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Essays on the U.S. financial cycle: construction, real effects and cross-border spill-overs

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Summary

5.1 Main findings

In this thesis, we examine the U.S. financial cycle from various angles. In Chapter 2, we describe the cycle with corporate and household sentiments. To gain insight into the links between financial and real sectors, in Chapter 3 we proceed to investigate two transmission channels. We question whether external dependence and Tobin's Q channels can transmit investor sentiment and affect U.S. manufacturing industries' investment. Finally, because the United States is a major economy, we expect that its cyclical fluctuations spill over to other countries. Chapter 4 thus focuses on the cross-border effects of U.S. market sentiments on Mexican macroeconomic indicators.

Building on early work by Minsky (1978, 1986) and Forni (2000), Chapter 2 presents our measure for the U.S. financial cycle. When constructing the financial cycle, we take a middle way between using only one indicator or a long list of them. We select six indicators and eliminate leads and lags in relation to one chosen reference indicator. For each pair of indicators, we select a frequency parameter (within the 12- to 40-quarter range), which maximizes coherence and minimizes the necessary phase shift. Whereas household sentiment depends on income and (expected) demand for real estate, investor sentiment depends on future profit expectations translated into capital asset prices and the conditions under which short- and long-term finance are available (see, e.g., Minsky, 1978).

We find that indicators for household and corporate sentiments relate well to U.S. financial stress and crisis moments. Investor sentiment is best described with the slope of the yield curve, the stock price index returns, a purchasing manager's index and noncorporate leverage growth. Household sentiment is best described with household leverage growth and real estate price index growth. We find that most troughs in the U.S. growth rate cycle are preceded by peaks in U.S. investor sentiment.

This coincides with Minsky's theory summarized by Palley (2011) as "success breeds excess breeds failure": increasingly optimistic valuations of capital assets eventually lead to present value reversals.

In Chapter 3, we investigate the effects of U.S. investor sentiment on investment in U.S. manufacturing industries. We specify two transmission channels from financial to real sectors. First, external dependence on finance describes an industry's need to borrow (see Rajan & Zingales, 1998). We estimate an industry's external dependence in a novel way using a panel data regression. As sentiment improves, so do financing conditions, which may increase investment through better access to debt finance. Second, Tobin's Q defined as the book-to-market value ratio is a proxy for an industry's growth prospects. As investor sentiment and financing conditions improve, this may increase investment for growth industries financed with equity.

We find empirical evidence that financial shocks are transmitted to the real sector through the external dependence channel. Malmendier and Tate (2005) reach similar conclusions using U.S. firm-level data and measuring financing constraints by the Kaplan-Zingales index: investment is sensitive to financing constraints. In contrast to Chen et al. (2007), we find no evidence for the Tobin's Q channel, consistent with the idea that Tobin's Q represents a market mispricing component as well. Higher equity prices may lead managers to invest in outside opportunities instead of decreasing the marginal product of capital further.

In Chapter 4, we investigate Mexico's exposure to short- and long-term changes in U.S. conditions, which are global conditions, by estimating U.S. and Mexican business and financial cycle components. Our findings are similar to Kose et al. (2004), who find strong co-movements between U.S. and Mexican indicators. We add to these insights by separating long-term from short-term co-movements. In addition, we distinguish two sources of long-term co-movements in the U.S. indicators originating from changes in household or investor sentiment: We find long-term countercyclicality and short-term pro-cyclicality between U.S. investor sentiment and Mexican leverage growth and the net financial account.

We also find short- and long-term countercyclicality of Mexico's net financial account with U.S. GDP growth rates and U.S. household sentiment, respectively. Our evidence is in line with Rey's (2015) finding that emerging market capital flows and credit growth are subject to a global financial cycle. Our interpretation of the evidence is that the Mexican economy is exposed to both the U.S. business and financial cycles. We also show that in the late-NAFTA sample period, real integration between the United States and Mexico increased. The period with increased trade integration coincided with reduced significance of idiosyncratic shocks in the Mexican stock price

index and GDP growth rates, which suggests that the trade agreement increased the role of the U.S. (business) cycle.

