of scale and scope economies. There appears to be a paradox; due to the fact that there seems to be a persistent consolidation trend in the banking industry since conventional research suggests that scale and scope economies in the banking system are small, yet bank mergers occurred at a dizzying pace in the 1990s and large bank holding companies in the US pushed for approval to merge with brokerage and insurance to exploit scale and scope economies. If scale and scope economies are small, why so many bank organizations are expanding in size and product lines? A valid explanation to this trivia could be that banks derive benefits from integration rather than scale and scope economies. The main hypothesis behind

integration economies (achieved at 10billions of dollars and over in asset size) is that banks main driver for growth is primarily revenue based rather than cost efficiency related to scale or scope economies derived benefits (Keeler-1989).

Standard measures and assumptions of cost and scale and scope economies in banking

Economic researchers use the average cost curve (relatively flat U-shape). Scale economies exist in banks with assets less than $300million, while scale diseconomies appear between size ranges of 2 and $10billion. There are numerous approaches of scale and scope economies. The most common function for measuring scale is the trans-log function. It performs poorly when it is applies to all bank sizes. The "Non Parametric Techniques" to fit the average cost curve find that, the minimum average scale economies are achieved at $500million asset size. Diseconomies of scale don't set over the entire sample (up to 10billion). The "Fourier Flexible Function" gives out similar results to the non- parametric technique. Humphrey finds that scale results are not particular sensitive to traditional (loans, deposits) output measures. Jagtiani finds that the inclusion of off-balance sheet items does not change their findings on small scale economies.

In terms of risk, large banks may benefit significantly from product and geographic diversification, verified by the reduction of cost of funds regardless the reduction on capital levels. McAllister and McManus find that financial returns to scale are significant and increase risk benefits for small banks and eliminate significant diseconomies of scale for large banks. Eamons, Gilbert, Yeager find that size is considered to be a significant risk reducing factor at banks.

In terms of economies of scope, it is assumed that all banks more or less offer similar products. Few observations exist on differing output arrays to statistically discern the costs of joint production of a single product. Results are more sensitive than the respective on scale measures to the cost function. The Trans-log function is multiplicative and predicts cost of zero for firms that don't produce the entire array of products (not flexible). Scope measures are highly sensitive to the use of data and not on the efficient frontier. Studies focus on average costs and large banks generate more revenues by offering joint products. Therefore additional complexity occurs when the method must capture all scope efficiency gains. Akhavein found that through estimating efficiencies via a profit function (revenue and cost efficiencies), mega-banks improve efficiency mostly from increasing revenues rather than cost changes.

An alternative approach examines and measures gains derived by scale and scope economies from bank mergers. If economies of scale and scope exist, a post-merger bank should be more efficient than it was in the pre-merger period. Efficiency gains of scale and scope economies are small to the degree of statistic insignificance. Most common approach to measure efficiency gains is by comparing pre and post-merger financial ratios. Rhoades (efficiency of horizontal bank mergers) finds no evidence of efficiency gains. Cornett – Tehranian find that merged banks produce superior cash flow returns due to the improved ability of attracting deposits and loans. Calomiris finds that post merger performance evaluations must specify counterfactual benchmarks. Peristianni (translog) finds that ratio comparisons fail to account for "X-efficiency" gains and post merger performance depends on banks' ability to strengthen asset quality. In other words, results in general, hardly find evidence of significant economies, despite the growing asset concentration of commercial banks. Results depend radically on technical assumptions. The survivor principle avoids that (T.Yeager-2004).

The survivor principle

The survivor principle, derived from micro-economic principles supports the "Darwinian" evolution of the bank industry. Simple and easy to understand are considered as advantages. To apply it, firstly one must segment the industry by size and observe to the course of market shares through time in each size category; if the market share of any given size category is growing it implies improvement in efficiency within that size range. Traditional accounting methodology fails to capture important scale and scope economies; additionally the principle can be used in other industries as well. Comprehensive, since it can capture integration economies or all the ways large banks can be more efficient than smaller banks. Fortunately it included all scale, scope and revenue efficiencies as well as other environmental and regulatory factors changed within the measuring period; it's not subject to any criticism since it is greatly inclusive. Specification free; results don't depend on any particular cost/profit function and most easy to compare with any other method.

