EXTERNAL REVIEWER'S REPORT ON TAMARA VOVCAK, "ESSAYS ON BANKING AND FINANCE"

This dissertation consists of three distinct chapters dealing with aspects of bank liquidity and risk-taking. The three essays provide empirical analyses employing data on US commercial banks in the period up to and just after the Financial Crisis of 2007-9. The questions raised are consequential, with important implications for regulatory policy and for our understanding of financial stability.

The first chapter studies whether banks with greater reliance on core deposits were able to withstand the turbulence of the financial crisis better. In particular, the chapter finds that banks with higher proportions of core deposits had smaller proportional decrease in credit provided during the crisis. Following that, the chapter explores whether the decrease in credit supply had consequences for real economic variables.

The second chapter asks whether the imposition of explicit liquidity requirements, an important innovation in the Basel III international regulatory agreements, would have affected bank profitability. Using data from the years before the financial crisis, the chapter finds that a hypothetical imposition of the regulation would indeed have lowered bank profitability. At the least, this suggests trade-offs between liquidity and profitability that should be considered in the design of the regulation.

The third chapter provides a different angle on liquidity regulations. Looking at bank decisions about capital, asset risk, and liquidity, the chapter finds that liquidity decisions and risk decisions are made simultaneously. This implies that regulations that look at capital and asset risk without considering liquidity may be inadequate, missing an important aspect of bank decision making.

Although all three topics are consequential, and the analysis is generally methodologically adequate, the first chapter is developed in greater detail and with greater care. The second and third chapters do not reach the level of analytical detail and rigor of the first chapter, leaving a somewhat uneven impression.

I will proceed to comment on the chapters one by one.

Chapter 1: This chapter explores the question of whether banks' funding structures played a role in their ability to weather the Financial Crisis. In particular, it asks whether banks with greater proportions of core deposits in their liabilities decreased their credit levels less than banks with higher proportions of core deposits.

Specifically, the chapter looks at loan securitizations, building on the work of Ivashina and Scharfstein (2010). The data in the chapter goes considerably further in time, ending in 2013. This allows a fuller assessment of the longer-term implications of funding differences.

At the same time, it is important to note some of the limitations of this analysis. By dealing with loan syndications, the method of this chapter leaves out single bank-single firm lending. This kind of lending is quite important to small and medium-sized businesses in the US. These firms, in turn, provide a significant amount of employment and have historically contributed substantially to employment growth. However, the syndication data have important advantages, allowing us to in effect compare the behavior of banks with differing characteristics in lending to the same borrower. This allows a plausible identification of credit supply.

Additionally, one has to be careful to note that the finding that banks with greater proportions of core deposits decreased credit less applies to this specific crisis. The 2007-9 Financial Crisis began as a crisis of the wholesale funding market, in contrast to the wave of bank runs and bank failures of 1930-31. Most likely, major waves of bank runs will remain a thing of the past, thanks to deposit insurance. However, it is important to be aware that the chapter analyzes the response to a specific kind of liquidity shock. There is no guarantee that future shocks will take the same form.

It might also be worth noting that the credit boom of the years leading up to the crisis was fueled by wholesale funding. The results reported in Table 1.5 show that banks with *lower* proportions of core funding increased credit faster before the crisis—precisely a picture of a lending boom fueled by wholesale funding.

The other major piece of the chapter is its analysis of the impact of bank lending on firm performance. The results in Table 1.9 find that increased bank credit during the crisis raised firms' stock returns. This result holds up for most of the categories of firms tested, with the quite understandable exception of firms that were able to issue debt securities themselves.

A good effort was made to ensure that the observed effects on stock returns were not due to firm characteristics or changes in firms' demand for credit. I am reasonably confident that the results are in fact driven by changes in credit supply by banks.

Finally, the chapter ends with an important additional piece of evidence. The last set of regressions reported in Table 1.16 suggest that credit supply actually impacted firm sales. In other words, the funding issues discussed here not only affected the stability of the banks themselves, as well as the financial position of the borrowing firms, they also affected real economic activity.

