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After the crisis: improving incentives in the financial sector

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Introduction

It is a great pleasure for me to be here for the inaugural ceremony of the new School of Finance at the University of St. Gallen. Naturally, finance has been an integral part of the University for a long time, but I am sure that today's ceremony represents both a new step forward and the realisation of a new objective. These are certainly warranted if we consider the need for improving financial decision-making made clear by the recent financial crisis. I will take this opportunity to reflect on three fundamental questions that have come to the forefront during this episode.

The first issue I would like to address is the question of risk and risk-taking in banking. While there is evidence that the excessive risk-taking that led to the last financial crisis was at least partly attributable to knowledge or competence problems, another important element was the misalignment of the incentives of the various stakeholders of financial institutions. This is particularly apparent in the case of institutions that were deemed too big to fail. In order to illustrate this point, I will look at the incentives with regard to risk-taking by the various stakeholders of a bank and try to gauge the likelihood that these incentives lead to decisions that would be optimal from society's viewpoint.

In my second section I will focus on the 'too big to fail' (TBTF) problem. My goal here will be to discuss the variety of solutions that can be envisaged in order to restore proper incentives and in particular assure that the capital necessary for maintaining the vital functions of financial institutions will in the future come from sources other than taxpayers. I will argue that higher capital requirements, in part in the form of contingent convertible bonds (Cocos), together with appropriate organisational measures, can fulfil the objective of a 'partial' bankruptcy and lead to improved incentives for key bank stakeholders. In this speech I will adopt a relatively academic point of view, appropriate for today's circumstances, which will lead me to the conclusion that sound theoretical principles underlie the TBTF package currently submitted to the Swiss Parliament.[1]

Finally, I would like to address the question of the likely impact of current regulatory efforts on the cost of capital for banks and their expected return on equity.

Part I: Risk and risk-taking

Progress in risk measurement: role in the crisis

There is no doubt that significant progress in both the definition and measurement of risk has been made in the recent past. As an example, the function of a risk manager was almost non-existent some 20 years ago. However, it is equally hard to dispute the fact that this progress has been over-estimated. For instance it was regularly claimed in the early 2000s that the financial system had never been as resilient and robust as it was at the time.

[1] The importance of this issue for the Swiss National Bank (SNB) is reflected in the number of times it has been addressed by members of the SNB Governing Board. For a more detailed and focused analysis of the proposed Swiss law, see the speech given by my colleague Thomas Jordan earlier this week.

Clearly, developments since the beginning of the financial crisis in mid-2007 have proved the contrary, and we need to draw suitable lessons from that experience.

Progress in the definition and measurement of risk may well have played a role in the recent financial crisis. A reason for this is that – as so often in modern finance – conceptual progress, in tandem with progress in the methodology of risk management, has led to a rather blind trust in models. In general, a trained economist learns to interpret models as abstract approaches to reality, with these models serving as a support for economic and business reasoning. Models are not meant to be substitutes for complete, partially qualitative reasoning including, in particular, a discussion of the model's assumptions and their degree of robustness. In some areas of finance, however, it appears that quantitative models have increasingly been viewed as the alpha and omega of business reasoning. They have often served as a substitute for an independent evaluation by business managers and decision-makers alike. We should therefore welcome some of the ideas put forward in the new 'Financial Modelers' Hippocratic Oath', such as "I will remember that I didn't make the world, and it doesn't satisfy my equations" (Wilmott, 2009).[2]

Risk and luck

Finance and banking are intimately linked with the notion of risk. Risk is a fascinating but difficult concept, if only because it is intimately linked with the concept of luck. In a risky world, heroes are more likely to be lucky than smart. In asset management, for instance, Barras, Scaillet and Wermers (2010) find that around 8% of mutual funds display a significant positive alpha, but of them only about 0.5% deliver a positive alpha that is not driven by luck. One question that arises from this finding is whether the associated statistics would be very different for the group of successful bank managers or successful traders in financial markets. Yet remuneration schemes do not appear to take this identification problem into account. It can be hypothesised that bonus payments are often a reward for luck rather than compensation for actual skill or effort. This hypothesis represents a very significant challenge for an efficient financial system. It is a challenge for a new school of finance. We need to improve our ability to distinguish between skill and luck. Simultaneously we need to draw the adequate conclusions from the difficulties that will always exist in signal extraction on this issue.