Asset size is highly correlated with traditional output measures and specifies scale and scope economies. Deregulation fuels essentially large bank growth. Large bank dominance does not necessarily imply that community banks are on the verge of extinction. Mega-banks' increase market share, apart from the fact that research

shows that scale and scope economies in banking are small. Application of the survivor principal shows that large banks (over 10billion) exploited significant integration economies within the 1984-2002 period. Market share has growth rapidly at the other size categories' expense; after the inclusion of off-balance sheet items and bank holding company affiliation.

Survivors principal cannot separate economies from deregulation and cannot resolve the scale paradox; suggesting that conventional scale and scope measures are missing key elements. A valid explanation could be that benefits to bank size accrue from rather revenue than cost related economies. Another possible explanation could be that large banks enjoy political benefits or international prestige by allowing them to engage in overseas activities. Size may allow banks gain systemic significance or reduce risk through greater diversification of merged banks will begin to shrink when they realize their scale or scope is not forthcoming (T.Yeager (2004)).

The following table shows a summary of methods, functions, approaches and explanatory variables used for identifying and measuring drivers of banks' growth pursuit, (both quantitative and qualitative measure such as institutional indices).

Researches and methods used

Author(s)	Title	Dep. Var.	Independent vars.	Estimation
Demirgüç-Kunt-Huizinga (2011)	Do we need big banks? Evidence on performance, strategy and market discipline	Z-score	Assets, Assets/GDP, ROA, ROE, interest cost, Fee income, interest income, Other Operating income, Short-term Funding, interest & Overhead expenses, Market share, Liquid_Assets/Total Assets Share Foreign Liabilities/GDP, Non-Banking FIs	OLS

Demirguc-Kunt-Levine (2000)	Bank Concentration: Cross-Country Evidence	Concentration	Financial development and bank efficiency measures, Financial sector policies, Industrial competition, Institutional environment indicators	Logit
Wheelock-Wilson (2011)	Do Large Banks have Lower Costs? New Estimates of Returns to Scale for U.S. Banks	Cost of scale economies	Input (sum of total loans, securities and off-balance items), Labor Expenses (Total expenses /Quantity)	Non-Parametric-Linear-Estimation
Hughes - Mester (2008)	Efficiency in Banking: Theory, Practice and Evidence	Performance(Return on Equity)	Property rights, Organizational Form, Technological effect, Key components of technology	Thick Frontier analysis Regression (TFA) through the structural and non structural approach
Yeager (2004)	Economies of integration in banking: an application of the survivor principle	Market Share	Asset size, intra-state inter-state deregulation, bank holding company size	Regression analysis
Rime-Stiroh(2001)	The performance of Universal Banks: Evidence from	Profit function(w,y,z,π,t)	ROE, ROA, W= variable costs, y= traditional income,	Distribution free approach, using traditional parametric

	Switzerland		z=cost of capital, Π= profit, off balance sheet items	methods(Translog, scale and scope measures)
Altunbas-Molineux (1996)	Applied Financial Economics: Economies of scale and scope in European banking	Scale measure(RSE), Scope measure(RSCE)	Log(Total Costs), Securities, Total Loans, EPSUB, RSE, RSCE	SUR-Regression, Translog function, Distribution Free Approach
Essay No.2	Do Swedish banks enjoy scale or scope economies?	Scope and Scale functions	Total costs, quantity, input prices	Trans-log function with SUR-Regressions (opportunity cost is measured by the CAPM model for 5 banks)
Berger - Humphrey (1991)	The dominance of inefficiencies over scale and product mix economies in banking	Scope and Scale functions	Total costs, quantity, input prices, asset size, Cost function (Thick frontier estimation Taking into account input Costs and outputs as well)	TFA analysis being compared to other DEA approaches(SCALE AND SCOPE)

