Subordinated debt in banking: a regulatory perspective

Fabiana Zangara

Faculty of Economics,
University of Palermo,
Course in Economics and Financial Analysis,
Piazza Marina 61, 90133 Palermo, Italy
Email: fabiana.zangara@gmail.com

Abstract: The banking industry during the 1980s was characterised by the rapid spread of products and services innovations. A vast growth in this area belongs to subordinated debt. Among the instruments created for the banks' need of self-financing, subordinated debts are identified as a particular category: people who are granted a subordinated debt mainly assume the risk of the issuer's insolvency accepting to place themselves in an intermediate position between the owners and all the other creditors. Purpose of this study is to analyse the framework of this particular class of debt. Subordinated debts tend to be the first shock absorber able to incorporate the losses and tend to be very volatile when the uncertainty on issuers increases. Moreover, it is interesting to study the subordinated debt trend in this period of financial instability in banking and relate also their fluctuations to the normative regulation changes.

Keywords: subordinated debt and tier 2; junior debt; tier 2 trend.

Reference to this paper should be made as follows: Zangara, F. (2018) 'Subordinated debt in banking: a regulatory perspective', *Int. J. Financial Innovation in Banking*, Vol. 2, No. 1, pp.60–81.

Biographical notes: Fabiana Zangara received a Master degree in Economics and Financial Analysis from the University of Palermo. She is currently doing research on risk management and working for NATO in Finance and Acquisition Department, Mons, Belgium.

1 Introduction

The goal of this paper is to provide a comprehensive analysis of the use of subordinated debt and explaining the reasons it was favoured by financial institutions as a diversification tool in recent years. Simply, in finance, subordinated debt (also called subordinated security, subordinated debenture or junior debt) is a class of debt that, in the event of bankruptcy, is ranked lower than other classes of debt. The name 'subordinated' means that the repayment of this is secondary to the one of the unsubordinated debt.

This paper is divided into three sections. Section 1 describes subordinated debt use, listing the different types existing and comparing their pros and cons. Additionally, the problem of asymmetric information is analysed with the new proposal to use this debt as

an instrument of market discipline. Section 2 provides a clear framework of rules and regulations – still partially under development. The regulatory aspects and effects are analysed from a practical point of view in the light of failures throughout history. Finally, the last section provides an empirical analysis with reference to a sample of European banks.

- Two questions may arise: why do banks use this instrument?
- Why should an investor buy this tool instead of another one?

2 The role of subordinated debt in the economics of banking

2.1 Definition and characteristics

There are essentially two characteristics that distinguish subordinated debt from other instruments: the yields and the payment subordination of the capital repayment. The yields are always higher than the ones of the other debt: the higher the yield, the riskier the investment. In fact, the greatest risk of subordinated debt is given by the subordination of the repayment at maturity.

This paper will treat in particular bonds' characteristics since they are the most spread subordinated instruments. Subordinated bonds are a special category whose repayment – in case of financial complications for the issuer – is made later than that of the ordinary creditors. It is a class of debt whose owners have a claim on the company's properties only after ordinary debt claims have been satisfied. Therefore, they should not be considered traditional debt instruments because of their more similar nature to equity. Subordinated bonds provide a regular payment with the coupons – as every bond – with an interest rate between 13% and 25% and may include equity kickers to compensate the holders for the additional risk and lack of asset security. Many subordinated bonds do not have a real closing date but provide the opportunity to be retrieved by the issuer at a certain date with the 'call' option. The lack of maturity makes difficult to estimate their return on investment.

With the latest regulations on minimum capital requirements known as Basel II and Basel III, the distinction between different categories of subordinated bonds has changed and the types have been reduced to two types: Tier 1 and Tier 2. Previously there were four types and all of them need to be mentioned as well due to their importance as someone may still hold some of them.

Tier 1 subordinated bonds are the riskiest type: in case of insolvency they risk 100% of the invested capital and the coupon can be cancelled in special situations – i.e., liquidity issues. *Upper Tier 2* subordinated bonds may, or may not, have a predetermined final maturity of a ten years minimum. In the event of insolvency, it is likely to lose 100% of the invested capital and the issuer may delay, but not delete, the coupon. *Lower Tier 2 s*ubordinated bonds are the most common type. They often have a 10-year maturity and the interests may be suspended only in events of severe insolvency and can have fixed-term or an early repayment clause – not before the fifth year of their life and, usually, five years before the final deadline. *Tier 3* subordinated bonds are less risky and less profitable. Since they are not recognised by banks as a real regulatory capital, they are uncommon, offer greater protection for clients and have a short-term maturity, usually between 2 and 4 years.

2.2 Subordinate debt: a finance perspective

Subordinated bonds are instruments between recapitalisation and loans so that they are assimilated to equity and enter in the regulatory capital just for 50% of their value. Indeed, they have the advantage, from the bank's point of view, of not immediately disrupting the social order, being mostly stable thanks to the possibility of deferring the deadline in the event of a crisis. The disadvantages are connected with the treasury management and with the renegotiation of the transaction in recapitalisation issues.

From the investors' point of view, such securities allow a greater return and the possibility to enter in the capital of a bank. If an investor chooses the subordinated debt instrument, the main categories from which he can pick are: ordinary subordinated bonds, bonds with option rights of the same issuer (equity compound subordinated bonds) and bonds convertible into shares of the same or another company (convertible subordinated bonds).

A subordinated bond depends substantially from the issuer's quality. With ratings ranging from AAA to D, the agencies measure the degree of risk to which the investor is subjected. Clearly, bank management, in order to sell, may have an incentive to reveal favourable information rather than the real one. This problem may be softened through legal information requirements but the regulation is very different among countries and very difficult to control. If a bank is suffering a bad financial situation, the government might have an incentive to cover losses with different approaches: by subsidies, by guarantees for depositors or by buying part of the bank. When one of these aids occurs, the default risk of owners, depositors and subordinated creditors is reduced: those are anti-alarmism policies to prevent dangerous phenomena such as the bank run. However, when risk is reduced too significantly, junior bonds are not convenient: risk premium becomes too low and the bond price does not reflect the real bank's exposure: the function of yield and prices are consequently restricted.

The default risk and the risk premium are variables that influence the cost and profitability of subordinated bonds and are generally related not only to the issuer's default risk but also to the already existent quantity of junior debt, with the amount of deposits – that is similar to a guarantee – and with bank's asset portfolio. Junior creditors may have an advantage from an increase in risk, since risk and yield are positively correlated. If the bank's manager is able to constrain the risk of bankruptcy, the subordinated bonds yields are supposed to be a correct indicator of an increase in risk. If this does not happen, the yields may be distorted.