Excessive risk-taking: lack of knowledge...

Let me now turn to the question of financial risk-taking. Overall, there is no (expected) return and no growth without risk so we have to be careful to foster a sufficiently pro-risk society. But risk calculus – weighing the marginal advantages and disadvantages of taking more risk – is a difficult exercise. It is difficult because it entails probabilities, that are hard to assess, over future scenarios which are themselves often hard to describe fully and accurately. And the difficulty increases by an additional step if there is an externality, that

[2] Wilmott, P. (2009) 'Financial Modelers' Manifesto', available at www.willmott.com, January 2009.

is, if the private and social cost and benefit of additional risk-taking differ. One can plausibly argue that the recent financial crisis was, to some extent, the result of excessive risk-taking. For the proponents of this hypothesis, the ultimate cause is in question. One possibility is that this excessive risk-taking was the result of wrong incentives, with decision-makers wilfully taking more risk for themselves or their institutions than would have been privately or socially desirable. The alternative would be that a misperception of the probabilities and possible consequences of the decisions was the prime cause: a lack of knowledge or competence. Since I will essentially concentrate on the first possibility, i.e. incentives, let me recall, by a way of contrast, a recent study by Fahlenbrach and Stulz (2011). These authors show that the losses of the banks whose managers' incentives were most closely aligned with the long-term interests of the firm they managed were at least as large, in the last crisis, as those at the financial institutions where governance was more obviously lacking. This suggests that wrong incentives were not the only factor in the behaviour and decisions that led to the crisis. Knowledge and competence were also at play.

... or a misalignment of incentives?

Incentives are an important component in risk and risk-taking. If there is an important lesson in economics and finance that has not been invalidated by the financial crisis, it is that incentives really do matter. The excessive risk-taking that was observed prior to the financial crisis is likely to have been – among other things – the result of the fact that key decision-makers were not provided with the right incentives to carefully analyse and balance the possible consequences of the risks they agreed to take. Let us take a bank as an example. The main relevant stakeholders are the depositors, the shareholders, the managers and the bondholders. What follows is a review of the situation of these stakeholders in relation to the desired risk profile of a typical bank.[3]

- **Depositors**

  Deposit insurance ensures that it is not the business of depositors to worry about the amount of risk that the bank, in which he or she has deposited his money, decides to take. A key lesson of the Great Depression was that deposit insurance is a socially justified feature of the banking system. This follows from the fact that banks are institutions vulnerable to bank runs, no matter how well they are managed. The principle of deposit insurance is widely accepted and I will not further question it. Yet, the extent of deposit insurance and the form of its financing are important questions. Recent history has refocused our attention on these matters, but these are not the issues I would like to deal with today.

[3] The focus here is placed on a typical banking institution, but other financial institutions might be similarly affected.

- **Shareholders**

The incentives for shareholders differ from those of depositors. At first sight shareholders, as ultimate owners of the bank, can be counted on to discipline risk-taking by the institution they own. After all, they stand to lose their entire stake if the risks taken lead to bankruptcy. However, this is only true to a limited extent. Indeed, if we go beyond an initial, superficial consideration of the situation, we soon realise that shareholders cannot be expected to discipline risk-taking by a bank. There are a number of reasons for this. In addition to the fact that individual shareholders are often small and scattered, they only have limited ways of exerting pressure on management, short of disposing of their share. Importantly, the reality of limited liability seriously biases shareholders' perspective on risk. While shareholders benefit from the upside of risk-taking, they are not symmetrically penalised on the downside. This asymmetry is particularly acute in the case of highly levered institutions. For these institutions, the return on equity in good times is high, say above 20%. The trade-off between high returns if the risky gamble pays off, and zero, if it does not, is particularly lopsided. Both limited liability and the natural highly leveraged nature of banking thus come with a natural propensity for socially excessive risk-taking on the part of banks' owners. In this sense, shareholders cannot be relied upon to impose on managers the socially optimal level of risk-taking.[4]

