Credit constraints, equity market liberalization, and growth rate asymmetry ☆

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ABSTRACT

This paper provides evidence that financial openness is an important determinant of growth rate asymmetry in emerging markets. I exploit exogenous shocks to financial flows and examine the impact of equity market liberalization on the skewness of output growth for 93 countries during the 1973–2009 period. I show that opening the economy to foreign portfolio investment results in a substantially higher negative skewness of output growth. This result obtains with equal strength in the aggregate data and in the sectoral data, and it is disproportionately stronger in sectors that require more external finance. The skewness effect of financial openness is stronger in countries which experienced a banking crisis after liberalization.

1. Introduction

It is well known that the behavior of macroeconomic aggregates such as output and investment exhibits an asymmetric growth pattern: booms are generally gradual and long-lasting, with growth rates not far from trend, while downturns are generally sharp, with growth rates far below trend for a short period of time (see Diebold and Rudebusch, 1990; Hamilton, 1989; Morley and Piger, 2012; Neftci, 1984). Most theoretical mechanisms proposed to explain this pattern rely on a learning process in which either bad signals are more extreme than good signals, or signals are less noisy during booms.[1] This view, however, abstracts from market frictions that may arise from agency problems, leading to an amplification of fundamental shocks in the presence of binding borrowing constraints. For example, credit frictions can amplify the

effect of negative credit shocks on asset prices and this effect can be transmitted across countries in a financially integrated world (Caballero and Krishnamurty, 2001; Mendoza and Quadrini, 2010). This mechanism implies that while growth rate asymmetry in itself may be hardwired in the business cycle for reasons unrelated to properties of credit markets, its evolution over time may be intimately related to changes in the availability of external finance.

Since 1980 many emerging markets have lifted restrictions on cross-border financial transactions. Consequently, economic research has focused intensely in recent years on the effect of financial openness on output growth rates. The evidence shows that financial liberalization is associated, causally, with better prospects for future growth (e.g., Bekaert et al., 2001, 2005; Gupta and Yuan, 2009; Quinn and Toyoda, 2008). However, while there is strong evidence that shocks to trend growth are the primary source of fluctuations in emerging markets, as opposed to symmetric transitory fluctuations around the trend (Aguiar and Gopinath, 2007), there has been no systematic attempt to link empirically the process of financial liberalization to *growth rate asymmetry*. Understanding this link seems crucial in designing appropriate policies – especially in emerging economies that have recently opened their markets to foreign portfolio investments – to reduce the negative welfare implications of large and abrupt macroeconomic contractions (e.g., Barro, 2006; Claessens et al., 2009; Reinhart and Rogoff, 2009) and of resource misallocation during protracted recoveries (e.g., Bergoeing et al., 2004).

This paper presents the first empirical test of the link between financial liberalization and business cycle asymmetry. I exploit shocks to the

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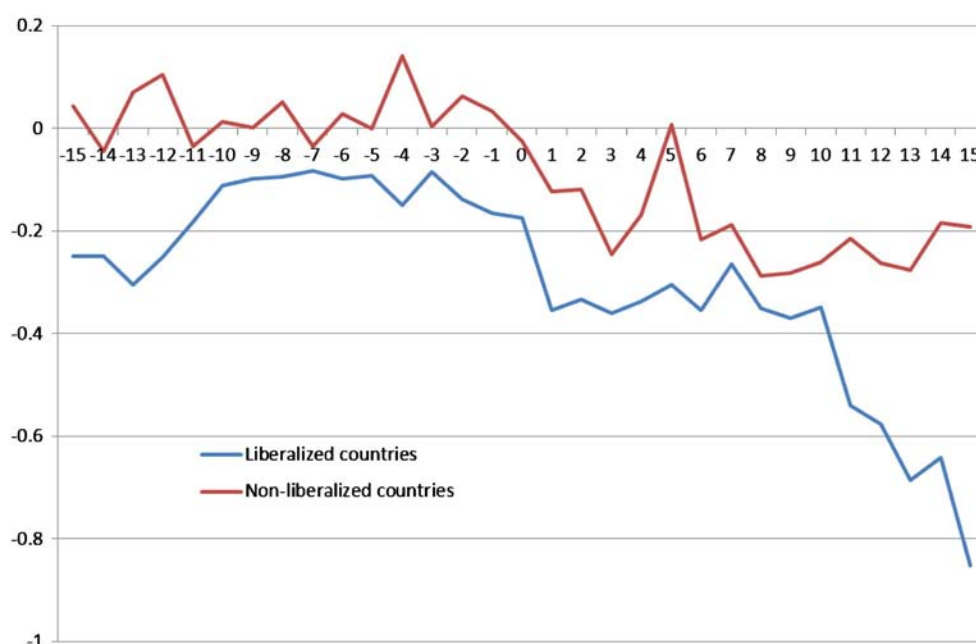 [1] See Van Nieuwerburgh and Veldkamp (2006) for a thorough review.

