Capital inflows and asset prices: Evidence from emerging Asia

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ABSTRACT

The withdrawal of foreign capital from emerging countries at the height of the recent financial crisis and its quick return sparked a debate about the impact of capital flow surges on asset markets. This paper addresses the response of property prices to an inflow of foreign capital. For that purpose we estimate a panel VAR on a set of Asian emerging market economies, for which the waves of inflows were particularly pronounced, and identify capital inflow shocks based on sign restrictions. Our results suggest that capital inflow shocks have a significant effect on the appreciation of house prices and equity prices. Capital inflow shocks account for – roughly – twice the portion of overall house price changes they explain in OECD countries. We also address cross-country differences in the house price responses to shocks, which are most likely due to differences in the monetary policy response to capital inflows.

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1. Introduction

Over the recent years emerging market economies experienced large swings in net capital inflows. While net capital inflows peaked in early 2008 at about 4% of emerging markets' GDP, they dropped to −2.5% following the collapse of Lehman Brothers at the height of the financial crisis. Interestingly, however, capital flows quickly resumed in early 2009. In Asia, flows already exceeded the pre-crisis level in early 2010.[1]

Capital inflows are, in principle, highly welcome in emerging economies. They lower the costs of funding, help raise the standard of living and thus facilitate convergence with advanced economies. Likewise, cross-border flows, by offering investment opportunities and extending the set of available assets, contribute to economic efficiency and risk sharing also in the source countries. Nevertheless, capital inflows often have many unwarranted effects: First, they can lead to a real exchange rate appreciation that undermines competitiveness in the tradeable goods sector. Second, by preventing the central bank from tightening monetary policy, they can lead the economy to overheat, generating inflationary pressures. Third, they can trigger and prolong asset price bubbles and amplify financial fragility.

The latter impact is the focus of this paper. In light of the recent financial crisis that originated in a housing price bubble in the US, researchers and policymakers focus again on the housing market as a key indicator for financial imbalances and macroeconomic risks. Federal Reserve chairman Bernanke (2010) explicitly linked capital inflows to accelerating house price inflation and bubbly property prices. Although he focused on the US case, the capital flow-house price nexus is arguably even more important for emerging countries.

This paper studies the response of property prices in emerging market economies to an inflow of foreign capital. Our contribution is threefold:

First, we estimate a panel vector autoregression (VAR) on a set of Asian emerging market economies for which the waves of inflows were particularly pronounced. A panel approach is best suited to summarize the data in light of the short sample period available after the disruptions of the Asian financial crisis. The paper focuses on Asia because capital quickly returned to this region after the 2008 financial crisis, inflows are more homogenous across countries in this region than compared to, say, Latin America and, finally, house prices experienced considerable upward pressure over the past years.

Second, we use sign restrictions following the work of Uhlig (2005) and, in particular, Sá et al. (2011) to identify capital inflow shocks and the responses of house prices and equity prices to these shocks. Our approach avoids an arbitrary ordering of the variables that often characterizes triangular identification schemes used in

Table 1
VAR specifications.

	VAR I	VAR II
Sample	2000:1–2011:1	2003:1–2010:4
Lag order	4	3
Countries	HKG, KOR, MAL, THA, TWN	HKG, KOR, MAL, SGP, THA, TWN
Variables	$FLOWS_{it}$, GDP_{it}, P_{it}, $REER_{it}$, $ASSET_{it}$, $LONG_{it}$, $SHORT_{it}$	

Table 2
Sign restrictions.

Restriction on	VAR with total capital inflows		VAR with portfolio inflows	
	Sign	Horizon	Sign	Horizon
Capital inflows	+	$K = 2$	+	$K = 1$
GDP	+	$K = 2$	+	$K = 1$
Price level	Unrestricted		Unrestricted	
REER appreciation	+	$K = 2$	+	$K = 1$
Asset prices	Unrestricted		Unrestricted	
Long rate	−	$K = 2$	−	$K = 1$
Short rate	Unrestricted		Unrestricted	

other VAR studies on asset price dynamics and monetary policy reviewed below. The shock we identify can best be interpreted as an unexpected increase in foreigner's demand for domestic assets. The driving forces behind international capital flows are often classified in terms of push and pull factors. Push factors, defined as financial and macroeconomic conditions in advanced economies, lead investors in advanced economies to send funds to emerging markets. In contrast, pull factors are given by conditions in the recipient countries attracting foreign investors. The capital inflow shock identified here is consistent with a shock to push factors.[2]

Third, we use the estimated panel VAR to shed light on cross-country differences in the responses of both types of asset prices, i.e. house prices and equity prices, to capital inflow shocks. For that purpose we exclude each country in turn from our panel VAR and estimate the VAR on the remaining set of countries. This gives us a set of impulse response functions from which the relative effect stemming from one country in the panel can be gauged.

