A Global Analysis of Financial Market Integration

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Preliminary

Abstract

We consider a global analysis of financial market integration by modeling a two-country overlapping generations economy in the presence of financial market frictions, and find several important features that have not been obtained from the local analysis around steady states. There are a stable symmetric steady state with harmonized growth and stable asymmetric steady states with capital flows from the poor to the rich, both of which may coexist, and out of steady states, there are interesting non-monotone behavior of the pattern of capital movement and development. The timing of integration that attains harmonized growth depends on several characteristics including the stage of economic and legal developments, income inequality, and global savings. The existence of a stable asymmetric steady state does not necessarily recommend the poor to keep capital control indefinitely, but if the stable symmetric steady state coexists, will guide the poor to open eventually capital accounts by delaying the timing of liberalization until arriving at some development stage. Even the existence of the unique steady state that is stable and symmetric may or may not recommend the poor to lift capital controls promptly because the symmetric-breaking process will occur on integration. The concept of optimal timing for liberalization allows us to explore conditions for successful integration.

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1. Introduction

The neoclassical theory on capital mobility predicts that capital should flow from rich countries to poor countries. By capital account liberalization, poor countries should be able to attain faster growth followed by the inflow of capital from abroad. The observed evidence on developing countries for past two decades, however, seems inconsistent with and even more complicated than the prediction of the neoclassical theory. In fact, despite the globalization as a great trend in the world economy, financial liberalization still does not appear to be progressed so fast; many observers and policymakers of poor countries are still skeptical on the effects of capital account liberalization on the economic growth, and even now so many countries impose various kinds of capital controls.[1]

A number of approaches have attempted to answer the question why capital does not flow from the rich to the poor, and sometimes even flow from the poor to the rich. Among several research lines, one research line emphasizes the role of frictions in international financial markets, and focuses on the important role of legal and institutional infrastructure and asymmetric information for financial development (e.g., La Porta et al (1997, 1998), Levine (1998), Levine et al (2000), and others).[2] Much theoretical literature has explained why and how perverse capital movements and the divergence in income between the rich and the poor arise under financial market integration. The policy implication recommended there is that poor countries should not open capital accounts, but the evidence is not necessarily consistent with the theoretical prediction.

In fact, the integration of financial market has been progressed first among developed countries, and later developed with the link of middle-income countries. Many observers and

[1] Braun and Raddatz (2007) report that in their sample of 108 countries for the 1970-2003, the number of those that allow for free capital mobility is 47, less than a half of all.

[2] Another research line has emphasized the cost of the governments' time inconsistency problem associated with sovereign debt. The literature includes Bulow and Rogoff (1989), Eaton and Fernandes (1995), Tirole (2003), and others. On the other hand, the research line supporting the "Lucas Paradox "(1990) has a negative stance to the financial-friction view, arguing that poor countries also have lower endowments of factors complementary with physical capital, and hence the large difference in capital-labor ratio will coexist with the equalization of marginal product of capital. Along this view, Caselli and Feyrer (2007) find that the cross-country difference in marginal products of capital is not so large relative to the difference in capital-labor ratio, and support partially Lucas's argument.

economists have addressed the important role of timing for financial liberalization for economic development in various ways. McKinnon (1991) addressed this question in terms of the sequence of liberalization between trade and capital markets.[3] As a matter of fact, even policymakers in poor countries will not intend to isolate their financial markets "indefinitely" from the world. Therefore, the theoretical research is needed to provide a sufficient characterization on the long-run inequality of income between countries, the patterns of capital movement, the timing of financial liberalization, and their relationship.

In this paper, we consider a two-country overlapping generations model in the presence of financial market frictions. Two countries are assumed to be inherently identical in technologies and institutions for contract enforcement, but may differ only in their initial levels of income. Moreover, we assume that entrepreneurs have no initial wealth for financing productive investment but can pledge up the future income (wage income in the model) as collateral. This assumption is motivated to make the dynamical system a one-dimensional map of the capital-labor ratio of either country, in contrast to the preceding literature which exhibits a complicated dynamical system (e.g., Boyd and Smith (1997) and Matsuyama (2004)). This assumption also enables us to preserve the non-monotone behavior of the interest rate in terms of the capital-labor ratio that is the source of multiple steady states and implicitly involved in the preceding literature. We conduct the global analysis, finding interesting properties of equilibria and the patter of capital movement that are not found in the steady state analysis. We find that there are a stable symmetric and stable asymmetric steady states, both of which may coexist, and that out of steady states, there are complicated but interesting non-monotone behavior of the pattern of capital movement and development. We show that how the process of development goes hand in hand with financial development, how the pattern of capital movement and development evolves over time, and how and when the globalization magnifies and lessens the divergence in per-capita income between the rich and the poor.

