22 Financial innovations, marketability and stability in banking

Arnoud W.A. Boot and Matej Marinč

22.1 INTRODUCTION

Having well-functioning financial institutions and markets is considered important for the economy at large. In this context it is important to look at the proliferation of financial innovations and ask what this has done to the functioning of the financial sector. When looking at the last few years with the financial crisis at the center of our attention, one is tempted to conclude that recent innovations like subprime mortgages and their repackaging in marketable securities have not contributed to the well functioning of the financial sector. But this conclusion might be premature.

The key question addressed in this chapter is therefore how financial innovations have affected the structure and stability of the financial services industry. A fundamental feature of recent financial innovations is that they are often aimed at augmenting marketability; see for example securitization and related products like credit default swaps (CDSs) and collateralized debt obligations (CDOs). Such marketability can augment diversification opportunities, yet as we will argue can also create instability. This is the focus of the chapter. We will argue that understanding the added value (and the downside) of financial innovations is important to understand the type of measures that might have to be taken. The point of view that we will advocate is that financial innovations have distinct value – and as such should be applauded – yet the institutional environment should be amended to control the negative effects that particularly the enhanced marketability might have induced.

Facilitating marketability is a core element of the most noteworthy innovations that have become infamous during the 2007–2009 financial crisis: for example, securitization resulting in securities like CDOs, asset-backed commercial paper (ABCP) and CDS. However, the mere fact that something becomes tradable can undermine commitment. For example, mortgages that become tradable might undermine the incentives of the originator to monitor the quality of borrowers. Or, more fundamentally, when markets exist for all kinds of real assets of a firm, the firm can more easily change direction in its strategy. This might be good, but could also lead to lack of commitment (and staying power), more impulsive decisions and possible herding. The last refers to the tendency to follow current fads. In banking, herding is particularly worrisome because it could create systemic risk, meaning that when all institutions make the same bets, risk exposures become more highly correlated and a simultaneous failure of institutions might become more likely.[1]

The enhanced marketability may also have led to a proliferation of transaction-oriented banking (trading and financial market activities) at the expense of more traditional relationship banking. Such an evolution is particularly relevant because

financial systems are often characterized as being either bank-based (continental Europe) or financial market-driven (US, UK). In the former, bank financing and relationships are dominant, while direct funding from the financial market plays a more important role in the latter. Financial innovations may have affected these systems differently.

The distinction is not as sharp as the dichotomy might suggest; for example more than half of US businesses are bank-financed, and financial markets clearly play a role in continental Europe; hence no system is fully market- or bank-driven. Nevertheless, an interesting question is whether the more recent proliferation of financial innovations might impact those systems differently. One observation is that bank-based and financial market-driven systems might have become more alike. In particular, recent innovations – like securitization – have made banks' assets more marketable and increased the sensitivity of banks to financial market developments. Banks might have thus become a more integral part of financial markets. The more intertwined nature of banks and financial markets may have weakened the distinction between bank-based and financial market-driven systems. One could argue – as we will do – that bank-based systems have been impacted most because they had increased sensitivity to financial market developments, but were somewhat insulated from it before.

Considering the herding behavior and more impulsive decisions that financial markets may facilitate (and possibly the boom–bust nature of financial markets), we will argue that the increased linkages between banks and these markets have augmented instability in banking, and bank-based systems may have felt this most. From here we will point to institutional and regulatory changes that might be needed to improve the stability of the financial sector. One could say that the institutional structure (including regulation) has not kept up with the enhanced marketability and 'changeability' of the industry.

The organization of the chapter is as follows. We will first discuss in section 22.2 the key insights from the literature on financial intermediation, particularly the distinction between relationship banking and transaction banking. In section 22.3 we will argue that there is substantial complementarity between relationship banking activities and investment banking activities; the latter are typically seen as centered around financial markets. A point that we will be making here as well is that characterizing investment banking as purely transaction-oriented is too simplistic.

In sections 22.4 and 22.5 we discuss, respectively, the pros and cons of financial innovations. There is a core literature, discussed in section 22.4, that convincingly argues that financial innovations can play a positive role and contribute to economic growth. Financial innovations could however have a destabilizing impact; the financial crisis of 2007–2009 is arguably a manifestation of this. Section 22.5 therefore asks the question: what causes innovations to be potentially value-destructive? A fundamental feature that comes up here is the marketability that recent financial innovations typically aim for; marketability may have a dark side and create instability. Section 22.6 further expands on the downside of marketability. Marketability, leading to more transaction-oriented banking, may erode institutional franchise value which, as we will argue, is key to stability. This has implications for the desired structure of banking. Section 22.7 concludes.