Our results suggest that capital inflow shocks had a significant effect on real house price appreciation. A shock that increases net capital inflows relative to GDP by one percentage point leads to an increase in real house prices of 0.5%. Although capital inflow shocks account for only a moderate small portion of overall house price changes, about 10–15% depending on the specification, this fraction is about twice as large as what has been found for OECD countries.[3] The shocks we identify capture the capital flight in 2008 and the massive return of capital coinciding with the unconventional monetary policies in industrial countries since 2009. To corroborate these findings, we also estimate the responses of equity prices to capital inflow shocks and restrict capital flows to portfolio inflows only. Finally, we find important cross-country differences in the sensitivity to capital flow shocks, which cannot be explained by mortgage market characteristics or property market regulation. Instead, our results are consistent with the view that aggregate macro policies such as the monetary policy response to inflows are the main determinant of cross-country heterogeneity.

The remainder of the paper is organized as follows. The following section briefly summarizes the related literature. Section 3

introduces the panel VAR model, provides details on the data set, the construction of the main variables and explains the identifying restrictions. The main findings are discussed in Section 4. Section 5 presents results from alternative specifications to corroborate the robustness of the previous findings. Section 6 sheds light on the cross-country heterogeneity in the asset price responses to capital inflow shocks. Section 7 summarizes the results and draws some conclusions.

2. Related literature

The present paper contributes to understanding the linkages between capital inflows and asset price surges with a particular focus on house price dynamics. Three strands of the literature are particularly relevant for this task. We briefly portray some key contributions to each strand with an eye on VAR studies and pay particular attention to papers addressing Asian economies.

First, recent papers estimate reduced form relationships between asset prices and the current account.[4] Based on a large cross-section of countries Kole and Martin (2009) find a robust negative correlation between the growth rate of house prices and the change in a country's current account balance. Likewise, Aizenman and Jinjarak (2009) find a strong positive relationship between current account deficits and real estate prices. The causality between house prices and the current account is studied by Jinjarak and Sheffrin (2011). They argue that current account deficits were unlikely to directly drove real estate prices in the US, Spain and Ireland. As shown by Kannan et al. (2011), after 1985 a deteriorating current account balance is shown to be a strong leading indicator for house price busts in OECD countries.

Second, some studies use VARs to estimate the dynamic interaction between asset price, capital flows and the macroeconomy and explicitly identify capital inflow shocks. Kim and Yang (2009) use a VAR model to analyze the effects of capital inflow shocks on asset prices in Korea. They find that capital inflow shocks have an effect on equity prices but not on property prices. These shocks are, however, identified by imposing a recursive ordering onto the variables. In light of the mutual interactions between asset prices, capital flows and the macroeconomic environment imposing this ordering requires a substantial amount on arbitrariness. Think of the relationship between asset price and monetary policy shocks. A triangular identification scheme forces the researcher to impose ex ante the direction of causality between asset prices and monetary policy within a quarter. In a related paper, Kim and Yang (2011) extend their work to a panel VAR estimated on five Asian economies between 1999 and 2006. Again, capital inflow shocks explain only a small fraction of asset price fluctuations. This paper suffers from the same weakness as the authors rely on an ad-hoc ordering of the variables to interpret the estimated shocks.

The relationship among asset markets and the current account is also studied by Fratzscher et al. (2010), although with a slightly different focus. The authors use a VAR with a sign-restriction identification scheme to assess the impact of asset market shocks on the US current account. While a few studies try to identify capital flows shocks, Helbling et al. (2011) instead use sign restrictions to identify a credit shock. According to their estimates, credit shocks, in particular those originating in the US during the recent global

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[2] Milesi-Ferretti and Tille (2011) and Forbes and Warnock (2011) stress the role of push-factors for recent periods of massive capital inflows. See also Förster et al. (2012) for an analysis of the global comovement of capital flows.

[3] See Sá et al. (2011) for these findings for OECD countries.

[4] In a recent theoretical contribution, Adam et al. (2012) develop an open economy asset pricing model for the G7 economies in which households entertain subjective beliefs about price behavior that are potentially decoupled from fundamentals. A two-country two-sector model which illustrates the link between a property price boom and the current account is presented by Punzi (2012). Favilukis et al. (2011) argue that capital flows play only a limited role in boom-bust cycles in property prices. Instead, they point to the reversal of financial market liberalization as a key driver.