Fig. 1. 10-year skewness of real GDP growth rate, liberalization trend. Notes: The figure shows the average skewness of real GDP growth rate calculated over 10-year forward-looking rolling windows for the 1973–2009 period for two groups of countries. 'Liberalized countries' are countries that liberalized their equity markets after 1973. 'Non-liberalized countries' are countries that remained closed throughout the sample period. The time trend refers to years before/after liberalization, for liberalized countries, and to years before/after 1991 (the average liberalization year in the sample), for non-liberalized countries. The skewness of GDP growth is calculated over a 9-year period for 2001, over an 8-year period for 2002, over a 7-year period for 2003, over a 6-year period for 2004, and over a 5-year period for 2005.

availability of external finance and study the impact of equity market liberalization on the negative skewness of output growth in emerging markets. Using a sample of 93 countries, I find that over the 1973–2009 period countries that became financially open experienced a large increase in the negative skewness of GDP growth relative to otherwise similar countries that remained closed to foreign portfolio investment. Fig. 1 illustrates the main result of the paper. It shows that over this period, the skewness of GDP growth declined globally. However, while for the countries that did not liberalize their stock markets, average GDP growth skewness declined from −0.0004 in 1991 (the median liberalization year in the sample) to −0.1913 15 years later, for the countries that opened their markets to foreign portfolio investment during the sample period, average GDP growth skewness declined from −0.0930 in the liberalization year to −0.8513 15 years later.

The significant negative effect of equity market liberalization on the skewness of GDP growth holds after conditioning on a large set of time-varying country factors, on time trends, and on country fixed effects. Furthermore, liberalization has the same effect on the growth rate asymmetry of sectoral value added growth, particularly in sectors which rely on external finance for technological reasons. The results survive a propensity score matching procedure whereby the control group of countries is reduced to the closest one based on pre-liberalization observables, and a battery of robustness tests that account for the fact that financial openness may be a part of a broader program of development. I find some evidence that the effect is realized through an increase in the severity of recessions induced by banking crises. Finally, the negative effect of equity market liberalization on growth rate asymmetry is larger in countries that are more open to trade, suggesting that open countries may be exposed to the twin risks of capital outflows and terms of trade risk.

This paper contributes to a large literature on the effect of financial openness on macroeconomic volatility. Stiglitz (2000), Kose et al. (2006), and Levchenko et al. (2009) argue that greater access to foreign capital increases volatility both in domestic financial markets and in the real economy. Other works (e.g., Easterly et al., 2001) find no effect of financial openness on macroeconomic volatility, or even a negative

effect on consumption volatility (Bekaert et al., 2006).[2] The contribution of this paper is in studying the effect of financial openness on the asymmetric third moment (skewness) rather than the symmetric second moment (variance) of economic fluctuations. In that sense, this paper is most closely related to two recent papers which study the link between credit markets and the asymmetry of economic variables. Ranciere et al. (2008) develop a model of financial liberalization with limited contract enforcement where systemic risk taking reduces the effective cost of capital and relaxes borrowing constraints. This allows greater investment and generates higher long-term growth, but it raises the probability of a sudden collapse in financial intermediation when a crash occurs. While the authors test empirically the link between long-term growth and financial fragility, proxied by the skewness of *credit* growth, this paper presents the first direct test of the link between financial openness and the skewness of *output* growth. More closely related is the paper by Ordoñez (2013) who argues that the asymmetry of economic variables is stronger in countries with less developed financial systems, because these have greater financial frictions, as captured in his model by higher monitoring and bankruptcy costs. While in his paper *financial development* reduces the negative skewness of lending rates and subsequently output growth by improving monitoring, the results in this paper imply that *financial openness* increases the negative skewness of output growth, for instance, by increasing the frequency and severity of recessions led by banking crises.

The paper proceeds as follows. Section 2 describes the data. Section 3 presents the empirical methodology and reports the main results, alongside a battery of robustness tests. Section 4 concludes.

2. Data

To examine the effect of financial openness on output growth asymmetry I combine data on equity market liberalization, output growth at the aggregate and sectoral level, and external dependence by sector.

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[2] For a comprehensive review of the literature on the volatility effects of financial liberalization, see Kose et al. (2006) and Henry (2007), among others.