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Financial integration, credit market imperfections and consumption smoothing

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ABSTRACT

Contrary to standard theoretical reasoning, recent empirical research shows that financial integration is associated with higher consumption volatility in developing countries. This paper illustrates how domestic credit market imperfections can alter the standard predictions about the consumption smoothing possibilities under financial autarky and international financial integration. I use a two-country international real business cycle model where the non-traded sector in the small country faces borrowing constraints due to contract enforceability problems. If the international risk-sharing opportunities are non-existent, households can secure themselves against the shocks in the non-traded sector only by adjusting their labor effort, which leads to changes in sectorial output and terms of trade. The deterioration of the terms of trade acts as a dampening effect on consumption, causing it to be less volatile under financial autarky relative to financial integration. Under financial integration, international financial assets provide the insurance against domestic productivity shocks without affecting the relative prices, hence allowing the consumption to react more.

1. Introduction

One of the perceived benefits of financial integration is international risk-sharing and consumption smoothing. Financial integration provides access to a wider range of assets, which act as cushion against domestic shocks. Theoretical studies (Mendoza, 1994; Baxter and Crucini, 1995; Sutherland, 1996) have shown that the diversification of assets generates a lower consumption volatility compared to a financially less integrated system or a financial autarky. Empirical studies, on the other hand, have not robustly established a negative relationship between financial openness and consumption volatility for a large set of countries. While some evidence suggests that lower consumption volatility is associated with greater financial openness in developed economies, the results for developing countries are less optimistic. In their empirical study, Kose et al. (2003) show that higher levels of financial integration in the 1990s are associated with higher consumption volatility relative to output volatility for developing countries. For a similar group of emerging markets, Bekaert et al. (2006) demonstrate that there is a weak positive correlation between the ratio of consumption growth volatility to income growth volatility and some forms of capital account openness.[1]

The purpose of this paper is to analyze how credit market imperfections in developing economies can alter the regular consumption-smoothing mechanisms provided by financial integration, and ask whether they are able to provide an explanation for the absence of a significant decrease, or an increase, in consumption volatility in the case of financial integration. The theoretical exercise shows that given the frictions, aggregate consumption and

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[1] See the next section for a more detailed summary of the evidence in these studies.

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consumption relative to output can be more volatile under financial integration for certain parametrizations. The mechanism works through different relative price dynamics generated endogenously under financial integration and financial autarky.

The model I develop in the paper is a two-country real business cycle model, where one of the countries represents an emerging market economy. This smaller economy features two credit market imperfections that are characteristic of developing countries as shown by Tornell and Westermann (2003). First, I assume that the non-traded sector firms cannot borrow internationally; they are bound to the domestic financial system for any borrowing requirements. I assume, moreover, that when they borrow from the domestic financial system, they face collateral constraints due to contract enforcement problems. As in Tornell and Westermann (2003), their borrowing cannot exceed a given proportion of their existing capital stock. These frictions make the non-traded sector inherently more volatile. Financial integration affects how the households respond to this volatility.

I analyze the impact of financial integration on the emerging market country by comparing two scenarios. The first set-up depicts a financial autarky where the economy is closed to trading of any international assets. The second scenario involves financial integration, where the households are allowed to hold international state contingent portfolios, and hence are able to fully insure themselves against domestic risks that are amplified by the financial imperfections.[2] In the autarky scenario, however, where the international risk-sharing opportunities are non-existent, households can secure themselves only by adjusting their labor effort, which leads to changes in sectorial output and relative prices (e.g. terms of trade).

The mechanism following a productivity shock in the non-traded sector is as follows. Due to the credit markets imperfections, the non-traded sector firms are required to pledge existing capital stock, which is denominated in the relative price of the non-traded goods, as collateral. Therefore, when faced with a productivity shock, value of the collateral decreases causing the firms to be more constrained. A stricter constraint implies that loans and demand for labor in the non-traded sector decrease. Under financial autarky households have no assets; so the only sources of income they have are from loans and labor supplied to the two sectors. When the demand for loans and for labor in the non-traded sector decrease, households insure themselves by supplying more labor to the traded sector. Higher labor supply in the traded sector leads to more output, and to terms of trade deterioration.[3]As a result of the terms of trade deterioration, the consumption bundle becomes more expensive, dampening the reaction of consumption to productivity shocks. Under financial integration, however, households have international assets to insure themselves with. Therefore, they do not react to the changes in the non-traded sector, and the terms of trade do not move. Without the dampening effect of the terms of trade, reaction of consumption to productivity changes can be higher, causing aggregate consumption to be more volatile. Higher consumption volatility under financial integration is associated with lower levels of welfare in the aggregate, due to big welfare losses of the non-traded good firm owners, even though the households are still better off under financial integration.[4]

The higher consumption volatility under financial integration results depend on the degree of risk-aversion of the households, as well as the elasticity of their labor supply. As the households become more risk-averse, the insurance international financial assets provide becomes more valuable. Moreover, as their total labor supply becomes more inelastic, adjusting labor effort becomes more costly in terms of welfare. In these two cases, the consumption and labor smoothing benefits of financial integration outweigh the dampening effects of relative prices observed in financial autarky.

Credit market frictions, similar to the ones depicted in this paper, have widely been used in explaining financial crises and instability of small open economies. Aghion et al. (2004), Tornell and Westermann (2002), and Arellano and Mendoza (2002) are a few examples that focus on such imperfections in the context of small open economies. Because the main goal of this strand of literature is to understand financial crises, most of these studies do not look at the role of domestic financial frictions in the context of international financial integration. One exception is Aghion et al. (2004), who show how capital account liberalization might destabilize a small country that has an intermediate level of financial development. In their analysis, they mainly focus on the volatility of investment and output, and do not discuss the implications for consumption. Levchenko (2005), on the other hand, focuses on the impact of financial liberalization on consumption volatility. He shows that in the countries with underdeveloped financial markets, domestic risk-sharing arrangements might deteriorate in the face of financial integration. As a results, individual consumptions might become more volatile, but aggregate consumption volatility will nevertheless decrease.

The rest of the paper is organized as follows: next section summarizes some of the empirical evidence on financial openness and consumption volatility. Section 3 presents the model economy. Section 4 discusses the model parametrization. Section 5 analyzes the frictions in the model and presents the results. Section 6 looks at sensitivity analysis. Section 7 describes the welfare results. Finally, Section 8 concludes.

[2] In either of these scenarios, the non-traded sector firm owners are not allowed to hold the international portfolios.

[3] The terms of trade is defined as the ratio of the imported foreign good price to the exported home good price. Hence, terms of trade deterioration means an increase in this ratio.

[4] The result that financial integration is not necessarily welfare improving to all parties is also discussed by Tille (2005). He shows that when the goods markets are characterized by rigidities and exchange rate pass-through is partial, the country with less volatile monetary shocks will lose from integration.