Berger - Humphrey (1994)	Bank Scale Economies, Mergers, Concentration, and Efficiency: The U.S. Experience	X-efficiency (managerial)	Scale, scope, input prices, quantity	Translog - Thick Frontier Curve of costs via Nonparametric estimation
Hughes - Joseph P. (2011)	The elusive scale economies of the largest banks and their implications for global competitiveness	Inverse Cost Elasticity	Asset size, cost functions(risk-return, mis-specified and economic)	Similar to the TFA Analogy, followed by Non-Parametric Regressions

Our paper focuses on what drives bank concentration and checks if the latter is associated with institutional environment in 34-OECD-country-members. This research will be conducted on a 34 cross-sectional country-basis and on a 21-year span from 1990 to 2010. Since there is no previous research relative to this topic, through experience and intuition according to the theoretical framework, we have narrowed down the number of candidate factors to fourteen and we expect the following:

- **CONC (Top#3 banks' assets in terms of GDP)-Dependent variable**
- **CRED_GDP(+) (=Private credit in terms of GDP)**

Ceteris paribus, if private credit increases bank's total assets would increase as well. In terms of market power the most efficient (large banks) would absorb the most of the credit increase. Hence concentration of the top 3 banks would increase.

- **EFFICIENCY(+/-) (=Total cost in terms of total income)**

A positive sign would verify bankers' claim; that banks follow growth pursuing strategies to achieve scale and scope economies. A negative sign would imply diseconomies of scope and scale; meaning that banks have reached asset size level beyond the technological justified, hence downsizing would be wise. On the other hand we can reach the conclusion that banks do not have scale and scope economies as their primary drivers for growth but a broader revenue base that would offer greater diversification but under no circumstances less overall risk (Economies of Integration-Yeager (2004) et al.)

- **DEP_GDP(+)(Bank deposits in terms of GDP)**

If bank deposits increase, most likely the top most efficient banks that can survive in lower interest margins, will claim the larger amount of deposits. Thus concentration would increase.

- **LIQ_LIAB(-)(liquid liabilities in terms of total funding)**

A bank with increased liquid liabilities(wholesale funding in terms of total funding) would have a funding structure more volatile and face higher funding liquidity risk. Hence banks would face harder market discipline and be forced to go for riskier strategies. Therefore through the channel of competition, concentration would decrease.

- **NIM(+) (Net interest margin revenues in terms of total income)**

The larger the ratio is the more stable revenue claims base a bank has. This margin

has a negative correlation with competition in the industry. Therefore if narrow NIM increases competition, that would result in the decline of concentration in the industry.

- **OTHER_F_ASSETS(-) (Assets of non bank financial institutions in terms of GDP)**

This ratio indicates the competition for deposits from non bank financial institutions. An increase of this ratio would imply a more intense competition for deposits. Since competition is inversely related to concentration, an increase of the previous would result to a decrease of the latter.

- **OVERHEAD_C(+/-) (Overhead costs over total assets)**

A positive sign would imply diseconomies of scale and scope. Consequently, downsizing would be prudent. It would also imply that banks' seek to broader their revenue base rather than trying to grasp the fruits of scale and scope economies, but economies of integration (Yeager 2004 et al.). A negative sign would verify the bankers' claim regarding the striving to reach scale and scope economies.

- **ROA (-)(Return on assets)**

ROA should be expected to be negatively related to competition since it reflects the risk apetite of bank managers; therefore it would result in a decrease of concentration. A positive sign could be justified as the advantage of greater diversification that mega-banks acquire that allows them to take on riskier projects.

- **ROE (-)(Return on equity)**

A positive sign of ROE would imply greater diversification, indicating the effort of large banks to attain economies of integration (Yeager (2004)et al.). A negative sign would imply competition intensity and consequently the decrease of concentration.

