The cyclical properties of disaggregated capital flows

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ABSTRACT

We analyze the second-moment properties of the components of international capital flows and their relationship to business cycle variables (output, investment, and the real interest rate) in 22 industrial and emerging countries. Total inward flows are procyclical with respect to all three macro variables. Net outward flows are countercyclical with respect to output and investment in most industrial and emerging countries. Disaggregated inward flows positively comove with output in industrial countries and with investment and the real interest rate in the G7 economies. Inward foreign direct investment is the only non-procyclical type of inward capital flows (with respect to output) in the developing economies. Formal statistical tests based on nonparametric bootstrap techniques detect significant variance increases in all G7 countries' disaggregated capital flows over exogenous and endogenously estimated breaks.

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1. Introduction

What are the cyclical properties of international capital flows? Do inward and outward flows of foreign direct investment (FDI) surge or contract with home and host countries' recessions and expansions? Has the volatility of disaggregated flows increased with financial globalization and episodes of capital account liberalization? In this paper we characterize the second-moment properties of disaggregated gross international capital flows for 22 countries and provide measures of their

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relationship to a set of macroeconomic aggregates. Our results provide preliminary answers to these questions and a set of stylized facts useful for understanding the dynamics of capital flows across a developmentally diverse set of countries.

Empirical research on capital flows has only just begun focusing on disaggregated gross flows (see, for example, Forbes and Warnock, 2011; Broner et al., 2010). Until recently, most empirical research on capital flows dealt with aggregate net flows across a diverse set of countries characterized by different levels of development and openness (Broner and Rigobon, 2006; Levchenko and Mauro, 2007), flows between specific country pairs, and single components of flows, such as FDI or debt. Yet, focusing on aggregate net flows obscures the potentially offsetting behavior of gross inward and outward flows, behavior that can have significantly different implications for macroeconomic conditions as well as individual industries and firms. Similarly, focusing on net flows reflects joint behavior of foreign and domestic agents, each of whom may have different motivations and incentives for their investment decisions. Until this point, there has been scant systematic analysis of the behavior of all types of capital flows at business cycle frequencies and at the cross-country level. Our work aims to fill this gap, contributing to the empirical evidence on links between the dynamics of international credit and economic activity.

Our focus is on the second-moment properties of international capital flows and on the relationship between capital flows and business cycle variables in source and destination countries. We adapt an idea originally suggested by Doyle and Faust (2005) and revisited in De Pace (forthcoming) in the context of the international business cycle literature. We use formal statistical techniques based on nonparametric bootstrap methods to test the significance of the volatility (variance) of capital flows and reference macroeconomic variables, their comovement (covariance and correlation), and their volatility and comovement variations over exogenous and endogenously estimated breakpoints.[2]

We carefully document how aggregate gross flows and the disaggregated components of flows interact with macroeconomic variables and delineate stylized facts on the cyclical properties of disaggregated capital flows for at least three reasons. First, although we know that capital flows from industrial economies to emerging markets are more volatile than flows between industrial countries (Broner and Rigobon, 2006), there are few facts available about the volatility of the individual components of flows for a comprehensive set of industrial and emerging market countries. Understanding the second-moment and cyclical properties of capital flows may help explain why, for example, we do not observe the type of risk-sharing arrangements predicted by theoretical models or why we see so much heterogeneity in the risk-sharing experience of countries at different stages of financial development (Kose et al., 2009). We also analyze capital flow volatility measures as volatility in financial flows can have negative consequences ranging from mild amplification of business cycles to increasing the risk of catastrophic collapse of financial systems.

Second, international capital flows can be seen as adjustments to country portfolios in response to investment decisions and exogenous shocks. Capital flows are ultimately determined by the interaction of demand and supply of financing by firms and sovereigns. By empirically characterizing the second moments of these flows, we provide a set of stylized facts that can guide the calibration of models incorporating country portfolios as well as understand how changes in the mix of flows can affect firm-financing decisions or restrict their access to capital (Devereux and Sutherland, forthcoming; Tille and van Wincoop, 2010).[3]

Third, we provide facts that could be valuable for answering policy-related questions concerning the dynamics of international capital flows following specific economic events. For example, our results provide a basis to answer questions such as: How do recessions in the G7 countries affect the volume and composition of capital flows to emerging countries? Does increasing financial development

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[2] Other studies, such as Claessens et al. (1995), consider the time-series properties of flows, such as persistence and predictability, and measure volatility using the coefficient of variation.

[3] Tille and van Wincoop (2010) theoretically show that the two most important causes of capital flow movements are portfolio growth due to time-varying expected returns and portfolio reallocation associated with time-varying second moments. However, they also note that fluctuations in second moments affect capital flows only to the extent that they affect the portfolio choices of domestic and foreign investors differently.