- **Managers**

What about the bank's managers? Here theory tells us that, apart from reputation and other soft considerations, the behaviour of managers will crucially depend on the link between their remuneration and the firm's performance. What is at issue here is less the level of managerial remuneration. More important is the relationship between the remuneration and the medium to long-run performance of the bank. Clearly, a managerial remuneration scheme which depends exclusively on the bank's current performance places managers in a situation similar to limited-liability shareholders. They cash in on lucky gambles but bear few of the negative consequences of unlucky ones. Unless we are willing to question the notion of limited liability for managers (as does Kotlikoff, 2010, for example), this kind of consideration provides the rationale for regulating managerial remuneration, and in particular for imposing long waiting periods before managers can cash in bonuses.[5] A very careful design of managerial payment

[4] Though determining the precise level of socially optimal risk-taking is difficult to gauge for the economy as a whole, excessive risk-taking by an individual institution is easier to detect.

[5] In Switzerland, a FINMA circular on remuneration schemes lays down rules for the remuneration of employees of financial institutions. Cf., FINMA Circular 10/1, 'Minimum standards for remuneration schemes of financial institutions', October 2009.

structure is needed if we want to ensure that the risk decisions of self-interested managers are in line with the long-term interest of firm owners and society.[6]

- **Bondholders**

Let me now turn to the issue of whether bondholders – the final stakeholder group – contribute to a balanced weighting of risk and return in a bank's decisions. Under normal circumstances, discipline arises through the possibility and reality of default and eventually bankruptcy. Bondholders who are deprived of the upside potential of the risks taken by the bank and lose part (or all) of their stake in the event of default can be counted on to ensure that the negative consequences of the risky gambles taken by the bank are given proper weight. Indeed, the cost of debt increases with additional risk-taking, thus reminding managers and shareholders of the downside of the risks they are naturally inclined to take. In reality, this is precisely where the moral hazard issue associated with the implicit guarantee of the 'too big to fail' (TBTF) status becomes relevant. By definition, a TBTF financial institution can expect to be rescued from bankruptcy. As a consequence, the banks' bondholders know they will not bear the cost of excessive risk-taking and therefore they need not take this cost into account when assessing the risk profile of the institution they lend to.[7]

To sum up, the combination of deposit insurance, limited liability of shareholders, short-term contracts of managers and the TBTF implicit state guarantee provide strong support for the hypothesis that an excessive willingness to take risks may also have been a possible factor in the recent financial crisis. In the case of systemically relevant financial institutions, it is not clear that any of the major stakeholders had the incentive to perform a balanced risk calculus. As mentioned before, competence and knowledge may have been at stake. They can be improved through further investment in teaching and research in finance. This will be to no avail, however, if the incentive structure in systemically relevant financial institutions is not simultaneously corrected.

Part II: Too Big To Fail

TBTF: a problem of externalities

I will now build on the previous analysis of risk and risk-taking and focus on the possibility of restoring incentives in the case of a TBTF institution. By definition, TBTF starts with an externality: an institution's failure cannot be accepted because its implications for other financial institutions and for the real economy would be too severe. In a TBTF situation,

[6] Executive compensation schemes which could represent an additional mechanism for improving managerial compensation include schemes that align managerial compensation with the long-term objectives of the firm. Skills are better assessed in relative terms and on a risk-adjusted basis. Therefore, a compensation scheme that rewards better-than-average corporate results and refers to risk-adjusted performance measures may reduce risk-taking and reward more skills. For a more complete discussion, cf. 'The Squam Lake Report: Fixing the Financial System', Princeton University Press, May 2010.