5.2 Policy implications

Financial cycle research suggests that policy makers should be more concerned with the medium and long run, relative to concerns linked to business cycle movement. Within that horizon, policy challenges should address financial imbalances such as stock overhang problems and in general to prevent the buildup of the financial system's vulnerabilities. Policy responses that only contain recessions in the short run can lead to much larger ones later on (e.g., Borio, 2012). A measure for a financial cycle provides a monitoring tool with regard to the buildup of financial vulnerabilities. Our work shows that the U.S. financial cycle should be described with both household and investor sentiment indicators. Each signals expectations for a different group of economic agents.

In the case of small open economies, financial cycles of the global economies should be monitored alongside domestic ones. In Chapter 4, we show that the U.S. financial cycle explains fluctuations in Mexican indicators, as was the case for Mexican leverage growth and the net financial account. The presence of global cycles according to Rey (2015) reduces the effectiveness of domestic monetary policy and motivates the need for macro-prudential policies. To smooth out financial cycles, the current bank regulatory framework includes Basel III. The idea is to accumulate capital buffers over the upswing of a financial cycle and to use accumulated capital as financial imbalances unwind (e.g., Drehmann et al., 2011, Borio, 2012).

Despite macro-prudential frameworks, financial vulnerability remains a problem due to unregulated shadow lenders. Bank regulation does not necessarily prevent the debt overhang problem on the firm level. Thus, the solution may be to impose more regulation directly, at least on systematically important corporations. Chapter 3 shows that industries with greater external dependence on (debt) finance generally invest more in the upswing of U.S. investor sentiment. New investment may belong to one of the three Minsky's categories ("hedge," "speculative" and "ponzi" investments; see Minsky, 1978). If managers are simply catering to the markets that expect positive future growth and current investment, then investments in speculative or ponzi positions may increase. For example, a loosening of financing conditions may lower the external risk premium and lead to higher acceptance rates of new (speculative) investment projects. Alternatively, if an upswing in market sentiment

conveys information about stronger future fundamentals, then the “hedge” type of investment may increase such that expected present value is positive for a range of future interest rates. More research is needed regarding the debt overhang problem on the firm-level; this may support the formulation of micro-prudential regulations.

5.3 Future research

This thesis covers only a few topics with regard to the U.S. financial cycle. In Chapter 2, we construct the U.S. financial cycle, which consists of investor and household sentiment. Even though these two factors summarize co-movements in our indicators well, an alternative choice is to add a third factor describing manager sentiment. Relating these three sentiments to economic growth outcomes could be a valuable extension. The analyses of lead-lag relationships between our indicators leads us to define a leading indicator and investigate its forecasts with regard to the timing of the economic crisis episodes in the United States.

Chapter 3 describes the two channels through which U.S. investor sentiment may affect the real sector. Identifying the reasons why external finance-dependent industries have a higher investment sensitivity to U.S. investor sentiment is left to future research. As noted previously, one explanation is that this property may reflect managers’ tendency to cater to market expectations. Alternatively, an upswing in sentiment reflects stronger future fundamentals and motivates investment, leading to a financially sustainable scenario.

Another interesting avenue is to investigate the possible channels from U.S. household sentiment to the real sector. For example, the inequality index for income distribution across households may determine the pass-through of U.S. household sentiment to real growth. Similarly, the propensity to consume varies over different age groups, and thus, changes in age distribution can affect the pass-through.

In Chapter 4, we measure co-movements between major U.S. and Mexican macroeconomic indicators. We restricted our analyses to quantifying the aggregate effects. One potentially interesting extension is to examine specific channels for U.S. market sentiment pass-through. For example, if Mexican capital assets are acquired by foreign investors the financing options available to a firm may change. Tracking the capital asset ownership changes over the course of the U.S. financial cycle could shed more light on the financial and real sector linkages.

Finally, a major research direction involves developing recommendations for the micro-prudential framework. Even though bank lending is now supervised by reg-

ulators, large financial vulnerability risks are likely to shadow lenders who remain unregulated. This lending channel leaves open the corporate debt overhang problem and in turn leads to systematic risk buildup. Identifying systematically important corporations and regulating their fund-raising practices similarly to what has been done in the banking sector could smooth out financial cycles. Future research should develop monitoring tools for corporate-level debt accumulation, primarily including information on systematically important corporations. Defining the criteria for an institution to qualify as systematically important is left to future research. For example, these criteria may include firms with large market concentration indexes.

This thesis uses aggregate level macro data. In Chapter 3, we did not fully deal with endogeneity issues. Availability of more granular micro data sets could broaden the research agenda further and reduce the remaining issues.