# FDI in Distribution Services and Trade versus Investment Trade-Off

## VERY PRELIMINARY VERSION

Aidan Islyami [iii]

*University of Kiel*

**Abstract**

There is a common perception in the developing countries that FDI in distribution services yields little development impact. On the other hand, there are many efforts to attract FDI in manufacturing. Therefore, in this paper, I construct a basic analytical framework to study the incentives to invest in distribution services, manufacturing or both by vertically integrated multinational firm. There is a horizontal motive to invest in distribution services and there is a vertical motive to invest in manufacturing. The two country north-south model captures several effects that match the existing empirical evidence. In particular, depending on the level of trade openness, the bilateral liberalization of trade may both increase and decrease the level of investment in distribution services.

Keywords: Trade in Services, FDI, Distribution Services

*JEL classification: F23; L81*

## 1. Introduction

The growth of multinational enterprise activity in the form of FDI (Foreign Direct Investment) has been rising at a faster rate than the trade flows between countries. The existing empirical evidence on the determinants of the firm's decision to invest abroad assigns a greater significance to horizontal rather than vertical FDI (Navaretti and Venables, 2004). This is apparently the case, since most of the investments still take place between developed countries where market seeking motives are more prevalent. On the other hand, the factor price differentials, which are considered to be a central cause of vertical FDI, would be insignificant to explain investments in-between high income countries. However, the importance of the vertical FDI is increasing. Moreover, it is difficult to disentangle the effects of factor price differentials (Hanson et al., 2001) Therefore, the significance of vertical FDI might be underestimated and it is better to study vertical FDI in the regional and sectoral specification where it should have a clearer pattern.

In this paper, I construct a theoretical framework that distinguishes between investments in distribution services and manufacturing. In this way I allocate a specific type of investment to a specific sector. Namely, FDI in distribution services is market seeking and the FDI in manufacturing is driven by the factor cost differentials. Consequently, the aim of the paper is to create a relatively simple analytical framework that would generate empirically testable predictions about the determinants of both types of investments. In addition, there are almost no theoretical approaches to FDI determinants, to my knowledge, that would explicitly discriminate between FDI distribution and manufacturing.

Why distribution services? According to the WTO classification distribution services sector comprises wholesale and retail trade, commission agent's services and franchising. In other words, those are the services that constitute an essential link between consumers and producers both within and across borders. The sector accounts for up to 50% of the price paid by the consumers (Pilat, 1997). The trade in two major components of distribution services: wholesale and retail trade occurs mainly through the commercial presence or mode 3 of GATS (General Agreement on Trade in Services). Moreover, in sectoral terms, the composition of FDI has shifted towards services in general.

The distribution sector is connected to the manufacturing in several ways. The retail industry, for example, sets product standards, shares the information on product promotion and

consumer preferences with manufacturing industry. A rational question that the reader may have at this point is: Are there any evidence for multinational firms to view the two types of investments as an alternatives? Hanson et al. (2001) study the data on primary and secondary industries of the foreign affiliates of the US based multinational firms whose parent primary industry is manufacturing. They find that the second major industry of the foreign affiliate sales of those firms is wholesale trade. Moreover, controlling for the size of the firm they find that most of the firms chose to invest in either manufacturing or wholesale trade and rarely both[iii]. Consequently, the authors argue that FDI should be differentiated as production oriented and distribution oriented.

In terms of the policy relevance of the given issue, it should be noted that there is a widespread view in the developing countries that FDI in distribution services is not crucial for growth (Palmade et al., 2004). At the same time, developing countries make a lot of effort to attract FDI in manufacturing that could be brought by the efficiency seeking multinational firms. As a matter of fact, in terms of the level of FDI, manufacturing still remains to be the most prevalent sector in the developing economies.

It is also feared that more investments in distribution could create urban sprawl and push smaller and less efficient retailers out of the market, which in turn could potentially bring more unemployment. As a matter of fact, there is an ongoing debate whether to let FDI in retail sector or not in several developing countries like India and Indonesia. On the other hand, the restrictions on distribution could hinder the efficiency of the upstream industries and consequently push up the business costs. It could also allow for rent-creation by incumbent firms. Kalirajan (2000) finds that the restrictions are primarily cost-creating.

