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Financial sector in flux

Commentary by

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ABSTRACT

This note discusses the fundamental impact of developments in information technology on the stability of the financial sector. It is argued that information technology has augmented trading opportunities that allow for 'excessive' changeability via transactions. This invites opportunistic behavior and undermines the stability of highly leveraged institutions such as banks. Such transaction oriented landscape is subjected to the momentum-driven nature of financial markets which invites highly correlated strategies – loading up on activities that are 'hot' – and hence augments systemic risk. It is argued that this also undermines market discipline as the financial markets effectively promote such strategies.
Moreover, the boom and bust nature of financial markets may well lead to underpricing (or underestimation) of risk in good times and help explain the prevalence of ROE as (non-risk adjusted) performance measure in banking. Leverage would then be encouraged (i.e. it increases ROE) and help explain the low capitalization in banking. This paper also argues that bank capital choices appear in a bad equilibrium where banks operate based on a fixed cost of capital notion which leads to a self-fulfilling high cost of capital equilibrium. Finally, the paper also warns against too much trust in diversification and risk transfers as these may lead to risks being concentrated in the hands of naïve investors. If those investors turn out to be of systemic importance the stability of the financial system at large is at stake.

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FINANCIAL SECTOR IN FLUX

Financial sector in flux is an understatement. Several years after the 2008-09 banking crisis we are still confronted with a weak financial sector, and, as I will argue, a limited understanding of the functioning of the financial system and causes of financial instability. We also seem very uncertain about the desired structure of the industry which complicates the design and implementation of effective remedies. In Europe, problems seem even more acute. The deadly embrace of weak governments and struggling domestic financial institutions endangers economic growth for many years to come.

My reading is that fundamental changes related to information technology and the related proliferation of financial markets have created a financial landscape that is highly opportunistic, transaction driven and prone to destabilizing herding behavior. In particular, information technology has deepened markets and created trading opportunities that allow for 'excessive changeability' via transactions which undermine the stability of highly leveraged institutions such as banks. Such transaction oriented landscape is subjected to the boom and bust nature of financial markets, and hence more opportunistic than the more stable longer term oriented relationship focus that existed before. I will argue that this has created a very fluid financial landscape that is beyond the control of supervisors, contains enormous systemic risk and hence is fundamentally unstable.

I will also argue that market forces – market discipline in particular – may well be ineffective in containing instability. Actually, my point will be that market forces are often at the root of financial instability. Structural remedies – via a fundamental redesign of the financial system – might be needed to restore stability.

1. Information technology, excessive changeability and herding

In general one could say that the rapid developments in information technology have deepened markets. One typically immediately focuses on financial markets, but this is too narrow. For example, information technology has facilitated the proliferation of private equity firms which help transform industrial corporations by facilitating divestitures and M&A. What this really means is that transactions – such as the divestitures – have become easier.

The same applies to the financial institutions, but unlike divestitures which are more incidental to industrial firms, transactions in the financial market – like trading – are close to, or even an integral part of, the business of banking.

The latest accelerating development is the proliferation of financial innovations. A fundamental feature of recent financial innovations is that they aim at augmenting marketability, see for example securitization and related innovations like CDS and CDOs. Such marketability may help financial institutions in managing their risks and possibly reduce funding costs.[1] Yet it may also create instability by facilitating more opportunistic behavior. The mere fact that something becomes tradable (or marketable – I will use these terms interchangeably) can undermine commitment.[2] For example, as is well known, mortgages that become tradable might undermine the incentives of the originator to monitor the quality of borrowers. But also indirectly commitments can suffer. For example, in recent work with Lev Ratnovski (Boot and Ratnovski, 2012) I show that the ability to shift resources to trading activities in financial institutions may undermine relationship banking activities by violating (implicit) funding commitments to those relationship banking borrowers. And this is particularly acute because trading activities are typically more readily scalable than relationship banking activities; i.e. the latter depend on more long term engagements leading to more cultivated relationships.

More generally, when markets exist for all kinds of real or financial assets, a firm can more easily change the direction of its strategy. This might be good (e.g. prevent rigidity), but could also lead to lack of commitment and staying power, more opportunistic decisions and possibly herding. The latter refers to the tendency to follow current fads, and that is precisely what opportunistic decision making in momentum driven financial markets may induce. In banking, herding is particularly worrisome because it could create systemic risk. Meaning, when all institutions make the same bets, risk exposures become more highly correlated and a simultaneous failure of institutions is more likely.