Research based on Moody's Bank and Finance manual from 1974 to 1995 listed the debt of the 150 biggest banks which in 1980 held approximately 50% of all American bank assets. It was estimated that the largest 100 were the only ones in possession of subordinated listed bonds and debentures. The result was that "the offering yields spread was estimated as the difference between the offering yield on the sample debt issue and the constant maturity yield on a Treasury security of comparable maturity on the same day. When a Treasury rate with a comparable maturity is not available, a comparable Treasury rate is obtained by interpolating rates on two Treasury securities with maturities bounding that of the new debt issue" (Vidhan, 2005).

The borrowers' repayment, from debt holders to shareholders can be seen as a waterfall – there is a separate pool for each kind of borrower. The first debts to be repaid, are the senior ones. Supposing that there is enough capital, cash flows are then allocated to the junior tranche. Then, assuming that there is enough capital even for them, the

remainder is allocated to the equity tranche. Thus, principal cash flows are used first to repay the senior tranche, then the mezzanine tranche, and finally the equity tranche.

There exists a simple way to calculate subordinated debt value: through the contingent claims valuation approach which uses the option pricing models to calculate the value of debt by using the characteristics of options based on shares. Indeed, in efficient markets, the market price is the best estimator of the value and discounted cash flow approach is the best way to evaluate an asset price.

The first type of contingent claim approach was developed by Black and Scholes (1973), while the model with several debt claims was developed by Black and Cox. This equation states that junior debt value is given by the difference between the value of a call option based on bank's value with strike price equivalent to the face value of senior debt (S), bought from senior debtholders at time t, and a call option on the value of the bank with strike price equivalent to the face value of total debt ($S + J$), sold to equity holders at the same time t (Nivorozhkin, 2001):

$$D_J = C(V, S, t) - C(v, S + J, t)$$

As evident, there are some limitations. There should be a liquid and efficient option market – the implied volatility derived from the option price is affected by the liquidity degree of the market and by the efficiency degree of the option market. The maturity must be equal for both options, which is a very strict condition, and other problems related to the options' market.

2.3 Subordinated debt as a banking market discipline

The market discipline is the set of rules that a bank must comply with a correct and transparent relationship towards its customers and for correct and healthy management. There are two schools of thought on market discipline. One is in favour of free banking, based on the famous theory of Adam Smith's invisible hand: the free market regulates and corrects imperfections. According to these researchers, the market is able to achieve efficiency by itself. In addition, they state that the cost of creating a supervisory system would be excessive. The other school supports the idea that the market is not able to solve the issues by itself and needs some external aids in order to restore the equilibrium every time a shock appears. Generally, the vision accepted by most States is the need of external support and, consequently, a regulation. Unfortunately, this intervention is costly and these costs are borne by those who need this information and control.

According to a study carried out by the Board of Governors of the Federal Reserve in 1999, the market discipline can basically be divided into:

- direct market discipline
- indirect market discipline.

The first one takes place whenever there has been a rise in interest rates. When this happens the interest rates have to grow in order to be able to attract new investors as depositors, debt security holders and shareholders. Something that can be used too is the price trend of these instruments in the financial market so that investors need something positive to decide to invest. It should not be forgotten that with a higher interest rate the financial institution will incur more costs to repay all interests.

The indirect discipline occurs in an external way by different controls made by banking authorities. There may be two types of indirect controls: 'on-site' – consisting of various checks made in the bank's headquarters – and the 'off the site' – consisting of checks made by authorities through data processing or information periodically issued by credit institutions. Thanks to these controls, a rating relative to each bank and its solvency linked to the management of risk can be produced. In this context, since the mid-1980s, some scholars have proposed subordinated debt as banking control and this debate is very actual since the market discipline has become one of the three pillars of Basel II.

The subordinated debt has the potential to enforce direct and indirect market discipline on the banking system: direct, with the power of investors who can decide whether to invest or not and indirect with reference to the information that these instruments provide. The spread trend is a great indicator of the health status of the bank's management and gives a lot of information to the supervisory authorities: in fact, for example, a sudden increase in the spreads indicates an increase of the risk involved and it is a sign that something is going wrong. In order to give an overall idea, according to an EBC statistic based on a sample of 39 large EU banks, the spread between senior and subordinated debt is on average 80–150 basis point. However, this spread picket at 300 basis point in the mid-2011 due to the worldwide crisis.

During the worst days of the credit crisis, when rumours ran unchecked, the spreads between senior and subordinated bonds were really high reaching also the 500 basis points: yields on subordinated debt were highest ever seen – Bank of America senior unsecured bonds with final date in 2015 picked at 12.2%, while subordinated bonds with the same maturity picked at 17% (Cohen, 2012). Some academics such as Zhichao Zhang in his "Subordinated debt as instrument of market discipline: Risk sensitivity of sub-debt yield spreads in UK banking", argue that subordinated debt should be issued by banks on a regular basis, considering the spread as a good indicator for the bank's health status and easiness of tracking the price and yield.[1]

However, other scholars have doubts about the effectiveness of subordinated debt regulation and how it should be applied: "subordinated debt spreads are without some ambiguity in interpretation" (Levonian, 2001). They consider issuing these instruments too costly for small banks so that they cannot be used as a homogeneous tool to investigate a banks health. Others suggest that these kinds of debt regulations do not work if bank insiders have the possibility to buy them as well. Moreover, even if many empirical studies find out that spreads are informative about the issuing banks' financial situations, other scholars point out that the information implied by spreads can be too full of distractor elements to produce corrective actions.

Another issue stressed by many authors is that the market price used as an indicator of regulatory action can cause failure if market participants have some hidden information or, on the contrary, are totally uninformed. To strengthen the idea that subordinated instruments are not good tools for market discipline there is the belief that investors are good in judging the risk of bank management but they cannot influence the trend (Flannery and Sorescu, 1996).

There are also difficulties in understanding the real level of risk or, more generally, the solvency of a credit institution due to the confidentiality that banks must meet regarding their clients and their related information. If banks spread their data, they would put an end to their business plan and make vain their efforts and hard work.

An additional concern arises at the international level. Although there have been and continue to be numerous efforts in the world, particularly in the European Union,

to homogenise, there are still difficulties in comparing data. Moreover, making a comparison is always difficult and, therefore, creating a regulation that sets new rules equal for all institutions, or that can be interpreted equally by all states, remains difficult.