- **STOCK_CAP(-) (Stock market capitalization in terms of GDP)-BOND(-) (Bond market of private and public debt securities)**

The development of these two markets operate as antagonists to the development of the banking industry, since every industry competes against each other to attract as much funds as possible. Thus it would justify a hypothetical negative sign. Banks thrive where the institutional framework is inefficient. If the institutional framework is efficient enough for securities markets to grow, that would reflect to a shrink of the banking industry; consequently leading to lower concentration. A positive sign would also be justified by emphasizing banks' role as intermediaries and via proprietary funding; the taking (short/long) positions in derivatives and other securities to remedy

mismatch maturities, capital requirements and improving the value of their investment portfolios.

- **SYS_DEP(+/-) (Financial sectors' deposits in terms of GDP)**

It's a ratio that "can go both ways" for the industry's concentration. It contains the deposits of both bank and non-bank related financial institutions. A subtraction of the parts would have been more informative and directly related to competition status of the financial system

- **Z-SCORE (+)(A bank's inverse measure of probability of default)**

The lower the Z-SCORE, the greater the probability of default, hence the harder the market discipline is for a bank. Therefore, if banks operate under swifter market discipline it would be positively translated into the cost of funds; thus narrowing the margins. Hence the narrower the margins, the higher the risk and consequently the lower the concentration via the channel of competition.

- **L_P(+)(Legal and property rights)**

It is a qualitative proxy for institutional environment, scaled from 1 to 10, indicating "how friendly" is the latter towards the creditor. A positive sign would imply a healthy institutional environment, eventually meaning that the most efficient "players" in the banking industry would either merge-out or acquire their less efficient competitors. A negative sign would imply a "foul" (inefficient) institutional environment that is affected by "Too Big To Fail" or "Too Big To Discipline" subsidies.

5.2 Data

All of the quantitative data was extracted from the "Database on financial development and structure-November 2013", authored by Thorsten Beck, Asli Demigruc, Ross Levine, available on the "World Bank" official website. A database of indicators of financial development and structure across countries and over time, combining and uniting a variety of indicators that measure the size, activity, and efficiency of financial intermediaries and markets and non bank financial institutions by presenting measures of the size of bond and equity markets. These indicators appear to be empirical analysis ready due to the use of links between the legal, regulatory, and policy environment and indicators of financial structure. These data can also be used to analyze the implications of financial structure for economic growth.

In regards of the qualitative part of the data was extracted from the "Economic freedom of the world dataset 2013", authored by James Gwartney, Robert Lawson, Joshua Hall, available on the "Fraser Institute" official website. This dataset contains the most-up-to-date worldwide indices of institutional framework in the light of economic activity.

Both of these datasets are produced on excel files. The quantitative data set contains quantitative data of 203 countries spanned from the 1960 to 2010. The qualitative dataset contains qualitative data of 154 countries spanned from the 1970 to 2010. What we need for our research is that both sources are being referred on the same country and time horizon. Therefore we filtered out country-data that weren't in the 34-OECD members and on the 1990-2010 time range in both datasets. After that we sorted the combined dataset by country and year in an alphabetic and ascending order respectively. The first thirteen explanatory quantitative variables mentioned in the previous section, were taken from the first dataset and the last qualitative variable was extracted by the second. Then we modified the combined dataset to be "Eviews-ready- to-import" accordingly to perform our empirical analysis for panel regression analysis. The next section describes step by step the empirical analysis conducted.

