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Evaluating international financial integration in a center-periphery economy ☆

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ABSTRACT

Does opening up capital markets facilitate risk diversification across borders? Are all countries gradually better off in the process of international financial integration? This paper explores welfare implications for various countries in a center-periphery framework with endogenous portfolio choice. Financial integration is divided into four stages: financial autarky, two-country integration, center-periphery integration and global integration. Two effects from financial integration emerge: diversification effects and financial terms of trade effects. Results show that financial integration between the center and a new periphery in center-periphery integration generates welfare losses for the peripheral country already integrated and welfare gains for the central country. Allowing for financial integration between peripheries in global integration leads the welfare in the center to deteriorate. From two-country integration directly to global integration, the large country gains, while the small one loses.

1. Introduction

One of the most noticeable features in international financial markets is the momentous rise of international capital flows over the past several decades (Lane and Milesi-Ferretti, 2001, 2007). This phenomenon has attracted an expanding volume of literature trying to evaluate welfare gains from international financial integration.[1] According to standard theory, financial integration helps countries efficiently allocate resources and diversify their income risks across borders. This argument mainly favors the case from financial autarky to perfect financial integration in which the allocation of resources is the first-best. Nonetheless, international financial integration in the real world seems to be somewhere in the middle. Over decades, policy makers and economists have been concerned with welfare benefits from removing barriers to international capital flows. Does opening up capital markets facilitate risk diversification? Are all countries gradually better off in the process of international financial integration?

Tackling these questions requires a multiple-country model where international portfolio choice is endogenous. This paper examines welfare implications for various countries in the process of international financial integration in a parsimonious center-periphery dynamic stochastic general equilibrium (DSGE) model which is augmented to allow for endogenous international portfolio choice. International financial architectures are exogenously divided into four stages according to the degree of international financial integration.[2] Fig. 1 illustrates these four stages. The first stage is financial autarky, in which countries do not hold external assets. In the second stage, two-country financial integration, central country A becomes financially integrated with peripheral country B, while peripheral country C still remains segmented from international financial markets. In the third stage, center-periphery financial integration, the central country becomes financially integrated with the peripheral countries but there's no financial integration

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[1] See recent studies such as Bonfiglioli (2008), Kose et al. (2009b), Devereux and Sutherland (2011b), Nicolo and Juvenal (2012), Lewis and Liu (2012) and others.

[2] The underlying driving forces for international financial integration could be capital account liberalization (for instance, see Henry, 2000; Quinn and Toyoda, 2008; also see a survey by Henry, 2007), improvement of contract enforcement (Albuquerque, 2003; Bai and Zhang, 2010, 2012; Chinn and Ito, 2006), reduction of information cost and other costs (Fratzscher and Imbs, 2009; Bekaert et al., 2011). Detailed investigation of driving forces for financial integration is beyond the scope of this study.

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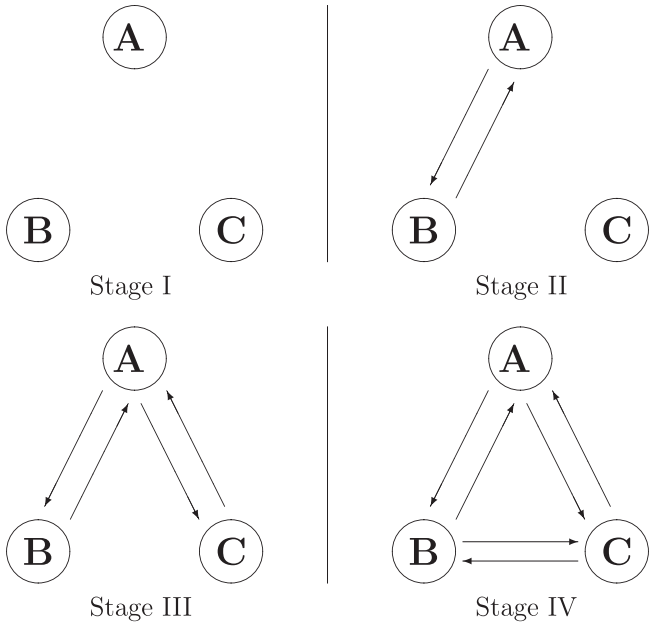

Fig. 1. International financial architectures. A represents the central country. B and C denote peripheral countries. The top-left panel shows financial autarky (stage I); the top-right panel, two-country financial integration (stage II); the bottom-left panel, center-periphery financial integration (stage III); and the bottom-right panel, global financial integration (stage VI).

between these peripheries. For instance, the United States is a world financial center, while developing countries are peripheries in the International Financial System (see empirical evidence in Section 2).[3] In the fourth stage, global financial integration, all financial markets integrate into the world economy and assets freely move across borders.