In order to resume, it is my opinion that the market cannot be left alone as it is not able to regulate itself without an external aid. The market discipline is essential for the financial market because of information asymmetry in general which can cause a market failure damaging too many people involved. Unfortunately, there still are too many difficulties in achieving a unique, strong and coherent supervisory authority for all banks and for all countries due to all the issues listed above. In this sense, the contribution of subordinated debt may be useful only in an environment where investors are rational and well informed.

3 International banking regulation on subordinated debt

3.1 Basel I and Basel II

The international regulatory framework for subordinated debt in banking

The goal of the Basel Committee is to find an agreement for common policies designed to prevent that regulations, behaviours and different procedures within national financial systems from causing unfavourable consequences for the global financial system. Basel 1 was developed with the objectives of strengthening the capital base, and, therefore, the stability of the international banking system. The first Agreement fixed the supervisory capital at 8%, taking into account only the credit risk. The first financial regulation was based on this ratio:

$$\frac{RC}{\sum A_i W_i} \geq 8\%$$

RC = regulatory capital, A_i = assets, W_i = risk weights, A_iW_i = risk weighted assets (RWA).

On one side, there is the value of risk-weighted asset and on the other side, there is the regulatory capital. The meaning of this ratio is fundamentally linked to the fact that every bank has to take into account credit risk and for every level of risk credit, it has to hold a minimum level of capital that is not equity but a higher concept.

The main objects of the new Capital Accord are synthesised into three classes:

- high level of soundness of banking system and also high stability, compatible to a competitive environment
- levelling the playing field, so as to treat banks in different countries the same way
- capital requirements more sensible to credit risk, so as to ensure a strong relationship between real credit risk and the new regulatory scheme.

This new agreement is based on three pillars: minimum capital requirements, supervisory review and market discipline. However, the capital adequacy is needed only for the quantitative aspect. Qualitative aspects should be taken into account since they have a huge impact on the stability of a bank, on the organisational structure, on the existence of internal control and quality and on the management distribution of responsibility.

The first pillar introduces a capital requirement to cover the typical risks of banking and finance. The minimum capital requirement is the quantitative part of the new capital accord. It gives the possibility to measure our capital requirements in comparison to the previous one. It increases the ratio:

$$\frac{RC}{A+[(M+O)*12.5]} \geq 8\%$$

The new risk class incorporates operational risk (O) and market risk (M). While the definition of regulatory capital remains effective, for both agreements, the regulatory capital (RC) is basically the same:

- tier 1 capital (core capital or basic equity)
- tier 2 capital (supplementary capital)
- deductions from capital.

The core capital (Tier 1) is measured as the sum of the Upper Tier 1, also called 'common equity' which contains ordinary shares (the saving ones are excluded since they do not ensure the full absorption of losses), reserves and the Lower Tier 1 made up of retained earnings and golden shares. Tier 1 Capital should be set at a minimum level of 4% of the total RC.

With a decreasing level of seniority, i.e., with less refund guarantee for the investor, there is Tier 2. It can be split into two levels: Upper – bonds lasting more than 10 years, hybrid instruments, hidden reserves and revaluation reserves – and Lower – containing subordinated bonds lasting five years. The deductions consist of goodwill, increase in equity coming from a securitisation exposure, investments in subsidiaries engaged in banking and financial activities which are not consolidated in national systems.

Basel II, however, recognises the lack of financial security inside the regulatory capital and provides an additional level of capital. Tier 3, i.e., 'weak capital', which consists of short-term subordinated debt only to hedge market risks but is not part of regulatory capital. Subordinated debt, therefore, is now more important than ever. Since the percentage of regulatory capital becomes higher and banks cannot cover all financial needs, they try to use other financial instruments, including subordinated debt.

3.2 Basel III: the new agreement on bank capital

The greatest financial crisis which has shown the weaknesses of the banking system and its regulation has prompted the Committee to create a new regulation to give a stronger basis to the banking system. Basel 2.5 regulations increased the banks' capital requirement to protect from market risk. It has been recognised that capital should be a mirror for volatilities during both crisis and calm periods, moved items from the banking book to the trading book and created a special capital requirement for derivatives that were not taken into account before. Banks need more stability to respond to crisis events. Adding short-term subordinated debt to increase regulatory capital exposes financial institutions too much uncertainty due to the characteristics of this kind of debt: it is too volatile and dangerous.

Basel III radically increased the equity amount which banks must hold, increased the requirements that they should meet and recognised that many financial institutions'

problems during the 2009–2011 period were due to liquidity problems and imposed new liquidity levels. New Basel III directions clearly prevent the use of step-up margins on the regulatory capital tool such as subordinated debt or Tier 1. The new rules, which were discussed in consultation with the banking industry, started to enter into force in early 2013.

A long transitional period up to 01.01.2019 was expected in order to facilitate a gradual adjustment of banks' operational strategies to avoid an impact on economic recovery. However, the European Banking authority states, basing the analysis on a sample of 164 banks (23 of those are Italian), that the big financial institutions already managed to reach an average Common equity tier 1 of 12,8% in 2016 – perfectly in line with the new regulation.

Briefly, the agreement can be divided into six parts:

- the definition of regulatory capital
- setting higher capital requirements
- introduction of minimum liquidity standards
- better coverage of market risk and counterparty
- containment of level of leverage
- countercyclical measures to reduce the 'procyclicality' of the prudential rules.

The decision to strengthen the capital requirements is essentially implemented in three ways: firstly, there is a significant shift of capital towards higher quality instruments; secondly banks are required to keep a buffer of additional capital above the minimum equal to 2.5% and lastly, Tier 3 is now eliminated.

Regarding the regulatory capital, the minimum requirement for the total assets does not change and remains at 8% in relation to the risk-weighted assets but banks that are allocating the 2% as common equity, will increase this percentage to 4% in Basel III regime. Moreover, in Tier 2, the Upper Tier 2 capital is eliminated. It has the task of ensuring loss absorption in case of liquidation. Therefore, the part of Tier 2 that remains is that of the Lower one regarding the subordinated debt. The process can be resumed in Table 1:

Table 1 Basel III regulatory capital in percentage

	Common equity (Tier 1)	*Additional Tier 1*	*Tier 2*	*Capital conservation buffer*	*Countercyclical capital buffer*
Until 2012	2.0%	2.0%	4%	–	–
2013	3.5%	1.5%	3.5%	–	–
2014	4%	1.5%	2.5%	–	–
2015	4%	1.5%	2%	–	–
2016	4%	1.5%	2%	0.625%	0.625%
2017	4%	1.5%	2%	1.25%	1.25%
2018	4%	1.5%	2%	1.875%	1.875%
2019	4%	1.5%	2%	2.5%	2.5%

4 Empirical analysis across bank's size and countries

The empirical analysis was made to analyse the differences in the use of subordinated debt in Italy taking into account the five largest Italian banks by capitalisation. There is also another empirical analysis among four European countries: Italy, Spain, Germany and France. Germany and France are chosen because they are the most advanced from a financial point of view (the UK has been left out due to it being outside the Eurozone) while Spain is the country with the most similar characteristics to Italy.

