

THE COMPOSITION OF INTERNATIONAL CAPITAL FLOWS: RISK SHARING THROUGH FOREIGN DIRECT INVESTMENT BY RUI ALBUQUERQUE

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1. RELEVANCE

Albuquerque presents a risk-sharing model where contracts are not perfectly enforceable and where foreign direct investment (FDI) can not be fully expropriated. This model builds upon Thomas and Worrall (1994) and extends the literature by allowing heterogeneous capital flows, exogenous termination of contracts and partial inalienability of FDI.

The model accounts for the fact that FDI is less volatile than other capital financial flows – a well documented fact¹- and has implications on the optimal proportion of FDI to non-FDI capital flowing to countries with commitment issues.

In the model, FDI provides better risk sharing, has a lower default premium and is less volatile than other types of capital flows, all because its partial inalienability.

To some extent, the question of why FDI is less volatile than other capital flows can be addressed using a different approach – high adjustment costs may provide a suitable answer too- but, Albuquerque's model has additional and testable predictions on the relationship between default risk and capital flows composition.

2. MODEL

There is a representative domestic consumer and a large number of international investors willing to fund projects in a host country. All agents in the model are risk neutral and foreigners face three investment opportunities – each one requires a different type of capital. One of them takes place in the international bond market, which is perfectly competitive, and yields a risk-free interest rate. This interest rate will be exogenous as in the usual small open economy model – so, strictly speaking we are in a partial equilibrium framework. The other two investment opportunities are projects located in the host country.

These local projects are subject to a common productivity shock and each of them has a different production technology. The host country cannot commit and contracts are not perfectly enforceable. Hence, at any point in time, the host country can expropriate the two types of capital, but one of them – which will be interpreted as FDI- is partially inalienable because the recipient country is unable to run the project without the intangible assets provided by the foreign investors.

The two production technologies are concave and they differ in their curvatures and in a scale factor introduced in the FDI production function in order to match the level of FDI observed in the data. Output resulting from the two investment projects is divided between domestic consumption, repayment of the loan's principal and interest and transfers to the foreign investor.

Owing to the imperfect enforceability, contracts have to be written in such a way that the host country doesn't want to walk away-meaning default. In addition, international investors must get, at least, positive utility when participating in the contract.

¹ Some examples mentioned by Albuquerque: During the Mexican crisis in 1994 FDI inflows fell 27% while debt flows dropped by 89%. In the East Asia crisis, net-long term inflows went down by 22% while FDI only decreased by 5%. Outside crisis, there is also evidence on the lower volatility of FDI flows. According to the World Development Indicators, in 89% of the countries surveyed, FDI flows exhibit lower coefficient of variance than non-FDI.

The problem faced by each representative agent can be represented recursively and the optimal contract, as in the rest of the limited commitment literature, is such that the host country is promised an increasing schedule of utility, so it does not have incentives to default. The optimum contract implies that the host country faces a borrowing constraint as international investors will downside investment at the beginning and build up slowly the project to keep the host country in the arrangement.

The key feature of the model is that because of the lack of contract enforceability and the asymmetry on expropriation between FDI and non-FDI, the marginal revenue of each project differs and is not equal to the risk-free interest rate. Hence, FDI flows carry a smaller default premium or rate of return relative to non-FDI.

For any country with commitment issues, a positive aggregate shock will relax its borrowing constraint and therefore will translate into an increase of non-FDI flows relative to FDI, although the two will increase in absolute terms. This feature of the model captures the lower relative volatility of FDI in response to aggregate shocks. Additionally, a country less committed to honor contracts should exhibit a higher share of FDI relative to non-FDI because of the partial inalienability of the first one.

3. RESULTS

Albuquerque tests the model's prediction along two dimensions: volatility of FDI relative to non-FDI and the relationship across countries between FDI as proportion of total capital inflows and the ability to commit - financing constraints. In order to generate a world-wide distribution of countries, Albuquerque adds an exogenous rate for terminating contracts that allows him to have default in the model – in the baseline model there are no defaults as by construction the optimum contract rules them out.

The paper uses a regular parameterization for the curvature of the production functions, the risk-free interest rate and chooses the exogenous rate in order to match the worldwide default experience in the 20th century- see Kraay, et al (2000). The simulations allow Albuquerque to classify countries by whether they have broken any contract – developing- or not -developed. The model gets the stylized fact of higher volatility of FDI flows relative to non-FDI in developing countries – for developed countries, the two types of capital have in the model the same volatility as without commitment problems both projects have the same marginal revenues and their shares are exclusively pined down by the curvature of the two production functions.

For the second prediction of the model, Albuquerque measures enforceability of contracts by sovereign credit ratings. Albuquerque claims that sovereign ratings are arguably the best way to think about lack of commitment in his model. He shows that the share of FDI inflows on gross private capital flows is negatively correlated to credit ratings. Bad credit countries have a higher share of FDI relative to other private flows because of their lack of commitment - which translates into financing constraints. Using Moody's credit ratings the results suggest that going from "Aaa" rating to "B" increases the share of FDI by at least 9%. In Albuquerque words, this result suggests that countries with low credit ratings get mainly FDI because it is all they can get.

4. WHAT IS MISSING?

Albuquerque doesn't test the model's prediction that FDI flows should exhibit lower rate of returns relative to non-FDI, particularly for countries with low credit ratings – papers on global imbalances and the US current account deficit have provided some evidence in favor of the opposite: FDI yields higher rate of returns.

The model makes prediction about FDI relative to non-FDI but not about debt. Albuquerque uses FDI shares on gross private capital flows, but debt in his model bears no risk. Moreover, this model cannot answer the broader puzzle of why we see so much debt in the world relative to FDI - this is common to most international models which overpredict risk-sharing.

The results of this model need to be reconcile with the literature on the productivity effects – spillovers – of FDI in which multinational companies have a positive effect on the host country and hence expropriating FDI has a cost in productivity terms. Additionally, an empirical research on the sectorial composition of FDI across countries could tackle the issue of how different sectors are exposed to different degrees of inalienability and hence how FDI flows respond to that.