

**Embargo: 15 December 2008, 6.00 pm**

# **Is Basel II Enough? The Benefits of a Leverage Ratio**

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Financial Markets Group Lecture

London School of Economics

London, 15 December 2008

## 1. Introduction

It is a pleasure to be at the London School of Economics this evening. I am very grateful to Professor Goodhart for his generous invitation. As many of you know, Charles is a kind of godfather to an entire generation of central bankers. His 1988 book, *The Evolution of Central Banks*, remains a classic and is still required reading for aspiring central bankers. Let me take this opportunity to thank Charles for tonight's wonderful platform and, more importantly, for his long-standing contributions to the art, science, and craft of central banking.

Recurring financial crises have become a hallmark of the modern financial system. It would seem that, every five years or so, a 100-year event destabilises the system. Moreover, each crisis appears more violent than the previous one. With the current crisis as my showcase, I will argue that excessively high leverage has been a key factor in making banks and ultimately the financial system much more fragile and vulnerable than most observers, regulators, or market participants ever imagined. Based on this diagnosis, I will argue in favour of restricting the leverage of core financial institutions, i.e., banks. Needless to say, banks have a tendency to oppose regulation. I will therefore discuss in some detail why regulating banks' capital is necessary and why it promotes financial stability.

## 2. High leverage as a main cause of financial fragility

The Swiss economy is far from the epicentre of the current financial crisis. Yet, the two big Swiss banks have been hit particularly hard by recent events. This is to a large extent the consequence of their extraordinarily high leverage. For some years now, we have argued that their high leverage makes them particularly vulnerable to extreme financial shocks.<sup>1</sup> Looking at risk-based capital measures, the two large Swiss banks were among the best-capitalised large international banks in the world. Looking at simple leverage,

<sup>1</sup> See every issue of the Swiss National Bank's *Financial Stability Reports* since 2003.

however, these institutions were among the worst-capitalised banks. With the benefit of hindsight, we clearly should have put even greater emphasis on the risks of excessive leverage.

Excessive leverage is by no means a problem uniquely associated with the two big Swiss banks. There is increasing international recognition that excessive leverage has been a crucial contributing factor to the current crisis. In April, the Chairman of the Financial Stability Forum (FSF), Governor Mario Draghi, summarised the view of the FSF when he said: “Our conviction is that [...] institutions have accumulated a level of leverage that was both misperceived and excessive.”<sup>2</sup> Gerald Corrigan argues that “leverage, in its many forms clearly was a driving force in creating the market conditions that would trigger the crisis, just as the inevitable de-leveraging on the downside of the cycle would severely amplify the magnitude of the crisis.”<sup>3</sup> In a similar vein, the International Monetary Fund (IMF) stresses that the dramatic deleveraging of financial institutions is exacerbating the downward spiral so prevalent in the current crisis.<sup>4</sup> Hence, by implication, the high starting levels of leverage are a major source of the severe and ongoing adjustment problems. Finally, the leaders of the G20 declared only last month that “excessive leverage” was a root cause of “vulnerabilities in the system”.<sup>5</sup>

Moreover, the problem of excessive leverage is not limited to the current crisis. It has been a pivotal feature of most previous financial crises. John Galbraith, for instance, has carefully documented the role of debt and leverage in crises going back to the 17<sup>th</sup> century.<sup>6</sup> More recently, the President’s Working Group on Financial Markets concluded in

<sup>2</sup> Mario Draghi, chairman of the Financial Stability Forum, in his address to the G7 ministers and governors, April 2008.

<sup>3</sup> E. Gerald Corrigan, *The Credit Crisis. The Quest for Stability and Reform*, The William Taylor Memorial Lecture, Group of Thirty, Washington DC, 2008, p. 8.

<sup>4</sup> See the October 2008 issue of the IMF’s *Global Financial Stability Report*, entitled “Financial Stress and Deleveraging”.