[7] The argument outlined here is particularly relevant for holders of senior bonds.

various stakeholders face misaligned incentives. The moral hazard issue already mentioned obviously means that the bondholders face the wrong incentives. This externality has additional implications for the social dimension of the risk decisions of managers and shareholders. This is because the private cost of an institution's failure underestimates its social cost. In other words, the externality implies that the appropriate risk calculus, taken from the perspective of a single institution, leads to excessive risk-taking from the perspective of society. The institution's failure may be the unfortunate consequence of risks that, in the best case, were justified from the perspective of the institution itself. But it imposes additional costs on other financial and economic institutions and market participants. These extra costs were not taken into account even if the decision-making process was privately optimal.

In what follows, let me discuss the appropriate recipe in the presence of an externality. Economic theory mainly suggests two measures: either restoring the appropriate incentives via a Pigovian tax[8] or applying direct quantity regulation.

Limiting the size of the bank

One extreme solution to the TBTF problem falling within the second category of measures is to adopt the following precept: if an institution is too big to fail, then it is too big to exist.[9] According to this view, the state should limit the size and scope of banks to levels where the TBTF externality does not materialise. Renouncing the benefits associated with scale and scope is the price to pay for this radical solution.[10] Potentially even more costly is the fact that all benefits associated with size and scope that might be discovered in the future are also forgone! This is a very strong encroachment on the principles prevailing in a free market economy, which is – among other things – based on the principle that firms are best positioned to select their business plan and should do so freely within the appropriate incentive structure.

Increasing capital requirements and imposing a capital surcharge

The 'Pigovian' approach is often more suitably and closely aligned to the principles of a dynamic market economy. In the problem at hand, the Pigovian approach may take the form of the imposition of higher capital requirements together with a capital surcharge, modulated to take account of the systemic risk of a financial institution. The benefits of increasing capital requirements are manifold. First, imposing more equity capital naturally makes an institution more robust and able to withstand adverse scenarios. This reduces the probability of bankruptcy, thus the severity of the externality. Second, a greater capital requirement also increases the stakes for shareholders as it decreases the degree of leverage

[8] See Pigou, A. (1920), *The Economics of Welfare*, London: MacMillan.

[9] There are a variety of advocates of this view. Cf., for instance, King, M. (2009), speech at the Lord Mayor's Banquet for Bankers and Merchants of the City of London at the Mansion House, June 2009.

[10] It is fair to acknowledge at this point that there is a lot of controversy and only weak evidence on the existence and size of returns to scale and scope in banking.

of the financial institute. This somewhat alleviates (although it does not fully resolve) the asymmetry problem facing limited liability shareholders and thus improves their incentives to undertake risk monitoring. Third, to the extent that equity capital is more expensive than debt, a capital surcharge works like a tax. It lets the firm decide on its optimal size but in so doing forces it to integrate the fact that a larger size imposes an extra cost to society and is thus only warranted if the additional benefit for the firm justifies the additional social cost. In other words: be big if you are convinced of the benefits of size but cover the social cost of your decision![11]

Imposing organisational measures

The level of the capital surcharge for systemically relevant institutions can, in the spirit of the Pigovian approach, be decreased if the size of the TBTF externality is further reduced by other means. This provides the rationale for imposing organisational measures with the goal of making partial bankruptcy possible.[12] The aim of organisational measures is to encourage banks to isolate the divisions that assume essential systemic functions from those that do not, so that the functioning ability of the former can be maintained in a case of near-bankruptcy, while the latter can be wound down. This would make it possible to dismantle a systemically relevant institution in such a way that only those parts of the institution that are vital to the economy need to be saved. Only a limited bailout is then necessary, and this can then be rendered compatible with the functioning of a free market economy, if the capital necessary for maintaining the vital functions does not come from the taxpayer.