22.2 RELATIONSHIP VERSUS TRANSACTION BANKING

Traditional commercial banks hold non-marketable or illiquid assets that are funded largely with deposits. There is typically little uncertainty about the value of these deposits which are often withdrawable on demand. The liquidity of bank liabilities stands in sharp contrast to that of their assets, reflecting the banks' *raison d'être*. By liquefying claims, banks facilitate the funding of projects that might otherwise be infeasible.[2]

The banks' assets are illiquid largely because of their information sensitivity. In originating and pricing loans, banks develop proprietary information. Subsequent monitoring of borrowers yields additional private information. The proprietary information inhibits the marketability of these loans. The access to information is the key to understanding the comparative advantage of banks (Diamond, 1984). In many of their activities, banks exploit their information and the related network of contacts.

One might be tempted to interpret modern banking as transaction-oriented. So does an investment bank – generally considered a prime example of modern banking – facilitate a firm's access to public capital markets? The investment bank's role could be interpreted as that of a broker; that is, matching buyers and sellers for the firms' securities. In this interpretation investment banks just facilitate transactions, which would confirm the transaction orientation of modern banking. The investment banks' added value would then be confined to their networks, that is, their ability to economize on search or matching costs. As a characterization of modern banking, however, this would describe their economic role too narrowly. Investment banks do more. Almost without exception investment banks underwrite those public issues, that is, absorb credit and/or placement risk. This brings an investment bank's role much closer to that of a commercial bank engaged in lending; the processing and absorption of risk is a typical intermediation function similar to that encountered in traditional bank lending.

In lending, a bank manages and absorbs risk (e.g., credit and liquidity risks) by issuing claims on its total assets with different characteristics from those encountered in its loan portfolio. In financial intermediation theory this is referred to as qualitative asset transformation.[3] Underwriting by an investment bank can be interpreted analogously; risk is (temporarily) absorbed and is channeled through to the claim holders of the investment bank. The role of investment banks is therefore more than purely brokerage. Underwriting requires information acquisition about the borrower which is supported by a relationship orientation. A relationship orientation will therefore still be present in investment banking, both in the direction of investors ('placement capacity') and toward borrowing firms.

Nevertheless, in a relative sense their involvement is more transaction-oriented. What will also be true is that in investment banking relationships depend much less on local presence. Public debt issues are relatively hands-off with few interactions between financiers and borrowers over time. The full menu of financing options for borrowers includes many other products with varying degrees of relationships. In the continuum between bank loans and public debt issues, we can find, for example, syndicated loans. These are offered by investment banks and commercial banks alike and involve several financiers per loan. Generally, only the lead banks have a relationship with the borrower, and the relationship intensity is somewhere in-between a bank loan and a public debt issue (see Dennis and Mullineaux, 2000; Sufi, 2007).[4]

As a caveat observe that within investment banks there is somewhat of a 'battle' between the client-driven activity that we have so far emphasized (involving underwriting, and so on), and proprietary trading that is purely transaction-oriented and has (virtually) no relationship component. In section 22.6 we will discuss this further.

We will now discuss the complementarities between more traditional relationship banking activities and investment banking, and point to the increased intertwined nature of banking and financial markets.

22.3 BANKS VERSUS CAPITAL MARKETS: COMPLEMENTARITIES

The standard view is that banks and markets compete, so that growth in one is at the expense of the other (e.g., Allen and Gale, 1995, 1997; Boot and Thakor, 1997). In this context Deidda and Fattouh (2008) show theoretically that both bank and stock market development have a positive effect on growth, but the growth impact of bank development is lower when there is a higher level of stock market development. What this shows is that dynamics of the interaction between banks and markets can have real effects. How banks and markets interact is therefore of great interest.

There is evidence that banks and financial markets do not just compete, but also are complementary. For example, the close monitoring role of banks might facilitate timely intervention. This feature of bank lending is valuable to the firm's bondholders as well. They might find it optimal to delegate efficiently the timely intervention task to the bank.[5]

Another manifestation of potential complementarities between bank lending and capital market activities is the increasing importance of securitization. Securitization is an example of unbundling of financial services and a more recent example of financial development. It is a process whereby assets are removed from a bank's balance sheet, so that a bank no longer permanently funds assets when they are securitized; instead, the investors buying asset-backed securities provide the funding. Asset-backed securities rather than deposits thus end up funding dedicated pools of bank-originated assets. Securitization decomposes the lending function such that banks no longer fully fund the assets, but continue to be involved in other primal lending activities, for example monitoring and servicing the borrowers. A potential benefit of securitization is better risk-sharing. The proliferation of securitization may however also be induced by regulatory arbitrage, for example as a vehicle to mitigate capital regulation; see section 22.4.

Central to the extensive academic work on securitization (see An et al., 2008) is the idea that it is not efficient for originators to offload completely the risks in the originated assets. The originating bank needs to maintain an economic interest in the assets to alleviate moral hazard concerns and induce sufficient effort on the originating bank's part in screening and monitoring. What this implies is that, even with securitization, banks should not become disengaged from the assets they originate. Banks still continue to provide the services involved in screening and monitoring borrowers, designing and pricing financial claims, and providing risk management and loan servicing support. As such, securitization preserves those functions that are at the core of the *raison d'être*

for banks. This militates against the notion that securitization necessarily lessens the importance of banks.