[1] As Loutskina (2011) points out, securitization could have allowed for a wider access to investors, reduced funding costs and hence improved lending opportunities for banks.

[2] The link between marketability and commitment is also present in various strands of the literature that focus on liquidity. Bhide (1993) argues that the liquidity of stock markets may have a dark side in that fully liquid stock markets with diffuse ownership may undermine monitoring incentives. Myers and Rajan (1998) emphasize that the illiquidity of bank assets serves a useful purpose in that it reduces asset substitution moral hazard. The dark side of marketability is also present in work in economics that emphasizes that creating (interim) markets and trading opportunities might not necessarily be good, see for example the work of Jacklin (1987) in the context of Diamond and Dybvig's (1983) intertemporal smoothing.

In my view, the increased marketability has created a fundamental shift in the underlying dynamics of financial institutions. Banks have become increasingly sensitive to financial market developments. This more intertwined nature of banks and financial markets has exposed banks to the boom and bust nature of financial markets and augmented instability.[3] Moreover, it has increased the complexity of the financial sector via interconnectedness and an elevated speed of change.

2. Market discipline?

The increasingly fluid and complex nature of the banking industry could point at the importance of market discipline in banking as a supplement to regulatory and supervisory controls. This is precisely what the third pillar of Basel II aimed at: more disclosure should facilitate market discipline and in that way ease the task of supervisors. This is however questionable. Market discipline might not be able to play an important role in ensuring the stability of the financial system. The momentum-driven nature of financial markets might mean that the risk in whatever activity that is 'hot' is effectively underestimated (or overlooked) by the market as a whole, and this may 'poison' market discipline. That is, momentum driven financial markets effectively promote certain strategies, and these very same markets would then not be in a good position to impose market discipline. To the contrary, they were actually encouraging those strategies by possibly underestimating the risks involved.

It appears to me that market discipline is not present when banks follow such financial market inspired strategies. Things are even worse because it also implies that the correlation in strategies between financial institutions will be high because all see the same opportunities and hence we observe herding behavior. Systemic risk would then be a serious concern and not checked by market discipline. What this points at is that from a macro-prudential view (i.e. system wide view) market discipline is not effective.[4]

[3] As Shin (2009, page 110) puts it, "… in a modern market-based financial system, banking and capital market conditions should not be viewed in isolation."

[4] This supports Flannery's (2009) analysis that in the summer of 2007 neither share prices nor CDS spreads provided information about pending problems. Market discipline might more readily work for idiosyncratic risk choices of an individual financial institution. Those may not be driven by financial market 'fads'.

3. Cost of capital and perverse high cost equilibrium

The level of capital that banks need to choose gets much attention in the literature. All kinds of implicit subsidies to banks (e.g. TBTF, tax deductibility of interest payments) may have tilted banks in a direction of choosing too little capital (equity) and too much debt. However, the reservations of banks towards capital seem to go even further and violate basic corporate finance principles. Bankers see capital as being very expensive and typically ignore that this is endogenous and caused by their own choices of risk and leverage. Standard capital structure theory tells us that the per unit cost of capital depends on the risks that this capital is exposed to. More risk – either via more risky assets or higher leverage – implies a higher cost of capital. This is indeed core to the well known Modigliani & Miller capital structure theory and, more generally, core to the theory of corporate finance. This does however not mean that the M&M capital structure indifference propositions apply to banks. Not only do externalities exist that distort private risk (and leverage) choices (see Admati, et. al., 2011), but also the 'special' nature of banking needs to be taken into account (e.g. a bank's role in liquidity transformation, see Gorton, Lewellen and Metrick, 2011). Yet basic corporate finance insights should have some merit also for banks.

Severe distortions can be expected if this is ignored. Importantly, banks should not choose to engage in certain activities solely because they have capital 'available'. What bankers mean with the term 'available' is that they can take on more asset risk or increase leverage without violating capital requirements.[5] This directly addresses the distortions that the simple belief that capital has somehow a high (exogenously) fixed price induces. The critical observation is that increasing asset risk and/or leverage increases the per unit cost of capital. Therefore, engaging in, for example, proprietary trading to exploit the bank's 'available' capital will elevate the cost of this capital, and as a consequence increase the cost of funds for the bank as a whole.