4.1 Empirical evidence on Italian banks

The analysis begins with an investigation of Italian banks. The five largest Italian banks by market capitalisation[2] are: UniCredit, Intesa Sanpaolo, Monte dei Paschi di Siena, Mediobanca and Banco Popolare Società Cooperativa. Over the past few years, subordinated debt has provided important support to financial institutions, both large and small. This support is in favour of the consolidation of the capitalisation level and capital adequacy. Moreover, it is interesting to note the growth, or decline, of the subordinated debt in accordance to international decisions taken by the Basel Committee II and III with relative changes to the regulatory capital on subordinated debt.

A stock analysis of subordinated bonds which, as mentioned, constitutes about 85% of the subordinated debt, is needed to give an initial idea of the entity of subordinated held by the biggest Italian banks. Giving an initial view of the current variation is interesting in order to see the changes in these stock data.

The information in Table 2 was taken from FactSet:

Table 2 Weight and variation of subordinated bonds (values are expressed in millions of Euros)

	Data	*Subord. bonds*	*Senior bonds*	*Percentage of subord. bonds*	*Variation of subord. bonds*
UniCredit SpA	31/12/15	18,208.5	106,370.0	14.6%	0%
	31/03/16	18,208.5	106,370.0	14.6%	
Banca Monte dei Paschi di Siena SpA	30/09/15	4,976.7	21,669.8	18.7%	–55%
	31/12/15	2,598.1	28,267.2	8.4%	
Intesa Sanpaolo SpA	30/09/15	12,998.0	–	–	–14.3%
	31/12/15	11,144.0	–	–	
Banco Popolare – Società cooperativa	30/09/15	2,753.4	3,920.6	41.2%	–18.9%
	31/12/05	2,663.2	5,299.4	33.4%	
Mediobanca SpA	30/06/14	1,773.1	13,409.1	11.7%	+3.4%
	30/06/15	1,913.9	13,859.9	12.1%	

Even if the data are not perfectly aligned, the evidence shows that the banks which own more subordinated bonds with respect to the others are UniCredit firstly and Intesa SanPaolo secondly. These two banks are the biggest in Italy and are the first two also for the holding of these subordinated instruments.

There is a general tendency toward the reduction of this form, used to raise capital in favour of an increase of the senior bonds. Almost all banks, except Mediobanca, are, in fact, decreasing the quantity of subordinated bonds held, while all of them are increasing the number of senior bonds. This reduction is quite consistent, especially for Banca Monte dei Paschi di Siena which halved the amount of subordinated bonds in its portfolio.

Clearly, this is a stock analysis and making a prediction or a deeper investigation is generally quite difficult yet needed to give an idea of the proportion of subordinated bonds relative to senior bonds (Table 3).

Table 3 Regulatory capital (values are expressed in millions of Euros)

Banca Monte dei Paschi di Siena	*Equity in Tier 1*	*Tier 2*
2015	9101	2196
2014	6607	3293
2013	8545	2096
2012	8289	3015
2011	11,649	5357
2010	9142	5456
2009	9093	5697
2008	6798	5525

UniCredit SpA	*Equity in Tier 1*	*Tier 2*
2015	48,146	10,659
2014	47,501	9358
2013	51,635	14,914
2012	67,845	14,343
2011	71,381	15,051
2010	72,387	15,689
2009	68,414	16,501
2008	63,117	20,603

Mediobanca SpA	*Equity in Tier 1*	*Tier 2*
2015	7137	1745
2014	6507	1576
2013	6153	2002
2012	6339	1471
2011	6156	1743
2010	5924	1004
2009	5648	817
2008	5903	918

Table 3 Regulatory capital (values are expressed in millions of Euros) (continued)

Intesa SanPaolo SpA	*Equity in Tier 1*	*Tier 2*
2015	35,451	2302
2014	34,760	1700
2013	37,159	7100
2012	37,955	8141
2011	38,773	12,201
2010	33,026	16,348
2009	31,238	15,472
2008	27,713	14,748

Banco Popolare – Società cooperativa	*Equity in Tier 1*	*Tier 2*
2015	14,248	1235
2014	13,864	1135
2013	11,589	1465
2012	–	–
2011	6628	3080
2010	6793	3421
2009	7125	2893
2008	4722	2910

In order to make a deeper analysis, it would be better to look for variations and trends. A set going from 2008 to 2015 was chosen as time horizon in order to try to make a parallelism across banks in an attempt to find a link between events which may have lead banks to modify their behaviours.

A useful analysis can be done about Tier 2. As it has been said, the Tier 2 capital is almost entirely composed of subordinated debt. Therefore, checking its variations with respect to new Basel III rules is interesting. Tier 2 includes a negligible portion of hybrid capital. In all banks there is an annual fee ranging from 3% to 6%, but since it is present in every bank with almost the same percentage, it can be neglected and the analysis can go on. In fact, the great predisposition to the issue of subordinated debt in comparison to the low use of innovative instruments of capital clearly emerges.

All banks seem to have the same trend: to decrease. The first thing that has to be noticed is the drastic decrease that hit UniCredit and Intesa SanPaolo from 2008 to 2012. Even if slower, the other banks have also decreased their quantity. Essentially, it can be said that two things might be the causes of this situation. The first one may be due to the worldwide crisis affecting worldwide affecting the investments with 2011 being deeply felt by banks because of the connection to the high mobility of capital and speculation. Another motivation, which probably is the one that best fits to the decrease of the latest years can be linked to Basel III. In fact, the banks which were mostly affected were the two which hold a lot of subordinated.

It can also be noticed that since 2014 there are signs of recovery. This can be due to several factors among which some can be highlighted. The first thing that can be thought, is that banks are emerging from the financial crisis of recent years and are entering a period of recovery. However, by doing a deeper analysis other factors may arise. In this period it is easy to find lower rates which do not reflect the real risk of the bank and may induce investors to place their money in more sure tools rather than in the subordinated debt. Another reason could be that the central bank, requires greater guarantees which can be translated into a need to increase the capitalisation and then the regulatory capital, to be able to stay in the market.

