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AUTHORS	Robert Holman Miroslav Kollar

ARTICLE INFO	Robert Holman and Miroslav Kollar (2009). Discussing the pro-cyclicality of financial intermediation and bank capital regulation. *Investment Management and Financial Innovations*, *6*(3-si)
RELEASED ON	Friday, 20 November 2009
JOURNAL	"Investment Management and Financial Innovations"
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES **0**

NUMBER OF FIGURES **0**

NUMBER OF TABLES **0**

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Robert Holman (Czech Republic), Miroslav Kollar (Czech Republic)

Discussing the pro-cyclicality of financial intermediation and bank capital regulation

Abstract

The paper discusses the pro-cyclicality of financial intermediation in general and regulation of bank capital in particular. It first introduces the reader to the history of bank capital regulation. Next, it describes the pro-cyclical elements in both Basel I and Basel II. Afterwards it discusses some measures proposed to mitigate the alleged pro-cyclicality of Basel II. Then it considers other measures addressing the pro-cyclicality of banking, such as the leverage ratio and dynamic provisioning. Finally, it concludes with a discussion of how an ideal bank capital regulation should look like.

Keywords: capital adequacy standards, dynamic provisioning, leverage ratio, pro-cyclicality, regulatory capital of banks.
JEL Classification: G21, G28.

Introduction

It is a natural trait of economic agents to be relatively more optimistic in their endeavors in the good times and, on the other hand, relatively more pessimistic in the bad times. These feelings of optimism and pessimism are even more reinforced by the behavior of the masses. Hence, waves of general optimism and pessimism are a natural feature of both human mankind and, in particular, market economy. In good times, no businessman – even the prudent one, who does not believe in market optimism lasting long – can afford to stay aside, or even go against the tide for a long time, if he does not want to lose market share or be driven out of business (Leijonhufvund, 2009). Particularly, financial markets and financial intermediation are very inclined to these changes of general optimism and general pessimism.

The pro-cyclical behavior of both the financial intermediation industry and the capital regulation of financial intermediation is a widely discussed topic. Banks tend to engage in more aggressive credit expansion in the periods of economic prosperity, and, in turn, tend to contract credit very quickly in times of economic weaknesses. We will understand pro-cyclical behavior of either the banks or the capital regulation as such behavior (or regulation) that amplifies the cyclical behavior of the real economy (Lowe, 2002). Even the capital regulations of banks, in particular the capital requirements of both Basel I and Basel II, are prone to be pro-cyclical. The purpose of this paper is to discuss the pro-cyclicality of capital regulation of banks and to consider potential remedies addressing this issue.

1. History of capital regulation of banks

Prior to the 1988 Basel Capital Accord (i.e. Basel I) the capital regulation of banks was not uniformly administered across countries. Every country focused its capital regulation on its domestic banks and on the domestic activities of international banks. The international activities of domestic banks were not closely monitored and no major consensus as to how to regulate large international banking groups prevailed. In terms of methodology, during the post World War II period, two strains of thought were back-lashing each other.

One was the informal and subjective approach tailored to the circumstances of individual banks. Within this approach, the national regulator looked individually at each bank and evaluated a myriad of various indicators. Each bank was thought to be specific and a dismal performance of one indicator could have been offset by good behavior of another indicator, or could even be ignored for a particular bank operating in a particularly constrained environment. A simple numeric categorization of capital adequacy was being refused; instead, indicators such as managerial capability and loan portfolio quality were taken into account. Indicators such as capital-to-assets, capital-to-risk-assets or capital-to-deposits were tested but often dismissed as being ineffective, and emphasis was put on regulatory discretion (Burhouse et al., 2003; Ryon, 1969).

However, the collapse of a few large banking institutions due to the stagflation in the 1970s (in particular, Bankhaus Herstatt in Germany and Franklin National Bank and First Pennsylvania Bank in the US), the forthcoming Savings and Loans crisis in the US (a collapse of 1617 banks – i.e. 9% of the market, and 1300 Savings and Loans institutions – i.e. 27% of the market) and the oil crisis and international debt crisis of the 1980s proved that even large banking institutions are vulnerable in times of economic crisis and that internationally active banking groups produce a dangerous contagion risk (Mishkin, 2007). Banking regulators worldwide began to search for precisely defined numerical capital standards that would be internationally recognized. The Basel Committee on

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Banking Supervision was formed within the Bank for International Settlements as an international forum for regulators dedicated to regulatory and supervisory matters that led to the formation of the 1988 Basel Capital Accord (i.e. Basel I) (Santos, 2000; Burhouse et al., 2003). US legislators were even more prompt than the Basel Committee in enacting numerical standards after the banking turmoil of the 1970s. In 1981, US regulators introduced leverage ratio (ratio of primary capital to assets) and minimum primary capital adequacy ratio. Nevertheless, minimum capital requirements were in the US banking legislation as early as 1864, and studies on the use of various capital ratios, or even risk adjusted capital ratios were undertaken from 1930s till 1950s in the US, but were downplayed as being ineffective (Burhouse et al., 2003).