<sup>5</sup> Declaration of the Summit on Financial Markets and the World Economy, G20, 15 November 2008.

<sup>6</sup> See John Galbraith (1990): *A Short History of Financial Euphoria*.

1999 that, "The principal policy issue arising out of the events surrounding the near collapse of Long-Term Capital Management is how to constrain excessive leverage."<sup>7</sup>

### 3. Is there a need for better regulation?

Assuming there is agreement that excessive leverage has been a major factor in past crises, what ought to be done about it? An obvious response is to limit leverage. But is it really that obvious? After all, some people would argue that regulation is at least partly to blame for past crises.

Before I go any further, I want to clarify where I stand in the debate on regulation vs. free markets – my ideological baggage, so to speak. I believe that free markets are the best available mechanism to allocate resources and that they are ultimately the best way to promote welfare and economic growth. Fundamentally, I am therefore wary of elaborate efforts to interfere with the functioning of free, competitive markets. At the same time, it is obvious to me that, under certain conditions, free markets produce inefficient outcomes. If these market failures are apparent and important enough, they justify and indeed require interference in the market mechanism. As Joseph Stiglitz put it, "Whenever there are "externalities"– where the actions of an individual have impacts on others for which they do not pay or for which they are not compensated – markets will not work well."<sup>8</sup>

In the real world of banking, potential market failures are particularly relevant. An important market failure stems from the fact that banks enjoy the benefits of a safety net. Many countries have explicit deposit insurance schemes, which limit depositors' losses. Moreover, in almost every country there is some degree of implicit government protection

<sup>7</sup> "Hedge Funds, Leverage, and the Lessons of Long-Term Capital Management", Report of The President's Working Group on Financial Markets, April 1999.

<sup>8</sup> Q & A with Joseph Stiglitz, Columbia University and *The International Herald Tribune*, 11 October 2006. <http://blogs.iht.com/tribtalk/business/globalization/?p=177>

for large banks. In the current crisis, government protection has become manifest and explicit in the form of the recent G7 and G20 communiqués. Most notably, in October the G7 finance ministers and central bank governors declared unambiguously that they “agree to take decisive action and use all available tools to support systemically important financial institutions and prevent their failure.”<sup>9</sup> In other words, governments imply that large banks are simply “too big to fail”.

Clearly, there are benefits to banks having safety nets. But there are also serious costs. It is a fact that the presence of insurance leads to less careful behaviour, otherwise known as moral hazard. If you rent a fully insured car, you will likely exercise less care driving it. Naturally, therefore, rental cars have a much shorter life span than non-rental cars. The same reasoning applies to banks. No sane banker will intentionally manage his bank into insolvency. But he or she has a lower incentive to avoid insolvency than if he were not insured.

This sub-optimal level of caution is immediately apparent in banks’ balance sheets: Banks tend to hold very low levels of capital. In a cross-sectional comparison, banks have much lower capital cushions than uninsured firms. On average, listed non-financial firms have capital-to-asset ratios of 30 to 40 percent.<sup>10</sup> In stark contrast, before the onset of the current crisis, all of the world’s top 50 banking institutions held, on average, only 4 percent of capital. None of them held more than 8 percent.<sup>11</sup>

In short, banks have a preference for very high leverage. This highlights a fundamental dilemma of capital regulation: Banks don’t like it. Bankers will typically argue that high leverage is beneficial or even necessary. Therefore, banks will naturally oppose any regulation aimed at restricting leverage. I find this neither upsetting nor surprising. If

<sup>9</sup> G7 Finance Ministers and Central Bank Governors Plan of Action, 10 October 2008.

<sup>10</sup> Raghuram Rajan and Luigi Zingales (1995): “What Do We Know about Capital Structure? Some Evidence from International Data”, *Journal of Finance*.