In addition, an interesting inquiry that has to be considered and analysed is the amount of subordinated borrowing with respect to the total assets present in Italian banks. In my opinion, these values have to be considered because if bank files for bankruptcy, the company's liquidated assets are used to reimburse outstanding debts. Thus, having an idea about the quantity and the variation of the ratio gives an idea about the variation of the proportion of the risk for the subordinated borrowing not able to be repaid. The analysis of how this ratio changes over time shows us if there is a common trend among Italian banks. Again, the time horizon of the data taken into account goes from 2008 to 2014 and a ratio is done for each period for each bank.

Table 4 which report data for all banks. Data was taken from BankScope.

Table 4 Subordinated debt/total asset (values are expressed in millions of Euros)

UniCredit SpA	*Subordinated borrowing*	*Total asset*	*Ratio* (%)	*Variation* (%)
2008	23,722.6	1,045,612,1	2.27%	–
2009	19,285.7	928,759.8	2.08%	–8.37%
2010	16,718.5	929,487.6	1.8%	–1.35%
2011	16,597.8	926,768.7	1.79%	–0.56%
2012	16,478.1	926,827,5	1.78%	–0.56%
2013	16,972.7	845,838.4	2.00%	+12.36%
2014	–	844,217.4	–	–

Monte dei Paschi di Siena SpA	*Subordinated borrowing*	*Total asset*	*Ratio* (%)	*Variation* (%)
2008	5531.3	213,796.0	2.59%	–
2009	6098.4	224,815.0	2.71%	+4.63%
2010	5741.1	244,278.9	2.35%	–13.28%
2011	5667.1	240,793.9	2.35%	0.00%
2012	4974.5	218,886.1	2.27%	–3.54%
2013	4878.6	199,105.9	2.45%	+7.90%
2014	6360.7	183,443.8	3.47%	+41.63%

Table 4 Subordinated debt/total asset (values are expressed in millions of Euros) (continued)

Intesa SanPaolo SpA	*Subordinated borrowing*	*Total asset*	*Ratio* (%)	*Variation* (%)
2008	16,961.0	636,133.0	2.67%	–
2009	18,385.0	624,844.0	2.94%	+10.11%
2010	19,590.0	658,757.0	2.86%	–2.72%
2011	15,437.0	639,221.0	2.41%	–18.67%
2012	11,391.0	673,582.0	1.69%	–29.88%
2013	11,532.0	626,283.0	1.84%	+8.88%
2014	14,234.0	646,427.0	2.20%	+19.57%

Banco Popolare – Società cooperativa	*Subordinated borrowing*	*Total asset*	*Ratio* (%)	*Variation* (%)
2008	3468.3	121,375.5	2.86%	–
2009	2812.6	135,709.1	2.07%	–27.62%
2010	3399.5	135,155.7	2.52%	+21.74%
2011	3443.7	134,126.6	2.57%	+1.98%
2012	2673.1	131,921.4	2.03%	–21.01%
2013	3322.0	126,042.7	2.63%	+29.56%
2014	3302.3	123,081.7	2.68%	+1.90%

Mediobanca SpA	*Subordinated borrowing*	*Total asset*	*Ratio* (%)	*Variation* (%)
2008	–	64,468.1	–	–
2009	929.2	73,890.5	1.26%	–
2010	952.2	76,501.2	1.24%	–1.59%
2011	1861.2	72,934.2	2.55%	+105.65%
2012	1536.3	78,679.1	1.95%	–26.53%
2013	1838.3	72,841.3	2.52%	+29.23%
2014	1898.6	70,464.0	2.69%	+6.74%

From a first sight, a common trend for the larger banks can already be seen. It is confirmed that the two banks that own the largest quantities of subordinated debt are UniCredit and Intesa SanPaolo – even if different values are shown since Tier 2 includes only a portion of the entire subordinated debt.

It can be seen that a particular and equal pattern for all banks is not experienced. UniCredit, Monte dei Paschi di Siena and Intesa SanPaolo have a similar trend: the ratio increased until 2009 and then declined until 2012, which seems to be the year of recovery for everyone, as the two remaining banks increased their ratio as well. The banks which seem to go 'against the grain' are Mediobanca and Banco Popolare, whose ratio picked in 2011.

There is no right or wrong trend, but the first of the three banks seems to be the one that reflects the evolution of the crisis and the consequential recovery.

4.2 Empirical evidence from a sample of European banks

The same analysis is done for four European countries. The three largest banks by market capitalisation of the four European countries chosen are: Germany (Deutsche Bank, CommerzBank, Deutsche PostBank), France (BNP Paribas, Société Génerale, Société Agricole), Spain (Banco Santander, Banco Bilbao Vizkaya Argentaria BBVA, Banco Sabadell) and Italy (UniCredit, Monte dei Paschi di Siena, Intesa Sanpaolo).

The study begins with a stock analysis of the amount of subordinated bonds in relation to the senior bonds. This information is taken from FactSet (Table 5).

It can be seen that all three major banks of all four countries hold the same quantity of subordinated bonds. However, upon a deeper analysis, France has the highest percentage of senior bonds, on average around 30%. France is followed by Spain, with an average percentage of 20% – average lowered by Banco Santander. Finally, Germany and Italy have almost the same partition of bonds with an average of around 10%.

Table 5 Weight and variation of subordinated bonds (values are expressed in millions of Euros)

Italy	*Data*	*Subord. bonds*	*Senior bonds*	*Percentage of subord. bonds*	*Variation of subord. bonds*
UniCredit SpA	31/12/15	18,208.5	106,370.0	14.6%	0%
	31/03/16	18,208.5	106,370.0	14.6%	
Banca Monte dei Paschi di Siena SpA	30/09/15	4,976.7	21,669.8	18.7%	–55%
	31/12/15	2,598.1	28,267.2	8.4%	
Intesa Sanpaolo SpA	30/09/15	12,998.0	–	–	–14.3%
	31/12/15	11,144.0	–	–	

Germany	*Data*	*Subord. bonds*	*Senior bonds*	*Percentage of subord. bonds*	*Variation of subord. bonds*
Deutsche Bank	31/12/14	13,080.5	109,279.0	10.7%	–26.17%
	31/12/15	9,596.3	117,102.0	7.6%	
Commerz Bank	31/12/14	6,872.0	64,212.0	9.7%	+72.16%
	31/12/15	9,512.2	47,418.0	16.7%	
Deutsche PostBank	30/06/15	–	2,501.0	–	–
	30/09/15	–	2,527.0	–	