The market structure of the distribution sector varies from country to country. However, there is a general trend for higher market concentration. This could be efficiency improving due to the significant economies of scale in the retail sector, for example (Nordas et al., 2007). There are several studies related to the interaction between trade in distribution services, market concentration and trade in goods. In particular, Francois and Wooton (2007) find that rising concentration in distribution services could be an effective barrier for trade in goods. As for

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[iii] Here controlling fort he size of the firm means that the effect does not appear only because foreign affiliates of relatively smaller firms tend to specialize in one sector.

the goods trade, Ishikawa (2008) shows that trade liberalization in goods, if not accompanied by FDI in distribution services, could hurt domestic consumers and lead to the overall welfare fall. Nordas et al. (2007) find that FDI in distribution services sector would raise the imports from the host to the home country of the multinational firm.

The rest of the paper is organized as follows: the second section presents an outline of the analytical framework. In the third section I study the relationship between FDI in distribution and investment costs in distribution and manufacturing, tariff rates, market size and wages in the developing country. The fourth section concludes.

## 2. Basic analytical framework

The case of two countries is considered. It is already a stylized fact that FDIs originate predominantly from the developed countries (Navaretti and Venables, 2004). Therefore, I assume that the multinational firm is located in the developed country and is denoted by north. Similarly, the developing country is denoted by south. The vertically integrated multinational firm maximizes profits by serving two segmented markets. In other words, in addition to the local market it could serve the foreign market through investments or trade. Initially, each country could produce one good. The representative consumer in each country demands both goods. I assume quadratic utility function. Consequently, the derived demand functions will be linear and will look as follows, for example, for the developed country:

$$\begin{cases} x_N = a_N - P_{xN}^c + b_N * P_{yN}^c \\ y_N = a_N - P_{yN}^c + b_N * P_{xN}^c \end{cases} \quad (1)$$

Here $a_N > 0$ is the market size and $b \in [0;1]$ represents the substitutability between two goods. Similarly for the developing country:

$$\begin{cases} x_S = a_S - P_{xS}^c + b_S * P_{yS}^c \\ y_S = a_S - P_{yS}^c + b_S * P_{xS}^c \end{cases} \quad (2)$$

The y-good is produced in the south and the x-good is produced in the north. There is only one factor of production. Thus, the production function in the manufacturing industry y in the south, for instance, could be represented as[iv]:

$$y = \delta * L_S \quad (3)$$

Here $\delta$ denotes productivity. Similarly in the north:

$$x = \gamma_N * L_N \quad (4)$$

The multinational could also shift the production of its good to the developing country:

$$x = \gamma_S * L_S \quad (4')$$

In contrast to the producer services, where skilled labor intensity is an important distinguishing factor, the distribution services employ many low skilled workers. In this setting, I neglect the resources used by multinational enterprise. There will be four scenarios depending on the decision of the multinational firm to serve the foreign market through exports, to invest in manufacturing, to invest in distribution services or to invest in both. In what follows, I would like to consider all four cases separately.

*Case 1: No investments*

In this case the developed country exports the local good and imports the foreign good and no investments take place. The multinational firm will maximize its profit at home and abroad by optimally choosing the prices it charges for both goods. In particular, the domestic profit is:

$$\Pi_N^1 = (P_{yN}^c - P_{yN}^p - \tau) * y_N + (P_{xN}^c - P_{xN}^p) * x_N \quad (5)$$

The producers' prices are obtained routinely from the corresponding profit-maximization conditions:

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[iv] I could have chosen a form with plant-level economies of scale. However, in the setting where production takes place either in two countries or in the south only, that would be equivalent to adding an additional barrier to FDI in manufacturing. The effect will be consistent with theoretical and empirical predictions of plant-level economies of scale on FDI in manufacturing. It won't bring any significant changes to the main outcomes of the model.

$$\frac{P_{yN}^p}{1+t_N} = \frac{w_S}{\delta} \quad (6)$$

$$P_{xN}^p = \frac{w_N}{\gamma_N} \quad (7)$$

Here $w_N, w_S$ denote the wages in the north and south correspondingly. $t_N$ is an ad valorem sales tax imposed by the north on the importing firm. The multinational firm which has a full monopoly over good X will also export it to the south and maximize profit by charging producer price $P_x^p$ :[v]

$$\Pi_S^1 = (\frac{P_{xS}^p}{1+t_S} - \tau - \frac{w_N}{\gamma_N}) * x_S \quad (8)$$

Where $\tau$ is per unit transportation cost and $t_S$ is an ad valorem tariff imposed by the south.

I assume that the there are many small distribution outlets in the south and the distribution margin is fixed at the level $K_D$. Hence, the consumer prices will be determined as:

$$P_{yS}^c = \frac{w_S}{\delta} + K_D \quad (9)$$

$$P_{xS}^c = P_{xS}^p + K_D \quad (10)$$

The resource constraints will be:

$$\begin{cases} x_S + x_N = \gamma_N * \overline{L_N} \\ y_S + y_N = \delta * \overline{L_S} \end{cases} \quad (11)$$

Here $\overline{L_N}$ and $\overline{L_S}$ are total factor endowments of the north and the south respectively.

