

# Composition of International Capital Flows: A Survey

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## Summary

In an integrated world capital market with perfect information, all forms of capital flows are indistinguishable. Information frictions and incomplete risk sharing are important elements that are needed to differentiate between equity and debt flows, and between different types of equities. This survey put together models of debt, FDI, and FPI flows to help explain the composition of capital flows. With information asymmetry between foreign and domestic investors, a country which finances its domestic investment through foreign debt or foreign equity portfolio issue, will inadequately augment its capital stock. Foreign direct investment flows, however, have the potential of generating an efficient level of domestic investment. In the presence of asymmetric information between sellers and buyers in the capital market, foreign direct investment is associated with higher liquidation costs due to the adverse selection. Thus, the exposure to liquidity shocks determines the volume of foreign direct investment flows relative to portfolio investment flows. In particular, the information-liquidity trade-off helps explain the composition of equity flows between developed and emerging countries, as well as the patterns of FDI flows during financial crises.

FDI investors get more efficient outcomes than FPI investors under their direct control over management, due to having better information about the firm's productivity, which allows them to make informed investment and management decisions. However, the better information mires FDI investors with a "lemons" problem: if an investment project has to be liquidated prematurely, market participants would not know whether the firm is sold because of exogenously determined liquidity needs, or because the more informed investors find some negative aspects about the asset productivity. The consequence is that the market will place a discount on direct-investor liquidated assets to be sold below assets that portfolio investors liquidate. The magnitude of the discount depends on market's perception about the likelihood of a liquidity shock.

Theory predicts that the composition of foreign equity investment entails relatively more FPI and less FDI if this country is expected to experience aggregate liquidity problems. The idea is that direct investments are more costly to liquidate. Hence, expecting greater liquidity needs in the future, investors tend to tilt their investments towards the liquid asset, which is a portfolio investment. This hypothesis does not depend on the source of illiquidity faced by direct investors.

Liquidity shocks to individual investors are triggered by some country specific aggregate liquidity shock. Individual investors are forced to sell their investments early particularly at times when there are aggregate liquidity problems. In those times, some individual investors have deeper pockets than others, and thus are less exposed to the liquidity issues. Thus, once an aggregate liquidity shock occurs, some individual investors will need to sell, but they will get a low price because buyers do not know if they have deep pockets and sell because of adverse information or because they are truly affected by the aggregate liquidity crisis. An equilibrium property is that the composition of current flows depends on the composition of past flows. In a pooled equilibrium, where FDI investors are heterogeneous with regard to their idiosyncratic future liquidity needs, low-liquidity needs investors generate negative externalities on the high-liquidity needs investors. The market naturally evaluates the liquidity risk as an average between the high and the low probabilities of the shocks to liquidity. If a high-liquidity needs investor has to liquidate her investment, market perceives that the premature sale has to with joint occurrences of some idiosyncratic low productivity liquidity realizations. Common knowledge concerning the distribution of idiosyncratic productivity and liquidity shocks help the market to evaluate the liquidated assets, imperfectly, because of the information asymmetry. Thus FDI asset is sold at a discount.

Another implication arises from the existence of information-based externalities. Ideally, if the high-liquidity needs investors could somehow separate themselves from the low-liquidity needs investors, the former could sell their assets at a better price. But this is not possible in the pooling equilibrium. This means that high liquidity need investors generate a positive information-externality over low liquidity need investors among direct investors. Because an increase in the number of FDI investors comes from high liquidity need investors, which reinforces such externality, thereby lowering the price discount, and creating incentives for even more investors to choose to become direct investors rather than FPI investors. Pooling equilibrium is therefore characterized by strategic complementarity. A dynamic implication is that the larger is the past and present share of FDI flows, the larger will also be the future share of FDI flows.

The asymmetric information between domestic investors (as borrowers) and foreign investors (as lenders) with respect to investment allocation leads to moral hazard and thus generates an inadequate amount of borrowings. The moral hazard problem, coupled with limited enforcement, can explain why countries experience debt outflows in low income periods; in contrast to the predictions of the complete-market paradigm. Finally, we analyze a risk-diversification model, where bond holdings hedge real exchange rate risks, while the equities hedge non-financial income fluctuations. An equity home bias emerges as a calibratable equilibrium outcome.