As the subprime crisis of 2007–2009 has shown, this development was not without problems. The structure of real-world securitization transactions appears to have taken a rather fragile form. In particular, it is important to note that much of the securitization leading up to the crisis involved the financing of long-term assets with short-term funding, which induced substantial liquidity risk; for example as in ABCP conduits. While this liquidity risk was sometimes mitigated by liquidity guarantees (e.g., stand-by letters of credit and other refinancing commitments), the underwriting institutions often underestimated the risks involved and overstretched themselves.[6]

The eagerness of banks to securitize claims – and keep the 'repackaging machine' rolling – may have also adversely impacted the quality of loans that were originated (e.g., subprime lending). The originating institutions often also retained minimal residual risk. As a consequence, monitoring and screening incentives may have been further compromised (see Mian and Sufi, 2007).[7] Credit rating agencies played an important role in this process as well. Their willingness to provide favorable ratings clearly helped in growing this market.[8]

The 2007–2009 financial crisis brought securitization almost to a grinding halt. However, the risk diversification that securitization can accomplish appears to be of more than just ephemeral importance. Thus, we expect securitization to re-emerge, albeit possibly in a form that entails lower levels of liquidity risk, as well as lesser moral hazard in screening (loan underwriting standards) and monitoring. A caveat is that some of the activity in securitization may have been induced merely by capital arbitrage,[9] in which case its social value may be rather limited; the new Basel II capital requirements – and also the so-called Basel III amendments – might diminish such regulatory arbitrage.

Another effect of the interaction between banks and markets is that as markets evolve and entice bank borrowers away, banks have an incentive to create new products and services that combine services provided by markets with those provided by banks. This allows banks to 'follow their customers' to the market rather than losing them. There are numerous examples. For instance, when a borrower goes to the market to issue commercial paper, its bank can provide a back-up line of credit in order to guarantee refinancing. Securitization of various sorts is another example in that banks not only originate the loans that are pooled and securitized but they also buy various securitized tranches as investment securities. The impetus for such market-based activities grows stronger as interbank competition puts pressure on profit margins from traditional banking products, and the capital market provides access to greater liquidity and lower cost of capital for the bank's traditional borrowers. As a consequence, there is a natural propensity for banks to become increasingly integrated with markets, and a sort of unprecedented 'co-dependence' emerges that makes banking and capital market risks become increasingly intertwined. This could make banks more willing to engage in lending and hence improve access to financing, but also points at potentially a higher level of instability. One conclusion that we will draw is that this could improve access to finance under 'normal' circumstances, yet makes access more volatile and subject to the boom-and-bust nature of financial markets.

22.4 UNDERSTANDING THE PROS OF FINANCIAL INNOVATION

The notion that financial innovation is good for economic growth is based on the idea that such innovations will improve the allocation of capital. In the words of Fed Chairman Ben Bernanke: 'The increasing sophistication and depth of financial markets promote economic growth by allocating capital where it can be most productive' (Bernanke, 2007). This sounds politically correct, and by its very generality is difficult to refute. However, more specificity is needed. What precisely can be good about financial innovations? In a first-best world where information is available to all and everybody is capable of fully discerning all relevant attributes, financial innovations could help complete the market, that is, facilitate a complete set of Arrow–Debreu securities. This is the typical 'spanning' argument; financial innovations are good because they help complete the market.[10]

As a more or less immediate corollary, financial innovations might then help improve the allocation of capital. In more simple terms, a complete market allows individuals to hedge optimally (that is, smooth) their income over time. Given the higher level of predictability that results, they are more readily willing to invest their money for longer periods of time, facilitating more long-term investments.

Similarly, the tradability of debt and equity in financial markets allows investors to liquefy their holdings at any point in time (i.e., by selling their holdings to other investors) and helps in diversifying risks. In doing so firms might have easier access to long(er)-term financing. The wish to liquefy claims also helps explain the introduction of limited liability in equity-type contracts – an innovation by itself. It facilitates trading, and allows investors to liquefy claims on otherwise long-term investments (Michalopoulos et al., 2009). Liquidity therefore is valuable; yet, as we will see, it can simultaneously have some negative repercussions. More specifically, in a world with imperfections, agency and information problems lead to potential distortions that can create a 'dark side' of liquidity.[11]

22.4.1 Financial Innovations Also Valuable for Other Reasons

New securities are sometimes introduced to help overcome information asymmetries. While not really a new security, a debt claim may illustrate this. Such a claim might offer financing at lower cost than issuing equity because it is less information-sensitive (see Myers and Majluf, 1984). The idea is that an equity-type claim would suffer from a 'lemon' problem: outsiders would not be able to assess the value and hence refuse to provide funding since the firm could try to exploit a too optimistic view among potential investors about the firm. As put forward in Akerlof's (1970) famous paper, investors would be naive to buy a firm's equity at an average price, because only the below-average firms would happily be willing to sell the equity at that price. Investors thus face a problem of adverse selection and the market may break down.