*Case 2: FDI in manufacturing*

In this case, multinational firm shifts the production of the northern country good to the south. Accordingly, both goods will be produced in the south and incur transport costs and taxes. In

this case, there will be no goods produced in the north and the labor of the northern country could be thought to move to the headquarter activities even though it is not explicitly modeled. This is a rather strong assumption that constrains labor endowment of the south to be large relative to the labor endowment of the north in order to produce feasible values. I lift this assumption in one of the following specifications. The constraint on factor endowments is even relevant if we take into account that wages do not adjust when firm chooses to invest abroad. The production function is represented by (4'), with higher productivity in the north:

$\gamma_N \geq \gamma_S$ .However, it would also be intuitive to have $\dfrac{w_S}{\gamma_S} \leq \dfrac{w_N}{\gamma_N}$ . That incorporates the vertical motive to invest in the south. Additionally, there will also be an implicit horizontal motive since the multinational firm supplies to the host market as well. As in the case before, multinational firm will maximize its profits by charging consumer prices for both goods domestically and the producer price for the x-good in the south:

$$\Pi_N^2 = (P_{yN}^c - P_{yN}^p - \tau)*y_N + (P_{xN}^c - P_{xN}^p - \tau)*x_N = (P_{yN}^c - \frac{w_S}{\delta}*(1+t_N)-\tau)*y_N +$$

$$+(P_{xN}^c - \frac{w_S}{\gamma_S}*(1+t_N)-\tau)*x_N \quad (12)$$

$$\Pi_S^2 = (P_{xS}^p - \frac{w_S}{\gamma_S})*x_S - FM \quad (13)$$

Here FM is the fixed cost of FDI in manufacturing. The labor is assumed to be immobile between countries. Therefore, only resources of the southern country will be used in the final production:

$$\begin{cases} x_S + x_N = \alpha*\gamma_S*\overline{L_S} \\ y_S + y_N = (1-\alpha)*\delta*\overline{L_S} \end{cases} \quad (14)$$

Where $\alpha \in [0;1]$ is the share of resources used in the production of x-good.

*Case 3: FDI in distribution services*

In this case, multinational firm invests only in distribution services. I assume that it takes over the less efficient distribution sector of the south and becomes the only distributor in the south just as it is already in the north. The profits in both markets are determined as follows:

$$\Pi_N^3 = (P_{yN}^c - \frac{w_S}{\delta} * (1 + t_N) - \tau) * y_N + (P_{xN}^c - \frac{w_N}{\gamma_N}) * x_N = \Pi_N^1 \quad (15)$$

$$\Pi_S^3 = (P_{yS}^c - P_{yS}^p) * y_S + (P_{xS}^c - P_{xS}^p - \tau) * x_S - FDS = (P_{yS}^c - \frac{w_S}{\delta}) * y_S +$$

$$+ (P_{xS}^c - \frac{w_N}{\gamma_N} * (1 + t_S) - \tau) * x_S - FDS \quad (16)$$

Here FDS is the fixed cost of FDI in distribution services. It consists partially of the cost of acquisition of the southern distribution sector and the cost of erecting no entry barriers as well as the fixed costs of operating in the foreign market. The distributor sources the y-good locally and x-good from its own home country. Apparently, there is a horizontal motive to invest in distribution services. The resource constraint is (11) as in the case 1.

*Case 4: FDI in both manufacturing and distribution services*

Here we will have the following profit functions:

$$\Pi_N^4 = \Pi_N^2 \quad (17)$$

$$\Pi_S^4 = (P_{yS}^c - P_{yS}^p) * y_S + (P_{xS}^c - P_{xS}^p) * x_S - \rho * (FM + FDS) = (P_{yS}^c - \frac{w_S}{\delta}) * y_S +$$

$$+ (P_{xS}^c - \frac{w_S}{\gamma_S}) * x_S - \rho * (FM + FDS) \quad (18)$$

Here $\rho \leq 1$ is a measure of complementarity between two types of investments. The resource constraints will be (14), the same as in the case 2.

