The impact of EU preferential trade agreements on Foreign Direct Investment[1]

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Abstract:

Although North-South preferential trade agreements (PTAs) are expected to affect foreign direct investment (FDI), to date there is not much evidence on the impact of EU PTAs on the pattern of FDI. The aim of this paper is to assess the impact of EU PTAs on the outward stocks of FDI of the EU. We estimate a model based on the knowledge-capital theory of the multinational enterprise over the period 1995-2005 by using a sample of 173 host countries. Explanatory variables include measures of the level of bilateral protection and dummies to capture the impact of deep integration provisions of PTAs. A dynamic panel model with fixed effects is used, in order to take into account the dynamic behaviour of FDI, i.e. that past FDI could affect current FDI, and the heterogeneity bias. Results show that EU FDI is a mix of horizontal and vertical FDI. The level of EU protection affects FDI negatively while the tariffs applied by host countries exert a positive impact on FDI. Deep integration provisions seem to affect EU FDI positively when the host country is a higher income country and negatively if it is a lower income country. Results suggest that unilateral preferences could be more helpful in enhancing EU FDI than reciprocal trade agreements. The findings are confirmed when the sample is split in groups of host countries on the basis of their participation in PTAs with the EU and their level of income.

Key words: regional integration, FDI, knowledge-capital model, dynamic panel data

JEL code: F15, F21, F23, C33

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1. Introduction

Over the past two decades the number of preferential trade agreements (PTAs) has dramatically increased; more than one third of world trade now takes place within preferential agreements (World Bank, 2004). The new wave of PTAs has also involved the European Union (EU) which very actively promotes North-South agreements. The number and geographical spread of the EU bilateral and regional agreements, already signed or under negotiation, is quite impressive; in addition to the ACP countries, in the past few years, agreements have been signed with the Mediterranean countries, South Africa, the Balkans, Chile and Mexico, while there are ongoing negotiations with MERCOSUR, the so called "European Neighboured Policy" countries, Central America, Andean countries, Korea, Singapore, Ukraine, ASEAN and India. These more recent agreements differ from their predecessors mainly because of the introduction of reciprocal, rather than unilateral, preferences. Further, the recent wave of agreements include a number of non-trade provisions in areas such as investments, services, competition policy, intellectual property rights, standards and dispute settlements. Although trade liberalization remains very important in the agreements, the expectations are that these "deep integration" provisions, by improving the overall economic climate and by locking-in domestic reforms, promote investments and new business, foster growth and help remove the obstacles faced by developing countries in fully exploiting the benefits of preferential treatment.

The recent EU approach to bilateral and regional agreements with developing countries is largely triggered by the criticisms which have often been made to past preferential agreements. It is now quite generally accepted that unilateral preferential schemes have been only marginally effective in improving access to the EU market for developing countries and, even less, in contributing to their development. The literature on the impacts of the EU PTAs has, by and large, emphasised the poor trade performances of the countries preferred by the EU with respect to the other developing countries (e.g. Martinez-Zarzoso, Nowak-Lehman, 2003; Bureau, Gallezot, 2004; Manchin, 2006; Persson, Wilhelmsson 2007, Agostino *et al*, 2010). The gradual integration in a reciprocity-based trade is expected nowadays to be more

beneficial to developing countries. Further, in recent years more emphasis has been given to the potential dynamic effects of PTAs and, among them, to their expected positive impact on investments. Prospects of preferential access to the EU market together with deep integration commitments should promote foreign direct investment (FDI) both from outside and inside firms (investment creation effect); this is expected to improve the welfare of the developing country, especially when FDI generates positive spillovers in terms of technological transfer and linkages with local firms. Considerable emphasis is often given to this positive side-effect of PTAs with developing countries in the political debate on EU trade and development policies. The recent remarkable growth of EU FDI in countries benefitting from preferences, (see Table 1 below) seems to support these expectations. In principle, however, PTAs may also displace existing FDI in developing countries (investment diversion effect); this may occur if, following the reduction of the tariffs, multinational firms find it profitable to exploit economies of scale by concentrating plants in one partner country from which to export to all the others.

Although these are considered as core issues in the general political debate on EU trade and development policies, there is not much evidence to date on the impact of the EU PTAs on the pattern of FDI. A number of studies have focused on EU enlargements or on a limited number of the EU PTAs (e.g. Baltagi *et al,* 2008; Adams *et al.* 2003) but, to the best of our knowledge, there are no contributions addressing the issue of the overall impact of the EU PTAs on the pattern of FDI: is the FDI creation effect prevalent on the FDI diversion effect or the opposite is true? Does the nature of the preferences - unilateral *versus* reciprocal – matter for their impact on FDI? What are the effects of the deep integration provisions?

The aim of this paper is to contribute to the literature by providing answers to these questions through the assessment of the impact of the EU trade agreements on the investment of EU firms in third countries over the period 1995-2005. For this purpose an empirical model based on the knowledge-capital theory of the multinational enterprise (Markusen, 2002; Bergstrand, Egger, 2007) is used to estimate the impact of both trade and deep integration provisions of PTAs on the outward stocks of FDI of the EU. The study covers all third countries and all PTAs signed by the EU or already in force during the examined period.

This paper differs in a number of respects from the other studies assessing the impact of PTAs on FDI (e.g. Adams *et al.*, 2003; Yeyati *et al* 2004; Medvedev, 2006; Baltagi *et al* 2008; Tekin-Koru, Waldkirch, 2009). First, while all these studies use a dummy to take into account the existence of preferences, in this paper we use an explicit measure of the extent of

the bilateral protection; thus, elasticities of FDI to protection in the EU and host countries are estimated. These provide a quantitative assessment of the different impact of EU and host country tariffs on FDI. By using a measure of bilateral protection it becomes possible to draw conclusions on the impact of different trade liberalization options (i.e., unilateral *versus* reciprocal; asymmetric *versus* symmetric) on FDI, something which would not be possible by using a dummy.

Second, most studies do not explicitly take into account the deep integration provisions of the PTAs [2], while in this paper they are included in the model through the use of dummies. The non-trade provisions of all PTAs of the EU considered include commitments regarding liberalization of investment and services, protection of intellectual property rights, standards, competition policy and the settlement of disputes. The dummies are used to test the impact of these non-trade provisions.

Third, a dynamic specification is used to capture the likely impact that previous bilateral stocks of FDI have on current bilateral FDI (Egger, 2001); by means of a dynamic specification the effects that certain policy changes, such as the implementation of deep integration provisions, may have mainly in the long-run can be captured.

The results provide a number of interesting insights. Overall, the estimations indicate that host country tariffs have a positive effect on the EU FDI, while EU tariffs exert a negative impact. This suggests that EU PTAs implies both investment diversion and investment creation; these results are, by and large, confirmed when we split the sample of host countries on the basis of their membership of a specific PTA with the EU, and of their level of income. Deep integration provisions positively affect FDI in upper-middle income countries, while they have a negative influence on the outward stocks of EU FDI in lower-income countries.

The paper is organised as follows. The following section offers an overview of the geographical pattern of the EU FDI in the period examined, with a particular emphasis on the countries which have signed or were negotiating a PTA with the EU. The third section provides the theoretical background to the empirical model. The fourth section illustrates the model and the data used and discusses the estimation issues; the fifth presents and discusses the results obtained, while the final section offers a number of concluding remarks.

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[2] Exceptions are Adams *et al.*(2003) and Lesher, Miroudot (2006).

2. EU Foreign Direct Investment and Preferential Trade Agreements during the period 1995-2005: an overview

EU outward FDI grew significantly during the period 1995-2005, with the exception of the years 2002-04 when the stocks of EU FDI declined, mostly because of the sharp reduction of the EU FDI hosted by developed countries (Figure 1). [3] The stocks of EU FDI hosted by developing countries which signed or were negotiating a PTA with the EU in the period 1995-2005 sharply increased; the average rate of growth was higher than that of both developed countries and the emerging and developing countries which did not have PTAs with the EU (Table 1).

