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### A walk down Lombard Street : essays on banking

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# Chapter 1

## Introduction

The banking industry undergoes dramatic change. The change is driven by increased competition (both within the industry and from non-banks) and by financial innovation. As a result, banks increasingly depart from the traditional model of conservative retail business, and adopt innovative funding and lending strategies. While some of those strategies undoubtedly increase efficiency and contribute to social welfare, others (or even the same ones!) also expose the banking system to new types of risks. The dangers associated with novel and often complex banking activities were abundantly illustrated during the recent credit market turmoil.

Two lessons from the recent events stand out. The first is the complexity of banks' funding strategies. Traditionally, banks financed themselves through fixed capital and (usually passive) deposits. Most strategic choices were taken on the asset side of the balance sheet. Not anymore. As competition for demandable deposits increases, banks increasingly use elaborate wholesale market funding tools (such as repos, commercial paper, etc.). The new structure of funding creates new types of risks. Should wholesale markets be disrupted (as during the recent events), banks can experience an effective creditor "run". Liquidity risks, which were considered mitigated under robust deposit insurance systems, re-emerge as a new and material threat.

The second lesson is that competition and innovation affect banks' prudence on the asset side of balance sheet. There, competition increases incentives to seek yield, while financial innovation provides instruments by which increased risks can be managed or, if desired, – concealed. This highlights the importance of understanding incentive structures behind banks' lending standards.

Although the current challenges in the banking system are time-specific, broadly they

are not new. A large number of concerns – optimal ex-ante regulation, central bank credibility, ex-post resolution – were articulated as early as 150 years ago, in Walter Bagehot's "*Lombard Street: A Description of the Money Market*". The questions raised by Bagehot are as topical today as they were in 1873. The title of this thesis – "*A Walk Down Lombard Street*" – is a tribute to the originator of contemporary banking literature.

This thesis consists of three essays in banking. The first two deal with bank liquidity risk. The third addresses the issue of bank credit standards.

The first essay, "*Bank Liquidity Regulation and the Lender of Last Resort*", studies banks' incentives to take suboptimal liquidity risk management choices (e.g. hold insufficient liquidity buffers) and derives policy implications. The principal distortion I explore is the effect of rents associated with the lender of last resort (LOLR) intervention in a possible systemic crisis. The paper shows that such rents can reduce banks' incentives to accumulate sufficient liquidity ex-ante and make them gamble for ex-post LOLR support instead. Interestingly, this behavior can have self-fulfilling characteristics: due to inter-bank complementarity of payoffs, a bank can change its behavior (and start gambling) simply in response to gambling by another bank.

I argue that there are two ways in which the regulator can intervene to assure socially optimal bank liquidity. The first, mechanical, is to impose quantitative requirements. The second is to structure LOLR process so as to minimize its distortions. In designing the LOLR intervention, the regulator faces the conflict between maximizing ex-post repayment (to reduce rents) and preserving the bank's charter value (to keep bankers' incentives aligned). I show that, within that trade-off, the regulator can "price" LOLR loan more accurately when it has more precise information about banks' asset values. This is normally possible in more advanced, transparent banking systems. The country cross-sectional implication – that emerging economies have to rely on explicit liquidity regulation, while advanced countries can have less binding regulation compensated by effective ex-post corrective action – is consistent with existing evidence.

In the second essay, "*Liquidity and Transparency in Bank Risk Management*", I study the interaction between two principal ways in which a bank can hedge the risk of liquidity shortfalls. One, traditional, is to accumulate highly liquid assets, in order to finance possible shortfalls internally. Another, less conventional, is to enhance transparency – ability to communicate with the market that allows better access to external refinancing. The paper argues that, although liquidity and transparency are strategic substitutes, their precise effects are different. A precautionary liquidity buffer allows the bank to cover

any outflows within its size internally, offering complete insurance against small liquidity needs. Transparency, on the other hand, helps resolve solvency concerns and obtain external refinancing for liquidity needs of any size. Yet it is effective only with probability (ex-post communication is imperfect) and provides incomplete insurance. Hence, liquidity and transparency can complement each other, and banks can optimally combine them in risk management.

Banks' incentives to invest in liquidity and transparency can be distorted by leverage, and suboptimal hedging justifies policy intervention. However, while liquidity is verifiable and can be imposed (for example, through explicit ratios), transparency is not easily verifiable and is more difficult to regulate. A resultant multi-tasking problem complicates optimal policy design. The most surprising result is that liquidity requirements can compromise banks' transparency choices. This would leave the bank exposed to large liquidity needs, increasing overall risks and reducing social welfare. The paper shows how imposing liquidity buffers on banks may in fact increase liquidity risks they face.

The third essay, "*Credits Standards, Information, and Competition*" (joint work with Enrico Perotti), suggests a novel rationale for banks' occasional use of lax credit standards. We show that extending credit to "bad" firms increases information asymmetry between the informed incumbent bank and possible external competitors at the refinancing stage. This limits credit market competition and allows the inside bank to collect high relationship rents on good firms, more than compensating for losses on bad credit.

The paper shows that the capacity of the incumbent bank to distort competition through lax credit standards depends on entrants' ability to screen firms. This gives an interesting insight into the effects on increased inter-bank competition on credit quality: credit standards can either deteriorate or improve, depending on the qualities of new entrants. These effects can help better understand the prudential impact of banking deregulation and foreign entry.