<sup>11</sup> Tier 1 capital to total assets. Source: *The Banker*, July 2007.

regulation is to be effective, we must expect it to impact on behaviour and restrict action. This will solicit complaints. If it doesn't, regulation would, by definition, be superfluous.

#### 4. From Basel I to Basel II

For all these reasons, I strongly support bank capital regulation that puts a meaningful limit on banks' leverage. But what is the best way to restrict leverage? In an ideal world, we would, of course, also want to take into account the riskiness of banks' assets.<sup>12</sup> As you know, banks can increase their risk not only by increasing their leverage but also by increasing the riskiness of their assets. To compensate for differences in banks' assets, we would ideally require banks with riskier assets to hold more capital. The Basel Committee on Banking Supervision has embraced precisely such a risk-weighted approach. More risk, more capital. If we lived in an ideal world, this simple principle would work well. By "ideal", I mean a world in which risks can be observed by everybody and assessed precisely.

What has become abundantly clear in recent months is that we do not live in an ideal world. Banks and the risks they incur are far from transparent. In fact, banks exist because of asymmetries of information.<sup>13</sup> A core function of banks is to "produce information". For instance, banks screen potential borrowers. Furthermore, banks monitor ongoing lending relationships. Without any asymmetries of information, banks would not be necessary, since households could invest their savings directly or through mutual funds. Therefore, by definition we cannot have banking with full transparency.<sup>14</sup>

Fortunately, banks are not totally opaque either. Some risks can be assessed more or less readily. A US Treasury bill is clearly less risky than an unsecured loan to an obscure

<sup>12</sup> See, e.g., Jean-Charles Rochet (1992): "Capital Requirements and the Behavior of Commercial Banks", *European Economic Review*.

<sup>13</sup> See, e.g., the classic article by Douglas Diamond (1984): "Financial Intermediation and Delegated Monitoring", *Review of Economic Studies*.

software company. Therefore, capital requirements can at least partially be based on the relative riskiness of various types of assets, even in our non-ideal world. "Basel I", the first Basel Accord of 1988, introduced "risk buckets" for this purpose. For instance, loans received a risk weight of 100%, government bonds a risk weight of 0%. "Basel II" - the revision of the first Basel Accord - which is currently being implemented, tries to go beyond what were perceived to be rather crude risk buckets. Under Basel II, risks are differentiated in more detail. For example, a loan to a large, international AAA rated firm is typically not as risky as a loan to a local restaurant.

While sensible, the higher risk sensitivity of Basel II comes at a price. First, banks and supervisors alike incur significant operational costs to implement the new, highly complex regulation. Second, but in my view more importantly, Basel II creates new risks: Risks about risk assessments. I am tempted to call them the unknowable unknowns. Under Basel II, we increase our dependence on risk models. What if we didn't pick the correct models? What if the data used to calibrate these models turn out to be of poor quality? What if the models were correct in the past, but the future is different? What if certain tail events simply cannot be modelled? These are all important considerations that we have to keep in mind when we interpret the risk figures from complex models. As it turns out, to view the model outputs as a true representation of reality has proven to be a grave mistake. Furthermore, the increased reliance on banks' internal models has rendered the job of supervisors extraordinarily difficult. First, supervisors have to examine banks' exposures. Second, they have to evaluate highly complex models. Third, they have to gauge the quality of the data that goes into the computation of these models. To put it diplomatically, this constitutes a formidable task for outsiders with limited resources.<sup>15</sup>

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<sup>14</sup> See Charles Goodhart (1988): *The Evolution of Central Banks*, p. 63

<sup>15</sup> For a discussion of potential short-comings of Basel II, see Robert Bichsel and Jürg Blum (2005): "Capital Regulation of Banks: Where Do We Stand and Where Are We Going?", *Swiss National Bank Quarterly Bulletin*.

