



# Financing investment in East Asia: Regional or global savings?<sup>☆</sup>



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## ABSTRACT

This paper investigates the extent to which domestic investment in East Asian countries is financed by domestic, (East Asian) regional and global savings in order to infer the relative importance of regional vs. global capital markets in East Asia. Panel regression results show that regional saving in East Asia plays a much more important role than global saving in financing investment in the region. The results suggest that global capital flows, despite its huge volume in East Asia, does not contribute to proper investment financing. The results also show that Japanese saving has significant effects on regional investment but Chinese saving does not.

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## 1. Introduction

International financial market liberalization has substantially raised the degree of capital mobility in East Asian countries since the 1990s.<sup>1</sup> In particular, since the 1997 Asian Crisis, East Asian economies have accelerated regional financial cooperation and integration – in part to safeguard the region's financial markets against the spillover of global market instability, and also to promote financial market development in the region.<sup>2</sup> However, it is not yet clear whether the regional financial market integration increased the degree of capital mobility within East Asia. Various signs suggest that capital mobility within East Asia may not be as high compared to the degree of capital mobility between East Asian countries and developed countries.<sup>3</sup> Recent buildup of global

imbalances may reflect the tendency of “international” mobility of East Asia's capital. For example, while many developing countries in East Asia continue to face significant infrastructure and investment deficits, they also accumulate large current account surplus.

This paper investigates the evolution of saving and investment relations of East Asian countries, which can provide evidence of regional and global financial integration in East Asia.<sup>4</sup> In particular, we examine the role of regional vs. global capital markets by measuring the extent to which domestic investment is financed by domestic saving, regional saving, and global saving. Based on such relations, we address how regional or global savings have contributed to financing domestic investment of East Asian countries in recent years.

Since Feldstein and Horioka (1980)'s seminal contribution, numerous studies have investigated the degree of international capital mobility based on the relation between domestic investment and domestic saving.<sup>5</sup> Under financial autarky, domestic investment and domestic saving should be perfectly correlated as domestic investment is fully constrained by domestic saving. However, if capital is perfectly mobile internationally, domestic

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<sup>1</sup> See, for example, Kim et al. (2007a).

<sup>2</sup> There have been several important regional initiatives, such as the ASEAN Surveillance Process, the Chiang Mai Initiative, the Asian Bond Markets Initiative, and Asian Bond Fund.

<sup>3</sup> Eichengreen and Park (2004) and Kim et al. (2007b) document that financial market integration within East Asian countries has been far slower than financial market integration between East Asia and advanced countries.

<sup>4</sup> We examined the same issue with different data and methodology in Kim et al. (2011).

<sup>5</sup> For example, see Murphy (1984), Obstfeld (1986, 1995), Bayoumi (1989), Kim (2001), Kim et al. (2007a), and Guillaumin (2009).

investment and domestic saving should exhibit a low correlation because capital can move freely to any place with high returns. We extend the Feldstein-Horioka methodology by adding regional and global savings in the saving-investment regression and investigate the role of regional and global capital markets in financing domestic investment of East Asian countries. Kim and Kim (2009) provide more detailed discussion on methodology and applications to more general samples including six regions in the world.

Panel regression results show that regional saving plays a much more important role than global saving in financing investment in East Asia. Global capital flows, despite of its huge volume in East Asia, does not contribute to proper investment financing. In particular, the role of Japanese saving is important in driving regional saving: when Japan is included in global saving (instead of regional saving), the coefficient on global saving becomes significant. However, Chinese saving does not play an important role in financing investment in East Asia.

This paper adds value to the previous literature on East Asia's experience of capital account liberalization and financial integration. While past studies have used various measures to document different degrees of regional vs. global capital mobility and financial market integration in East Asia, there have not been any studies that focus on the saving and investment relation. Previous studies have used measures such as deviations from the interest parity condition, cross-country consumption correlation, degree of capital market restrictions, etc.<sup>6</sup> Although some studies have investigated the saving and investment relation in East Asia, they have not examined the issue from the comparative perspective of regional vs. global capital markets of East Asia. These previous studies including Kim et al. (2007a,b), Kim and Wang (2007), Kim et al. (2005) and Sinha (2002) have used saving retention coefficient to measure the degree of capital mobility in East Asia.