The remarkable expansion of the EU FDI hosted by developing countries with a PTA with the EU is more evident if one compares the rate of growth of EU FDI with that of bilateral trade. In general terms, exports and imports were increasing at lower rates with respect to FDI across all areas, but in particular for developed countries. Unlike FDI, the rate of growth of bilateral trade of developing countries with a PTA is much lower than that of emerging and developing countries which do not have PTAs with the EU. In other words, among developing countries, in those with a PTA with the EU FDI has increased more and trade less compared to those countries which do not have a PTA. This confirms the relevance of the growth of EU FDI in countries which have a PTA with the EU.

Although few developed countries continue to account for the major share of EU outward FDI, they have been losing ground (Table 2). A major shift of EU FDI in this period was toward the 12 countries which entered the EU in 2004 and 2007 (NMS in the Tables and Figure 1), but also a number of emerging countries which do not have trade agreements with the EU – such as China and Russia, which account for a large part of the sharp increase of the share of the group "Emerging and other developing countries" - have attracted new EU FDI. The Table shows that, on the whole, the developing countries which signed a preferential agreement with the EU, although still accounting for a small part of the EU FDI, increased their share of EU FDI by almost 50%. Mediterranean countries, Chile, Mexico and the Balkans have all more than doubled their share, while the increase was lower for the ACP countries and South Africa. Mercosur, which started negotiations with the EU only in 2000, is

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[3] The group "Developed countries" here includes both those with a PTA with the EU (the European Economic Area, EEA) and those without bilateral trade agreements with the EU (United States, Canada, Japan, New Zealand and Australia). The developing countries which have signed or were negotiating a PTA with the EU over the period 1995-2005 are the ACP countries, South Africa, Chile, Mexico, the Mediterranean countries, the Balkans, the other European Neighboured Policy (ENP) countries and Mercosur.

the only area which decreased its share on the EU FDI over the period. As for trade, developing countries with a PTA with the EU did not increase their share of exports to the EU, and even decreased their weight on imports; this loss in competitiveness on the EU markets, which is particularly evident for the ACP countries and for those countries which have started to negotiate agreements with the EU during the period considered - the other European Neighboured Policy (ENP) and Mercosur countries - is noteworthy especially if compared with the extraordinary performance of the emerging and developing countries which do not have a PTA with the EU.

Table 3 reports the average values of bilateral tariffs applied by the EU and the host countries during the period 1995-2005. [4] As expected, the tariffs applied by the EU are, on average, fairly small and lower for imports coming from developing countries with a PTA with the EU. The average tariffs applied by host countries are higher than the ones applied by the EU; this is the case for the developing countries which have a PTA, both high and low income countries, whose average bilateral tariffs are quite significant (over 9%). The other countries apply, on average, lower tariffs to EU exports. On average, the level of tariffs applied by developing countries which have a PTA with the EU is higher than that of the tariffs applied by other developing countries. During the period 1995-2005, EU tariffs decreased more than those applied by host countries to EU exports. Reductions in the EU tariffs have been slightly higher for countries with a PTA with the. As for the host countries, tariffs were reduced more in countries which do not have a PTA with the EU.

To sum up, tariffs applied to EU exports by developing countries with a PTA are much higher, and declined less during the examined period, with respect to other low and lower income countries. This may be one of the factors which helps to explain why EU exports towards developing countries with a PTA have been growing less - and FDI growing more - than exports (FDI) towards other developing economies.

Finally, Table 4 reports for each PTA the various areas of deep integration included in the agreement as for year 2005. Following the approach of the World Bank (World Bank, 2004), six non-trade provisions included in the EU PTAs have been considered, that is, investment liberalization, services liberalization, protection of intellectual property rights (IPR), standards recognition, enforcement of competition policy, and dispute settlement; in addition, only the areas in which specific commitments are actually undertaken (and not just mentioned) have been considered as being part of the agreements. In three cases - ACP

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[4] Details about the methodology used to compute the average bilateral tariffs are provided in section 4.

countries, Mediterranean countries (with the exception of Israel and Jordan) and South Africa - the agreement does not contain specific commitments on liberalizing investment and/or services or provisions on standards, while the agreements with Chile, Mexico and those with the acceding countries (both the NMS-12 and Croatia and Macedonia) cover all areas of deep integration. Overall, Tables 2 and 4 do not seem to provide clear-cut evidence on the relationship between deep integration provisions and the pattern of the EU FDI. Countries with weak commitments in important areas such as investment and services liberalization, like the Mediterranean countries, attracted as much EU FDI as those with strong commitments (i.e. Chile and Mexico); on the other hand, EU FDI grew much more slowly in the ACP countries and South Africa, which did not undertake commitments in a number of important areas such as investment liberalization.

3. Foreign direct investment and preferential trade agreements: theoretical background

Trade costs are one of the key variables determining multinational activity. Early papers explained either horizontal or vertical FDI within general equilibrium trade models in a two-country, two-factor and two-production activities framework. Horizontal FDI occurs when a multi-plant firm locates the same activity in different countries. Markusen (1984) and Markusen and Venables (2000) have shown that horizontal FDI is likely to be important when plant economies of scale are low with respect to firm economies of scale and countries are similar; further, high trade barriers represent a key factor in explaining the choice of producing abroad (tariff-jumping). With vertical FDI different stages of the production process are geographically dispersed. Early models of vertical FDI emphasize that they are likely to be more important when countries differ in factor endowment (Helpman, 1984). Recent literature has expanded this traditional distinction by emphasising the more complex integration strategies of multinational enterprises arising when more countries and stages of production are considered (e.g. Grossman *et al*, 2006; Baltagi *et al,* 2007; Ekholm *et al,* 2007); these include also export-platform FDI, occurring when firms manufacture goods in a foreign country and sell it in a third country.

The different kinds of FDI have been integrated within the knowledge-capital model of the multinational enterprise - originally developed by Markusen (2002) and further expanded by Bergstrand and Egger (2007) to the three-factor and three-country case - which

explains both the choice of replicating the same activities in many locations and that of fragmenting production stages geographically. According to the knowledge-capital model horizontal FDI is likely to prevail if countries are similar in size and in relative endowments and trade costs are high, while vertical FDI could occur when countries differ in factor endowments, especially if the country abundant in skilled-labour is small, and trade costs are low.

A number of theoretical papers has specifically addressed the issue of the impact of trade agreements on FDI by means of partial equilibrium models in a three-country framework (e.g. Motta, Norman 1996; Montout, Zitouna, 2005; Ekholm *et al* 2007). Although based on different settings, these papers share the view that the formation of a free trade area encourages export-platform FDI by both inside and outside firms, and that the overall impact on FDI depends upon the initial situation. If, before the agreement, (inside and outside) firms do not invest abroad, then the reduction/elimination of tariffs of partner countries may stimulate both inside and outside firms to invest in the low cost member country and to export from that plant to the other member countries; thus, the regional agreement has an investment creation effect. However, if initially firms are already horizontally integrated in the partner countries, then the trade agreement may have an investment diversion effect: firms may decide to concentrate production in one country from which they export to the other member countries.

On the basis of this literature a number of variables are expected to explain FDI. [5] The first variable is the size of the market of host and home countries. Market size is crucial in determining whether to exploit plant economies of scale; the larger the size of the markets, the easier it is to cover the plant costs. Hence, we expect horizontal FDI to be positively correlated with the market size. Horizontal FDI is also expected to be positively influenced by market similarity, according to the general equilibrium trade model, while differences in factor endowments can explain vertical FDI.

Trade costs may have different impacts depending upon the nature of FDI. Host country barriers to trade positively affect horizontal FDI, while they should have no effect on vertical FDI, or a negative impact if subsidiaries in the host country use inputs imported from the home country. Conversely, home country barriers to trade are expected to negatively influence vertical FDI, especially if goods produced in the low cost partner country are shipped back to the home country. Finally, other costs that firms face when investing abroad

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[5] The variables here mentioned are also those found to be the most important determinants of FDI by empirical studies (e.g. Carr *et al,* 2001; Markusen, Maskus, 2002; Baltagi *et al,* 2008).

are also important FDI determinants; these generally depend on the overall economic, political and social climate for (foreign) investment in the host country. Obviously, high investment costs negatively affect both vertical and horizontal FDI.