[5] The reader may (or better: should) also object to suggestion that banks have capital 'available', or somehow have idle capital that needs to find a use. Capital is a funding source and is an item on the right hand side of the balance sheet supporting activities – assets – that are on the left hand side. Thus, capital is *not* an asset nor can it somehow be idle or 'available'. Note that for investors who are providing the capital to the bank ('shareholders'), the capital is an asset.

Banks that consider themselves 'overcapitalized' and decide to put this capital to use may thus not create value at all. This argument may also explain why banks consider capital (prohibitively?) expensive. If potential investors anticipate that banks will put their capital 'to use' at all cost, they will gross-up their required return accordingly. Banks then can issue equity only at discounted prices. These beliefs and anticipations create a perverse equilibrium. Given the bankers' state of mind – fixed priced, expensive capital that needs to be put to use as quickly as possible – the market responds rationally by charging a high price for capital. And given these anticipations by the market, the bankers' beliefs are justified and confirmed in equilibrium.

4. Market sentiment and ROE

More insights can be obtained if we introduce the impact that financial market sentiment has. Considering that financial markets go through euphoric (boom) periods – with risks often underestimated or underpriced (particularly in 'hot' activities) – and busts when risks are more prominent may help explain the actions of banks. If risk is underpriced, loading up on risk (via leverage, asset risk or mismatches) seems to create value.[6] It would appear to 'solve' one of the puzzles as to why banks appear to maximize ROE while corporate finance theory tells us that risk should be taken into account, and thus the risk-adjusted ROE should be targeted. In the extreme, if risk would be ignored fully, ROE becomes a perfectly sensible measure. This could also explain why increasing leverage is so popular in boom times: increasing leverage elevates ROE.

Market discipline would again fail. In euphoric times market forces would not put pressure on banks to be adequately capitalized; after all risk is not on the radar screen or underpriced. Indeed, we observe in boom times enormous pressure on banks 'to economize' on capital and in this way increase ROE. When the euphoria is over we typically observe the opposite: the market becomes obsessed by risk and no level of capital is considered adequate. This state of affairs is rather depressing. Strengthening the capital base is so much easier in boom times but

[6] Adrian and Shin (2010) point at the effect of favorable financial market conditions on leverage (increasing) and funding (becoming more fragile and short-term). Both effects cause stress when market conditions deteriorate. Demirguc-Kunt and Detragiache (2005) point at the risks of collective euphoria, and that with the length of an economic boom a crisis becomes (ultimately) more likely. See Acharya, Gale and Yorulmazer (2011) and Brunnermeier (2009) for fundamental analyses of the risks coming from financial market linkages. Further empirical evidence is provided by Yang and Tsatsaronis (2012).

then market pressures run in the opposite direction. In bad times one can never have enough capital but then profitability is lower and external access to new capital is complicated. Hence market forces might not be very helpful. They may well be orthogonal to what prudency would dictate.

5. What to do?

The important question is how to deal with the instability in banking. One could say that the institutional structure (including regulation) has not kept up with the enhanced marketability, 'changeability' and hence complexity of the industry. I believe a fundamental redesign of the financial system is needed. Unfortunately, blue prints are not (yet) available nor can they be expected soon. Fundamental uncertainty about the desired role and positioning of the financial services industry will be with us for some time; only over time will more clarity come about.

This does not mean that I disagree with the current dual focus: safeguarding both effective supervision of individual financial institutions (micro-prudential focus) and macro-prudential stability (addressing system-wide, e.g. interconnectedness concerns). From both a macro- and micro-prudential perspective more capital in the system may help. However, perverse market forces and the bankers' (extreme) beliefs on the high cost of capital, as mentioned earlier, may undermine its effectiveness.[7] Structural measures are still in their infancy. While many proposals are floating around (including those advocating structural measures, e.g. Vickers in the UK, Liikanen for the EU and the Volcker Rule in the US), we just do not know what the overall design of a financial system should be to effectively deal with the fundamental 'fluidness' of the system.