5.3 Empirical analysis and results

After importing the dataset in the Eviews program with the proper format, before commencing our analysis, certain process of the variables is called for. First and foremost we check all the variables for stationarity verification, according to the ADF-criterion (Augmented Dickey-Fuller) for unit-root testing. It is a Fisher-like test with a null hypothesis|(H_0) of existing Unit root. If the p-value (=prob) is less than 5%, we accept the alternative (H_1) hypothesis; claiming the absence of unit root (stationarity). If "Unit-Root" exists, we repeat the process for"1st Differences" and in case unit root is still persistent we repeat the process for "2nd Differences", that will most likely is going to resolve the problem. All variables apart from "STOCK_CAP","SYS_DEP","DEP_GDP", "BOND" and "CRED_GDP" were found to be non-stationary and achieved stationarity at the "1st Differences". The initial equation containing all 14 variables is as followed:

$$\text{Concentration}_t = C + \beta_{1*}\,\text{CONC}(-1) + \beta_{2*}\,\text{STOCK\_CAP}(-1) + \beta_{3*}\,\text{DL\_P}(-1) +$$
$$+\beta_{4*}\,\text{DEFFICIENCY}(-1) + \beta_{5*}\,\text{DROA}(-1) + \beta_{6*}\,\text{DROE}(-1) +$$
$$+\beta_{7*}\,\text{DLIQ\_LIAB}(-1) + \beta_{8*}\,\text{CRED\_GDP}(-1) +$$
$$+\beta_{9*}\,\text{DOTHER\_F\_ASSETS}(-1) + \beta_{10*}\,\text{SYS\_DEP}(-1) +$$
$$+\beta_{11*}\,\text{SYS\_DEP}(-1) + \beta_{12*}\,\text{BOND}(-1) + \beta_{13*}\,\text{DNIM}(-1) +$$
$$+\beta_{14*}\,\text{DOVERHEAD\_C}(-1) + \beta_{15*}\,\text{DZSCORE}(-1) + V_t$$

We are going to conduct a "no-effects" panel regression. The first output we'll get is going to give out a table in the form of:

Dependent Variable: CONC				
Method: Panel Least Squares				
Sample (adjusted): 1992 2010				
Periods included: 19				
Cross-sections included: 34				
Total panel (balanced) observations: 646				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONC(-1)	0.752314	0.033602	2.238896	0.0000
LGDL_P	0.682730	0.348554	1.958749	0.0506
LGDLIQ_LIAB	-0.042840	0.028705	-1.492429	0.1361
LGDROE	0.181813	0.122034	1.489852	0.1368
LGDOTHER_F_ASSETS	-0.032134	0.022308	-1.440479	0.1502
LGDEFFICIENCY	0.072259	0.052771	1.369314	0.1714
LGSTOCK_CAP	0.031152	0.024062	1.294621	0.1959
C	3.834522	3.894301	0.984650	0.3252
LGSYS_DEP	0.427783	0.506542	0.844516	0.3987
LGDEP_GDP	-0.407373	0.501573	-0.812191	0.4170
LGDROA	-0.114855	0.208313	-0.551355	0.5816
LGDNIM	-0.584259	1.243193	-0.469967	0.6385
LGCRED_GDP	0.009403	0.026702	0.352144	0.7248
LGDOVERHEAD_C	0.351248	1.385651	0.253489	0.8000
LGDZSCORE	0.034581	0.162773	0.212448	0.8318
LGBOND	0.001353	0.022523	0.060083	0.9521
R-squared	0.714836	Mean dependent var		4.209131
Adjusted R-squared	0.708047	S.D. dependent var		4.188048
S.E. of regression	2.262915	Akaike info criterion		9.100811
Sum squared resid	322609.5	Schwarz criterion		9.211543
Log likelihood	-2.923562	Hannan-Quinn criter.		9.143773
F-statistic	1.052839	Durbin-Watson stat		1.988816
Prob(F-statistic)	0.000000			

In regards of Autocorrelation the Durbin-Watson Statistic is close to 2 (1.988816), implying that there are no autocorrelation issues in the regression. Coefficients-column shows the degree in which the independent variables affect the dependent. Prob.-column (p-value) represents the statistical significance of the independent variable. If "Prob." is greater than the percentage of significance that our research is based on (e.g1%,5%,10%) the variable is deemed insignificant and it is excluded from the equation. In this case the LGBOND (0.001353) variable I extracted and the process is being repeated until we reach to a set of variables with "Prob." lesser than our percentage of significance. Adjusted R-squared shows "how well" the independent variables "explain" the dependent one. We repeat the extracting of the statistically insignificant variables to reach the statistically significant equation. Thus we get the following output:

Dependent Variable: CONC				
Method: Panel Least Squares				
Sample (adjusted): 1992 2010				
Periods included: 19				
Cross-sections included: 34				
Total panel (balanced) observations: 646				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CONC(-1)	0.785962	0.025119	3.129016	0.0000
C	6.311435	2.447883	2.578324	0.0101
LGDL_P	0.780893	0.307963	2.535673	0.0115
LGDROE	0.166841	0.078903	2.114490	0.0349
R-squared	0.710784	Mean dependent var		4.209131
Adjusted R-squared	0.709432	S.D. dependent var		4.188048
S.E. of regression	2.257540	Akaike info criterion		9.077771
Sum squared resid	327194.4	Schwarz criterion		9.105454
Log likelihood	-2.928120	Hannan-Quinn criter.		9.088512
F-statistic	5.259305	Durbin-Watson stat		2.036891
Prob(F-statistic)	0.000000			

After repeating the process to reach a statistically significant model and prudentially solve the heteroskedasticity issues. For panel regressions there is not HAC process integrated on Eviews 8.0; therefore an Add-in must be downloaded to prevent heteroskedasticity issues. This add-in "white-ens" and gives out robust standard errors. It might augment p-values but not to a point that is going to affect our results. Eventually we get the following output:

Dependent variable: CONC				
Method: Least Squares				
Sample: 1990 2010				
Included observations: 646				
Covariance matrix type: HC0 (White)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CONC(-1)	0.785962	0.035607	2.207298	0.0000
LGDL_P	0.780893	0.171581	4.551170	0.0000
LGDROE	0.166841	0.114480	1.457377	0.1455
C	6.311435	1.367102	4.616653	0.0000
R-squared	0.710784	Mean dependent var		4.209131
Adjusted R-squared	0.709432	S.D. dependent var		4.188048
S.E. of regression	2.257540	Akaike info criterion		9.077771
Sum squared resid	327194.4	Schwarz criterion		9.105454
Log likelihood	-2.928120	Hannan-Quinn criter.		9.088512
F-statistic	5.259305	Durbin-Watson stat		2.036891
Prob(F-statistic)	0.000000			

We see that after taking heteroskedasticity and autocorrelation (**Durbin-Watson stat=2.036891**) in mind added the valid value of **Adjusted R-squared** =**0.709432;** ROE loses statistical significance and we see that the initial hypothesis that the institutional framework's (L_P) quality affects **positively and strongly (0.780893)** is being verified at 1% significance level. Therefore the final output for "no effects" is as follows:

Dependent variable: CONC			
Method: Least Squares			
Sample: 1990 2010			
Included observations: 646			
Covariance matrix type: HC0 (White)			
Variable	**Coefficient**	**t-Statistic**	**Prob.**
Concentration (Lagged)	0.8147500	3.1745210	0.0000
L_P***	0.8026900	4.5589820	0.0000
C	5.2945800	4.2503820	0.0000
Adjusted R-squared	0.70786	Schwarz criterion	9.1024000
		Durbin-Watson stat	2.0887000

The statistically significant equation is the following:

Concentration= Concentration(lagged)*0.81475+(L_P)*0.80269+C*5.29458+Ut

(31.74521)*** (4.558982)*** (4.250382)***

Adjusted R-Squared = 0.70786 Durbin-Watson Statistic = 2.0887

The institutional environment **[(L_P) (0.80269)] is strongly and positively related** to concentration at 1% level of statistical significance (prob. =0.00). It implies the existence of a healthy institutional environment. It implies that the most efficient "players" (banks) in the industry will either merge-out or acquire their less efficient competitors.