For the purpose of this paper, we wish to focus in particular on the impact of a PTA on the pattern of the outward FDI of one partner country. The expected impacts of a PTA are straightforward. Two key features distinguish the PTAs of developed countries and, more specifically, those of the EU. First, trade concessions may be unilateral - such as the preferential treatment granted to the ACP countries before the Cotonou agreement or the "Everything but arms" initiative - or reciprocal, e.g. the free trade agreement between the EU and the EFTA countries or, more recently, the Economic Partnership Agreements with groups of ACP countries. In the first case the PTA implies the reduction/elimination only of the home country trade barriers; we should expect a positive impact on vertical FDI, because firms face lower costs when shipping the product back to the home country, while the impact on horizontal FDI should be negligible. Reciprocal liberalization implies the reduction/elimination of both home and host countries barriers to trade. While this may have positive effects on vertical FDI, we expect a negative impact on FDI if horizontal FDI prevails before the agreement. In the latter case, regional integration could imply the dismantling of plants in host countries.

As already mentioned, more recent regional agreements cover a number of other areas other than trade in goods (deep integration). Often agreements include investment liberalization provisions - such as the elimination of local content requirements, the removal of barriers to international capital flows and limitations of the foreign investor participation in domestic economic activities – and commitments to liberalise services. These provisions are expected to have a positive effect on both horizontal and vertical FDI, as they reduce investment costs. Other provisions include rules to protect IPR, mutual recognition of standards, enforcement of competition policy, and dispute settlement. A number of these provisions are likely to have a positive effect on FDI. Effective protection of IPR appears to be a key factor influencing the choice to invest abroad, as it reduces the risk of dissipation of the knowledge-based intangible assets of multinational firms; nevertheless, so far the empirical evidence of a positive relation between IPR protection rules and FDI has been weak (Maskus, 2000). Effective procedures for dispute settlement also may favour FDI, while the likely impact of mutual recognition of standards, being non-tariff barriers, is ambiguous; (it may also have an investment diversion effect). The impact of the enforcement of competition policy is not straightforward; the literature on multinational firms has shown that FDI may be

either positively or negatively correlated with the degree of market power (Barba Navaretti, Venables, 2004). One argument frequently cited to support the view that deep integration has an overall positive effect on FDI is that, by locking-in existing domestic reforms, it reduces the risk for foreign investors from political instability. Empirical studies tend to support this view, as they find a positive relation between deep integration and FDI, even though the results do not appear robust to changes in the empirical setting (e.g. Adams *et al*, 2003; Medvedev 2006; Lesher, Miroudot, 2006). Overall, the impact on FDI of deep integration provisions of PTAs is difficult to predict, as there are valid reasons to believe that the overall effect could be either positive or negative.

4. The empirical model

The empirical model used in this paper is more parsimonious than the one proposed by Carr *et al*. (2001) and used by Markusen and Maskus (2002) to test the knowledge-capital theory. In particular, it includes only four control explanatory variables in addition to the variables of interest, i.e. trade costs and deep integration provisions.[6] Unlike previous contributions, we assume the EU as the home country, instead of considering member countries as single home countries. The main reason is that the focus of this paper is the impact of PTAs on the extra-EU FDI, and not on intra-EU FDI; the variables of interest are specific to the EU and do not change from one member state to another. [7]

Hence, we adopt the following specification:

$$\ln\left(FDI_{jt}\right) = \beta_0 + \beta_1 \ln\left(sumGDP_{jt}\right) + \beta_2 \ln\left(relGDP_{jt}\right) + \beta_3 \ln\left(relSKILL_{jt}\right) + \beta_4 \ln\left(dist_j\right) + $$
$$+ \beta_5 \ln\left(host\_tariff_{jt}\right) + \beta_6 \ln\left(eu\_tariff_{jt}\right) + \beta_7 deep\_signed_{jt} + \beta_8 deep\_force_{jt} + \delta_0 trend_t + u_{jt}$$
[1]

where subscript *j* refers to the host country (j=1,...173), *t* indicates the year (t=1995,...,2005); u_{jt} is the error term and *trend* indicates a trend variable. *FDI* indicates the EU outward stocks

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[6] The basic cross-section specification for the knowledge-capital model generally includes interaction terms between skilled labour relative endowments and other explanatory variables, such as the differences in GDP and trade costs. However, the inclusion of these variables leads to the multicollinearity of regressors in the time dimension of panel data (Egger, Merlo, 2007). It is worth noting that also investment costs have been here excluded; this is mainly because of the difficulties in finding data for the whole period and all the countries covered by the study. Nevertheless, the impact of investment costs is expected to be captured by the fixed effects and by the lagged dependent variable in the dynamic model.

[7] The implicit assumption made here is that the extra-EU FDI is not affected by the characteristics of the member state in which the multinational firm is based; rather, EU firms decisions about exports and FDI outside the EU are influenced by the EU market size and factors endowment.

of FDI, *sumGDP* is the sum of GDPs of the host country and of the EU, *relGDP* is the EU-to-host relative GDP and *relSKILL* is the EU-to-host relative skilled-labour endowment. The latter two variables are given by the ratio between GDP or skilled-labour endowments of the EU and those of each host country. [8] *Dist* is the distance between the host country's capital and Brussels, *host_tariff* indicates the tariff applied to the EU exports by the host country, while *eu_tariff* indicates the tariff applied by the EU to imports from the host country. *Deep_signed* is a dummy variable equal to one if a PTA contains deep integration provisions and the agreement has been signed and zero otherwise, while *deep_force* is a dummy variable equal to one if a PTA contains deep integration provisions and the agreement is in force. The basic idea is that these commitments are likely to influence foreign investors even before they come into force, though their impact is expected to be higher the closer the date of implementation of the agreement.

Outward stocks of FDI come from the Eurostat database, which reports data on bilateral FDI from the balance of payments statistics of member countries. Data on GDP are from the World Development Indicators (WDI) 2008. The skilled labour endowment of each country is measured by the secondary school enrolment provided by the WDI 2008. [9] The distances are those provided by CEPII.

A distinguishing feature of this paper is the way in which trade costs are represented in the model. Previous studies have all used a dummy variable to proxy the existence of a PTA (Adams *et al*., 2003; Yeyati *et al*., 2004; Medvededv, 2006; Ekholm *et al*., 2007; Baltagi *et al*., 2008; Tekin-Koru, Waldkirch, 2009). However, dummies may capture a range of other country specific effects which are contemporaneous with the PTA. Furthermore, the dummy variable implicitly assumes that tariffs granted under different preferential schemes are all the same. For these reasons, we use the weighted average of bilateral applied tariffs provided by WITS as a proxy of the trade costs for each country. WITS provides data on bilateral tariffs disaggregated at the six digit level for each pair of countries. In aggregating tariffs the use of import value shares as weights leads to an "endogeneity bias" due to the fact that if tariffs are very high, imports are likely to be very low or nil. A weighted average has thus been computed following the MacMap procedure (Bouët *et al*., 2005). Countries have been split

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[8] The specification proposed by Carr *et al*. (2001) considers the difference between skills or GDP of host and partner countries, rather than the ratio. However, Carr *et al*. (2001) adopt a specification in levels. Studies which consider a specification expressed in logarithm generally use the logarithm of the ratio, i.e. the difference between the logarithms (Egger, Winner, 2006; Baltagi *et al*., 2007; Egger, Merlo, 2007; Egger, 2001 and 2008).
[9] Because of the huge amount of missing values, secondary school enrolment data, instead of tertiary school enrolment or labour force with tertiary/secondary education, have been used to measure the skilled labour endowment.

into five groups on the basis of their level of development. Then, the weighted average of tariffs has been obtained by using as weights the share of imports of each country from the group the exporter belongs to. In this way, the endogeneity bias due to the use of bilateral imports in the weighting procedure is reduced (Cipollina and Salvatici, 2008).

Information about deep integration provisions of PTAs is obtained from the relevant EU regulations. Table A1 in the Appendix reports the PTAs of the EU which have been considered. The deep integration dummies have been set as 1 when the PTA exists and includes specific commitments in investment liberalization - which is considered a key feature to promote foreign investments (World Bank, 2004) – and in at least two out of the other areas.