Basel I classified bank's assets into five categories (e.g., sovereign debt, corporate debt, etc.) and assigned fixed risk weights to each of the category (Santos, 2000). Basel I also defined what could be classified as regulatory capital and finally proposed the calculation of the capital adequacy ratio. As time passed, Basel I was thought to be too rigid without any flexibility as to the risk weighting of the bank's assets. In 2004, the Basel Committee introduced the New Basel Capital Accord (Basel II – implemented in EU and US by year 2008) that should have replaced the original Basel I accord (Santos, 2000). Basel II relies on a more flexible calculation of risk weights to bank's assets. The five asset categories of Basel I are replaced by internal and external rating mechanisms that treat each asset (i.e. each bank loan) individually based on its risk characteristics. Therefore, the risk weighting is said to be more flexible and more realistic (Borio, Haibin, 2008).

2. The pro-cyclical behavior of capital regulation of banks

Even though current economic research concentrates on the possible pro-cyclical behavior of Basel II, it has to be mentioned that the Basel I framework is also prone to a degree of pro-cyclicality (Borio, Haibin, 2008). If the losses of banks during an economic downturn are large enough to reduce the amount of regulatory capital below the required minima, banks are forced either to dramatically reduce their credit supply or to increase interest rates to such an extent that profits from new loans would build up sufficient amount of regulatory capital. This behavior of banks would then deepen and prolong economic downturn in the real economy.

With Basel II, the whole issue of pro-cyclicality is a little more complex. The main idea behind Basel II is that a bank should hold less capital to a less risky loan and more capital to a more risky loan. Banks can rely in evaluating the riskiness of a particular loan on either the services of external credit rating agencies or on their own internal rating models. The issue of Basel II pro-cyclicality stems from the following logic. During the period of economic upturn, banks (and/or credit rating agencies) evaluate the riskiness of loans to be rather low. Most of the economy prospers and the probability of defaults of particular economic agents is relatively low. During this wave of prosperity we can also observe that general optimism and hunt for profits stimulate banks to provide credit to companies or projects that would not be regarded as sustainable in more normal times. Dramatic increases in interest rates in the economy, or unexpected deep economic slowdown, home or abroad, could make apparently profitable companies or projects unprofitable and unsustainable, hence being on the verge of default on its debt. All of a sudden, the probability of defaults of such companies or projects increases and it turns out that the risk weights originally assigned to these loans were overly optimistic. It also turns out that banks should have probably set aside more capital to these loans than they originally did. During the downturn, however, banks' profits decrease due to slower credit expansion and due to increased loan provisioning. Retrospectively, it can be said that the risk weights to such loans should have been higher from the very beginning than they originally were. The probability of the default is calculated from historical data and it is logical that during an economic upturn the data have a positive bias and during an economic downturn – a negative one, hence this confirms the pro-cyclicality of the aforementioned calculations. Nevertheless, we have to note that the pro-cyclicality of Basel II is yet to be confirmed by more thorough data analysis since the concept as such is applicable only from 2008 onwards (Lowe, 2002; CEBS, 2008; Goodhart et al., 2004; Gordy, Howells, 2006).

Some of the counterarguments against the pro-cyclical character of Basel II are as follows. It is argued that with the incorporation of Basel II, bank behavior might change. Credit risk management practices might improve and the pro-cyclical character of risk models is better understood. Banks might therefore act upon this knowledge and be more prudent in their credit policy as well as more willing to hold extra capital cushions in case expectations of worse times come true. Also, the second pillar of Basel II – the supervisor's power to increase the capital requirements of individual banks based on their current situation – and various new counter-cyclical features of Basel II (that we will comment on in the next chapter) should also diminish the pro-cyclicality of Basel II (Borio, Haibin, 2008). We should not be naive here, though.

Even though the understanding of risk and risk management might be deeper nowadays, the modelling approach towards probability of default in particular and risk in general remains the same. The risk calculations are still heavily model-dependent and rely on historical time series data, as we will discuss below. Also, it is naive to think that banks would be willing to keep more capital on their balance sheets than they are forced to – remember capital is costly.