## 5. Strengthening Basel II: introducing a leverage ratio

So where does that leave us? Based on what we know and understand today, I would suggest that risk-weighted capital requirements, broadly as proposed under Basel II, probably remain the most rigorous way to address banks' tendencies to incur excessive risks and, ultimately, to ensure adequate capital levels. However, we must address the serious short-comings of the risk-weighted approach, which have become so powerfully manifest during this crisis. What Basel II needs, therefore, is a safeguard to provide the financial system with additional protection against the negative consequences of these short-comings.

I want to stress that a safeguard of this kind is needed in addition to the improvements to Basel II that are currently under way as a result of the recent FSF Report to the G7 ministers and governors.<sup>16</sup> Which brings me back to the obvious and simple response to excessive leverage: The imposition of a limit on banks' leverage as a complement to the risk-weighted approach reflected in the current Basel framework.

The regulation of banks' leverage is usually referred to as a "leverage ratio". Specifically, the idea is to set a lower limit to the capital-to-assets ratio of banks. Let me stress again that this instrument is not meant to and should not replace Basel II. There is no reason to eliminate the benefits of risk-weighted capital requirements. The leverage ratio should be applied as a complement to the risk-weighted approach as reflected in the current Basel framework. That means we would have two independent measures of capital adequacy. And banks would have to meet a minimum requirement for both measures.

<sup>16</sup> "Report of the Financial Stability Forum on Enhancing Market and Institutional Resilience", Financial Stability Forum, 7 April 2008.

To some extent, such a capital regulatory framework is old news. Historically, capital requirements in most countries took the form of simple leverage ratios. Risk-weighted requirements were only introduced following the first Basel Accord of 1988. The “old-fashioned” leverage ratios were replaced by “modern” risk-sensitive requirements. Some countries, however, have maintained leverage ratios as essential elements of banking regulation. Notable examples are the US and Canada. Despite being somewhat old news, I am convinced that the introduction of a leverage ratio is fully compatible with the ongoing efforts to strengthen banks’ capital. We must not forget that Basel II aims to secure a *minimum* level of capital. It’s up to every bank and every national supervisor to exceed this minimum. As the G20 has put it, “regulation is first and foremost the responsibility of national regulators”.<sup>17</sup>

## 6. The pros and cons of a leverage ratio

Let me now highlight the most important benefits of a leverage ratio. Equally, I would like to address the most commonly expressed concerns about a leverage ratio.

Having a leverage ratio to complement risk-weighted capital requirements has many advantages. Some of them I have already alluded to. Most significantly, a leverage ratio can operate fully independently of any complex modelling assumptions and calibration procedures. As such, it serves as a complementary instrument to risk-weighted requirements when assessing banks’ capital adequacy. This is of considerable value. During the recent crisis those banks and supervisors, which took several instruments into account, including volume limits and restrictions on asset growth, clearly performed better.<sup>18</sup> More generally, research has shown that risk-weighted capital ratios and leverage ratios contain complementary information about banks’ condition.<sup>19</sup> Hence, by looking at

<sup>17</sup> G20, „Declaration of the Summit on Financial Markets and the World Economy“, 15 November 2008.

<sup>18</sup> See “Observations on Risk Management Practices During the Recent Market Turbulence”, Senior Supervisors Group, March 2008.

<sup>19</sup> See, e.g., Arturo Estrella, Sangkyun Park, and Stavros Peristiani (2000): “Capital Ratios as Predictors of Bank Failure”, Federal Reserve Bank of New York *Economic Policy Review*.

both risk-weighted capital ratios and leverage ratios, supervisors and banks can be expected to make better judgments in a systematic way. Moreover, it is much more difficult for banks to arbitrage around two capital ratios than around just one.