### 3. Analytical results

The fixed costs of manufacturing (FM) and distribution services (FDS) could be thought to be partially sunk and partially determined by the changes in the policies to stimulate or prohibit investments by the government in the south. Figure 1 depicts the regions for the different values of fixed costs in manufacturing and distribution services. The shaded area of the graph represents the set of the values of the fixed costs for which the variables of the system achieve feasible values. In other words, in that region, prices, quantities and profits are greater or equal than zero. Each region in the shaded area is referred to by the number which matches

the number of the case illustrated above. The composition of the figure is intuitive. The FDI in both sectors will take place under relatively low fixed costs. Under prohibitively high fixed cost of manufacturing (distribution services), there is a threshold value for the fixed cost of distribution services (manufacturing) such that in the area higher than the threshold, no more FDI take place. The movement away from the north-western corner and towards the south-eastern corner of the graph would represent a policy shift to stimulate FDI in manufacturing and discourage FDI in distribution adopted by the developing country. The area between the region 4 and region 3 is slightly upward sloping and the area between region 4 and region 2 is steeply upward sloping (not vertical) due to the complementarity between two types of investments.
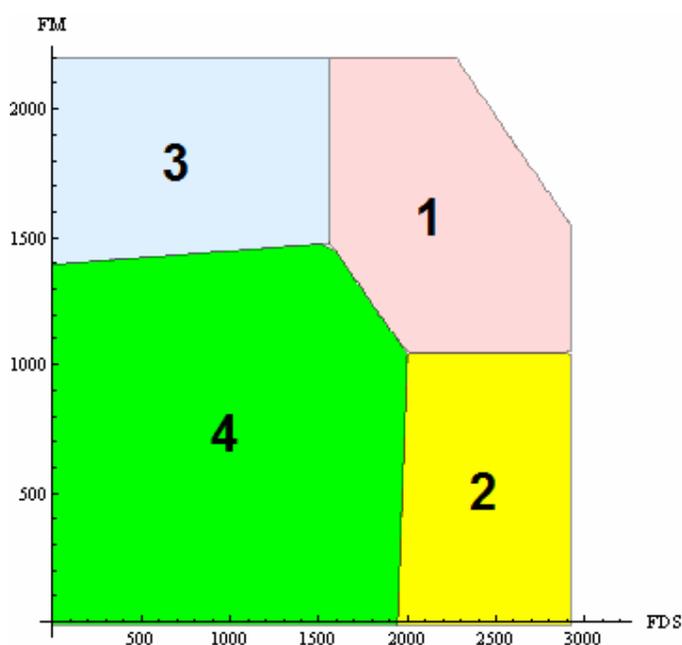


**Figure 1.** The investment decisions of the multinational firm for different values of fixed costs of manufacturing (FM) and fixed costs of distribution (FDS).

The northern country tariff $t_N$ would practically be equivalent to higher barrier for FDI in manufacturing and the higher southern country tariff $t_S$ would, on the other hand, stimulate FDI in manufacturing by the so called tariff-jumping considerations. In the next figure I assume that the tariffs for the trade in goods are identical in both countries $t_N = t_S = t$. In this case, the overall investment pattern will, among other things, depend on the level of fixed cost in distribution services. If that fixed cost is high, only two modes of supplying the foreign

market will be feasible (Figure 2A in the Appendix). The higher tariffs will lead to more investments in manufacturing, which demonstrates the substitutability between FDI in manufacturing and trade in this case. On the other hand, for the sufficiently low fixed cost (Figure 2C in the Appendix) there will be a similar tradeoff between mode 3 and mode 4. As the fixed cost of distribution starts increasing from this level, for the relatively high cost of manufacturing, there is a threshold value of the bilateral tariff rate such that in the area above it no more investments are chosen by the multinational. This is because the profit obtained from the distribution margin will not be sufficient to cover the fixed costs at the scale required to make the investments in the distribution sector. The case with somewhat higher fixed cost (FDS=1600) is presented below. For the relatively high level of fixed cost in manufacturing, there will be no investments if the tariffs are sufficiently high. Consequently, with decreasing tariffs multinational firm will increase its exports to the south even further and, at some point as described above, the profit obtained from investment in distribution will be higher than the profit of no investments. In other words, there will be complementarity between FDI in distribution and trade at the relatively high level of tariffs.
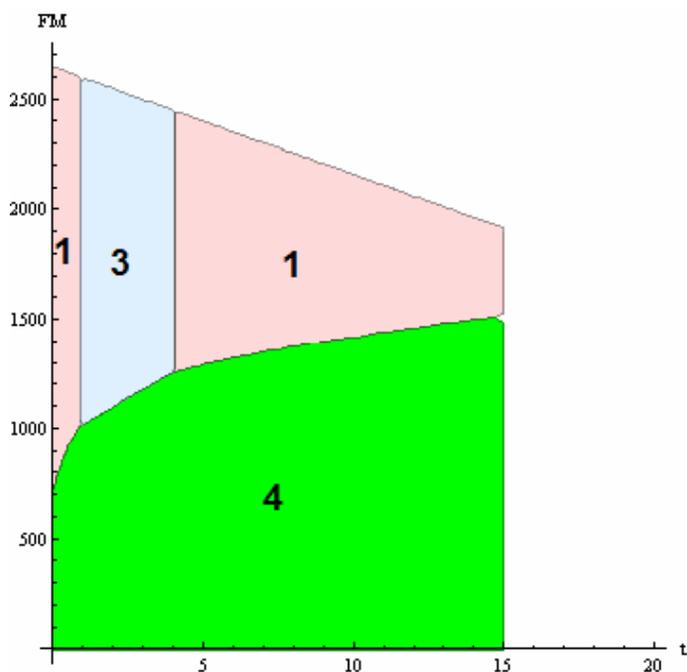