Note that things might not be that bad if there is a very low cost in verifying the true state of nature which would help enforce the ensuing obligations. That is, if the lemon problem can be easily overcome by verifying the true state at relatively low cost, equity financing might be available. However, if the verification cost is high this may

not work. The costly-state-verification literature has focused on *ex post* verification (Townsend, 1979); the firm may hide assets and refuse to repay outside financiers. A debt claim may help, since with debt (contrary to equity) verification is not always needed. That is, if debt is repaid (interest plus principal) there is no need to verify. If it is not repaid (or only in part) one needs to verify whether there is indeed a lack of resources. Having a debt contract in conjunction with a third party (for example, bankruptcy court) that can impose a stiff penalty on the firm if it falsely claims insufficiency of funds can solve the misrepresentation problem. Unless the debt is issued by a very risky firm the anticipated costs of verification are limited since in most cases the firm can and will repay (and no verification is needed). Note that in the case of external equity there is no fixed payment and verification is always needed. The upshot of this is that a debt security can be seen as a value-enhancing innovation to help facilitate access to funding (see the earlier contribution of Gale and Hellwig, 1984; and also Tirole, 2006).

The literature on financial innovation – also referred to as the security design literature – has come up with various other approaches to mitigate problems of information asymmetry. One that also rationalizes debt as a valuable security is Boot and Thakor (1993). They show that if information production costs are not excessive, introducing debt in the capital structure of firms could encourage information production in equity financial markets. This would then, via trading in the financial market, get prices closer to the underlying true value. The idea is that with debt in a firm's capital structure, equity becomes riskier, but importantly more information-sensitive. Hence, for (potential) equity holders the value of producing information about the firm goes up. More information is produced as a result, and prices are pushed towards their real values (see also Fulghieri and Lukin, 2001). All this would be good for resource allocation because mispricing is mitigated.[12]

Others have argued that a rights issue – again a financial innovation – could help solve the lemon problem (Heinkel and Schwartz, 1986; Balachandran et al., 2008). With a rights issue existing shareholders get the right to buy the newly issued shares. In essence, if only existing shareholders buy the new shares that a firm wants to issue, the pricing is not that important. Why? Observe that when shares are issued at a price that is too low, new shareholders get a windfall gain at the expense of existing shareholders. With a rights issue (in principle) the new shares go pro rata to the existing shareholders; gains and losses are now in the same hands, that is, internalized by the same group of investors. A rights issue may therefore allow the firm to raise new equity, while a 'normal' equity issue would have been infeasible because of a lemon problem. This is important because it highlights that existing shareholders might be prepared to continue to provide financing.[13]

The security design literature provides several other examples of financial innovations that could resolve particular agency and asymmetric information problems. For example, convertible bonds could give bondholders protection against risk-seeking behavior by shareholders. The idea is that in a situation where a lot of debt already exists, new debt financing might not be available because it might induce shareholders to favor excessive risk. That is, their leveraged claim gives shareholders an enormous upside potential if risks work out, while the downside is born by the debtholders. With convertible debt, debtholders will share in the upside if risks work out (i.e., conversion will then

occur). As a consequence, incentives are more aligned because shareholders no longer exclusively get the upside and debtholders get part of the upside.

Other motivations for introducing financial innovations include regulatory arbitrage and minimizing transaction costs. Whether this is good or bad depends on the particular context. For example, innovations designed to bypass regulations (regulatory arbitrage) might be good if one considers those regulations undesirable.[14] But assuming that the regulation in question has merit – say, capital requirements imposed on banks – innovations that are only aimed at bypassing it should probably be viewed negatively.

Reducing transaction costs as a rationale for financial innovations can often be viewed more positively. If certain frictions – transaction costs – impede the optimal allocation of capital then innovations that reduce these seem optimal.[15] In this positive interpretation, innovations like credit default swaps (CDSs) and collateralized debt obligations (CDOs) would promote an optimal allocation of capital by reducing the cost of diversifying and reallocating risk. However, as Posen and Hinterschweiger (2009) note, during the period 2003–2008 the growth in over-the-counter (OTC) derivatives outpaced that of real investment by a factor of 12 (300 versus 25 percent). And after 2006 real investments stagnated while OTC derivatives arguably grew faster than ever. While this does not preclude that the proliferation of these financial instruments provided benefits also later in the boom, the negative effects on the robustness of the financial system – as observed in 2007–2009 – tend to refute this.

What emerges is that there are clear pros to financial innovation but negative effects cannot be excluded. In our view (see also the next section) this is related to the fast changes that innovations induce and the fact that existing institutions (including regulation) might not have adjusted to the new realities. In that type of environment innovations might become 'weapons of mass destruction' as Warren Buffet once remarked.[16]

We now elaborate further on the 'dark side' of financial innovation.