Can we say anything about the role of leverage ratios in the recent credit crisis? While a rigorous analysis would reach beyond the scope of my comments today, it seems clear that the leverage ratio has helped protect the US banking system from even greater calamity. This is not necessarily because the leverage ratio encourages more prudent behaviour, but because the leverage ratio ensures a minimal buffer to absorb the negative consequences of imprudent behaviour. I leave it to your imagination what would have happened if the US banks had entered the current crisis with leverage ratios of only 2 percent instead of well over 5 percent. It is interesting to note that Mark Carney, the Governor of the Bank of Canada, is convinced that Canadian banks, which are also subject to a leverage ratio, are “healthier than their international peers” because “their leverage is markedly lower”.<sup>20</sup>

Given these positive effects of a leverage ratio, what are the arguments against it? In my view, there are three potential short-comings. They are the treatment of off-balance-sheet exposures, pro-cyclicality, and banks’ profitability. Let me briefly address these in turn.

- Off-balance-sheet exposures: To obtain the leverage ratio, capital is divided by total assets. Obviously, such a simple calculation fails to take into account off-balance-sheet items. The introduction of a leverage ratio could therefore encourage banks to build up large off-balance-sheet exposures. There are two responses to this potential problem. First, this is precisely why it is important that a leverage ratio only be used as a supplement to Basel II. To the extent that a move to off-balance-sheet activities raises banks’ risk, Basel II will result in higher capital charges – and thereby reduce banks’ incentives and possibilities to

<sup>20</sup> Mark Carney, „Building Continuous Markets“, Remarks to the Canada – United Kingdom Chamber of Commerce, London, 19 November 2008.

arbitrage around a leverage ratio. More importantly, the Basel Committee is now in the process of improving the treatment of off-balance-sheet items under Basel II. Second, if we conclude that despite the ongoing reforms of Basel II, off-balance-sheet exposures continue to undermine adequate capital provisioning, the leverage ratio can easily be enhanced to include such exposures. In Canada, for instance, some off-balance-sheet items are added to banks' total assets when calculating the leverage ratio. Alternatively, we could go further and consider defining a "managed leverage ratio" as proposed by Professor Joseph Mason of Louisiana State University, "which takes all the securitisations and puts them back on the balance sheet".<sup>21</sup>

- **Pro-cyclicality:** There are valid concerns that a leverage ratio may amplify the financial cycle. First, the imposition of a leverage ratio in the middle of the current crisis would put additional de-leveraging pressure on banks. Second, in the long run it would make the availability of credit more volatile. Banks would be forced to cut down on lending in a downturn in order to comply with the leverage ratio requirements. Unfortunately, this so-called pro-cyclicality is inherent to all forms of capital regulation. The problem stems from the fact that in most cases, specific capital minima have to be respected throughout the cycle. In Switzerland, in a recent reform of the large banks' capital requirements, the Federal Banking Commission embarked upon a pragmatic approach to address this dilemma. In normal times, banks will be required to hold capital significantly in excess of the regulatory minima. Conversely, when the cycle turns, they will be allowed to dip into the capital cushion. Naturally, the Swiss authorities are acutely aware that imposing tighter capital requirements right now would be pro-cyclical. Under the new regime, the capital requirements have to be met by 2013. If necessary, this implementation window will be extended further.

<sup>21</sup> „Capital Ratios Helped Mask Looming Crisis“, *The Wall Street Journal Europe*, 11 November 2008.

- Finally, let me address the question of banks' profitability: This is a tricky question, which requires a two-part answer.
  - First, capital requirements effectively reduce the value of a bank's explicit or implicit government safety net. If we think of the safety net as a put option for the owner of the bank, capital requirements effectively reduce the price of that put option. In other words, banks have to bear a larger share of their potential losses themselves. This, of course, is bad news for the banks. Distortions due to the safety net are the main rationale for capital regulation. Capital requirements aim to correct these distortions and strengthen the motivation of banks to avoid excessive risks. While this comes at a cost to banks, it increases overall efficiency and economic welfare.
  - Second, capital requirements reduce the tax shield of debt. Debt has an advantage over equity capital in the sense that payments to debt holders are deducted from profits. In contrast, payments to shareholders, i.e., dividends, are made out of profits and hence are subject to corporate taxes. Forcing banks to hold more capital reduces their tax shield and thereby diminishes banks' market value. What are the orders of magnitude we are talking about here? Let me offer you a very rough back-of-the-envelope calculation using publicly available data in Switzerland. Assume that a bank has to increase its leverage ratio from 1% to 5%. If this bank is subject to an effective tax rate of 20%, the increase in capital will reduce the bank's total market value by less than 1%.