**Figure 2B. (FDS=1600)** The investment decisions of the multinational firm for different values of fixed costs of manufacturing (FM) and bilateral tariff rate (t).

On the other hand, as the tariffs decrease even further, at some point, it will be more profitable to increase the exports and choose the mode with no investments again. At the lower values of the tariff rate we will observe substitutability between trade and investment in distribution. Therefore, depending on the level of trade openness, liberalization of trade in goods may both stimulate and discourage FDI in distribution services.

Pontes (2004) criticizes the standard theories of FDI which assume a monotonic relationship between FDI and trade. In particular, horizontal theories of FDI predict a positive relationship between FDI and trade and vertical theories predict a negative relationship. However, empirical evidence indicates that it is more complex than that. Pontes (2004) then obtains a non-monotonic relationship, similar to the one obtained in the Figure 2B, in the model with vertically related intermediate and final stages of production. The pattern remains unchanged when I use only the tariff imposed by south as a trade cost and keep the level of the northern country tariff constant, inline with the theoretical specifications.

Similarly, we could investigate the incentives to invest in manufacturing and/or distribution services by changing the values of other parameters from the benchmark. I assume the benchmark values to be the ones used to construct Figure 1 and Figure 2B. The fall in the relative wage in the south should bring more incentive to invest in manufacturing. As it could be seen from Figure 3 in the Appendix, it also extends the feasible value of the tariff.

The market size is an important determinant of horizontal FDI in both theoretical and empirical studies. Figure 4 illustrates the regions constructed in the similar way as the previous graphs. However, this time I place the market size of the south on the vertical axis and the market size of the north on the horizontal axis. At the low levels of market size in the south there could still be investments in manufacturing and as the market size of the south starts to increase, the no investment mode may start to be preferable. This happens firstly because the market seeking motive and the vertical motive are strictly divided in this model. Therefore, the decision to invest in manufacturing is feasible independent of the market size in the host country. As the southern market rises even further, the restrictiveness of the assumption according to which the production of both goods takes place in the south becomes apparent. In other words, the higher is the market in the developing countries the higher will be the demand for goods produced by their trading partners which in turn leads to higher production and employment in the latter. In terms of the present model, it would mean more

pressure for the multinational firm to start using its own domestic resources and to switch back to the mode with no investments. This effect could be eliminated if I assume that multinational keeps its local production in all modes and in addition to that could shift a share of the production of x-good to the south. The resource constraint for the cases with FDI in manufacturing will then look like this:

$$
\begin{cases}
x_S + x_N = \alpha * \gamma_S * \overline{L_S} + \gamma_N * \overline{L_N} \\
y_S + y_N = (1-\alpha) * \delta * \overline{L_S}
\end{cases} \quad (14")
$$

However, such specification will be of little interest for the present study since it does not include vertical investment.
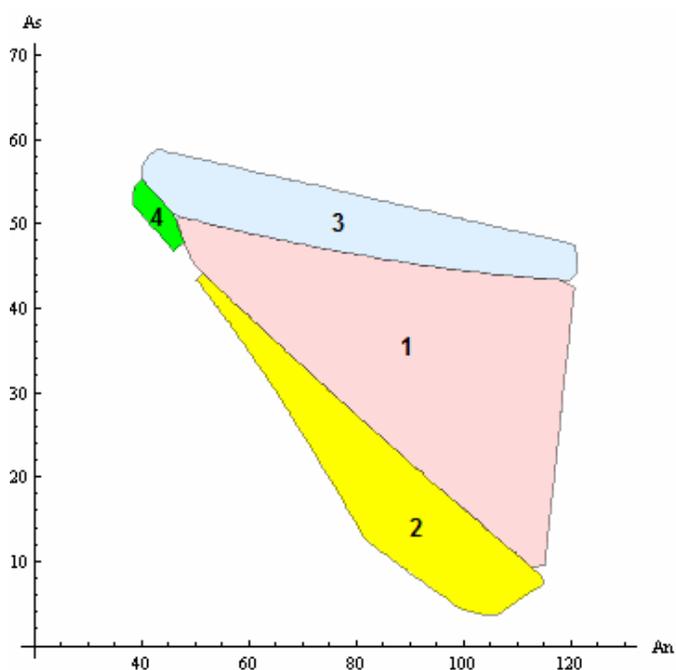


