The impact of international financial integration on economic growth: New evidence on threshold effects[☆]

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ABSTRACT

Recent research highlights that countries differ with respect to their experience with capital flows and do not systematically gain from capital account liberalization. This paper contributes to the empirical literature that investigates the circumstances under which international financial integration (IFI) is growth-enhancing. Relying on non-linear dynamic panel techniques, we find that countries that are able to reap the benefits of IFI satisfy certain threshold conditions regarding the level of economic, institutional and financial development, and government spending. Our results also reveal a differentiated behavior of FDI and portfolio equity liabilities compared to other types of capital flows, with threshold conditions being systematically less restricting for the former and growth effects significantly larger.

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1. Introduction

Intensification of the financial globalization (FG) process has unceasingly drawn the attention of economists and policymakers on the actual macroeconomic implications of unfettered capital flows. After three decades of witnessing rapid increase in cross-border capital flows,[1] the real benefits of FG in terms of economic growth remain highly controversial (Obstfeld, 2009).

Whereas standard theories predict that the gains from liberalizing the capital account are substantial and straightforward,[2] this view has been challenged over the years by recurring financial crises. The extensive empirical literature on the link between IFI and growth also fails to provide systematic and robust evidence of a positive causal relationship,[3] suggesting that, overall, financial liberalization leads to uncertain outcomes. The inherent instability of capital movements and their acute interaction with economic policies and macroeconomic conditions explain in large part the costs–benefits trade-off associated with liberalizing financial transactions (Fischer et al., 1998; Stiglitz, 2000). Foreign — and domestic — investors are indeed prone to react to a number of structural factors and macroeconomic news affecting the return and risk of financial investments.

Departing from the standard neoclassical framework, some theories suggest the existence of pre-requisites conditioning the gains from IFI and the need to sequence reforms when devising growth strategies for developing economies (Edwards, 1984; Mckinnon, 1991). Theories based on second-best arguments predict, for instance, that eliminating the distorting effects of capital controls may actually amplify the negative effects of other pre-existing distortions — such as weak domestic institutions, trade barriers, market failures in the financial sector, and result in aggravated resource allocation problems and welfare loss (see Eichengreen, 2001). In recent theoretical models, the introduction of financial frictions in open-economy models explains how financial

[1] Following the rapid relaxation in capital controls that occurred in industrial countries in the 1980s and in developing countries since the early 1990s, international capital transactions rose from about 5% of world GDP to over 20% in 2007.

[2] They occur through three main channels: improved global allocative efficiency as financial resources are allowed to flow to their most productive uses (Barro et al., 1995), enhanced international risk-sharing and risk-diversification (Obstfeld, 1994), and promotion of domestic financial development (Levine, 2001).

[3] Prasad et al. (2003), Rogoff et al. (2004), Kose et al. (2006) and Kose et al. (2009) provide detailed reviews.

openness can lead to a variety of outcomes, ranging from equilibrium with large capital inflows and higher investment and growth, to ones with capital outflows from poor to rich countries or volatile capital flows and unstable domestic financial markets (Aghion et al., 2004; Aoki et al., 2006; Gertler and Rogoff, 1990; Matsuyama, 2004, 2008).

At the empirical level, the revival of the threshold research agenda has aimed at rationalizing the potential benefits of IFI with a focus placed on assessing the importance of achieving institutional and financial development, trade liberalization and macroeconomic stabilization before opening the capital account; but so far, empirical evidence has yielded conflicting conclusions.[4] One of the main limitations in most of past studies is their reliance on linear specification where an IFI indicator is simply interacted with a conditioning variable. These studies can therefore only provide an indirect estimation of the threshold condition — i.e. the level of the conditioning variable above which the marginal effect of IFI on growth becomes positive — whereas indication on its statistical significance and the confidence interval around it would also be of policy relevance. To our best knowledge, Kose et al. (2011) is the only study to look into this point. After estimating the IFI–growth relationship with a quadratic interaction specification, they derive the confidence intervals of the overall financial openness coefficients (including interaction terms) at different levels of the threshold variables.

This paper re-examines the IFI–growth nexus by focusing on the presence of contingency effects in the relationship. The major difference from previous FG literature lies in the use of non-linear panel estimation techniques to assess a set of well documented precondition factors. Specifically, we rely on the panel threshold regression framework, developed by Hansen (1999), and use an extension of Caner and Hansen (2004) methodology to allow for endogeneity of regressors. This empirical strategy allows us to investigate the threshold effects of the IFI–growth link in a more adequate and flexible way than previous studies. First, the panel threshold regression (PTR) methodology provides endogenous identification of threshold levels, which could bring new insights into the issue compared to ad hoc methods of sample-splitting or linear interaction specification. The dynamic panel threshold estimator adopted in this paper provides robust results through instrumenting the endogenous regressors. Second, it allows determining whether the threshold effect is statistically significant and the non-linear specification validated. The alternative variables selected as threshold are country characteristics deemed to be pre-requisites allowing IFI to be growth-enhancing.