France	*Data*	*Subord. bonds*	*Senior bonds*	*Percentage of subord. bonds*	*Variation of subord. bonds*
BNP Paribas	31/12/14	13,674.9	11,517.1	54.3%	–23.76%
	31/12/15	16,455.0	8,041.0	67.2%	
Société Générale	31/12/14	7,916.0	22,255.0	26.2%	+37.02%
	31/12/15	13,046.0	23,350.0	35.9%	
Crédit Agricole	30/06/15	25,217.0	80,097.0	23.9%	+12.55%
	30/09/15	28,728.0	78,107.0	26.9%	

Table 5 Weight and variation of subordinated bonds (values are expressed in millions of Euros) (continued)

Spain	*Data*	*Subord. bonds*	*Senior bonds*	*Percentage of subord. bonds*	*Variation of subord. bonds*
Banco Santander	31/12/14	17,132.0	196,889.0	8.0%	–18.75%
	31/12/15	21,153.0	201,656.0	9.5%	
BBVA	31/12/15	11,546.0	21,417.0	35.0%	–1.43%
	31/12/15	12,914.0	24,557.0	34.5%	
Banco Sabadell	30/06/15	949.9	2,727.2	25.8%	–10.08%
	30/09/15	1,471.2	4,865.7	23.2%	

Italy and Spain share a common pattern. The three major banks of these two countries have a similar propensity to decrease the quantity of subordinated bonds related to the senior ones. In Spain, only Banco Santander, the strongest, is increasing the quantity of subordinated debt, while the others are decreasing it. In Italy, there is a common negative trend among all banks. Some similarities can be found between Germany and France. Even if Deutsche Bank is decreasing its quantity, Commerz Bank is increasing its quantity. It can be observed that subordinated bonds are increasing by 72% with respect to the senior bonds. Moreover, in France, all three major banks are in a positive trend, with an average of around 20%.

As previously said, this is only a stock analysis and it is difficult to do a deeper analysis and try to find a real common trend. As was done for the five major Italian banks, the same can be done for the three major banks of these four countries. Below, Tier 2 will be analysed, which can be a good approximate analysis of bank tendencies about subordinated.

It will be useful, at the end, to do an analysis with respect to what happened in Europe both from a regulatory point of view – the transition from Basel II to Basel III – and from an environmental point of view – the financial crisis. The analysis is the same as the one done previously. Table 6 shows the state of Tier 2 for each bank from 2008 to 2014 and the trend can be visualised in Figure 1.

It is not immediate to see, but a general pattern can be found. There is a stability until 2010 for almost all banks – except for Credit Agricole which has an exponential rise of Tier 2, and thus of subordinated debt which is the propeller of this kind of growth. The country which tends to have more stability is Spain – except for Banco Santander which decreases their Tier 2 a lot. For the last two years the trend seems to increase, or, more generally, seems to be quite stable. There are only a few banks that are decreasing Tier 2. France, above all, Germany and Spain show this kind of recovery, while Italy is the only State which seems to have a stable pattern. It should also be remembered that from 2012 the Tier 2 should go from 4% to 2% in the regulatory capital. This result seems counterintuitive with half of the general actual trend of rising Tier 2. An explanation could be that banks are recovering from the great crisis which hit the market a few years ago, raising their assets, their regulatory capital and, consequently, their Tier 2. However, in 2013, almost all banks had the same tendency: to raise their Tier 2. The same reasons were given for the growth of Italian banks, but, with a year's delay, can be given by the market itself and by the central bank – i.e., low yield encouraging the subordinated debt spread and the capital adequacy required by international regulation.

Table 6 Regulatory capital (values are expressed in millions of Euros)

German banks: equity in Tier 1 and Tier 2:		
Deutsche Bank	*Equity in Tier 1*	*Tier 2*
2008	11,083	6302
2009	12,205	3523
2010	14,973	6123
2011	15,114	6179
2012	14,906	6532
2013	14,792	4747
2014	62,581	4395
2015	52,429	6299
Commerz Bank	*Equity in Tier 1*	*Tier 2*
2008	1708	8357
2009	1877	11,893
2010	3071	9130
2011	3047	10371
2012	5113	9878
2013	5828	10,945
2014	1139	6353
2015	–	5500
Deutsche PostBank	*Equity in Tier 1*	*Tier 2*
2008	3382	3155
2009	3293	1866
2010	3761	2124
2011	4529	2334
2012	4901	2139
2013	4859	2013
2014	4812	2573
2015	–	–

French banks: equity in Tier 1 and Tier 2:		
BNP Paribas	*Equity in Tier 1*	*Tier 2*
2008	53,228	16,948
2009	69,501	24,152
2010	85,629	18,806
2011	85,626	12,769
2012	94,422	9186
2013	91,162	6367
2014	50,182	6790
2015	48,686	9066

Table 6 Regulatory capital (values are expressed in millions of Euros) (continued)

French banks: equity in Tier 1 and Tier 2:		
Société Generale	*Equity in Tier 1*	*Tier 2*
2008	36,085	9910
2009	42,204	7303
2010	46,421	5143
2011	47,067	3964
2012	49,809	809
2013	51,008	4033
2014	55,168	5863
2015	59,037	10,022
Crédit Agricole	*Equity in Tier 1*	*Tier 2*
2008	41,100	2200
2009	3700	10,700
2010	44,400	19,800
2011	43,200	18,700
2012	38,600	17,600
2013	40,814	19,472
2014	47,639	17,386
2015	–	–

Spanish banks: equity in Tier 1 and Tier 2:		
Banco Santander	*Equity in Tier 1*	*Tier 2*
2008	38,968	25,225
2009	48,366	24,309
2010	53,205	26,071
2011	56,694	15,568
2012	57,558	15,378
2013	57,346	9730
2014	71,598	–
2015	–	–
BBVA	*Equity in Tier 1*	*Tier 2*
2008	29,512	12,324
2009	36,689	12,186
2010	40,952	9,901
2011	43,614	8,609
2012	46,310	7,385
2013	39,945	8,695
2014	41,396	11,046
2015	–	11,646

Table 6 Regulatory capital (values are expressed in millions of Euros) (continued)

Spanish banks: equity in Tier 1 and Tier 2:		
Banco Sabadell	*Equity in Tier 1*	*Tier 2*
2008	4486	1467
2009	5106	1006
2010	5754	1042
2011	6160	567
2012	9006	732
2013	10,231	588
2014	503	839
2015	12,109	1208