**Figure 4.** The investment decisions of the multinational firm for different values of market size in the south (As) and in the north (An).

As the southern market further expands, the multinational firm will start investing in distribution. In Figure 6, I again demonstrate the spectrum of choices of the multinational firm for the market size in the south and the labor endowment in the south in the horizontal axis. For the purpose of illustration, I use somewhat higher value of the market size in the north in this figure ($a_S = 75$). All the points in the north-western part of the graph represent small and rich countries and the points in the south-eastern corner represent large and poor countries.

12

The location of the feasible set is in line with the assumptions about the southern country and the linearity of demand. Clearly, higher market size brings more investments in distribution and higher endowment of labor will bring more investments in manufacturing. It is interesting to contrast the obtained results with the existing empirical studies.

Hanson et al. (2001) find that the share of FDI in wholesale trade sector in the sum of wholesale and manufacturing FDI is decreasing in the host country GDP. This result is inconsistent with the horizontal theories of FDI, especially when applied to distribution services. The GDP per capita could be used as an alternative measure of the market size. Boatman (2007) uses agency theory considerations to study the determinants of FDI in distribution. In that study, firms choose between supplying the foreign market by investing in distribution services or by exporting. Both Hanson et al. (2001) and Boatman (2007) find positive and significant relationship between per capita GDP in the host country and FDI in distribution.
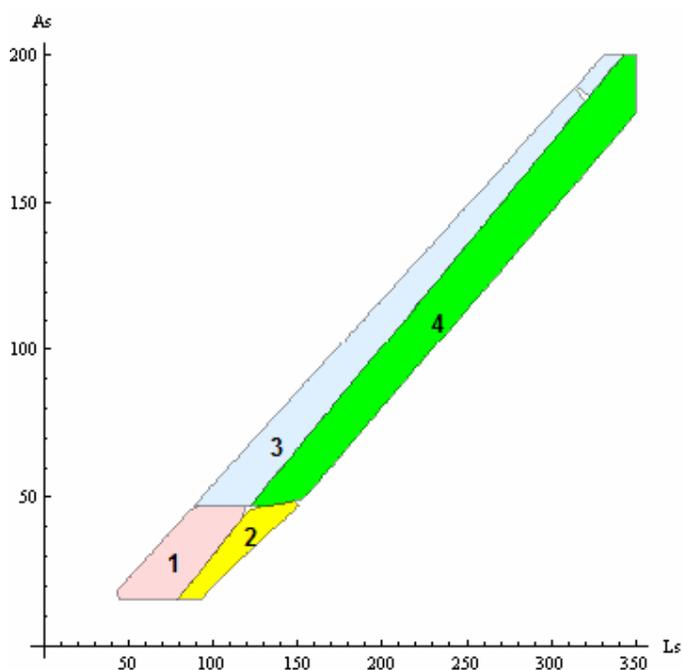


**Figure 5.** The investment decisions of the multinational firm for different values of market size in the south (As) and the factor endowment in the south (Ls).

The Figure 6 in the Appendix presents the value of total trade and imports from the host to the home country of the multinational ($P_{yN}^p y_N$) for different values of the fixed cost of distribution. Initially, I set a prohibitively high fixed cost of manufacturing. Thus, only modes

13

1 and 3 will be feasible and the total value of trade will just be: $P_{xS}^p x_S + y_N P_{yN}^p$. The multinational firm starts making investments in distribution as the fixed cost passes a certain threshold value. Both bilateral trade and the imports from the host to the home country of the multinational firm fall. The first result complies with the Francois and Wooton (2007) because the distribution margin increases after the investment. The result reverses for the case with low fixed cost of manufacturing (Figure 7 in the Appendix). In this case, only mode 2 and 4 will be feasible and the total trade in values will be $P_{xS}^p x_S + P_{yN}^p y_N + P_{xN}^p x_N$ and imports from the host country to the home country of the multinational will be $P_{yN}^p y_N + P_{xN}^p x_N$. Even though the distribution margin rises and the total trade falls after the liberalization of trade in distribution services, imports from the host to the home country will increase. The latter result complies with the empirical evidence in Nordas et al. (2007).