Table 5 provides information on the variables included in the model. This confirms that, as already highlighted in section 2, the EU FDI directed to high income countries are, on average, more than twenty times those directed toward developing countries, most of which enjoy trade preferences. As expected, differences in GDP and skill endowments are very high for lower income countries and developing countries with a PTA with the EU. Countries which do not have a PTA with the EU apply, on average, lower tariffs on EU exports than PTA countries, while EU tariffs are lower for trade preferred and lower income countries.

Estimating equation [1] by OLS could raise the problem of heterogeneity bias due to observable and non-observable factors specific to each country-pair. From an econometric perspective, the omission of such factors may lead to a mis-specification of equation [1], and produce biased and inconsistent estimates. To take into account individual country effects, country specific dummies are included in equation [1], that is the error term of equation [1] is decomposed as: $u_{EUjt} = \alpha_j + \varepsilon_{EUjt}$, where α_j indicates time-invariant country fixed effects and ε_{EUjt} is the idiosyncratic error term.

Furthermore, when dealing with the stocks of FDI it is quite plausible that past bilateral FDI affects current bilateral FDI (Egger, 2001). Thus, a dynamic specification could be more appropriate. Since OLS and fixed effect estimators yield biased and inconsistent estimates with a dynamic panel specification, the Arellano and Bond (1991) estimator - which is based on a generalised method of moments (GMM) applied on the first-differenced equation - has been employed. Blundell and Bond (1998) proposed a system-GMM approach which combines first-differenced model (with lagged levels of FDI as instruments) and level model (with lagged differences of FDI as instruments). As Egger and Merlo (2007) have argued such an approach is not appropriate in this context. Indeed, system-GMM requires

that initial levels of the series of the bilateral FDI among countries do not deviate systematically from their long-run value. In order to use also lagged differences of the dependent variable as instruments in the level equation for the system-GMM, initial levels of the dependent variable should be mean stationary; however, this assumption is not plausible when the stocks of FDI are the dependent variable (Egger and Merlo, 2007). This is why the Arellano and Bond (1991) estimator has been employed here.

Econometric studies assessing the impact of PTAs on trade have found evidence of endogeneity for the PTA variables (Lederman and Özden , 2004; Baier and Bergstrand, 2007; Caporale *et al.* 2009). Actually, PTA variables could be simultaneously determined with trade flows, since it is not obvious whether countries trade more because they participate to a PTA or sign a PTA because they were already trading relatively more with each other than with third countries. Further, the eligibility to some preferential schemes, such as GSP, may be negatively affected by the exported volume (Özden, Reinhardt, 2005). As regards EU FDI, there is no evidence to date on the direction of the causality relationship between FDI and tariffs which, in principle, may also run in both directions – from tariffs to FDI and *vice versa* – and, as a result, on the correlation between these regressors and the error term. Intuitively, simultaneity between FDI and tariffs may arise if stronger relations also in terms of investments between the two countries affect the level of bilateral tariffs. We tested the hypothesis of endogeneity of host and EU tariffs by using the Davidson-Mackinnon exogeneity test. The resulting p-value is equal to 0.08 and, thus, we reject the null hypothesis of exogeneity at the 10% level of significance.

The Arellano-Bond (1991) estimator allows to deal properly with the endogeneity of regressors by employing appropriate instruments in the GMM procedure. In other words, when estimating equation [1] through the GMM the joint determination of dependent and independent variables may be taken into account. Since Arellano and Bond (1991) show that endogenous variables lagged by two or more periods are valid instruments, we consider the lagged values of host and EU tariffs as instrumental variables.

5. Results

Table 6 presents the results obtained by estimating equation [1] by fixed effects and dynamic GMM, as discussed in the previous section. We also report estimates obtained through OLS for comparison. [10]

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[10] It is worth noting that we should have 1903 (11*173) observations. However, there are many missing values for secondary school enrolment and host tariffs for least developed countries. Moreover, for more than four

As for the OLS estimates, the coefficients have the expected sign, except for the differences in the skilled-labour endowments variable (*skillrel*), which shows a coefficient that is negative and significant. The joint size of the EU and host country markets (*sumGDP*) has a considerable positive and significant effect on the outward FDI of the EU, as shown by the values of the coefficient, in line with most empirical studies on the determinants of FDI. Conversely, relative GDP, as expected, has a negative impact. Among variables concerning PTAs, only the deep integration variables seem to have a significant effect on the FDI of the EU with, as expected, a positive sign.

The results change somewhat when we take into account the heterogeneity bias by considering a fixed effect model. [11] While the fixed effect estimates confirm the relevance of market size and the negative impact of market differences, unlike the OLS estimates, differences in skilled labour endowments exert here a positive and significant impact on EU FDI. These findings suggest that the pattern of the EU FDI is a mix of vertical and horizontal FDI, in line with the results of previous empirical studies dealing with US FDI (e.g. Carr *et al*, 2001; Baltagi *et al* 2007). Further support to this hypothesis is also given by the coefficient of the EU tariff, which is significant and negative. This result suggests that high EU tariffs tend to discourage outward EU FDI, possibly because firms have to face high trading costs to import the final products into the EU market. The presence of deep integration provisions in the agreement has a positive and significant impact on the FDI only if the agreement is in force.

Table 6 also reports the results obtained for the dynamic model using the Arellano and Bond (1991) estimator.[12] The dynamic specification seems to work well, as indicated by the serial correlation tests and the Hansen test. Serial correlation tests show, as expected, a first-order autocorrelation because a first differenced model is considered, but also the absence of second-order autocorrelation. Furthermore, the Hansen test does not reject the null hypothesis that instruments are exogenous. As results show, past FDI significantly and positively affects current FDI. Thus, the dynamic model estimated through the Arellano and Bond (1991) procedure should be considered as the most appropriate.

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hundred observations, EU FDI to developing and least developed countries is equal to zero. Because we are using logarithms, these observations had to be dropped. Only for ten host countries is EU FDI always equal to zero, while, on average, we observe four zero EU FDI over the eleven years analysed. Hence, the probability to observe zero EU FDI is unlikely to be systematic and correlated with EU FDI.
[11] The distance variable has been dropped here, as it is absorbed by country fixed effects, which capture the effects of all time invariant country specific variables.
[12] In estimating the first-differenced equation through the GMM estimator we take into account the fixed effects as well; hence, the distance variable has been dropped in this estimation as well.

The results for the dynamic model also confirm the considerable positive impact of market size, and that FDI is larger the more similar the countries' market size and the greater the differences in skilled-labour endowment. The coefficient of the skilled-labour differences is considerably higher than in the fixed effect estimation and significant at the 1% level. Thus, the estimations seem to provide rather strong and robust evidence of the coexistence of factor endowment based FDI together with market-oriented FDI.

The policy variables confirm, by and large, the results obtained with the fixed effect estimation. Deep integration commitments affect negatively investment by EU firms if the agreement is signed but not yet in force, and positively when the PTA is in force. We have also estimated their long-run impact; the long-run coefficient and the relative standard error are reported at the bottom of the Table.[13] The long-run coefficients are significant and confirm that deep integration positively affects FDI also in the long-run only if the agreement is in force.

The EU trade protection has a negative impact on FDI, supporting the hypothesis of the existence of vertical FDI as well. Unlike the fixed effect estimation, in the estimation of the dynamic model the coefficient of the host country tariff is significant at the 1% level and, as expected, is positive, indicating that a high level of trade protection in the host country encourages tariff-jumping FDI. This result reinforces the hypothesis of a mixed pattern of FDI. Further, it is worth noting that the value of the coefficient of the EU tariff is significantly lower than that of the host country tariff coefficient. This means that a symmetric reduction of host and EU tariffs by one percent would increase EU FDI by 0.005 percent, but at the same time EU FDI would decrease by 0.077 percent because of the reduction of the host country tariff.

Overall, these findings suggest that PTAs may have both an investment creation and an investment diversion effect. The unilateral reduction of the EU tariffs should encourage FDI in the partner countries. Conversely, with a reduction of tariffs on a symmetrical bilateral basis we should expect that investment diversion more than offsets investment creation; our empirical evidence suggests that the same percentage reduction of the average tariff of the EU and partner country would yield a reduction of horizontal FDI in the host country about twenty times higher than the increase in vertical FDI. The main policy implications is that EU investments in the host countries may be encouraged more by unilateral liberalization by the EU, than by reciprocal liberalization.