22.5 INNOVATIONS MIGHT BE PROBLEMATIC

Johnson and Kwak (2009) state that a financial innovation is only good if it 'enables an economically productive use of money that would not otherwise occur'. This statement makes it clear that financial innovations do not necessarily add value. This might particularly be the case when information asymmetries are present.

When information asymmetries are severe and particular contingencies are not contractible at all, having complete markets is infeasible. This happens when contingencies are not verifiable, and/or too costly to verify. Introducing a financial innovation might now have a much darker motivation. Financial innovations might be intended to fool market participants. An example might be the Dutch or UK market for life insurance products. On several occasions structural misselling has occurred with a common denominator: the presence of an excessive variety of product innovations that share one characteristic – complexity in conjunction with obscurity of costs relative to potential benefits.[17]

Financial innovations would then tend to worsen the allocation of capital. The more recent advances in securitization could be interpreted that way too. Initially securitization could have allowed for a wider access to investors, reduced funding costs and hence

improved lending opportunities for banks. As stated earlier, this may well have been value-enhancing. There is a logic in fulfilling the demand for high investment grade securities by packaging mortgages, and selling the low-risk portion to (distant) investors. As long as the originators of the loans keep the more risky layer, they would still have a strong incentive to screen loan applicants and monitor them. What happened subsequently is less benign. It is clear that lending standards weakened (Keys et al., 2010).[18] In part this had little to do with securitization. The housing boom in the US seduced lenders into granting higher mortgages. As long as prices kept rising, loans could always be refinanced and/or sales of underlying houses would cover the outstanding mortgages. Where securitization did come into the picture is that the insatiable appetite for triple-A paper in the market pushed financial institutions into a high gear repacking mode, ultimately lowering standards even further. Also, in a desire to issue as much triple-A paper as possible, the more risky tranches of securitization structures were repackaged again, and more triple-A paper was squeezed out. All this packaging and repackaging led to very complicated securities. When the market finally started questioning the sustainability of the housing boom, the arcane securities were suddenly out of favor.[19]

Financial innovations often cause harm by reducing transparency, and this might be deliberate. The earlier example about life insurance, as stated, might be a good example. While securitization did create arcane products (the sequentially repacked claims), the objective of securitization might not have been to create this lack of transparency. The arcane nature of the end product might have been a side-effect of the sequential repackaging that was driven to 'squeeze out' as much triple-A paper as possible. In practice this may still have had the same effect: some market participants were fooled into trusting the quality of this highly rated paper (and the willingness of rating agencies to grant such high ratings did help; see also White, 2010).

The more fundamental observation, and the one already eluded to in the previous section, is that securitization is a financial innovation that intertwines banks with financial markets. Financial markets are however subject to booms and busts, and are heavily momentum driven. As long as momentum was there, the market's appetite could not be saturated, and much money could be made by putting the 'repackaging machines' into higher and higher gear. The important observation is that recent financial innovations are ways to augment marketability, and this is typically linked to financial markets, and those are subject to boom and busts.

22.5.1 Marketability and Excessive 'Changeability' are Key

Securitization has opened up the bank balance sheet. Many bank assets have potentially become marketable. This marketability is typically seen as something positive, but the links with the financial markets that this has created have made banks potentially more vulnerable vis-à-vis the volatility and momentum in financial markets. Moreover, marketability means that existing activities and risks can be changed almost instantaneously. Since financial markets go through cycles and are subjected to hypes and investor sentiments, the banks' decisions might become more momentum-driven; see also Shleifer and Vishny (2010). This adds further instability.[20]

One could frame the enhanced opportunities to change things almost instantaneously as a move to more 'footloose institutions'. What we mean by this is that corporations (or

banks for that matter), due to the proliferation of financial markets and the increased marketability of their assets (creating a transaction orientation), become uprooted, meaning that they lose a degree of fixity and stability. This discussion is also related to the general corporate governance question on the rights of shareholders in the financial market. In related work by Boot et al. (2008), the emphasis is on the need to have some stable shareholders. The liquidity that stock markets provide may cause ownership to be changing all the time such that no stable and lasting link with shareholders comes about. Support and commitment to a particular strategy might then become weaker and more haphazard.[21] This could make firms more sensitive to short-term financial market pressures.[22]

22.6 DARK SIDE OF MARKETABILITY AND (LACK OF) INSTITUTIONAL FRANCHISE VALUE

Creating liquidity and opening up markets – that is, trading possibilities – is typically seen as something positive. But this is not always the case, as follows from the previous section. One application is the context first investigated by Amar Bhide (1993). His insight was that the liquidity of stock markets is typically considered a virtue, yet may have a dark side in that fully liquid stock markets encourage diffuse ownership, and this may undermine monitoring incentives (i.e., cause free-rider problems). Hence corporate control over managers might be lax, inducing inefficiencies. In other words, monitoring incentives typically require a large(r) and enduring stake in a company, yet this is at odds with liquidity. This suggests a trade-off between liquidity and a more enduring presence by committing not to sell.