## 4. Concluding remarks

One of the important aspects that could be used to evaluate the performance of the analytical model is its ability to capture the existing stylized facts. The model constructed in this paper, captures several intuitive results and paves the way for the empirical specification. In particular, I find that there is a non-monotonic relationship between trade costs and FDI in distribution services. I also find a robust positive relationship between market size in the host country and the incentive to invest in distribution. However, the obtained results should be accepted with due caution subject to the structure of the model. The market structure of the distribution sector could be modeled more comprehensively to make the above mentioned comparisons with the empirical literature on the interaction between the market structure in the distribution services and the trade in goods more solid.

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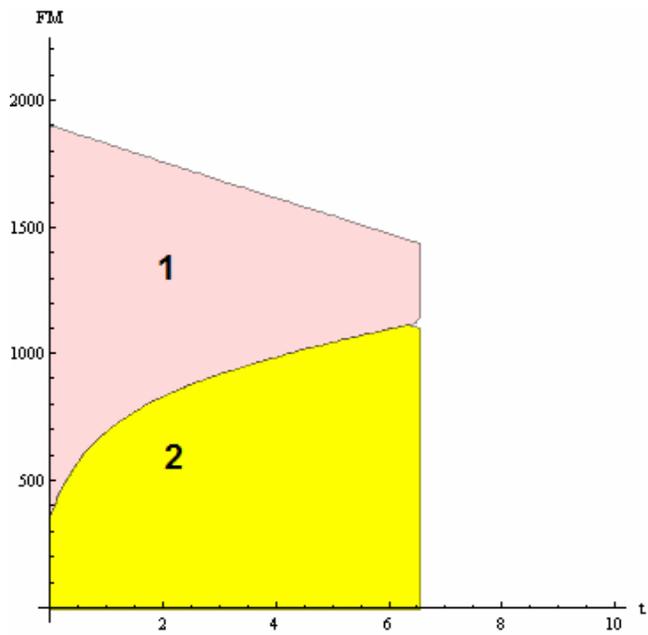
**Appendix**



**Figure 2A. (FDS=2700)** The investment decisions of the multinational firm for different values of fixed costs of manufacturing (FM) and bilateral tariff rate (t)
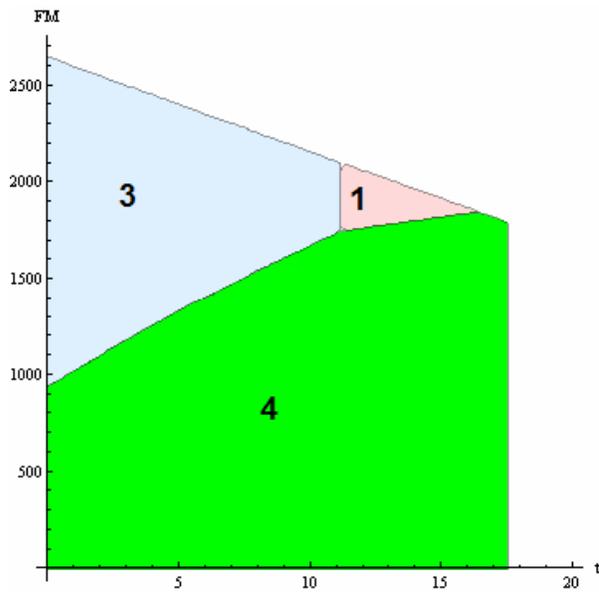


**Figure 2C. (FDS=1300)** The investment decisions of the multinational firm for different values of fixed costs of manufacturing (FM) and bilateral tariff rate (t)
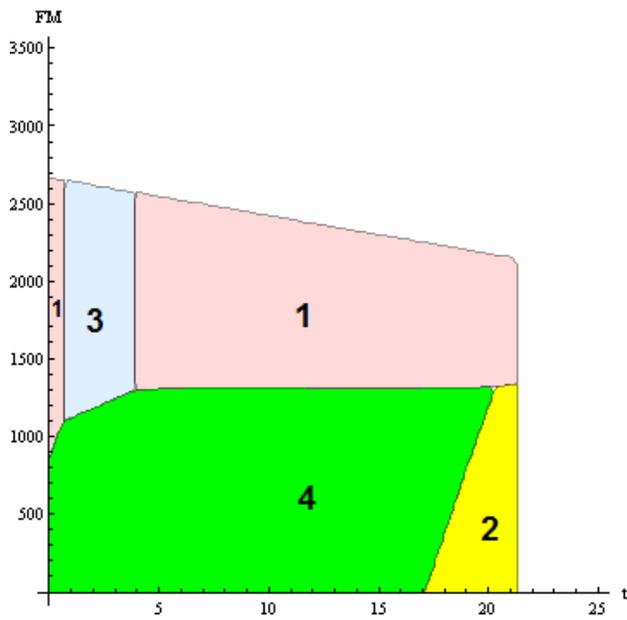
16