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[13] The long-run coefficient is given by $\beta_{deep}/\left(1-\beta_{FDI_{t-1}}\right)$.

A further extension of the analysis is the estimation of equation [1] by splitting the sample in two groups: developing countries with a PTA – under negotiation, signed or in force during the examined period - with the EU, and the other countries, in order to verify if there are some significant differences in the pattern of EU FDI among the two groups of countries. The first group includes countries eligible for GSP, the ACPs, the European Neighbourhood Policy (ENP) countries - including the Balkans and the Mediterranean countries - the Mercosur countries, Chile, Mexico and South Africa. Table 7 reports the results of these estimations. The significance of the lagged dependent variable and tests on serial correlation show that the Arellano and Bond (1991) estimator is again the most appropriate. In the latter estimation, results confirm the general findings for both groups of countries regarding the size of joint market and the difference in labour skills, which both positively affect EU FDI, and for relative GDP, which shows a negative and significant coefficient. Moreover, as for the first group of countries, host tariffs positively affect FDI, while EU tariffs have a negative impact. Similarly to the estimates for the total sample of countries, also in the case of the developing countries with a PTA with the EU the coefficient of host tariffs is much higher than that observed for the EU tariffs. This confirms that unilateral trade preferences granted by the EU may enhance EU FDI towards developing countries while this is not the case for reciprocal liberalization; in the latter scenario, investment diversion is expected to more than offset the investment creation effect of a PTA. Conversely, EU FDI towards the second group of countries - which includes developed countries as well as the few developing countries which do not have any PTA with the EU - are not affected by the level of tariffs of host countries, while the coefficient of the EU tariffs is significant, although the sign is not that expected based on theory. Finally, the coefficients of deep integration variables are significant but negative for developing countries which have a PTA with the EU. The result contrasts with those from previous studies which, as mentioned before, have found (weak) evidence either of a positive effect or no impact (e.g. Adams *et al.*, 2003; Medvedev 2006; Lesher, Miroudot, 2006). This negative impact of deep integration provisions on FDI in PTA countries is even greater in the long-run. On the contrary, for the other group of countries deep integration has a significant positive influence on FDI if the PTA is in force.[14]

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[14] It is worth mentioning that the group "other countries" includes also countries which had a PTA with the EU over the period 1995-2005, such as the new member states (NMS-12) and Switzerland. The agreements of the EU with these countries also included deep integration provisions and this is why deep integration coefficients have been estimated also for this group.

Estimations have also been run by splitting the sample in high and upper-middle income countries and low and lower-middle income countries, according to the classification of the World Bank (Table 8), in order to verify if the variables of interest, such as EU and host tariffs and the deep integration dummies, have a different impact on EU FDI according to the income level of the host country. Again for these estimates, the Arellano and Bond (1991) method should be considered as the most appropriate. For both groups of countries, EU FDI is confirmed to be positively correlated with the size of joint market and the relative labour endowment. The coefficient of relative market size is negative but significant for the high and upper-middle income countries only.

Moreover, host trade protection negatively affects EU FDI in low and lower-middle income countries; this may be possibly due to the negative impact on FDI that host tariffs exert when the local subsidiaries of multinational firms use inputs from the home country. The results do not provide analogous evidence for the high and upper-middle income countries. EU tariffs have a negative and significant effect on FDI towards the group of low and lower-middle income countries. Thus, as for low and lower-middle income countries, our evidence suggests that both EU and host country tariffs reductions always positively affect FDI; this is possibly because of the prevalence of vertical type multinational firms and the lack of horizontal FDI. The results for relative market size – which is not significant- and relative skills, which is positive and significant, support this hypothesis. Hence, the policy implication is that, for these countries, bilateral liberalizations may encourage more FDI than unilateral ones.

Finally, Table 8 shows that deep integration provisions have a significant negative effect on the EU FDI towards low and lower-middle income countries, both in the short-run and in the long-run, confirming the evidence found for PTA countries. On the contrary, the effect is significantly positive in the case of the EU FDI hosted by high and higher-middle income countries. In other words, estimations made for different aggregates of countries confirm, by and large, that deep integration provisions negatively influence EU FDI toward developing countries while the effect is significant and positive in the case of higher income countries. The results obtained for the total sample (Table 6), are thus the consequence of the coexistence of two very different behaviours: the EU FDI towards lower income countries, for which the effect of deep integration provisions is negative, and EU investments in higher income countries, which are positively affected by deep integration provisions.

To further investigate this issue, equation (1) has been estimated including in the model, instead of the two deep integration dummies, a dummy variable representing single

deep integration provisions (investment liberalization, service liberalization, standard recognition, protection of IPR, enforcement of competition or dispute settlement) one by one. The main objective is to verify if, despite the aggregated negative impact of deep integration provisions on FDI for developing countries, there is any single provision – especially IPR and investment liberalization which, on the basis of previous literature, are expected to positively influence investments – showing a positive and significant coefficient also in the case of less developed host countries. The dummy is equal to one if the PTA is in force and includes that single provision and zero otherwise. Since these dummies are highly correlated, they cannot be included in the model at the same time; hence, six different estimations have been run. Results, which are reported in the Appendix, confirm those obtained by estimating the model with the aggregate dummies. The coefficients of the individual deep provision dummies are all negative and significant for developing countries while they are significantly positive for the other groups of countries. Hence, also these results confirm that deep provisions negatively affect EU FDI in lower income countries and countries with a PTA with the EU.

6. Concluding remarks

The aim of this paper is to assess the impact of EU PTAs on the pattern of outward stocks of EU FDI. Using a sample of 173 host countries and the EU as the home country, we have estimated an empirical specification of the knowledge-capital model over the period 1995-2005. Unlike previous studies, which have limited the analysis to the impact of the enlargements of the EU on FDI, in this paper all host countries, including developing and less developed ones, and all PTAs have been considered. Furthermore, bilateral tariffs have been used to measure bilateral trade protection, instead of using dummy variables. Finally, we include two dummies to also take into account the deep integration provisions often included in the more recent agreements. From an econometric point of view, heterogeneity bias, which could be due to the likely correlation between country specific effects and regressors, has been taken into account by including in the model country fixed effects. Furthermore, we have considered the fact that past stocks of FDI are likely to affect current ones and estimated a dynamic panel model by using the Arellano and Bond (1991) estimator.

Results show that the pattern of the EU FDI is a mix of vertical and horizontal FDI. Market size has a considerable positive impact on the outward stocks of FDI; further, FDI is greater the more similar the market size of the countries involved and the greater the difference in skilled-labour endowments. These findings are, by and large, in line with

previous empirical studies. Our estimates provide rather robust evidence that EU tariffs have a negative impact on outward FDI; thus, PTAs reducing EU tariffs are expected to positively affect EU FDI in third countries. There is also evidence that tariffs applied by host countries to EU exports have a positive effect on the outward FDI; this suggests that PTAs may have also an investment diversion effect. Because the size of the coefficient of the host country tariffs is much greater than that of the EU tariff, we should expect that the same reduction of the host and EU tariffs would result in a much greater investment diversion than investment creation effect, with an overall expected decline in the EU outward FDI. Thus, one of the main policy implications of the paper is that, while unilateral preferences granted by the EU could encourage EU FDI, reciprocal trade agreements are likely to reduce them. A further result is that the effect of deep integration on the outward stocks of EU FDI depends on the state of play of the PTA; only if the agreement is in force are EU investments positively affected by deep integration provisions.

These results are largely confirmed when the sample of host countries is split into countries with a PTA with the EU and other countries, and in higher and lower income countries. Unilateral liberalization is confirmed to be more helpful in enhancing EU FDI towards countries which have a PTA with the EU. However, this may not be the case for low- and lower-middle income countries, for which our results suggest that host tariffs exert a negative effect on FDI, possibly because of the prevalence of vertical-type FDI; in that case, there would be no investment diversion effect and reciprocal trade liberalization is expected to increase FDI more than unilateral trade liberalization. Another interesting and quite robust result is that all deep integration provisions have a negative effect on the EU FDI in countries with a PTA with the EU and, more generally, in low and lower-middle income countries. We did not find evidence supporting the hypothesis that this is due to the negative effect exerted only by certain deep integration commitments, such as standards recognition; rather, our estimates suggest that all areas of deep integration provisions exert a negative impact on the EU FDI in low and lower-middle income countries. On the contrary, EU FDI towards high and upper-middle income countries is positively affected by deep integration provisions. Our results seem to suggest that deep integration commitments, in order to be effective in terms of encouraging FDI, need a certain level of economic development of the host country.