The main contribution of this paper is to evaluate welfare gains from international financial integration in a multiple-country dynamic general equilibrium model with incomplete markets and with many stages of financial integration. The effects of financial integration on welfare gains are divided into two additive parts: diversification effects and financial terms of trade effects. Diversification effects capture gains by holding a diversified portfolio across the world given asset prices and returns, which are partial equilibrium effects (see Bohn and Tesar, 1996; Fama and Miller, 1972; French and Poterba, 1991).[4] Financial terms of trade effects, which operate in general equilibrium, measure the change of relative asset prices across different financial integration regimes.

First of all, from financial autarky to some degree of financial integration, a participating country faces positive financial integration effects and thereby becomes better off. The reason is that the financial terms of trade effect for this country is zero since the autarky portfolio is always feasible in financial integration, while the diversification effect is positive since this country has access to domestic and foreign assets simultaneously. Second, from two-country financial integration (countries A and B) to center-periphery financial integration (countries A, B and C), central country A becomes better off while peripheral country B is worse off. On the one hand, the diversification effect for country A in the center-periphery integration is positive because it diversifies its income risk by investing in both peripheries, and since country B has no more new assets available for its purchase, its diversification effect becomes zero. On the other hand, the fact that country C joins international financial markets boosts the world demand for assets issued by country A and the asset price of country A rises accordingly, implying that country B (respectively A) faces a negative (respectively positive) financial terms of trade effect. The total effects of financial integration for country B are therefore negative, and so is welfare, while country A faces the opposite situation. In equilibrium, country B has to reduce its foreign asset holdings and is left holding more of its own assets, and thereby faces a higher domestic income risk exposure. Third, further allowing for financial integration between peripheral countries in global integration leads the welfare in central country A to deteriorate. Following a similar argument, the financial terms of trade effect for country A is negative due to a reduction of demand for core assets which consequently depresses the asset price of country A, while its diversification effect is zero at this stage. Fourth, from two-country integration directly to global integration, the large country gains from financial integration, while the small one loses. Global integration provides all countries with a larger variety of assets and leads to positive diversification effects for all countries. Nevertheless, financial terms of trade effects may work in favor, or against, some country since endogenous asset prices are determined by relative market sizes. When peripheral countries are small, the asset price of country A increases in global integration relative to two-country integration and hence the financial terms of trade effect becomes negative (respectively positive) for country B (respectively A). Results show that the adverse financial terms of trade effect dominates the positive diversification effect for small peripheral country B.

This paper is related to several branches of literature. First, this work draws on a large volume of research evaluating welfare gains from international financial integration (see Backus et al., 1992; Baxter and Crucini, 1995; Brandt et al., 2006; Cole and Obstfeld, 1991; Martin, 2010).[5] Contrary to most research that compares a financial autarky with a bond economy or an economy with perfect financial integration, my model endogenizes international portfolio choice and examines welfare implications for many stages of financial integration in a dynamic model.[6] Theoretically, it is useful to compute welfare gains for an economy with incomplete markets. This paper adapts the methodology developed by Devereux and Sutherland (2011a) for solving the first-order dynamics of country portfolios to calculate welfare gains in incomplete markets. The model shows that opening up financial markets does not necessarily diversify income risk since financial terms of trade effects from financial integration may work against some countries, and consequently financial integration does not gradually enhance welfare for all participants. This result also sheds light on non-monotonic changes of welfare in the development of financial markets (Matsuyama, 2008).

Second, demand and market size effects play an important role in determining diversification effects and financial terms of trade effects. Hassan (2013) shows that the size of economies can explain the cross-country variation in currency returns. Martin and Rey (2004) illustrate the effects of world population distribution on global demand for assets and, consequently, financial terms of trade in a static model. In Martin and Rey (2000), they explore financial integration and asset return changes led by cross listing in a static three-country environment. This paper complements Martin and Rey (2000, 2004) in several ways.[7] They focus on the cross-listing of companies, but I investigate capital market liberalization. They assume that there exist state-contingent international assets and that each agent exerts a monopoly power over

[3] This paper mainly focuses on the role of risk diversification in the process of financial integration. It is beyond the purpose of this work to address the issue of "intermediation centers" that a financial center such as Luxembourg channels funds from one country to another country.

[4] The lack of portfolio diversifications across countries is called "home bias in equities". See an earlier survey by Lewis (1996) and the latest one by Coeurdacier and Rey (2013).

[5] Kose et al. (2009a) report that gains from financial integration are mixed in the literature.

[6] Early works with endowment economies including Obstfeld (1992), Tesar (1995), Lewis (1996) and others, focus on either complete markets or non-contingent bond markets.

[7] Chari and Henry (2004) explore the extent to which risk sharing drives the revaluation of stock prices that occurs when countries open their stock markets to foreign investors.

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