In subsequent research, Bolton and von Thadden (1998) have shown that stock market liquidity may actually benefit from the simultaneous presence of a few block holders. That is, having some proportion of shares freely traded, but not all, may help create liquidity in the freely traded shares in part because the market knows that some investors have a more sizable and permanent (minority) stake that gives them an incentive to monitor. In this way some agency problems at the level of the firm might be mitigated. This is in line with the earlier discussed work of Boot et al. (2008) who focus on the pros and cons of (lack of) stability in the shareholder base particularly in the context of exchange-listed firms.

The costs of liquidity and/or marketability can be further emphasized in the context of financial sector stability. This can be linked to securitization (see earlier), but also to the stability of investment banks versus commercial (relationship-oriented) banks. Traditional relationship-oriented banks seem incentivized to build up institutional franchise value. Individuals are part of the organization as an entity, and not readily identifiable as individual stars. In other words, the value created is an integral part of the organizational entity and not portable as part of individuals.

Investment banks on the other hand, particularly their trading activities,[23] seem more based on the individual star concept with high marketability of individuals. As a consequence, less institutional franchise value is built up; individual franchise values dominate. If this is the only difference then a relationship banking institution has substantial implied franchise value, while the investment bank has little implied value, and hence

Keeley's (1990) analysis would suggest that an investment bank would take lots of risk, while the franchise value of a commercial bank would help curtail its risk-taking.[24]

Historically investment banks have solved the marketability problem (and the potential lack of institutional franchise value) by having partnerships. The partnership structure has two dimensions that could jointly resolve the marketability problem, and related opportunistic, risky behavior (and the star phenomenon):

- a partnership means that bankers have their personal wealth tied up in the business: they own the equity claim of the business;
- the partnership structure is such that the equity is not (optimally) marketable.

The latter implies that 'stars' cannot take their money out, or only at a reduced value. Implicitly, this means that non-portable franchise value is created, and this value is transferred over time to future partners. Interesting examples exist where institutions have made changes that have destroyed this structure. For example, with a go-public transformation (converting a partnership into a listed shareholder-owned company) the current partners effectively expropriate all franchise value that has been built up over time.[25] Even worse, once the partnership is gone, stars may no longer be 'under control'. Their financial interest is no longer tied to the firm. This elevates risk and reduces stability.

In commercial banking the enhanced marketability, and with it, transaction focus, may have opened the door for some type of 'star' phenomenon as well. Transactions as typically linked to marketability make it easier for individuals to stand up as being the sole 'inventor'. This may have induced opportunistic behavior, particularly as partnership structures in commercial banking have never been very common.

In any case, partnerships among major financial institutions are rare. Changes, whether in the form of financial innovations (products), processes (securitization) or institutional changes (the demise of a partnership in lieu of an exchange listing with marketable equity) all work in the same direction. They make things 'footloose' and in doing so could undermine stability.

22.7 PUTTING IT TOGETHER: WHAT TO CONCLUDE?

What has been shown is that financial innovations can be good from the perspective of completing markets, as well as from the perspective that focuses on overcoming asymmetric information and agency problems. Nevertheless, a much more negative picture can be drawn. The instability that they might cause is arguably even more worrisome. This red flag is related to the observation that financial innovations often aim at augmenting marketability, and intertwine banks and financial markets. This makes banks subject to the boom-and-bust nature of financial markets. Marketability definitely has a dark side; it potentially causes severe instability.[26]

We have emphasized potential complementarities between banks and financial markets. On the positive side one could say that financial innovations have possibly strengthened these complementarities. One could however easily draw a more negative conclusion. In the 2007–2009 financial crisis European banks have arguably been hit hardest. One interpretation is that the European financial sector started combining

the worst of both worlds: it continued to be driven by banks, with their negative effects on renewal and entrepreneurship, yet these very same banks became intertwined with financial markets and as a consequence volatility increased and the benefits of stability disappeared.

We tend to subscribe to the conclusion that the marketability created in banking via financial innovations has created a very opportunistic environment prone to herding, fads and excessive risk-taking. More instability seems an inherent part of this new reality. Our discussion on the value of partnerships that actually may contain unwarranted opportunistic behavior, and its disappearance, points to the need to find some new 'fixed points' in the financial system; not everything can be fluid.

What comes out of this chapter is that we need to (learn to) deal with the instability that marketability brings. The institutional framework needs to adapt to this new reality, and that is what we mean by discovering new 'fixed points'.