Cocos: better incentives for bondholders

A possible way to keep vital parts of banks functioning during crisis situations without involving the taxpayer is to have recourse to contingent convertible bonds or Cocos. These are bonds that are converted into equity if certain thresholds are reached. One such threshold may be a capital level corresponding to a *de facto* bankruptcy. With these 'low–trigger' Cocos, the necessary capital for supporting the vital functions of the bank is forthcoming precisely when it is most needed, in other words, when the institution would not otherwise be viable as a going concern. The conceptual attractiveness of Cocos is that, in addition to recapitalising banks when the standard form of recapitalisation is unavailable, they also restore creditors' incentives to monitor risk. Cocos can therefore be viewed as partial substitutes for unusable or impractical bankruptcy procedures, as they ensure that one major class of stakeholders – which would otherwise be outside the risk calculus loop – is now interested in monitoring the bank's risk attitude and contributing to containing the pro-risk bias of the other stakeholders.

[11] Banks' liquidity issues are not dealt with explicitly here. Clearly, weak bank liquidity profiles were at the core of the recent crisis. Liquidity measures represent a critical part of the Basel III regulatory framework. They are also part of the TBTF proposal. Another relevant issue relates to the maturity mismatch between a bank's assets and liabilities. This is discussed in Hellwig (2008), among others.

[12] For suggestions on improving resolution options for systemically relevant financial institutions, cf. also 'The Squam Lake Report: Fixing the Financial System', Princeton University Press, May 2010.

The Swiss solution

Resolving the TBTF issue is a first order of priority. It is of utmost importance for Switzerland, given the relative size of the two big banks in relation to economic output.[13] The recent history of developments has helped us to understand that our two big banks are not only too big to fail, but that circumstances could arise under which they would be too big to be rescued as well. The solution chosen by the Swiss authorities to address this important problem is fully in the spirit of the above conceptual discussion. It relies on higher capital requirements and a capital surcharge proportional to the systemic externality with a substantial part of the extra capital taking the form of Cocos. It also imposes organisational measures fulfilling the objective of allowing for a 'partial' bankruptcy and thus reducing the size of the TBTF externality.

Part III: The side effects of improved incentives

Will higher capital restrict bank lending?

Let me now turn to the examination of some of the potential side-effects of the measures described in the preceding section. A legitimate first question is whether improving incentives in the way we have described could have undesired indirect effects such as modifying the banks' lending behaviour. An argument often heard is that higher equity requirements would force banks to set aside, or hold in reserve, funds that could otherwise be used for lending. Here the main observation is that extremely risky gambles should now be avoided as a result of improved incentives. There has been excessive risk-taking in the past; there should be less of it under the new incentives. Beyond this intended effect, which concerns only the most risky activities, the form of financing used by an institution – in itself – should have no impact on the profit-maximising business model. That is, as far as activities and revenues are concerned, imposing extra capital does not change the perspective of the decision-maker beyond restoring the incentives for balanced risk-taking. The exception is the case of marginally profitable activities, and here only to the extent that the cost of financing is increased (more on this later). Provided that activities are profitable, and bearing in mind that in banking the targeted return on equity is not only highly positive but incomparably higher than in other sectors of the economy, the cost of financing should not be the main determinant of activity. Holding more capital does not impair banks' ability to create value by lending, provide payment services or satisfy the demand for investment banking activities. High leverage is not a pre-requisite for banks to perform their socially valuable functions.

[13] The balance sheet of the two biggest Swiss banks adds up to a multiple of the size of domestic GDP.

Will higher capital requirements increase the cost of financing?

I now want to address the question of whether higher capital requirements *per se* will increase the cost of financing. A theoretical basis for answering this question can be found in the work of Modigliani and Miller.[14] In a perfect, frictionless world, the value of a firm does not depend on whether it is financed by debt or equity.