## 2. Regional vs. global capital flows

Although general data on cross-border capital flows by the source and destination countries remain limited, "Coordinated Portfolio Investment Survey (CPIS)" by the International Monetary Fund reveals an interesting trend in capital flows in stock and bond markets.<sup>7</sup> The East Asian region's portfolio investment in regional assets rose from 14.8% of total assets in 2001 to about 27.9% in 2007, while developed economies (US, European Union 15, and Japan) account for about 70.5% of the region's liabilities in 2007, down from 77.5% in 2001. Kim et al. (2011) provide more detailed information in this regard.

Fig. 1 shows relative shares of portfolio investment by the source country – from G6, from East Asia excluding Japan, and from Japan (as a ratio of total portfolio inflows from all countries). CPIS data is available for seven countries in the region; Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand, but not for China or Taiwan. The figure shows that in most countries, there is a clear pattern that capital inflows from G6 countries decrease since 2005. Because the 2008 global financial crisis hit G6 countries more severely than East Asian countries, portfolio investment by G6 countries has decreased during and prior to the crisis period. In Korea and Singapore, we can observe a steady decrease in the share of G6 in portfolio inflows throughout 2000s. In 2009–10, portfolio inflows from G6

countries slightly increased as these countries recover from the 2008 crisis.

Share of portfolio inflows from regional sources has increased over time in Korea, Singapore, the Philippines, especially during the crisis period in 2007–09. However, the share of East Asia decreased in some countries such as Thailand and Hong Kong. The relative size of portfolio inflows from regional sources (even after including Japan) is still quite small compared to portfolio investment from G6 countries. Exceptions are Indonesia and Malaysia where regional portfolio inflows are more than a half the size of portfolio investment from G6 countries. Singapore is the main reason for a large share of regional capital inflows in these two countries.

## 3. Empirical method

While the original Feldstein-Horioka saving-investment correlation puzzle is based on cross-sectional regression analysis, we start from the following saving-investment regression that has been widely used in past studies in a time-series or panel regression setup.

$$\hat{I}_{it} = \alpha_i + \beta \hat{S}_{it} + \varepsilon_{it}, \quad (1)$$

where  $I$  is domestic investment,  $S$  is domestic saving, the subscript  $i$  indicates country, and the subscript  $t$  indicates time. Hat variables denote percentage deviations from the previous period. The coefficient  $\beta$  represents how saving is related to investment, called *saving retention coefficient* in the previous studies. A high  $\beta$  can be interpreted as an evidence of low degree of international capital mobility.

This regression may also be interpreted as showing how investment is financed by domestic saving. A small (or large)  $\beta$  suggests that only a small (large) fraction of domestic investment is financed by domestic saving. If domestic investment is not fully financed by domestic saving, a fraction of domestic investment is likely to be financed by foreign saving, which implies a non-zero degree of international capital mobility. In the following, we extend this interpretation explicitly, in order to evaluate the relative role of regional vs. global capital markets (or saving) in financing domestic investment.

We add regional and global savings as explanatory variables to Eq. (1):

$$\hat{I}_{it} = \alpha_i + \beta \hat{S}_{it} + \gamma \hat{S}_{it}^R + \delta \hat{S}_{it}^G + \varepsilon_{it}, \quad (2)$$

where  $S^R$  is East Asian regional aggregate saving (excluding own country's saving), and  $S^G$  is global aggregate saving (excluding East Asian countries). The regression shows how domestic investment is related with domestic, regional, and global savings. We can interpret  $\beta$  as the usual saving retention coefficient. Further,  $\gamma$  and  $\delta$  can be interpreted as how much domestic investment is financed by Asian regional aggregate and global saving. If we extend the interpretation that a low  $\beta$  implies a high degree of international capital mobility, a high  $\gamma$  (a high  $\delta$ ) can be interpreted as a high degree of regional (global) international capital mobility, because domestic investment is likely to be less related with domestic saving but more related with foreign saving when the degree of international capital mobility is high.

One potential problem in interpreting the estimated  $\beta$  as the (inverse of) degree of international capital mobility (both in Eqs. (1) and (2)) is that saving is not exogenous to investment. That is, if saving is exogenous, then  $\beta$  shows how saving affects investment and  $\beta$  can be nicely interpreted as the measure of (inverse of) degree of international capital mobility because saving does not affect investment under perfect international capital

<sup>6</sup> See, for example, Eichengreen and Park (2004), Kim et al. (2007b), Kim and Lee (2008), and Kim et al. (2004).

<sup>7</sup> Data on cross-border direct investment by the source country are not currently available for most sample countries.

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