However, these costs notwithstanding, banks and shareholders may also benefit from holding more capital. For instance, banks that were more conservatively capitalised before the outset of the current crisis have now benefited from their relative strength. In the

area of wealth management, for instance, stronger banks have been successful in attracting clients from weaker banks. Moreover, looking at the poor performance of thinly capitalised banks' stocks over the last decade or so, low leverage ratios do not seem very attractive. Our empirical analysis suggests that risk-adjusted stock returns of banks do not increase with leverage. A cross-sectional comparison of risk-adjusted returns with other industries is also sobering. The performance of the relatively low-capitalised banking sector has been devastating during the last decade.

## 7. Conclusion

To conclude, leverage has been a major contributing factor in the current financial crisis. Excessive leverage has amplified the shocks to the financial system. Moreover, the now inevitable de-leveraging is imposing further stress on the system. To enhance the longer-term resilience of the financial system, effective regulation to curtail banks' leverage is required.

In an attempt to put a lower bound on banks' leverage, I strongly support enhancing current risk-weighted capital requirements with a simple leverage ratio. A leverage ratio effectively serves as a safety valve against the weaknesses and shortcomings of risk-weighted requirements. It ensures a minimum capital buffer that protects banks against unexpected losses and underestimation of risk. As we have learned from the current crisis, the failure of risk models may quickly turn banks that seem comfortably capitalised into poorly capitalised banks. Let me emphasise again that I don't advocate replacing the current Basel II regime with a leverage ratio. This would be unwise, as we would forgo all the advantages of the risk-weighted requirements. In particular, we would lose valuable indicators of banks' levels of risk. And, quite frankly, there is no real alternative in sight, at least not readily.

In discussions with my central banking and regulatory colleagues I detect increasing interest and willingness to examine and consider the proposal of a leverage ratio as a complement to the risk-weighted capital regime under Basel II. Governor Nout Wellink, the Chairman of the Basel Committee on Banking Supervision, has recently said that the committee is currently considering measures to strengthen Basel II by supplementing it “with simple, transparent gross measures of risk”.<sup>22</sup> Last month, the German Council of Economic Experts advised the German government and parliament to introduce a leverage ratio as a robust supplement to Basel II.<sup>23</sup> Other countries may also find it worthwhile to consider introducing a leverage ratio, even if any formal international agreement should fail to materialise. In doing so they would not only enhance financial stability in their own banking systems, but would also contribute to a more stable international financial system. Finally, it is encouraging to note that a number of banks have made voluntary commitments not to exceed certain predefined leverage limits.

Adding a leverage ratio to Basel II will reinforce banks’ capital and strengthen capital regulation. However, we must remain realistic. Introducing a leverage ratio doesn’t solve everything. A leverage ratio addresses excessive leverage in the banking system. It does not address credit concentration, excessive maturity mismatch or undue reliance on asset market liquidity. Financial crises, let alone financial cycles will never be eliminated. Our aim must be to ensure that the negative consequences, both to banks and to the real economy, remain manageable. Putting in place a shock-absorbing leverage ratio to complement the risk-weighted framework of Basel II will help us get one step closer to this goal.

<sup>22</sup> Nout Wellink, “The Importance of Banking Supervision in Financial Stability”, speech given on 17 November 2008.

<sup>23</sup> German Council of Economic Experts, “Mastering the Financial Crisis – Strengthening the Forces for Growth”, 12 November 2008.