While the shift from Basel I to Basel II is generally regarded as a step forwards because it brings forward a risk-weighted approach to determining capital requirements, the reality of Basel II implementation is and will be much more complex. On theoretical grounds, Basel II presupposes that observing, measuring and assessing risk are an easy task for both the banks and the supervisory bodies. However, as the current crisis revealed, bank's risks are far from transparent. Introduction of Basel II has created a new risk in the banking business – the risk of proper risk assessment. The whole idea of Basel II relies heavily on risk models (either the models of credit rating agencies or internal rating models of banks). This reliance on risk models in the assessment of risk depends in turn on the choice of the right model, on the calibration of the model, on the quality of the data used to calibrate the model, and on the impossibility to model certain extreme events. Current global financial crisis showed that the risk management industry (including the risk management practices of banks) is not as reliable as it portended to be. Therefore, to think that regulators and supervisors will be smarter than the rest of the risk management community in assessing the appropriateness of bank's risk management models is a naive assumption (Hildebrand, 2008). It should be highlighted here, though, that Basel II cannot be held responsible for the current global financial crisis, since it was put in use only during year 2008.

3. Addressing the pro-cyclicality of Basel II

There are various proposed measures that should mitigate the pro-cyclical character of Basel II (Amenc, Sender, 2009; Sender, 2008; CEBS, 2008; 2009; BIS, 2008). The most important is the integral part of the original Basel II framework – its second pillar. This pillar gives the banking supervisory body the discretion to require that the bank increases its regulatory capital in addition to the capital standard minima. The supervisory body can apply this discretion on individual basis on any bank in the system and can use any tools that it finds appropriate (on top of the Basel II framework) to judge the capital adequacy of the particular bank. There are, however, no generally accepted guidelines as to how to assess banks within this second pillar of Basel II. The whole assessment is regarded to be very complex, with intensive data requirements. Therefore, the supervisory body is in a difficult situation to make a sophisticated-enough case for forcing the bank to increase its regulatory capital on top of the first pillar of Basel II. This approach has not been widely used in practice yet, among other things because of a danger of possible judicial disputes of particular banks as to the additional capital requirements by the supervisor. The unsystematic, discretionary and non-transparent character of the second pillar of Basel II and the element of uncertainty and speculation it produces are its main disadvantages. The outcome of an extensive use of the second pillar by the supervisors might well be that banks would transfer their productive activities from exploration of market opportunities or improvements in their risk models to clashes, mitigation and disputes with the supervisors as to the appropriate level of their regulatory capital. The loss of market effectiveness here is evident.

Other proposed stabilizers that should mitigate the pro-cyclical character of Basel II are, the following. First, more conservative requirements on risk characteristics of the internal rating models of banks (e.g., on calculations of the probability of default, loss given default, etc.). This includes, for example, prolonging the time series that are used to calculate these parameters or to minimize expert judgment in calibration of these parameters.

Second, back-testing of the internal rating models of banks. This includes, for example, regular comparison of the realized default rates of banks' counterparties with the estimated default rates for the same economic agents. In case of discrepancies, a change to the modelling apparatus should be proposed.

Third, testing the adequacy of loan provisioning. This includes, for example, comparison of created loan provisions with the expected losses stemming from the internal rating models.

Fourth, putting emphasis on the through-the-cycle approach to rating. In practice though, both the external and internal rating systems are somewhere between the point-in-cycle and through-the-cycle approaches.

Finally, we should also mention, for example, stress testing of the bank's balance sheet within the internal rating approach, or the scaling factor. The scaling factor is a coefficient reflecting the ratio of estimated probabilities of default to the probabilities of default in case of economic slowdown. This should account for regular business cycle fluctuations, not severe recessions, though.

As we see, even before the true pro-cyclical character of Basel II was confirmed on the data, various counter-cyclical measures have already been or will be incorporated into the original Basel II framework by the Basel committee, based primarily on a theoretical risk of the Basel II pro-cyclicality as highlighted by a number of academic economists (see above). This will make the whole framework that is already highly technical, even more sophisticated and complex.

3.1. Note on the role of credit rating agencies. Ratings assigned by the credit rating agencies or the rating transition matrices are also considered to have pro-cyclical character. Despite the long-term perspective that credit rating agencies take in assigning credit ratings, they tend to overshoot in both good times and bad times. This overshooting is positively related to the state of the economy, hence the possible pro-cyclical character of credit ratings (Amato, Furfine, 2003; Lowe, 2002).