Figure 1 European Tier 2 trend (see online version for colours)

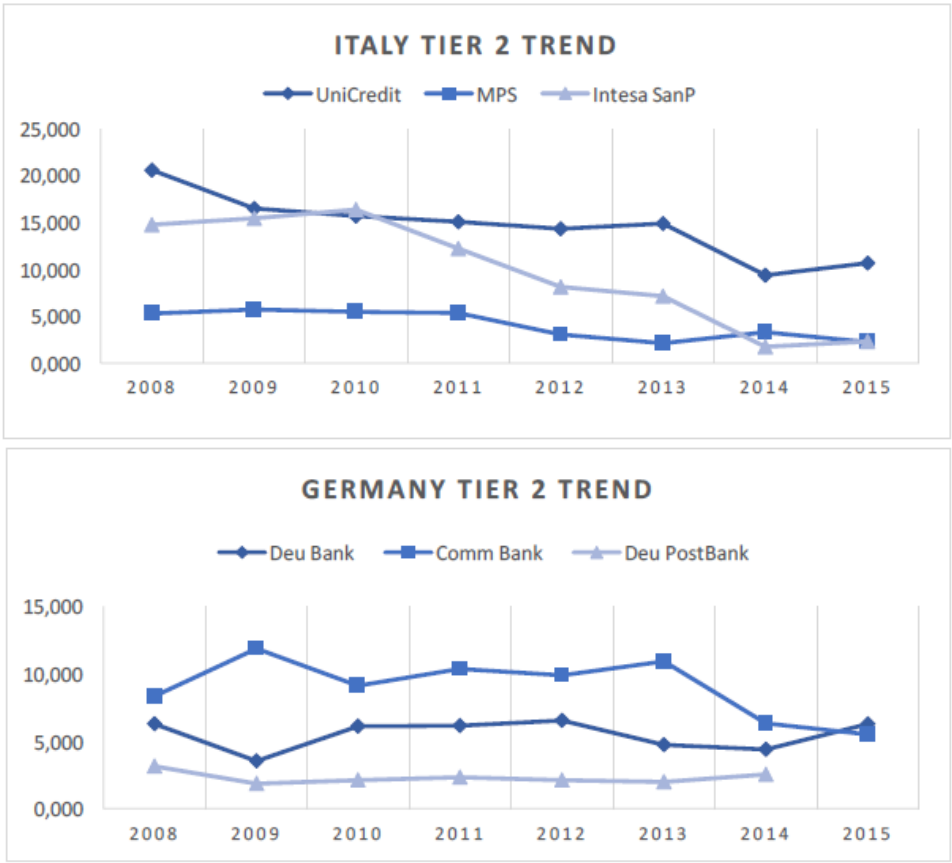
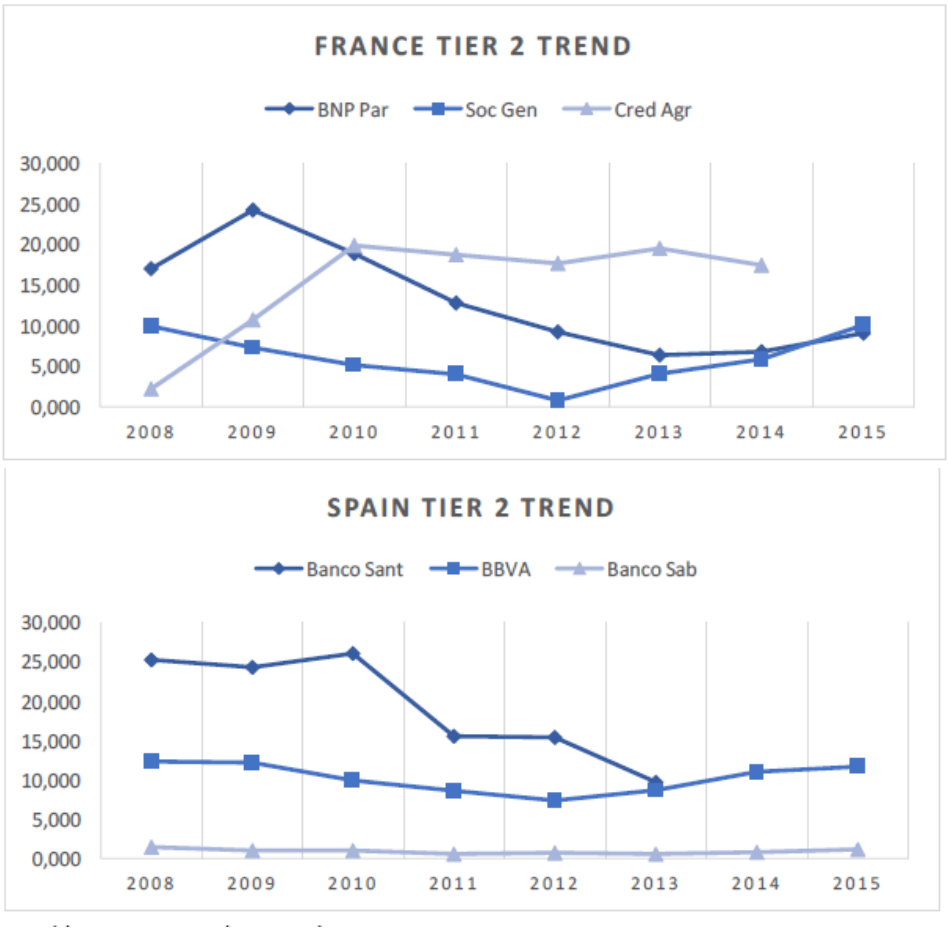


Figure 1 European Tier 2 trend (see online version for colours) (continued)



5 Conclusions

Subordinated debt has been widely spread, probably due to the fact that it increases the level of capitalisation. This method of growth is very interesting for financial institutions which find the possibility of a bank capitalisation without altering the balance of property. The reduction of the propensity to risk and thus the propensity to buy subordinated debt in adverse economic times, when banks' performance does not guarantee adequate safety levels should not be underestimated. These instruments are a big help for bank growth and expansion but it is questionable if selling these products to small savers is correct since the full prospectus of the product is not always given – or is given in the reduced version – and not always easy to understand. Any kind of investors, both professional and retail, have always been attracted by higher returns and safe investments.