We find evidence that countries benefiting from IFI satisfy certain threshold conditions in the level of income, the quality of institutions, the level of financial development and government expenditure. Our results also reveal a differentiated behavior of FDI and portfolio equity liabilities compared to other types of capital flows, with the threshold conditions being systematically less restricting for the former and the growth effects significantly larger.

The paper proceeds as follows. In the next section, we review some of the existing literature on the factors preconditioning IFI. In Section 3, the empirical methodology, consisting in a dynamic panel threshold regression (PTR) model, is presented. Section 4 describes the data and details (i) how we measure IFI, and (ii) the choice of threshold variables. Results are shown and discussed in Section 5. In Section 6, we present some robustness analyses, where we introduce as well a composite indicator of development as an alternative threshold variable, before concluding in Section 7.

2. Review of the threshold literature

One of the statistical regularities found in the literature is that studies tend to report very small or slightly negative correlations between IFI — measured by various indicators — and real per capital growth when samples include developing countries (Kose et al., 2006; Rodrik and

Subramanian, 2009).[5] The contrasted past experience of developing and developed economies suggest that certain countries' characteristics might precondition the impact of capital flows, either leading to higher growth or increasing the vulnerability to crises. In particular, some authors have argued that financial development and the quality of institutions — especially those establishing the security of private property, the enforceability of contracts and an effective legal system — enhance the absorptive capacity of host countries, given their central role in shaping incentives and ensuring efficiency in the allocation of resources (Acemoglu et al., 2003; Blackburn and Forgues-Puccio, 2010; Ju and Wei, 2010; Mishkin, 2008).

Empirical studies report diverging results. Arteta et al. (2001) interact Quinn's (1997) de jure index of financial openness with financial depth (proxied by the ratio of liquid liabilities to GDP) and institutional strength (the *International Country Risk Guide*'s index of law and order) and show some evidence that the effects of capital account liberalization vary with the effectiveness of law and order, but not with a country's stage of financial development. Edison et al. (2002) reach similar conclusions using various de facto measures of IFI and additional proxies for financial development and institutions. A recent study by Bekaert et al. (2011) shows that both financial and institutional development explains the heterogeneity in the capital stock and total productivity growth effects following capital account liberalization. Kose et al. (2011) stress the key role of domestic financial development in improving the cost–benefits trade-off from capital flows. Using a non-linear — quadratic — interaction specification, the authors derive the financial development threshold as the level at which the marginal growth-effect of financial openness turns positive and report a credit-to-GDP ratio above 73% in the fixed-effect estimation and 50% in the GMM estimation.[6]

The literature on threshold effects and reform sequencing has also underscored the distorting effects of trade barriers and macroeconomic imbalances. Financial integration without trade openness could lead to a misallocation of resources when foreign capital flows into non-competitive domestic industries (Brecher and Alejandro, 1977). It can also raise the vulnerability to sudden stops and financial crises in face of current account adjustments (Cavallo and Frankel, 2008; Martin and Rey, 2006). Regarding macroeconomic imbalances — in particular conditions inconsistent with a country's administered exchange rate, their interactions with capital flows can pose critical challenges for developing countries, which have limited policy tools to counteract capital flight.

Few empirical studies look into the role of trade openness and macroeconomic policies in conditioning the growth effects of IFI. Calvo et al. (2004) and Cavallo and Frankel (2008) show that trade openness attenuates the vulnerability to financial crises. Arteta et al. (2001) do not find that the growth-impact of financial openness is contingent on trade openness, measured by Sachs and Warner's (1995) openness dummy. Kose et al. (2011) use the sum of exports and imports of goods and services divided by GDP and find very high threshold levels from 149.6% to 160.2%. Turning to macroeconomic policies, Edison et al (2002) report some evidence that IFI interacts with inflation, but not with government deficit. Mody and Murshid (2005) find that better policies — including better economic management — play a role in catalyzing the positive impact of financial openness on investment growth.

In view of the inconclusive results provided by past studies, the aim of this paper is to revisit the threshold effects in the IFI–growth relationship. We apply recent panel threshold regressions methodology and reassess whether the effects of capital flows are contingent on the level of

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[4] Kose et al. (2009) survey the theoretical arguments underpinning the existence of threshold effects and the related growing empirical literature.

[5] For instance Alesina et al. (1993) find evidence of a small positive association between capital account liberalization and growth with a sample of 20 high-income countries, while Grilli and Milesi-Ferretti (1995) find a negative link in a sample dominated by developing countries. Considering a broad dataset of more than 60 countries, Edwards (2001) finds opposite and significant effects of capital account liberalization on growth in high and low-income countries, although the significance of his results are sensitive to the choice of indicator for capital account openness.

[6] The sign of marginal effect reverses for credit-to-GDP ratio above 137% in the fixed-effect estimation and 126% in the GMM estimation.