The timing of integration that attains harmonized growth depends on several characteristics including the stage of economic and legal developments, income inequality, and global savings.

[3] Bartolini and Drazen (1997) emphasize the signaling role of capital account liberalization as a commitment to policy reforms to boost capital inflows.

The existence of a stable asymmetric steady state does not necessarily recommend the poor to isolate their capital markets indefinitely from the world, but if the stable symmetric steady state coexists, will guide the poor to delay the timing of liberalization until arriving at some development stage. On the other hand, the existence of the unique steady state that is stable and symmetric does not recommend the poor countries to lift capital controls promptly. An early ride on "turnpike" on globalization may force the poor to be trapped into prolonged stagnation with capital flight before exploiting gains of financial integration. The concept of optimal timing for liberalization allows us to explore conditions for successful integration. This paper is organized as follows. Section 2 reviews the related literature. Section 3 sets up the model. Section 4 characterizes the autarkic economy and section 5 the world economy. Section 6 analyzes the dynamic properties and provides policy implications for financial integration.

2. Related Literature

In answering the puzzle on why capital does not flow rich to poor countries, much literature has emphasized the role of frictions in international financial markets. One important research line of this view focuses on the role of legal and institutional infrastructure and asymmetric information in developing financial markets (e.g., La Porta et al (1997, 1998), Levine (1998), Levine et al (2000), and others). The empirical literature includes Bekaert et al (2001), Reinhart and Rogoff (2004), Portes and Rey (2005), Chin and Ito (2006), Alfaro et al (2006), and Braun and Raddatz (2007).[4] The theoretical literature includes Gertler and Rogoff (1990), Boyd and Smith (1997), Sakuragawa and Hamada (2001), and Matsuyama (2004), Caballerro and Krishnamurty (2001) (2006), Aghion et al (2004), and Aoki, Benigno and Kiyotaki (2006), and others.[5]

Gertler and Rogoff (1990) is a seminal work that explained the perverse capital movement when the financial market imperfection arises from asymmetric information between creditors

[4] Bekaert et al(2001), Chin and Ito (2006) and Braun and Raddatz (2007) investigate the impact of institutional factors that will affect financial development on capital account linearization.
[5] Caballerro and Krishnamurty (2001) (2006) and Aghion et al (2004), investigate the small-open-economy model of asymmetric information in order to identify perverse capital flows

and debtors. In their static model, the difference in borrowers' ability to rely on external finance causes capital flows to go from poor to rich. Boyd and Smith (1997) developed the idea of Gertler and Rogoff (1990) in the dynamic framework, showing that the financial market integration causes the divergence in income between the poor and the rich, even with identical technologies and institutions for contract enforcement. Matsuyama (2004) constructed more general but tractable model than Boyd and Smith (1997), succeeding in characterizing all the steady states, including those with binding borrowing constraint and the one without it. Boyd and Smith (1997) and Matsuyama (2004) demonstrated how the integration of financial markets magnifies inequality in income between the rich and the poor by relying on the poverty trap argument that involves the multiplicity of steady states that arises from a feedback effect between the borrowers' wealth and investment, reinforced by the so-called, "balance sheet effect" (e.g., Bernanke and Gertler (1989)). But the introduction of the feedback effect complicates the dynamic system and hence their scope turns out to be limited to the local analysis around steady states. Their complexity in principle arises from their application of the Diamond's (1965) overlapping generations model in which agents work and earn labor incomes when young. Sakuragawa and Hamada (2001) are an exception that studied the whole development process, in and out of steady states. They constructed a two-country model with different institutions for contract enforcement, and with technological externalities in production, having policy implications on the timing of lifting capital account for successful development

Tornell and Velasco (1992) constructed a growth model with poorly established property rights, showing that how the poorly established property rights make people appropriate others' properties and lead to the slowdown of economic growth and capital flight. Acemoglu and Zilibotti (1997) demonstrate how the market incompleteness, combined with technological non-convexities, magnify the inequality of nations and becomes a reason for perverse capital mobility. In theirs, rich countries provide more opportunities for diversification, and the better financial market encourages more investment.

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that happened in Asian emerging market countries.