Investors, therefore, are faced with a choice, making an assessment of the associated risks: securities with higher yields more likely lead to a loss of capital. For larger banks,

much of the subordinated bond is held by many small investors who often hold a share in a pension fund or an investment fund, and do not know they hold pieces of this subordinated debt. Obviously, the category of retail investors is more disadvantaged than those of professional investors.

The law on transparency of investments has improved extremely, but the technical characteristics of subordinated debt are not always easy to understand, especially for retail bondholders which face bank sellers. There is a growing need for oversight to ensure the stability of financial institutions and ensure that management is rigorous and prudent in order to avoid moral hazard issues that might take place. The information asymmetry issues cannot only be solved with the transition from bail-in to bail-out. This solution removes only part of the moral hazard problem.

The evidence presented in this paper suggests that the tendency of subordinated debt is to grow or, at most, remain stable. It is my opinion to consider the Tier 2 analysis very important due to its being a good indicator of the banks' health and it is also a good approximation of the subordinated debt held. It was seen that the evolution of the subordinated debt – summarised in this analysis by Tier 2 – was essentially negative until 2012, but is now generally stable or even increasing since it is part of the regulatory capital. Both with the pick of the basis points spread among senior and unsubordinated debt and with the negativity of Tier 2 trend, we could identify the end of 2011 and the beginning of 2012 as the starting point of the subordinated instruments stabilisation/ growth.

The shared European pattern was to decrease due to two main factors: the worldwide crisis and the transition to Basel III regulation which started to take place in the economic recovery since 2014 and in this scenario, Italy is perfectly aligned with the general European trend. It is also interesting, in my opinion, to analyse the changes occurred in the same period among the issue of subordinated and senior bonds. It has been found out that some of the largest banks have agreed to lower the amount of their subordinated debt, as is the case of UniCredit that in its consolidated financial statements of 2015 announced a buy-back plan of subordinated bonds that do not fall within the regulatory capital of Tier 2.

References

Black, F. and Scholes, M. (1973) 'The pricing of options and corporate liabilities', *The Journal of Political Economy*, Vol. 81, No. 3, May–June, pp.637–654.

Cohen, M. (2012) *Senior Versus Subordinated Bonds: Which Is The Better Bet?*, March.

Flannery, M.J. and Sorescu, S.M. (1996) 'Evidence of bank market discipline in subordinated debenture yields: 1983–1991', *The Journal of Finance*, Vol. 51, No. 4, September.

Levonian, M. (2001) *Subordinated Debt and the Quality of Market Discipline in Banking*, Federal Reserve Bank of San Francisco.

Nivorozhkin, E. (2001) *Subordinated Debt and Equity: Complements or Substitutes?*, Working Paper in Economics, Department of Economics, Gothenburg University.

Vidhan, K.G. (2005) 'Market discipline of bank risk: evidence from subordinated debt contracts', *Journal of Financial Intermediation*, Vol. 14, pp.318–350.

Notes

[1]This theory is based on the consideration that prices accurately reflect the performance of the bank: i.e., that they are *risk sensitive*.

[2]The term capitalisation is the total market value of the shares issued by a listed company.

Websites

https://www.bancaditalia.it/

https://www.bis.org/

https://www.ecb.europa.eu/

https://www.factset.com/

http://www.federalreserve.gov/

http://www.ilsole24ore.com/finanza-e-mercati.shtml/

Bibliography

Anson, M.J.P. (2006) *Handbook of Alternate Assets*, John Wiley & Sons Inc., New York, USA.

Banca D'Italia (2005) *Il bilancio bancario: schemi e regole di compilazione,* 4° aggiornamento Dicembre 2015.

Basel Committee on Banking Supervision (2001) *The New Basel Capital Accord*, January.

Basel Committee on Banking Supervision (2003) *Markets for Bank Subordinated Debt and Equity in Basel Committee Member Countries*, Working Paper No. 12, August.

Basel Committee on Banking Supervision (2010) *Basel III: International Framework*, December.

Basel Committee on Banking Supervision (2013) *Capital Requirements for Banks' Equity Investments in Funds – Final Standard*, December.

Black, F. and Cox, J. (1976) 'Valuing corporate securities: some effect of bond indenture provision', *Journal of Financial Intermediation*.

Blum, J.M. (2002) 'Subordinated debt, market discipline, and banks' risk taking', *Journal of Banking and Finance*, Vol. 26, No. 7, July, pp.1427–1441.

Board of Governors of the Federal Reserve System (1999) *Using Subordinated Debt as an Instrument of Market Discipline Study Group on Subordinated Notes and Debentures*, December.

Borroni, M. (2006) *Prestiti subordinati e debt capital nelle banche italiane*, Bancaria Editrice.

De Angeli, S. and Rusconi, L. (2008) *Il mezzanine finance*, Vita e Pensiero Editore.

ESMA (2015) *Final Report, Guidelines on Complex Debt Instruments and Structured Deposits*, art. 78, 26 November.

European Commission (2011) *New Proposal on Capital Requirement*, July.

Evanoff, D.D. (2000) *Subordinated Debt and Bank Capital Reform*, FRB Atlanta Working Paper No. 2000-24, November.

Goyal, V.K. (2005) 'Market discipline of bank risk: evidence from subordinated debt contract', *Journal of Finance Intermediation*, Vol. 14. pp.38–42.

Hull, J.C. (2015) *Risk Management and Financial Institutions*, John Wiley & Sons Inc., New York, USA.

Leone, P. (2012) *Tavola Rotonda – Interventi – Banca, rischio sistemico e regolamentazione strutturale*, Rivista Bancaria, Minerva Bancaria, November–December.

Nicolai, M. (2011) *Il Mezzanine Finance*, Egea Editore.

Resti, A. and Sironi, A. (2009) *Rischio e valore nelle banche. Risk management e capital allocation*, Egea Editore.

Rutigliano, M. (2012) *L'analisi del bilancio delle banche: Rischi, misure di performance, adeguatezza patrimoniale*, Egea Editore.

Scannella, E. (2009) 'Bank capital: theory and regulation', *Banche e Banchieri, Rome, Italy*, No. 4, July–August, pp.284–307.

Scannella, E. (2012) 'Capital regulation and Italian banking system: theory and empirical evidence', *International Journal of Economics and Finance*, Vol. 4, No. 2.

Tutino, F. (2009) *Il Bilancio delle banche*, Bancaria Editrice.

Tutino, F. (2015) *La Banca*, Il Mulino Editore.

Tutino, F., Birindelli, G. and Ferretti, P. (2011) *Basilea 3, gli impatti sulle banche*, Egea Editore.