Finally, this paper has not addressed a number of relevant issues which should be hopefully addressed by future research. The effects of PTAs have been assessed here only for the EU FDI; however, PTAs may well attract multinational firms from third countries as well. To fully address this issue, data on bilateral stocks of FDI from non-EU countries would be

necessary; while these are available for OECD countries, this is not always the case for many other third countries. A further extension of this work would be considering the existence of trade agreements of host countries with countries different from the EU. EU FDI are likely to be positively affected by these agreements, as EU firms benefit from the larger size of the host market and exploit economies of scale. South-South agreements may have this positive side-effect, i.e. by enlarging the size of the internal market they improve their attractiveness for EU investors. Finally, this paper has only examined the outward stocks of EU FDI, because its focus was the impact on FDI in developing countries; however, EU trade agreements obviously affect EU inward stocks of FDI. This is another issue that could be addressed by further research.

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Figure 1: EU-15 outward stocks of FDI (EUR bn)
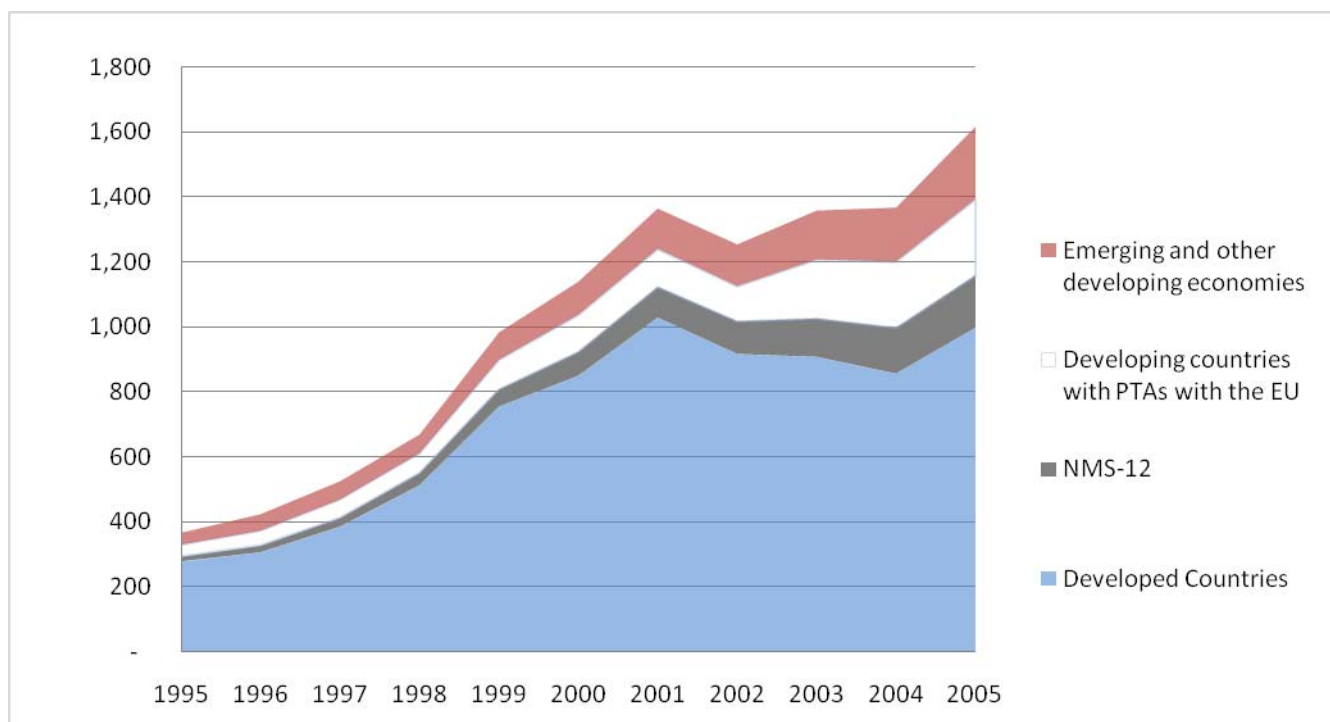
Source: authors' computation on Eurostat data

Table 1: EU-15 outward stocks of FDI and trade: average rate of growth

(1995-2005) (%)

	FDI	Exports	Imports
Developed Countries	14.8	3.1	2.8
New Member States -12	28.4	10.5	11.3
Developing countries with PTAs with the EU	22.6	8.1	9.0
Emerging and other developing economies	20.6	15.0	11.4

Source: authors' computations on Eurostat and Unctad data

Table 2: Distribution of the EU-15 FDI outward stocks , exports and imports during the period 1995-2005 (%)

	EU-15 FDI outward stocks			EU-15 Exports			EU-15 imports		
	1995-96	1999-2000	2004-05	1995-96	1999-2000	2004-05	1995-96	1999-2000	2004-05
Developing countries with a PTA with the EU	*10.2*	*9.6*	*14.7*	*16.2*	*18.1*	*18.8*	*15.3*	*14.3*	*13.9*
ACP	0.7	0.8	1.1	1.7	1.9	1.8	3.6	2.7	2.7
South Africa	1.3	1.1	1.6	-	1.4	1.8	-	1.3	1.5
Chile	0.4	0.4	1.2	0.6	0.4	0.4	0.6	0.5	0.7
Mexico	0.8	0.9	2.4	1.2	1.8	2.1	0.6	0.7	0.7
Euromed	0.9	1.2	2.1	7.7	8.0	8.3	5.3	5.0	5.5
Balkans	0.0	0.1	0.4	1.0	0.9	1.2	0.5	0.4	0.5
Mercosur	*6.0*	*5.0*	*5.8*	*3.7*	*3.2*	*2.7*	*3.0*	*2.3*	*1.5*
other European Neighboured Policy countries	*0.0*	*0.1*	*0.2*	*0.3*	*0.5*	*0.5*	*1.8*	*1.4*	*0.8*
Others	**89.8**	**90.4**	**85.5**	**83.8**	**81.9**	**81.2**	**84.7**	**85.7**	**86.1**
NMS-12	4.3	5.9	10.1	11.8	13.1	19.3	9.7	10.6	13.6
Developed countries	63.7	68.4	53.9	37.1	39.6	38.3	37.0	35.1	24.8
European Economic Area	10.7	7.4	8.4	10.3	8.2	8.7	8.4	6.2	5.3
Emerging and other developing countries	11.1	8.8	13.1	24.6	21.0	14.9	29.6	33.8	42.4

Source: authors' computations on Eurostat and Unctad data

Table 3: Bilateral tariffs over the period 1995-2005

	Total		High and upper-middle income countries		Low and lower-middle income countries	
	Average value	*Rate of growth*	*Average value*	*Rate of growth*	*Average value*	*Rate of growth*
Countries with a PTA with the EU						
Host countries average tariff	9.5	-2.1	9.1	-2.0	9.5	-2.2
EU average tariff	0.9	-5.5	0.7	-7.0	0.9	-4.8
Others						
Host countries average tariff	4.0	-2.9	3.4	-3.9	7.2	-1.0
EU average tariff	2.0	-5.1	1.9	-6.2	2.3	1.5

Source: authors' computation on World Bank data

Table 4: Deep integration provisions in EU trade agreements (2005)

	Investments liberalization	Services liberalization	Standards	Competition	IPR	Dispute settlement
ACP	0	X	X	X	X	0
South Africa	0	0	0	X	X	X
Chile	X	X	X	X	X	X
Mexico	X	X	X	X	X	X
Israel and Jordan	X	X	X	X	X	X
Other Euromed	0	0	0	X	X	X
Croatia and Macedonia	X	X	X	X	X	X
Other Balkans	0	0	0	0	0	0
New Member States-12	X	X	X	X	X	X

Table 5. Descriptive Statistics, 1995-2005.