Higher equity capital reduces leverage. Thus it reduces return on equity (ROE) when a bank makes a profit but it increases it when the bank makes a loss. In other words, if increased capital requirements lower the ROE in good times, they raise it in bad times, hence reducing shareholder risk. It follows that shareholders will demand a lower average ROE for a better capitalised bank, as this is the counterpart for the better protection they obtain in bad times. We can thus expect a decrease in ROE, but this only reflects the decreased risk premium associated with the decreased risk-taking. Similarly, the cost of debt decreases and this drop in the cost of funds perfectly offsets the effect of the greater use of the more expensive source of capital in the firm's financing structure. The essence of the Modigliani-Miller theorem is that the cost of capital and thus the firm's value are unaffected.

Of course we do not live in a perfect world, and the Modigliani-Miller equivalence does not hold. Financing matters. The relevant literature typically puts forward a number of factors to justify the higher cost of equity financing: the fiscal advantage of debt, the cost associated with bankruptcy and the differential liquidity and issuing cost between debt and equity. These arguments apply to pure equity financing, not in the case of Cocos. As debt instruments, Cocos offer the fiscal advantage of other debt instruments. As hybrid instruments, they substitute for other hybrids that are already part of the financing structure of banks and that have proved relatively inexpensive for banks to issue. Finally, it is not clear that bankruptcy costs are relevant in the context of the TBTF problem where precisely those costs are never really incurred. For all these reasons, we may hypothesise that the total cost of bank financing will not materially increase as a result of higher capital requirements, in particular if the latter can take the form of Cocos. It is the case, however, that mitigating the implicit subsidy to TBTF institutions does correspond to a socially desirable increase in the cost of doing business for these institutions.

Is maximising return on equity an appropriate objective?

As mentioned in our discussion of the cost of capital, return on equity will be affected. A more highly capitalised bank is expected to have a lower ROE because of its lower risk profile. However, this is socially desirable. The common emphasis on ROE should be handled with scepticism, as ROE is a measure that is not adjusted for the risk profile of the bank and thus can be easily manipulated by increasing leverage.

[14] Modigliani, F. and Miller, M. H. (1958). 'The Cost of Capital, Corporate Finance and the Theory of Investment', *American Economic Review*, 48, 261–97.

Because ROE depends on the capital structure of a bank, this measure should not be used to compare two banks with different capital structures. If, however, two banks have the same capital structure, does it follow that targeting the highest ROE is the appropriate strategy?

If a bank is operating efficiently, its return on equity will be positively correlated with the risk taken: on average, more risk means more reward and thus more profitability. However, as we have seen, there is such a thing as too much risk-taking from society's perspective, in particular in the context of TBTF or systemically relevant institutions. That is, the amount of risk taken by a TBTF bank can diverge from the risk that society would like the bank to take. Targeting a very high return on equity is very likely to be inappropriate from a social point of view, as excessive risk-taking imposes an externality on the stability of the system.

Concluding remarks

Let me conclude with a brief summary. Today I have first reviewed the incentives for risk-taking by the various stakeholders of a bank. This review showed that, in particular in the case of a TBTF institution, no single stakeholder group is confronted with a natural incentive for a prudent weighting of risks. I have concluded that we should not be surprised by the assessment that the financial crisis could have its cause in excessive risk-taking by financial institutions. Pursuing the case of TBTF institutions we have considered a set of measures that have the potential to correct the incentive structure. Higher capital requirements in general, a capital surcharge for systemically relevant institutions, Cocos and organisational measures designed to allow for 'partial' bankruptcies naturally belong to a programme aiming at improving financial incentives. It is worth noting that these are essential elements of the TBTF package currently submitted to the Swiss Parliament. Finally, I have discussed the impact of such measures on the incentive to lend, the cost of capital and the return on equity. The aim of these measures is, first, to improve the incentives for balanced risk-taking and, second, to mitigate the implicit subsidy granted to TBTF institutions. These are the first-order effects. There should be few additional side-effects on lending practices and on the cost of capital. Average return on equity is likely to decrease in proportion to the decline in the risks assumed by shareholders.

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