This feature of credit ratings would not be so dramatic, if the credit ratings industry did not play such an important role in today's world of finance. The Great Depression brought about a major shift in the importance of credit ratings. From 1936 onwards, US bank regulations required that banks hold on their balance sheets bonds of certain minimum credit rating. In 1975, the US Securities and Exchange Commission (SEC) coined a list of "nationally recognized statistical rating organizations" (NRSROs) whose bond ratings are used for specific regulatory purposes – among others also for bank capital requirements purposes. Nowadays, credit ratings play a crucial role in determining the level of regulatory capital banks hold. Using credit ratings for regulatory purposes increased the role of credit ratings to such an extent that market players began to rely less on their own analyses and more on the plain language of credit rating categories. The regulatory requirement of at least two independent ratings created an oligopolistic structure in the credit rating market, with the two major players dominating almost entirely the whole market. The shift from the investor-pays model to the issuer-pays model also increased the importance of credit rating. In the investor-pays model, credit ratings were available only to those investors who paid for them and these ratings were part of their wider market analysis. In contrast, in the issuer-pays model the ratings are made public after the issuer pays for them and the entire investment and regulatory community can use them in their decision-making (Knowledge@ Wharton, 2009).

This extensive use of the credit ratings by both the investors and the regulators could have amplified their possible pro-cyclical character. In our view, however, the introduction of the Basel II framework plays a positive role in decreasing this over-reliance on external credit ratings. Basel II allows banks to use either external ratings assigned by the credit rating agencies or to use their own internal rating frameworks approved by the particular regulator. This competition between external and internal ratings could in the future decrease the over-reliance on the external credit ratings with respect to bank capital regulation. We should, however, not forget that as long as the internal credit ratings work with measures identical or similar to various probabilities of default as described above, they might also be exposed to pro-cyclical character.

4. Other measures addressing the pro-cyclicality of financial intermediation

There are two other regulatory measures that are (besides any changes to accounting standards) currently widely discussed as having the potential to effectively complement the Basel II framework (i.e. on top of the changes proposed to Basel II). One of them is the leverage ratio and the other one is dynamic provisioning. Let us address these two measures in turn.

A regulatory measure that could help to make the banking industry healthier is said to be the leverage ratio, i.e. a simple ratio of tier 1 capital to assets. Leverage ratio has been historically used in various forms by the regulators, especially in the United States and Canada, and in these countries it is still used today as a complement to existing capital standards (Burnhouse et al., 2003). An interesting fact is that financial institutions, especially banks, hold much less capital to its assets than non-financial institutions. Whereas non-financial institutions held 30-40% of capital to assets, world's top banks held only 4 to 8% of capital to assets (tier 1 capital to total assets) before the current crisis (Hildebrand, 2008).

The central banking community or the supervisory community view the leverage ratio as an interesting complement to the Basel II framework (not its substitute!), since both the central bankers and the bank supervisors still believe that the risk-sensitivity of the Basel II approach is an important step forward. Hence, banks would have to meet both the Basel II standards and the leverage ratio requirements. The logic of a leverage ratio for banks is to put a minimum limit on their capital to assets ratio.

The simplicity of leverage ratio is its main advantage. It is completely immune of any modelling complexity or calibration. Even though some literature states that banks and supervisors who followed besides capital standards and also the

leverage ratios performed better during the crisis than others, the leverage ratio is not a saviour and did not insulate any of the US or Canadian banks from the current crisis. But it might seem that without the existence of a leverage ratio in the US banking regulation, the scope of current crisis would be much greater (Hildebrand, 2008).

The main disadvantage of leverage ratio is its pro-cyclicality. The logic here is the same as with the pro-cyclical character of Basel I. In complying with the leverage ratio during an economic downturn, banks would be forced to cut down on their lending activities to meet the leveraged ratio requirements, which would eventually amplify the economic downturn in the real sector. Another disadvantage of leverage ratio as being currently used, for example, in the US is that it does not fully account for off-balance sheet assets. This disadvantage materialized itself especially during the boom period preceding the current global financial crisis where banks got around the leverage ratio by the extensive use of off-balance sheet vehicles.

