



*The Macroeconomic Consequences of Carry Trade Gone Wrong and Borrower Protection*

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# 1 Summary of “The Macroeconomic Consequences of Carry Trade Gone Wrong and Borrower Protection”

This thesis focuses on the interaction of the macroeconomy, excessive private debt and underlying bankruptcy institutions. First, the thesis explores how Emerging Europe coped with foreign currency debt during the Great Financial Crisis, when local currencies depreciated sharply against the euro and the Swiss franc. The reallocation of depreciation losses from borrowers to banks can lead to different macroeconomic implications dependent not only on the size of debt but also the borrower type. Thus, the analysis focuses on different potential ex-post policies after unexpected currency depreciation: (i) shifting corporate currency mismatch losses to banks and (ii) shifting consumer currency mismatch losses to banks. The thesis continues by considering borrower protection laws, namely recourse laws, and their effect on macroeconomic and welfare outcomes, regardless of debt denomination.

In Chapter 2<sup>1</sup>, I analyze the policy of shifting corporate currency mismatch losses from firms to banks. The key novelty in the model is the explicit modeling of corporate debt overhang in line with the finance literature (Merton (1974)). I calibrate the model to the Hungarian economy which experienced a sudden depreciation episode in the beginning of 2009. I show that insulating corporate borrowers from exchange rate risk and landing losses to banks results in better macroeconomic outcomes. The reason behind is that lending in foreign currency reduces bank exchange rate risk but raises credit risk creating bank equity losses. Therefore, banks cannot avoid losses entirely but the size of losses depends on the strength of corporate frictions. Corporate debt overhang amplifies aggregate shocks substantially. So reducing losses for overindebted firms leads to better macroeconomic outcomes despite bank losses from an open currency position. The results suggest that one of the reasons why six years after the crisis the Hungarian economy was still experiencing sluggish recovery may well have been the policy of shifting currency mismatch losses to corporate borrowers. This backfired not only by distorting firms’ incentives to invest downwards, but also in higher credit risk for banks, so the policy did not succeed in protecting banks either.

In the analysis I also show that, to contain currency mismatch losses in the banking sector, the government can resort to bank recapitalization. Recapitalizing banks as a policy response would have reduced aggregate losses and would have mitigated the effects of currency mismatch losses on credit supply.

In Chapter 3<sup>2</sup>, I again address the macroeconomic consequences of carry trades gone wrong but now I

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<sup>1</sup>It is based on the joint work with Prof. Sweder van Wijnbergen.

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also account for household currency mismatch losses. Household currency mismatch losses were relevant in several countries in Emerging Europe, especially in Hungary and Poland, where about half of mortgages were denominated in Swiss francs.

Although I choose the financial frictions based on the Hungary's experience during the recession, I also estimate the model on Hungarian data to evaluate the relevance of the chosen frictions. I find strong evidence in favor of corporate debt overhang rather than monitoring costs for corporate loans in the spirit of Bernanke et al. (1999). The Bernanke et al. (1999) based dynamics of borrower net worth and the associated borrowing costs cannot explain aggregate fluctuations in the Hungarian economy as well as the financial distortion for firms' incentives to invest and hire. Moreover, introducing household debt together with corporate debt improves model fit significantly, suggesting that household debt played a significant role in explaining aggregate fluctuations too.

Using the calibrated/estimated model, I investigate the losses allocation problem. Making corporate borrowers bear currency risk results in worse macroeconomic outcomes than shifting currency mismatch losses back to banks. This result confirms the findings presented in Chapter 2. However, foreign currency mortgages to households generate less recessionary outcomes than currency mismatch in the banking sector. This is because household debt does not affect aggregate supply directly. Also, consumption losses do not affect domestic producers directly but the effect on domestic producers depends on the import structure.

The results suggest that shifting corporate losses back to banks (and recapitalizing them if necessary) would have mitigated the recession better than shifting households losses. Paradoxically, the Hungarian government did the opposite.

In Chapter 4, I explore the general equilibrium arguments for increasing borrower protection. I focus on a particular type of protection, namely recourse laws, which targets residential mortgages. A higher level of protection in this case means milder recourse laws. Then in case of default and for negative home equity, a lender can claim a smaller share of borrower's wage income. Due to general equilibrium effects, increasing borrower protection creates output gains for most of cases but the size of the effect on output depends on the starting level of protection and the level of risk in the economy. The novel result is that, for low initial levels of bankruptcy protection, both mortgage credit and corporate credit increase in response to higher borrower protection, creating large output and welfare gains. Mortgage credit increases sharply because mortgages become less risky from the borrower's perspective. The increase in mortgage demand creates strong general equilibrium effects through housing prices: higher housing prices boost savers' income

and savings so that banks can intermediate more credit to both households and firms. Thus, the general equilibrium effect mitigates crowding-out of capital and higher capital increases equilibrium income for both savers and borrowers. The output effect also depends on the level of risk in the economy. The higher is the level of total risk, the higher are output gains from milder recourse for all levels of earnings exemptions.

The associated general equilibrium effects contribute to total welfare gains from higher borrower protection significantly. The highest welfare is achieved when the level of earnings exceptions for mortgage borrowers amounts to more than one half of borrower's earnings.

The results offer support for strengthening borrower protection because milder recourse laws not only provide more consumption insurance but also generate positive general equilibrium effects. This finding is important for Emerging Europe too; although the region has experienced rapid financial development in the last two decades, the development of relevant institutions lagged behind.

## References

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