	All host countries		Host countries with a PTA with the EU		Host countries with no PTA with the EU		High and upper-middle income host countries		Low and lower-middle income host countries	
	Mean	*(CV)*	**Mean**	*(CV)*	**Mean**	*(CV)*	**Mean**	*(CV)*	**Mean**	*(CV)*
FDI stock (in thousand Euro)	5446.51	*(.13)*	1029.73	*(.26)*	24050.53	*(.26)*	12222.28	*(.19)*	450.23	*(.28)*
GDP of the Host countries (in billions Euro)	158,000.00	*(.)*	49,000.00	*(.)*	676,000.00	*(.)*	317,000.00	*(.)*	35,400.00	*(.)*
GDPrel (in thousand Euro)	1,273,273.00	*(.38)*	1,516,834.00	*(.42)*	117,026.90	*(.77)*	721,295.70	*(.38)*	1,700,992.00	*(.42)*
SKILLrel	2.59	*(.97)*	2.92	*(1.01)*	1.28	*(3.17)*	1.35	*(3.95)*	3.73	*(1.13)*
HOST tariff	8.35	*(1.32)*	9.46	*(1.48)*	4.02	*(1.22)*	7.11	*(1.34)*	9.48	*(1.38)*
EU tariff	1.10	*(.67)*	0.88	*(.58)*	2.02	*(1.07)*	1.24	*(.79)*	0.99	*(.58)*
Total observations	1720		1390		330		730		990	

Note: CV is the coefficient of variation.
Source: authors' computations.

Table 6. Estimation results. Dependent variable: FDI stocks (in logarithm) (1995-2005)

	OLS with cluster			Fixed Effects			Arellano-Bond (1991)		
FDI(t-1)							0.297	*(.01)*	***
sumGDP	35.708	*(4.86)*	***	34.822	*(3.)*	***	21.673	*(.79)*	***
relGDP	-1.166	*(.06)*	***	-2.499	*(.46)*	***	-5.611	*(.25)*	***
relSKILL	-0.845	*(.33)*	**	1.121	*(.43)*	***	3.568	*(.13)*	***
HOST tariff	0.112	*(.16)*		-0.070	*(.1)*		0.077	*(.03)*	***
EU tariff	0.003	*(.04)*		-0.051	*(.01)*	***	-0.005	*(.)*	***
DEEP signed	0.584	*(.27)*	**	0.037	*(.18)*		-0.309	*(.04)*	***
DEEP force	1.534	*(.3)*	***	0.414	*(.19)*	**	0.709	*(.06)*	***
DIST	-0.182	*(.17)*							
Trend	-0.627	*(.11)*	***	-0.558	*(.08)*	***	-0.395	*(.02)*	***
Costant	-1220.919	*(168.74)*	***	-1178.321	*(102.49)*	***			
Observations	741			743			509		
R-squared	0.7427			0.6323					
Wald-Chi Square							36691.99		
Hansen test							62.74		
(p-value)							*(.59)*		
AR(1) test							-3.72		
(p-value)							*(.)*		
AR(2) test							-1.18		
(p-value)							*(.24)*		
Long-run coefficient DEEP signed							-0.440	*(.06)*	***
Long-run coefficient DEEP force							1.008	*(.08)*	***

Notes: standard errors in parenthesis.

***; **, * indicate significance at 1%, 5% and 10% level, respectively.

§: standard errors are adjusted by clustering observations at the country level.

Table 7. Estimation results for developing countries with a PTA with the EU. Dependent variable: FDI stocks
(in logarithm) (1995-2005)

	Developing countries with a PTA			Others		
	Fixed Effects		Arellano-Bond (1991)	Fixed Effects		Arellano-Bond (1991)
FDI(t-1)			0.299 (.02) ***			0.303 (.05) ***
sumGDP	38.190 (3.65) ***		24.601 (.93) ***	25.980 (5.41) ***		16.310 (2.61) ***
relGDP	-3.009 (.51) ***		-4.295 (.29) ***	0.744 (1.1)		-3.101 (1.58) *
relSKILL	1.327 (.48) ***		2.659 (.11) ***	0.040 (1.11)		1.193 (.61) *
HOST tariff	-0.515 (.15) ***		0.146 (.07) **	0.274 (.12) **		-0.070 (.16)
EU tariff	-0.057 (.02) ***		-0.061 (.) ***	-0.058 (.02) **		0.008 (.) *
DEEP signed	-0.183 (.21)		-0.242 (.07) ***	0.332 (.35)		0.094 (1.21)
DEEP force	-0.028 (.22)		-0.640 (.1) ***	1.753 (.36) ***		1.883 (1.) *
DIST						
trend	-0.644 (.09) ***		-0.435 (.02) ***	-0.322 (.13) **		-0.268 (.05) ***
costant	-1288.967 (124.34) ***			-904.466 (184.81) ***		
Observations	536		355	207		154
R-squared	0.6337			0.7087		
Wald-Chi Square			24643.72			2032.05
Hansen test			47.34			17.41
(p-value)			(.62)			(1.)
AR(1) test			-3.33			-1.79
(p-value)			(.)			(.07)
AR(2) test			-1.53			-0.72
(p-value)			(.13)			(.47)
Long-run coefficient DEEP signed			-0.345 (.1) ***			0.135 (1.73)
Long-run coefficient DEEP force			-0.913 (.15) ***			2.702 (1.4) *

Notes: standard errors in parenthesis.
        ***; **, * indicate significance at 1%, 5% and 10% level, respectively.

Table 8. Estimation results by level of income of countries. Dependent variable: FDI stocks (in logarithm) (1995-2005)

	High and upper-middle income		Low and lower-middle income	
	Fixed Effects	**Arellano-Bond (1991)**	**Fixed Effects**	**Arellano-Bond (1991)**
FDI(t-1)		0.227 *(.02)* ***		0.370 *(.04)* ***
sumGDP	32.222 *(3.56)* ***	17.130 *(1.23)* ***	38.354 *(5.29)* ***	19.718 *(1.99)* ***
relGDP	-3.486 *(.61)* ***	-4.517 *(.35)* ***	-1.152 *(.78)*	-0.001 *(.77)*
relSKILL	0.711 *(.63)*	4.238 *(.29)* ***	1.697 *(.65)* **	1.321 *(.34)* ***
HOST tariff	0.045 *(.11)*	-0.050 *(.09)*	-0.337 *(.2)* *	-0.338 *(.06)* ***
EU tariff	-0.049 *(.02)* ***	0.006 *(.)*	-0.048 *(.02)* **	-0.038 *(.01)* ***
DEEP signed	-0.022 *(.21)*	0.678 *(.16)* ***	0.071 *(.36)*	-0.710 *(.13)* ***
DEEP force	0.419 *(.22)* *	2.307 *(.25)* ***	0.352 *(.39)*	-1.583 *(.23)* ***
DIST				
trend	-0.522 *(.09)* ***	-0.282 *(.03)* ***	-0.579 *(.14)* ***	-0.266 *(.07)* ***
costant	-1078.194 *(121.78)* ***		-1316.006 *(179.67)* ***	
Observations	432	313	311	196
R-squared	0.6596		0.6266	
Wald-Chi Square		3132.43		1732.23
Hansen test		33.88		28.01
(p-value)		*(.92)*		*(.46)*
AR(1) test		-2.44		-2.86
(p-value)		*(.02)*		*(.)*
AR(2) test		-0.68		-1.52
(p-value)		*(.5)*		*(.13)*
Long-run coefficient DEEP signed		0.876 *(.21)* ***		-1.127 *(.21)* ***
Long-run coefficient DEEP force		2.984 *(.34)* ***		-2.511 *(.46)* ***

Notes: standard errors in parenthesis.
        ***; **, * indicate significance at 1%, 5% and 10% level, respectively.

Appendix.