**Figure 3.** The investment decisions of the multinational firm for different values of fixed costs of manufacturing (FM) and bilateral tariff rate (t). The relative wage in the south is lower than in the benchmark.
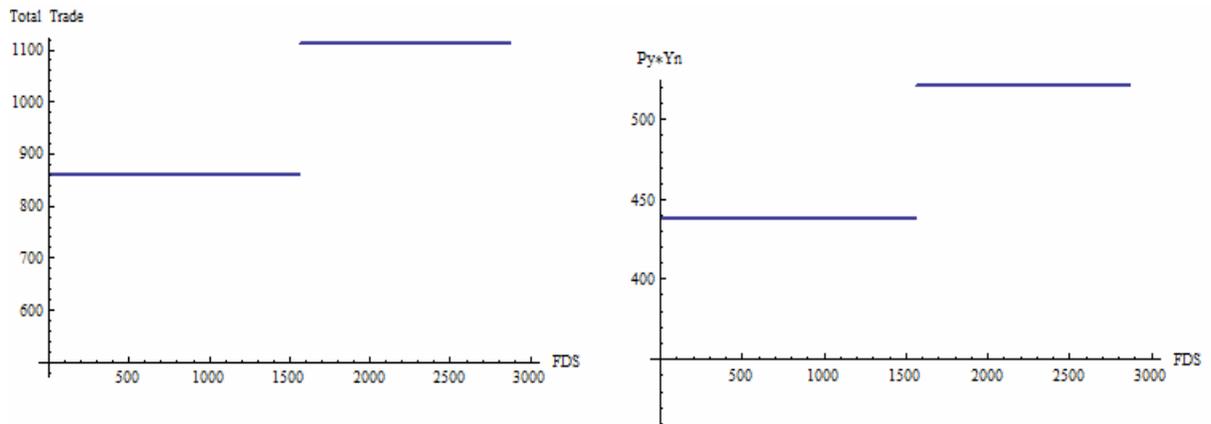


**Figure 6.** The total value of trade and imports from the host to the home country of the multinational depending on the fixed costs of distribution. The case with prohibitively high fixed cost of manufacturing.
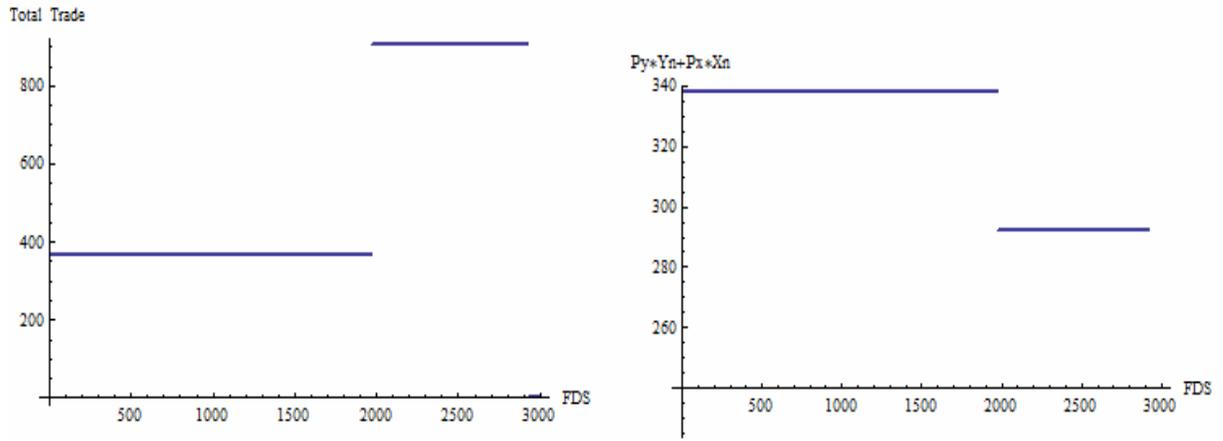
**Figure 7.** The total value of trade and imports from the host to the home country of the multinational depending on the fixed costs of distribution. The case with low fixed cost of manufacturing.