We follow the same process for a country-fixed-panel-regression but with an additional action. When we set the initial equation, before pressing "OK", we got at panel options and choose "Panel effects: fixed" and then press "OK". By choosing country effects, the model "keeps in mind" stable over time factors that cannot be quantified. Eventually we get the following first output:

Dependent Variable: CONC				
Method: Panel Least Squares				
Sample (adjusted): 1992 2010				
Periods included: 19				
Cross-sections included: 34				
Total panel (balanced) observations: 646				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CONC(-1)	0.660411	0.037940	1.740658	0.0000
LGSTOCK_CAP	0.143123	0.039819	3.594299	0.0004
LGDL_P	1.411.865	0.414595	3.405411	0.0007
C	-1.153.315	5.965.026	-1.933462	0.0537
LGDEFFICIENCY	0.096936	0.055210	1.755769	0.0796
LGDROA	-0.302149	0.216094	-1.398230	0.1626
LGDROE	0.144082	0.131196	1.098215	0.2726
LGDLIQ_LIAB	0.038401	0.037079	1.035655	0.3008
LGCRED_GDP	0.025008	0.042692	0.585775	0.5582
LGDEP_GDP	0.189701	0.709315	0.267443	0.7892
LGDOTHER_F_ASSETS	0.010199	0.038923	0.262024	0.7934
LGSYS_DEP	-0.187317	0.717490	-0.261073	0.7941
LGBOND	0.011170	0.050552	0.220967	0.8252
LGDNIM	-0.220443	1.413097	-0.156000	0.8761
LGDOVERHEAD_C	0.117284	1.556622	0.075345	0.9400
LGDZSCORE	0.001466	0.210032	0.006981	0.9944
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.731967	Mean dependent var		4.209131
Adjusted R-squared	0.710416	S.D. dependent var		4.188048
S.E. of regression	2.253714	Akaike info criterion		9.141027
Sum squared resid	303229.8	Schwarz criterion		9.480143
Log likelihood	-2.903552	Hannan-Quinn criter.		9.272598
F-statistic	3.396531	Durbin-Watson stat		1.955891
Prob(F-statistic)	0.000000			

In regards of Autocorrelation the Durbin-Watson Statistic is close to 2 (1.955891), implying that there are no autocorrelation issues in the regression. Coefficients-column shows the degree in which the independent variables affect the dependent. Prob.-column (p-value) represents the statistical significance of the independent variable. If "Prob." is greater than the percentage of significance that our research is based on (e.g1%,5%,10%) the variable is deemed insignificant and it is excluded from the equation. In this case the LGDZSCORE (0.001466) variable I extracted and the process is being repeated until we reach to a set of variables with "Prob." lesser than our percentage of significance. Adjusted R-squared shows "how well" the independent variables "explain" the dependent one. We repeat the extracting of the statistically insignificant variables to reach the statistically significant equation.

Thus we get the following output:

Dependent Variable: CONC				
Method: Panel Least Squares				
Sample (adjusted): 1992 2010				
Periods included: 19				
Cross-sections included: 34				
Total panel (balanced) observations: 646				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CONC(-1)	0.669366	0.035842	1.867553	0.0000
LGSTOCK_CAP	0.155104	0.036856	4.208379	0.0000
LGDL_P	1.432776	0.408679	3.505872	0.0005
LGDEFFICIENCY	0.083353	0.039798	2.094406	0.0366
C	-4.900036	3.323744	-1.474252	0.1409
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.729078	Mean dependent var		4.209131
Adjusted R-squared	0.712590	S.D. dependent var		4.188048
S.E. of regression	2.245238	Akaike info criterion		9.117692
Sum squared resid	306498.4	Schwarz criterion		9.380681
Log likelihood	-2.907015	Hannan-Quinn criter.		9.219728
F-statistic	4.422120	Durbin-Watson stat		1.965699
Prob(F-statistic)	0.000000			

After repeating the process to reach a statistically significant model and prudentially solve the heteroskedasticity issues. For panel regressions there is not HAC process integrated on Eviews 8.0; therefore an Add-in must be downloaded to prevent heteroskedasticity issues. This add-in "white-ens" and gives out robust standard errors. It might augment p-values a bit.