Let us now turn to second measure that is currently widely discussed as having a possible potential to supplement the existing Basel II framework. This measure is dynamic provisioning, which besides Spain has not been widely used, yet. Some aspects of dynamic provisioning are present in Germany, Portugal or France. Pure accounting provisions are based on the exactly quantifiable losses on a loan portfolio for a particular year. Hence, in good times the accounting provisions are low, and in bad times they are very high, eating up the capital base in the bad times. Therefore, they contribute to the pro-cyclical character of financial intermediation. The general logic of dynamic provisioning is as follows. Banks will, in comparison to accounting provisioning, calculate statistical provisions based on average historical losses on a loan portfolio during the whole business cycle. This implies that during good times, banks will create in a dynamic provisioning framework higher provisions than they would create using a purely accounting approach to provisioning, and during bad times banks will create fewer provisions, which would positively affect bank's profits and capital during an economic downturn. The adjective "dynamic" refers to the fact that the provisions rise in good times and decline in bad times. They rise in good times when accrued loan losses for a year are lower than the average business-cycle-adjusted loan losses, and they decline in bad times when the accrued loan losses for a year are greater than the average business-cycle adjusted loan losses. The parameters of the calculation of dynamic provisions are determined by the supervisory body. The use of dynamic provisions in the Spanish banking sector is said to contribute to a better shape of the Spanish banking sector during the current global financial crisis (despite bursting of the real estate bubble in Spain) compared to banking sectors of other countries not using dynamic provisioning (Bikker, Metzemakers, 2003; Borio, Lowe, 2001; De Lis et al., 2003).

The dynamic provisioning framework has a strong opposition in the accounting community. US GAAP and the International Accounting Standards treat provisioning in the accounting manner as described above. On the other hand, the supervisory community would like to see a more widespread use of dynamic provisioning among the banks.

Concluding remarks: the future of the bank capital regulation

As we have seen above, the issue of the pro-cyclicality of financial intermediation and capital regulation is very complex. The potential pro-cyclical character of Basel II and its heavy reliance on risk management models produce uncertainties that are yet to be explored. Implementing new pro-cyclical elements into the Basel II framework will make the framework even more complex and complicated. Using the discretionary second pillar of Basel II for addressing the pro-cyclicality of bank capital will produce an environment of constant clashes between the banks and the regulators as for the required level of regulatory capital. As we have also seen, other more simple measures, such as the leverage ratio, tend to have pro-cyclical elements in the same way as the original Basel I. Finally, dynamic provisioning has so far very limited use and goes very strictly against fundamental accounting principles.

Human beings in general and market economy in particular have a natural tendency to surrender to waves of optimism and pessimism. Pro-cyclicality of financial intermediation reflects this nature of the market economy and it cannot be characterized as a market failure. Banks are extremely optimistic in good times and extremely pessimistic in bad times, which is manifested in their credit policy throughout the business cycle, henceforth accentuating economic fluctuations in the real economy. Unfortunately, all current forms of bank capital regulation are pro-cyclical as well (Hildebrand, 2008). And even more unfortunately, since banks do not like capital regulation, they will paradoxically always support more complex capital regulation frameworks than simple rules because overcoming simple and transparent rules (unless they suffer from loopholes) is more visible to the general public and to the regulators and thus more complicated than, e.g., creating various hybrid forms of capital or AAA

rating off-balance sheet structures in a complex risk-adjusted Basel II framework.

Besides capital regulation, banks' desired level of capital is naturally determined by their long-term strategy and credit ratings provided by the credit rating agencies (CEBS, 2008). These two are natural market determinants of the desired level of capital. Long-term strategy forces banks to hold certain capital levels that will allow them to survive in the long run, i.e. after the boom turns into a bust. Competition and market forces will drive out of the market those banks whose business is not sustainable in the long run. Credit rating is a voluntary "marking" system that market participants understand, and to which they commonly defer. In a free-market economy without any capital regulation of banks, a credit rating business of any kind would probably have developed as well, allowing the market participants to judge banks and differentiate among banks (see above note on credit ratings). However, even the long-term strategy or the credit ratings may fall to the delusion of long-lasting unsustainable good times. And in a world, where capital regulation exists, we have to stipulate features that an ideal regulatory framework should possess.

Given these facts, how should an ideal capital regulation of banks look like? Regulation cannot get rid of the pro-cyclicality of financial intermediation, or the "animal spirits" within the market economy. However, there are two main features that a successful regulation of bank capital should possess. First of all, it should be simple, transparent and thorough. No place for loopholes or creative overcoming of the regulation should be left over. Second, and more importantly, it should possess a mechanism whereby banks will create more capital in good times and less in bad times, i.e. they will use the capital created in good times during the bad times (see Leijonhufvund, 2009; Hildebrand, 2008; FSF, 2009 for similar conclusions). Such a capital requirement would be little tighter in the good times and little relaxing in the bad times. This feature will mitigate the pro-cyclicality inherent in any banking business; though not completely get rid of it because it is in the long run impossible to suppress natural characteristics of capitalist economy by regulation. The optimal parameters of such a mechanism are to be thought over carefully by the regulators so that to minimize the deepness of the next financial crisis to come. This should be one of the potential directions of a future research within this topic area. And remember, the crisis will occur again, because it is natural. But we have to produce such system of capital regulation that will minimize the impacts of a crisis on the real economy.

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