**Foreign Direct Investment in a Small Open Economy Developing Economy.**

Based on Godin & Yilmaz (2020b).

According to *Balance of Payments and International Investment Position Manual* (IMF, 2009),FDI is a type of cross-border investment where the foreign investor has control or a significant degree of influence on the management of an enterprise that is resident in another economy. This cross-border financing of enterprises is expressed in equities, investment in indirectly controlled enterprises, investment in fellow enterprises, debt, and reverse investment (IMF, 2009).

In the context of developing economies like Colombia, it is important to analyse the FDI not only for its real effects in terms of economic growth, technology transfer and productivity enhancements, but also for its financial and balance of payments effects. Regarding the first, although not necessarily all FDI becomes gross capital formation, its real implications depends on the economic sectors where it is allocated because they differ in their linkages and technological complexity, in their capital intensity and high – skilled labour demand, and in the tradable or non – tradable classification of the goods or services produced.

Secondly, despite the fact that FDI is an important source of financing for the external deficit in developing economies, it has been emphasized on its long-run pressures on the current account due to the deterioration in the country’s International Investment Position and financial liabilities accumulation (Garavito, Iregui & Ramirez, 2014). Likewise, the FDI procyclical and volatile character very closely linked to the natural resources booms and the global financial cycle, has effects on the trade balance through domestic currency appreciation (Botta, Missaglia & Godin, 2016). Added to the fact that FDI generally triggers other capital inflows such as portfolio investment that can induce a greater macroeconomic vulnerability and financial instability, in contexts with high international liquidity and financial account deregulation (Pedrosa & Biancarelli, 2015).

In consequence, FDI is introduced into the *Colombian small open economy model* to capture some of the dynamics above mentioned through the SFC modelling methodology in continuous time. In the model, FDI is divided into a greenfield FDI () and non-greenfield FDI ().

The first item refers to the establishment of new facilities or the expansion of the existing ones typically expressed by a higher gross capital formation in the host country, so that it is added directly to the realized real investment equation.

On the other hand, non-greenfield FDI is not a source of new physical capital accumulation but rather a source of funding for firms and banks by reducing their total financial needs, and , respectively. So, the is the non – greenfield FDI allocated to the firms while is the non – greenfield FDI allocated to the banks.

Regarding to the behaviour of total FDI inflows to the economy, in a standard framework, FDI patterns worldwide could depend on some structural conditions such as relative labour costs, taxes and tariffs, environmental regulation, and sectoral composition of the host economy (Stone & Jomini, 2002), added to infrastructure, natural resources and human capital endowments, R&D expenditure, political risks, and GDP performance (UNCTAD, 2002) (Garavito, Iregui & Ramirez, 2014). However, since the model does not follow a multisectoral approach and that many of the possible determinants cannot be included in the model, it is assumed that FDI grows at a rate equal to .

In turn, FDI growth rate follows a dynamic behaviour described by the equation (6). Firstly, there is acceleration in the FDI inflows to the economy when there is a positive output gap between domestic and international GDP growth rate. Secondly, based on the monetary structure of the model, it is supposed that foreign direct investors face a trade – off between an expected FDI profitability index and the expected foreign yield.

The expected FDI profitability index is given by the expected FDI implicit profitability (the expected dividends paid to the rest of the world as a share the stock of equities owned by the rest of the world) weighted by the country risk and the expected movements in nominal exchange rate. On the other hand, the expected foreign yield is taken from Yilmaz & Godin (2020a) where is the riskless interest rate on foreign bonds.

The idea behind this arbitrage formulation is to capture the effects on international liquidity conditions and exchange rate expectations on FDI inflows to the domestic economy, while the FDI implicit profitability is a good proxy of the incentives to bring capital to Colombia because in times of high FDI inflows, this indicator is usually higher than other international benchmark rates such as Libor and Prime (Garavito, Iregui & Ramirez, 2014)

Greenfield FDI is a share of total FDI, which is determined – like the investment decisions of the firms – by the real expected return of the capital stock weighted by , in order to capture that Greenfield investment is riskier than Non – Greenfield investment (Valdecantos, 2016). Consequently, to increase the ratio of greenfield to total FDI there must be a high expected return rate as the risk parameter is higher.

Non – Greenfield FDI is a residual once is determined. However, it is important to analyse how is the allocation of this type of FDI between firms and banks. The dynamic behaviour of the fraction assigned to the firms depends positively on the gap between the firms FDI implicit profitability and the banks FDI implicit profitability.

The financial counterpart of these FDI flows is given by the issuance of new equities by the firms and banks, which leads to private equity accumulation by the rest of the world as is presented in equation (13), even though actual FDI is expressed in other financial assets different to equities (IMF, 2009). The accumulation of equities issued by the firms and the banks is presented in equations (14) and (15), respectively.

The dividends paid to the rest of the world are distributed considering the ownership structure of firms and banks, that is, the stock of equities owned by the rest of the world as a share of total stock of equities in each sector.

***Note about equities.***

In the process of incorporating the FDI flows into the model, we have had to concerns that are important to consider before to close the model:

1. In the benchmark model, it was not necessary to make explicit the fact that households owned the firms and the banks, as there were no FDI flows and all the dividends fell within their consumption function. However, now that the rest of the world is a stakeholder in the real and financial sector, maybe it would be important to make explicit the stock of equities owned by the household in order to calculate properly the share of dividends that are going to be distributed to the rest of the world, taking into account the ownership structure.

Even if we assume in the initial conditions that the households own most of the equities in both sectors, depending of the magnitude of the FDI flows entering to the economy – if there is no more equities accumulation in the households balance sheet – , it could be the case where the rest of world has a share in the companies ownership (and therefore in the dividends) that is not consistent with the actual Net International Investment Position and the data about the external liabilities.

1. As we made endogenous the total FDI flows entering to the economy, there is an implicit assumption related to the fact that the equities issued by the firms and banks are also endogenously determined by the behaviour of the rest of the world. Thus, whatever the FDI flows entering to the economy there will always be a corresponding issue of new equities by these sectors.

Based on that, it could be the case where this source of funding represents most of the total financial needs of the firms and banks, despite the fact that the depth of the financial system in Colombia does not correspond to such a statement. In the same way, this type of funding could diminish the role of other sources of funding such as loans in the case of the firms and the central bank in the case of the banks, that maybe have more representativeness.

To keep the FDI flows into the model due to its relevance in developing economies and to be consistent with the previous comments, it could be added the purchase of equities in the portfolio allocation of the households (in order to balance the ownership structure) and give to the companies more discretion to decide how many shares to issue.

This is only a draft that we have been working on, so, all the comments and suggestions you can make are well received. Emphasis will be placed on the firms and the behaviour equations are a bit different regarding to the latter.

The new quantity equities issued by the firms is a share of the of the gross capital formation.

The new quantity of equities accumulated by the rest of the world is a residual between the supply of new equities and the ones purchased by the households.

The FDI flows presented in the section above are supposed to be desired flows, so that the difference between the value of the new equities available to be purchased by the rest of the world and the desired FDI flows. Consequently, if the desired FDI is higher than the nominal value of the equities sold to the rest of the world, the remaining capital flows are expressed in new FX deposits.

The quantity of equities purchased by the households is given by:

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1. ¿Cuánto de los dividendos va al resto del mundo y cuánto a los hogares (estructura de la propiedad)?
2. Ecuación de las acciones.
3. ¿Qué determina el arbitraje entre Greenfield y Non-Greenfield? ¿No debería dar mayor rentabilidad respecto a una misma acción non-greenfield?
4. ¿Precio de las acciones?