Eventually we get the following output:

Dependent variable: CONC				
Method: Least Squares				
Sample: 1990 2010				
Included observations: 646				
Covariance matrix type: HC0 (White)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CONC(-1)	0.669366	0.040261	1.662549	0.0000
LGDEFFICIENCY	0.083353	0.042165	1.976818	0.0485
LGDL_P	1.432776	0.178653	8.019876	0.0000
LGSTOCK_CAP	0.155104	0.016709	9.282708	0.0000
C	-4.900036	1.259156	-3.891524	0.0001
R-squared	0.729078	Mean dependent var		4.209131
Adjusted R-squared	0.712590	S.D. dependent var		4.188048
S.E. of regression	2.245238	Akaike info criterion		9.117692
Sum squared resid	306498.4	Schwarz criterion		9.380681
Log likelihood	-2.907015	Hannan-Quinn criter.		9.219728
F-statistic	4.422120	Durbin-Watson stat		1.965699
Prob(F-statistic)	0.000000			

The statistical significant equation is the following:

Concentration=Concentration(-1)*0.669366+Efficiency*0.083353+(L_P)*1.432.776+

(1.662.549)*** (4.558982)** (4.250382)***

+Stock Market Capitalization*0.155104 + Vt

(9.282.708)***

Adjusted R-Squared = 0.712590 Durbin-Watson Statistic =1.965.699

Our results verify our initial hypothesis at 5% level of statistical significance. Concentration is positively and significantly affected by the institutional framework L_P (1.432776) and it is significantly robust (Prob=0.00); meaning that the most efficient banks of the industry will either out-merge of acquire their less efficient

competitors (T. Yeager – (2004)). In terms of efficiency, the positive relationship verifies the bankers' claim that banks seek growth to attain scale and scope economies related benefits. The model seems to be having an adequate, co-linearity-free **Adjusted R-Squared= 0.712590** and it is free of autocorrelation issues(**Durbin-Watson stat=1.965699).** The fact that STOCK_CAP (0.155104) relationship remains positive emphasizes the intermediary role of banks in the securities markets and the contribution of proprietary trading in their revenue base.

6. Conclusions

In order to understand how variables' behavior is justified, competition relationship with the latter and concentration is the inductive "vehicle" to comprehend our conclusions. Our initial objective was to see whether the institutional framework efficiency affects significantly the concentration of the banking industry. L_P positive relationship is theoretically justified, implying if legal, judicial, anti-trust laws and property rights frameworks are efficient; banks can grow easier since their overall risk would be mitigated due to the higher recovery rates, legal enforcement of contracts, healthier competition and swift judicial resolutions of legal disputes.

On both "No-effects" & "Country-fixed-effects" scenarios, the institutional environment is strongly and positively related to concentration. The most-efficient banks will either out-merge or acquire their less efficient competitors. On a "Country-fixed-effects" scenario, efficiency is positively related to concentration; thus verifying "Bankers' Claim" regarding that banks follow growth pursuing strategies to achieve scale and scope economies. Stock market capitalization is positively related to concentration. It verifies banks' intermediary role in the stock markets and the additive effect of proprietary trading and the latter two contributing effect on banks' revenue base expansion.

This paper's results could be useful as an insight for regulators and policy makers. The real question is whether concentration is the "symptom" and not the "cause" of the financial sectors undermining. Several academics believe size and concentration are just distractions (Mester, De Young(2010), et al.). It's been stated that it would be cheaper in terms of tax-payers' money to let insolvent financial institutions fail when their supposed to; keeping market discipline as swift as possible by eradicating the distorting effect of implicit government guarantees. Policy makers and regulators must come up with resolution schemes that would work in parallel with

suppressing bank size and allow insolvent banks to fail on time by preventing "Spill-Overs" to the real economy. The recent financial crisis surfaced it quite demonstrably.

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