A technical note: on page 14, please explain the notation theta sub b in equations 1.2 and 1.3—I presume that these are bank fixed effects (?). An example of a good explanation is page 16, equation 1.6 "exposure of firm j in quarter t". Also, I am not sure if it was ever explicitly stated that the data is quarterly—I could not find that.

Chapter 2: This chapters asks whether the imposition of Basel III liquidity regulations would have decreased the profitability of banks. Using bank data from before the Financial Crisis, the chapter estimates the relationship between bank profitability and levels of liquidity and capital. This relationship is then used to see whether raising bank liquidity would have lowered bank profitability.

The chapter makes a very big assumption that new rules do not endogenously affect banks' business models asset choices, interest rates and the like. It also ignores the possibility of general equilibrium effects occurring as the system as a whole adapts to the new regulations. These considerations lead me to be skeptical about the validity of this approach as an analysis of the impact of the regulations.

I would therefore suggest that the author add language making it clearer that this historical analysis only provides limited insight into what would happen if regulations had been in place. Of course, regulations are now in place, so it would be possible to do an entirely different analysis after the fact. I am not suggesting that such an analysis be done; I would, however, suggest more careful consideration of the limitations of the analysis in the chapter.

Furthermore, in view of the fact that the sample spans 2001-13, I was surprised to see that there was no analysis of a possible structural break post-crisis. During the crisis, the wholesale funding markets froze. Many banks had to rethink their liquidity models and processes. Additionally, as early as late 2008 or early 2009, international regulators indicated their intention to impose mandatory liquidity ratios in the future. In view of all of these shocks and the easily identifiable timing of regulation, it seems well worthwhile to test whether the quantitative relationships found in the chapter's regression models hold both pre- and post-crisis.

Chapter 3: This chapter looks at the simultaneous determination of bank asset risk, capital and liquidity. Each is modelled with a partial-adjustment model. The three models are combined using 3-Stage Least Squares to account for the endogeneity of decisions on each factor.

While I applaud the effort to look at all three aspects simultaneously, I am not sure that this approach is capturing the essence of the Originate-to-Distribute model. The idea was to underwrite exactly those assets that could be securitized. In other words, the expectation was that *these assets were in fact highly liquid.* Imposing measures of liquidity that were devised later seems artificial and unable to capture the behavior of banks at the time.

Put differently, securitization is endogenous to liquidity. Banks securitized (sold assets) when liquidity was low. In fact, banks planned securitization timetables carefully, considering this a primary means to manage their liquidity.

My concern is that the regression model does not deal with the endogeneity between securitization and liquidity adequately. Perhaps a fourth equation would be needed to describe the relationship between the SEC variable and the LIQ variable.

Additionally, I have a few smaller comments. On page 86, introduction to the chapter, the phrase "higher capital and liquidity reduces risk" should be more precise. Does this refer to ex post risk of failure, or asset risk?

Also, on page 91, it is fine to use Risk-weighted assets/Total Assets as a measure of risk. Many others studies in the literature do so. But to say that Basel II risk weights "measures the bank's true risk" is a major overstatement. That was the intention of the advanced approaches of Basel II, but I would prefer to present it as an intention, not an accomplishment.

Finally, on page 93, the impact of securitization on asset risk depends a lot on the selection of assets to be securitized. If the bank's strategy is to securitize riskier assets, the impact for on-balance sheet asset risk is negative (lower on-balance sheet asset risk).

But the opposite could be the case. In fact, a capital arbitrage strategy would see low-risk assets as requiring too much capital, since capital requirements were the same for all assets in the categories of Basel I and the Basel II standard approaches. This approach would securitize low-risk assets, raising on-balance sheet asset risk.

Summary: This dissertation takes on consequential issues of financial sector behavior. It extends our understanding of the relationships between liquidity, capital and asset risk in banking, using extensive empirical analysis based on sophisticated and appropriate analytical tools. However, I have reservations about the possible structural break in Chapter 2 and the endogeneity of securitization and liquidity in Chapter 3.