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Costly financial intermediation and excess consumption volatility[☆]

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ABSTRACT

This paper documents the cyclical properties of financial intermediation costs and uses their dynamics to explain excess consumption volatility (ECV) differences across countries in a dynamic stochastic general equilibrium framework with housing market. I find that financial development levels have a limited role in explaining ECVs. Instead, the volatility of financial sectors plays the determinative role. Consistent with the data, the model finds higher ECVs in emerging countries. The paper also shows that if the US had the same intermediation cost structure as Turkey, deteriorations in the production and consumption following a financial shock would increase threefold.

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1. Introduction

It has already been established that more developed financial systems lead to higher consumption smoothing and less output volatility through better risk insurance (see Aghion et al. (1999, 2004), Easterly et al. (2001), Denizer et al. (2002), Kose et al. (2003), and Fanelli (2008)). However, comparing consumption to output volatility does not reveal clear cut explanations in the literature. For instance, Kose et al. (2003) find that consumption volatility relative to output volatility, or excess consumption volatility (ECV, henceforth), increased from the 70s to 90s in the US and in other countries, while there were significant enhancements in financial development levels across the world. Using banks' cost efficiency, i.e. intermediation costs per assets, as an indicator of financial development, I show that financial development levels have limited role in explaining the ECV differences across countries. Instead, the volatility of the financial sector plays the ultimate role.

The volatility of macroeconomic variables, particularly that of consumption, has detrimental economic effects by creating uncertainty and risk. Ramey and Ramey (1995) and Laursen and Mahajan (2005) among others, show that volatility leads

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to lower economic growth and social welfare.[1] These negative effects are more pronounced in emerging countries than developed countries.[2] Using a sample of 75 countries, Crucini (1997) finds that the ECV is 3.5 times higher in less developed countries.[3]

This paper explains the disparity in ECVs across countries by accounting for differences in their financial intermediation costs. In a DSGE framework with a housing market, I show that, instead of financial development levels, the volatility of financial systems creates ECV differences across countries. Because emerging countries have more volatile financial sector, their economy experiences greater credit crunches leading to more dramatic macroeconomic fluctuations. The spillover from the financial sector to the housing market leads to higher ECVs. Since some developed financial systems are actually more volatile than others due to large information flow and large volume of trade, concentrating on financial development level differences is misleading in cross-country comparisons.

This paper improves upon existing literature in four main ways. First, the paper introduces the dynamics of financial intermediation costs. In the literature, financial intermediation costs -all non-interest expenses that banks incur- have been scarcely studied and generally treated as constant over time. For instance, although they represent a narrow version of intermediation costs, monitoring costs used in a costly state verification framework are assumed to be constant fractions of assets over time (see Townsend (1979) and Bernanke et al. (1999)). Studies that incorporate financial intermediation costs similar to this paper lack the time dimension and frequency necessary to address cyclicality of costs due to data limitations. In a cross sectional environment, however, they show the importance of financial intermediation costs. For instance, Demirguc-Kunt and Huizinga (1999) show that banks pass their costs to the depositors and lenders. Imrohoroglu and Kumar (2004) find that small cost increases have high effects on returns to capital by altering the composition of projects. Antunes et al. (2013) show that the net welfare gain of reducing intermediation costs from 3.93 to 1 percent is about 1.14 (1.90) percent of equivalent consumption in the baseline economy for an endogenous (exogenous) interest rate. This paper complements the literature by incorporating the cyclical properties of costs to a general equilibrium model. By constructing a high-frequency, bank-level dataset in the US, I show that financial intermediation costs are highly countercyclical and their dynamics have an important role at the macroeconomic level.

Second, because these costs affect the abundance of credit supply and demand in an economy, they provide a concrete way to measure financial shocks. Financial shocks attracted significant scholar attention particularly after the Great Recession. Papers such as Christiano et al. (2008), Del et al. (2010), Jermann and Quadrini (2012), Iacoviello (2015), and Ajello (2015) show the important role of financial shocks as a source of macroeconomic fluctuations. In fact, Ajello (2015) interprets the intermediation costs (implemented as a wedge on financial transactions) as financial shocks similar to this paper. Following Philippon (2015), Ajello (2015) defines the costs by the ratio of income share of finance industry to the quantity of intermediated assets. Importantly, he finds that financial shocks account for 25% of GDP volatility.[4] This paper complements these works by providing the opportunity of observing financial shocks directly from the data rather than estimating shocks from the models. To the best of my knowledge, financial intermediation costs data as used in this paper are the first attempt to have a tangible measure for financial shocks.

Third, I use financial intermediation costs as a proxy for financial development across countries and across time. Demirguc-Kunt et al. (2004) find that factors that are closely related to economic and financial development, such as regulations on bank entry, economic freedom, and property rights explain most of the cross country variations in these costs. Barth et al. (2004, 2007) show that intermediation costs are negatively correlated with private monitoring and less government ownership. Moreover, Beck (2007) demonstrates that less developed financial systems are typically characterized by high intermediation costs, and these costs are the major resource that creates the wedge between deposit and lending interest rates. In this paper, I show that the intermediation costs are a good proxy to capture the development levels and volatility in financial markets.

Lastly, there are some theoretical improvements in this paper. For instance, the model allows both households and firms to have credit constraints instead of only firms. In a less than perfect world, all borrowers would face some credit constraints. Otherwise, all firms and households would pay a loan rate that is close to the riskless rate, and their borrowing would be unlimited. Yet, this is far from the reality. In the data, nearly 70% of all loans in the financial system are collateralized (Berger and Udell, 1990). Therefore, loans made available to households and firms are limited to their assets, such as residential real estate, commercial real estate or physical capital. This model uses commercial and residential real

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[1] Behrman (1988), Rose (1994), and Foster (1995) show that the lack of consumption smoothing causes significantly negative effects on the life expectancy, nutrition intake and education of households.

[2] Pallage and Robe (2003) find that the median welfare cost of aggregate fluctuations in poor countries is at least 10 times what it is in the United States.

[3] Aguiar and Gopinath (2007) find that consumption is 45 percent more volatile than output for emerging markets. However, consumption in developed countries is less volatile than output on average.

[4] The intermediation cost measure in Philippon (2015) is very similar to this paper. In specific, the average cost in Philippon (2015) is around 3.9% and the standard deviation is around 0.27%, whereas they are 3.38% and 0.30% in this paper, respectively. There are, however, conceptual differences between the two cost measures. Philippon (2015)'s cost measure would be only valid in equilibrium when credit markets clear via prices. Therefore this cost measure cannot be used to explain recessionary episodes which constitute the advantage of the cost measure used in this paper.

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