Finance as an academic field faces some challenges as well. The interaction between the functioning of financial markets (e.g. market forces such as the potential underpricing of risk in euphoric times) and bank behavior need to be much better understood. I have emphasized the lack of market discipline, even the perverse pressures coming from markets, and the herding behavior (and systemic risk) that might be induced.

[7] In particular, banks might choose to increase their risk exposure following higher capital requirements in order to preserve the (high) ROE on a now broader equity base. See Boot (2011) for an expanded overview of these and other distortions.

But also the core premise of asset pricing theory – the benefits of diversification – needs to be better understood. The possibilities of removing risks from a bank's balance sheet was heralded by many as fundamentally strengthening diversification opportunities, but is this correct? Apart from evident failures of institutions to truly offload risks (e.g. witness the boomerang created by liquidity guarantees[8]), the concept of diversification itself requires further thought. Diversification may well have led to a concentration of risks in the hands of the most naive investors. After all, investors underestimating risks are willing to accept these risks at a lower compensation. This variation on the winner's curse puts pause on the benefits of diversification. Diversification may lead to risks being concentrated in the hands of naïve investors. If those turn out to be of systemic importance – like the German Länder banks – the stability of the financial system at large is at stake.

[8] For example, in the process of securitization, extensive liquidity guarantees on the securitized assets created substantial boomerang effects invalidating the effectiveness of the risk transfers.

References

Acharya, V.V., D. Gale and T. Yorulmazer (2011), Rollover Risk and Market Freezes, *Journal of Finance*, Vol. 66(4), p. 1177–1209.

Admati, A.R., P.M. DeMarzo, M.F. Hellwig and P.C. Phleiderer (2011), Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is Not Expensive, Rock Center for Corporate Governance at Stanford University Working Paper No. 86.

Adrian, T., and H.S. Shin (2010), The Changing Nature of Financial Intermediation and the Financial Crisis of 2007-09, Staff Report no. 439, Federal Reserve Bank of New York.

Bhide, A. (1993), The Hidden Cost of Stock Market Liquidity, *Journal of Financial Economics*, Vol. 34(1), p. 31-51.

Boot, A.W.A. (2011), Banking at the Crossroads: How to Deal with Marketability and Complexity, *Review of Development Finance*, Vol. 1, p. 167-183.

Boot, A.W.A., and L. Ratnovski (2012), Banking and Trading, working paper, IMF, September. [see also "The risk of trading by banks", www.voxeu.org, 8 October 2012]

Brunnermeier, M.K. (2009), Deciphering the Liquidity and Credit Crunch 2007-08, *Journal of Economic Perspectives*, 2009, Vol. 23(1), p. 77-100.

Demirguc-Kunt, A., and E. Detragiache (2005), Cross Country Empirical Studies of Systemic Bank Distress: Survey, IMF Working Papers 05/96, Washington, International Monetary Fund.

Diamond, D.W., and P.H. Dybvig (1983), Bank Runs, Deposit Insurance and Liquidity, *Journal of Political* Economy, Vol. 91(3), p. 401-419.

Flannery, M.J. (2009), Market Discipline in Bank Supervision, In: *The Oxford Handbook of Banking*, Eds. A.N. Berger, P. Molyneux, and J.O.S. Wilson, Oxford: Oxford University Press. p. 377-404.

Gorton, G., S. Lewellen and A. Metrick (2011) The Cost of Bank Capital: Thinking Beyond Modigliani and Miller, working paper.

Jacklin, C. (1987), Demand Deposits, Trading Restrictions, and Risk Sharing, In: Contractual Arrangements *for Intertemporal Trade*, Eds. E.D. Prescott and N. Wallace, University of Minneapolis Press, Minneapolis, p. 26-47.

Loutskina, E. (2011), The Role of Securitization in Bank Liquidity and Funding Management, *Journal of Financial Economics*, Vol. 100(3), p. 663-684.

Myers, S.C., and R.G. Rajan (1998), The Paradox of Liquidity, *Quarterly Journal of* Economics, Vol. 113(3), p. 733-771.

Shin, H.S. (2009), Reflections on Northern Rock: The Bank Run That Heralded the Global Financial Crisis, *Journal of Economic Perspectives*, Vol. 23(1), p. 101-119.

Yang, J., and K. Tsatsaronis (2012), Bank Cost of Equity, Leverage and the Business Cycle, working paper, BIS, Basel.