NOTES

1. Risk taking might also become more cyclical. For example, Coval et al. (2009) find that the demand for senior tranches in securitized structures was high despite their high sensitivity to bad economic states. Investors were either lured by high ratings of such instruments or, alternatively, they were eager to upload systemic risk. And this was an industry wide phenomenon. Haensel and Krahnen (2007) show on a data set of European CDOs that banks that issued CDOs raised their systemic risk.
2. See Bhattacharya et al. (2004) for an overview of the modern literature on financial intermediation.
3. We do not focus on the costs and benefits of such mismatch on the banks' balance sheets. See Calomiris and Kahn (1991) and Diamond and Rajan (2001) for theories that rationalize jointly the asset and liability structures of banks.
4. It is important to note that the relationship aspect does not only involve funding, but also includes various other financial services, for example letters of credit, deposits, check clearing and cash management services. We will not focus on these services per se, but note that the information that banks obtain by offering multiple services to the same borrower might be valuable in lending (Degryse and Van Cayseele, 2000). For example, the use of checking and deposit accounts may help banks in assessing a firm's loan repayment capability. Thus, the scope of relationships may affect banks' comparative advantages.
5. To play this role well, banks may need to secure senior status. Seniority makes them willing to act tougher. To see this, observe first that the unsecured other debtholders need to be compensated for their subordinated status. This is directly related to the work on bargaining power and seniority; see the work of Gorton and Kahn (1993) and Berglöf and von Thadden (1994). The complementarity between bank lending and capital market funding is further highlighted in Diamond (1991), Hoshi et al. (1993) and Chemmanur and Fulghieri (1994). See Petersen and Rajan (1994) and Houston and James (1996) for empirical evidence, and Freixas and Rochet (2008) for a recent overview.
6. Most noteworthy are the bankruptcies among German *Länder* banks that were involved in providing liquidity guarantees. Risks were further elevated by enormous leverage in the securitization process.
7. Securitization is facilitated in part by credit enhancement, including partial guarantees by the arranger of a securitization transaction (and/or he holds on to the most risky layer of the transaction). In the recent credit crisis, this disciplining mechanism broke down; residual risks with the arranger appeared minimal, and were often framed as liquidity guarantees to off-balance street vehicles without appropriately realizing the inherent risks. That is, banks, while they might have believed that risk was offloaded, often had been underwriting the liquidity risk in securitization transactions by, for example, guaranteeing the refinancing of commercial paper in ABCP transactions via standby letters of credit. Such guarantees have generated profits for banks, but also created risks, as illustrated by the losses incurred by banks in the recent subprime crisis. The marketability of securitized claims has also been facilitated by accreditation by credit rating agencies (Boot et al., 2006). The role of rating agencies has been called into question with the 2007–2009 subprime lending crisis.
8. Allegations have been made about conflicts of interest for rating agencies arising from the fact that structured finance is (was) a source of ever-increasing income for them, which then corrupts their incentives for

accurately rating the issuers involved in structured finance (Cantor, 2004; Partnoy, 1999). In this context, Coffee and Sale (2008) point at the naivety to think that reputation-building incentives alone would keep credit rating agencies in check (see also Mathis et al., 2009).

9. Jones (2000) reviews the principal techniques for regulatory capital arbitrage invoked by Basel I standards. Calomiris and Mason (2004) provide evidence on regulatory arbitrage in the case of credit card securitization.
10. A complete market means that investors or consumers can 'contract' on any conceivable future state of the world, and in doing so create an optimal allocation. In the context of hedging, for example, such a complete market allows investors to neutralize whatever state-contingent risk they may face. What this means is that investors can tailor the state-dependent pay-offs to their precise preferences. Please note that one cannot automatically assume that introducing new securities in incomplete markets that give investors greater 'spanning' opportunities is by definition value-enhancing. Elul (1995) shows that adding a new security could have 'almost arbitrary effects on agents' utilities'.
11. We are not focusing here on innovations in trading platforms and trading practices in general (e.g., flash trading). Hendershott et al. (2010) argue that financial innovations in algorithmic trading (e.g., smart order routing, direct market access, crossing, co-location, global capacities) increase liquidity.
12. Hennessy (2009) shows that firms may issue securities that are less information-sensitive if the Akerlof (1970) lemon problem is severe. In that case, risk and information problems are overwhelming, and trying to carve out a relatively safe claim might be the only hope for obtaining external finance.
13. Note that this may not work in the presence of (too much) debt. With what is called 'debt overhang', new equity even from existing shareholders may not be forthcoming because it would give debtholders a windfall gain. This is the case particularly when the coupon on existing debt is fixed; these debtholders would then fully benefit from any infusion of equity. Existing equity holders would pay the price and possibly choose to resist a new equity issue. If debt could get renegotiated hand-in-hand with an equity infusion, this effect could be mitigated. It is also quite prevalent in banking where a government guarantee effectively makes debt available at low cost, while the guarantee is not priced. This induces risk-taking behavior and could make banks averse to raising new equity because it would benefit the government (i.e., lower the value of the guarantee).
14. Also tax evasion should be mentioned. Tax efficiency, to put it more neutrally, is central to many financial innovations. For example, the practice of financial engineering in order to design a security that has properties of equity but qualifies for interest deductibility for tax purposes; for example, trust-preferred securities that were mainly issued by bank holding companies for their favorable tax and regulatory treatment.
15. Tufano (2003) summarizes other motivations for introducing financial innovations along these lines.
16. So far we have not emphasized that many of these recent developments in innovation have been facilitated by developments in information technology (IT); particularly marketability has really been spurred by these IT developments. For a broader discussion of the impact of IT advances on banks and financial markets, see Frame and White (2009). The major revolution in IT technology induced innovation in both front offices and back offices. In front offices, IT technology enabled new channels of access to banking such as Internet banking. In addition, several new products have been created for borrowers such as factoring, leasing and asset-based lending (Berger and Udell, 2006). In back offices, the IT technology has possibly led to better assessment of risk also for more opaque small business lending. The example includes small businesses credit scoring techniques that were developed in the 1990s (see Berger et al., 2005, and Petersen and Rajan, 2002, for the impact of IT on the distance between bank and borrower). In addition, substantial changes occurred in payment technologies. Paper payments such as cash and checks were increasingly replaced by electronic payments such as debit and credit cards. Studies identify substantial cost reduction in processing of electronic payments from 1990 to 2000 (see Berger, 2003) and economies of scale (see Hancock et al., 1999). For markets, IT developments have led to fast and largely automated electronic trading. This has probably increased the frequency of trading and liquidity; however, much about its stability impact is as yet unknown.
17. Gabaix and Laibson (2006) analyze how producers (e.g., financial services firms) can exploit uninformed consumers by misrepresenting attributes. In Carlin (2009) complexity is added to discourage information production, intended to facilitate expropriation of investors. Henderson and Pearson (2009) show how innovations might be designed to fool market participants, and in doing so cause serious harm.
18. Parlour and Plantin (2008) analyze loan sales. In their view banks weight the benefits of loan sales in the form of additional flexibility to redeploy bank capital quickly with the drawbacks in the form of lower monitoring incentives. They show that loan sales would lead to excessive trading of highly rated securities but to insufficient liquidity in low-rated securities. Risk-weighted capital requirements may help in bringing liquidity to low-rated securities.

19. DeMarzo (2005) shows that pooling of securities is valuable due to diversification especially if the originator has limited information about the assets' quality. However, the informed financial institutions buy pooled assets and tranch them. By tranching the assets financial institutions make liquid and low-risk debt less sensitive to their private information.
20. Also replacing deposit funding by wholesale funding exposed banks to additional liquidity risk. Huang and Ratnovski (2011) show that the dark side of liquidity comes in the form of reduced incentives of wholesale funds providers to monitor their banks and this may trigger inefficient liquidation; see also Acharya et al. (2010). The main threat of a bank run may no longer come from demand deposits as in Diamond and Dybvig (1983), but rather from wholesale financiers or from bank borrowers that deplete their loan commitments (see Ivashina and Scharfstein, 2010; Gatev et al., 2009).
21. Another important area of research on the dark side of marketability is the work in economics that emphasizes that creating (interim) markets and trading opportunities might not necessarily be good. It could for example create time-inconsistency problems and complicate the feasibility of otherwise (*ex ante*) optimal commitments. In this context, the work of Jacklin (1987) is noteworthy. He showed that introducing trading opportunities at the intermediate point in time could destroy the liquidity insurance feature of demand deposit contracts in the Diamond and Dybvig (1983) framework.
22. The dark side of liquidity and possibility for quick changes in asset allocation is related to the work of Myers and Rajan (1998) who emphasize that the illiquidity of bank assets serves a useful purpose in that it reduces asset substitution moral hazard.
23. Many of the activities in an investment bank are relationship-based (see section 22.3); trading is typically not. In recent times, traders appear to have gained power within investment banks, for example more recent leaders of Goldman Sachs came from the trading side. In any case, we do not see the distinction between commercial banking and investment banking as an absolute dichotomy.
24. There is some value in the multitude of connections that are combined in the investment bank, but this is also pointing at externalities of failure (see Duffie, 2010).
25. Morrison and Wilhelm (2008) analyze the decisions of major US investment banks to go public. Investment banks were initially organized as partnerships. The opacity of partnerships and illiquidity of their shares allowed for successful mentoring and training in tacit uncontractible human skills, such as building relationships, negotiating mergers and acquisitions (M&A) deals and advising clients. They have argued that IT technology necessitated heavy investments and that that necessitated investment banks to go public. Potentially confirming this is that wholesale-oriented investment banks such as Morgan Stanley, for which tacit human capital was more important than IT technology, went public later than retail-oriented investment banks such as Merrill Lynch.
26. Other thoughts on instability and financial innovation are provided in Shiller (2008), Loayza and Ranciere (2005) and Brunnermeier et al. (2009). See also Frame and White (2002) on the difficulty of evaluating the added value of financial innovations.

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