Table A1: The Preferential Trade Agreements of the European Union over the period 1995-2005

Country	Agreement
South Africa	Trade Development and Cooperation Agreement
ACP countries	Lomè IV and the Cotonou Agreement
Chile	Association agreement
Mexico	Economic Partnership and Political Coordination and Cooperation Agreements
Algeria, Egypt, Israel, Jordan, Morocco, Palestine, Tunisia	Association Agreements
Syria	Cooperation Agreement
Lebanon	Interim Agreement
TFYR Macedonia, Croatia, Albania, Montenegro	Stabilisation and Association agreements
Serbia	Interim Agreement
Turkey, Andorra	Custom union
Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia	European Agreements
Cyprus, Malta	Association Agreements
Norway, Iceland, Switzerland	European Economic Area
Mercosur	*Ongoing negotiations*

Table A2. Estimation results including single deep provisions in the model. All countries. Dependent variable: FDI stocks (in logarithm) (1995-2005). **Estimation method: Arellano-Bond (1991)**

	Investment liberalization			Standard			Service			Competition			Dispute or IPR		
FDI(t-1)	0.302	(.01)	***	0.299	(.02)	***	0.319	(.01)	***	0.304	(.02)	***	0.284	(.02)	***
sumGDP	20.718	(.79)	***	21.612	(.99)	***	21.929	(.37)	***	21.626	(1.03)	***	21.870	(.72)	***
GDPrel	-5.619	(.2)	***	-5.645	(.23)	***	-5.958	(.2)	***	-5.779	(.24)	***	-5.750	(.22)	***
SKILLrel	3.265	(.1)	***	3.348	(.1)	***	3.508	(.09)	***	3.378	(.1)	***	3.322	(.16)	***
HOST tariff	0.031	(.03)		0.106	(.03)	***	0.070	(.02)	***	0.108	(.03)	***	0.091	(.02)	***
EU tariff	-0.009	(.)	***	-0.005	(.)	***	-0.010	(.)	***	-0.005	(.)	***	-0.005	(.)	***
Deep variable	1.184	(.07)	***	0.908	(.05)	***	0.877	(.05)	***	0.899	(.05)	***	1.034	(.06)	***
trend	-0.384	(.02)	***	-0.398	(.02)	***	-0.415	(.01)	***	-0.403	(.03)	***	-0.404	(.02)	***
Observations	509			509			509			509			509		
Wald-Chi Square	23259.38			29781.8			18112.2			28634.6			28455.13		
Hansen test	70.31			71.67			68.52			71.59			72.09		
(p-value)	(.53)			(.49)			(.59)			(.49)			(.48)		
AR(1) test	-3.51			-3.51			-3.7			-3.51			-3.45		
(p-value)	(.)			(.)			(.)			(.)			(.)		
AR(2) test	-1.33			-1.3			-1.27			-1.24			-1.27		
(p-value)	(.18)			(.19)			(.2)			(.22)			(.21)		

Notes: standard errors in parenthesis.
***; **, * indicate significance at 1%, 5% and 10% level, respectively.

Table A3. Estimation results for developing countries with a PTA with the EU including single deep provisions in the model.
Dependent variable: FDI stocks (in logarithm) (1995-2005)**. Estimation method: Arellano-Bond (1991)**

	Investment liberalization			Standard			Service			Competition			Dispute or IPR		
FDI(t-1)	0.246	(.03)	***	0.300	(.02)	***	0.241	(.03)	***	0.299	(.01)	***	0.301	(.02)	***
sumGDP	24.702	(1.08)	***	24.772	(.95)	***	24.974	(.98)	***	24.905	(.96)	***	24.520	(.99)	***
GDPrel	-4.749	(.24)	***	-4.609	(.27)	***	-4.775	(.22)	***	-4.578	(.28)	***	-4.573	(.28)	***
SKILLrel	3.041	(.14)	***	2.639	(.15)	***	3.015	(.31)	***	2.628	(.15)	***	2.798	(.16)	***
HOST tariff	0.425	(.05)	***	0.212	(.05)	***	0.263	(.05)	***	0.218	(.05)	***	0.227	(.05)	***
EU tariff	-0.058	(.)	***	-0.060	(.)	***	-0.061	(.)	***	-0.060	(.)	***	-0.058	(.)	***
Deep-variable	-0.642	(.13)	***	-0.438	(.08)	***	-0.365	(.13)	***	-0.437	(.08)	***	-0.477	(.08)	***
trend	-0.423	(.03)	***	-0.449	(.02)	***	-0.434	(.03)	***	-0.450	(.02)	***	-0.442	(.03)	***
Observations	355			355			355			355			355		
Wald-Chi Square	5652.92			11523.59			17810.6			12137.5			10828.66		
Hansen test	45.37			47.23			44.87			47.31			47.34		
(p-value)	(.73)			(.66)			(.75)			(.66)			(.66)		
AR(1) test	-2.74			-3.29			-2.95			-3.28			-3.23		
(p-value)	(.01)			(.66)			(.)			(.)			(.)		
AR(2) test	-1.26			-1.41			-1.67			-1.48			-1.38		
(p-value)	(.22)			(.16)			(.17)			(.14)			(.17)		

Notes: standard errors in parenthesis.
***; **, * indicate significance at 1%, 5% and 10% level, respectively.

Table A4. Estimation results for countries with no PTA with the EU including single deep provisions in the model. Dependent variable: FDI stocks (in logarithm) (1995-2005)**. Estimation method: Arellano-Bond (1991)**

	Investment liberalization, Standard, Competition, Service, Dispute or IPR		
FDI(t-1)	0.303	(.05)	***
sumGDP	16.368	(2.38)	***
GDPrel	-3.162	(1.44)	**
SKILLrel	1.246	(.58)	**
HOST tariff	-0.053	(.14)	
EU tariff	0.008	(.)	**
Deep-variable	1.816	(.19)	***
trend	-0.267	(.05)	***
Observations	154		
Wald-Chi Square	2353.17		
Hansen test	17.2		
(p-value)	(.99)		
AR(1) test	-1.8		
(p-value)	(.07)		
AR(2) test	-0.72		
(p-value)	(.47)		

Notes: standard errors in parenthesis.
***; **, * indicate significance at 1%, 5% and 10% level, respectively.

Table A5. Estimation results for high and upper-middle income countries including single deep provisions in the model. Dependent variable: FDI stocks (in logarithm) (1995-2005). **Estimation method: Arellano-Bond (1991)**

	Investment liberalization			Standard, Competition, Dispute or IPR			Service		
FDI(t-1)	0.235	(.02)	***	0.211	(.03)	***	0.234	(.02)	***
sumGDP	17.182	(1.17)	***	18.275	(.91)	***	15.955	(1.31)	***
GDPrel	-4.684	(.46)	***	-4.707	(.26)	***	-4.069	(.45)	***
SKILLrel	3.914	(.31)	***	4.459	(.18)	***	3.923	(.3)	***
HOST tariff	-0.249	(.07)	***	-0.213	(.06)	***	-0.171	(.08)	**
EU tariff	-0.005	(.)		0.001	(.)		0.000	(.)	
Deep-variable	1.770	(.06)	***	1.777	(.11)	***	1.822	(.08)	***
trend	-0.299	(.03)	***	-0.308	(.03)	***	-0.255	(.04)	***
Observations	313			313			313		
Wald-Chi Square	6487.46			5619.61			7934.76		
Hansen test	35.37			36.89			34.36		
(p-value)	(.91)			(.88)			(.93)		
AR(1) test	-2.76			-2.62			-2.86		
(p-value)	(.01)			(.01)			(.)		
AR(2) test	-0.58			-0.46			-0.62		
(p-value)	(.56)			(.65)			(.54)		

Notes: standard errors in parenthesis.
***; **, * indicate significance at 1%, 5% and 10% level, respectively.

Table A6. Estimation results for low and lower-middle income countries including single deep provisions in the model. Dependent variable: FDI stocks (in logarithm) (1995-2005). **Estimation method: Arellano-Bond (1991)**

	Investment liberalization, Dispute or IPR			Standard, Service or Competition		
FDI(t-1)	0.435	*(.03)*	***	0.431	*(.03)*	***
sumGDP	21.951	*(2.21)*	***	23.003	*(1.84)*	***
GDPrel	-2.597	*(.82)*	***	-1.926	*(.73)*	***
SKILLrel	1.541	*(.28)*	***	0.829	*(.27)*	***
HOST tariff	-0.338	*(.06)*	***	-0.406	*(.05)*	***
EU tariff	-0.058	*(.01)*	***	-0.058	*(.01)*	***
Deep-variable	-0.713	*(.21)*	***	-1.154	*(.15)*	***
trend	-0.430	*(.07)*	***	-0.438	*(.06)*	***
Observations	196			196		
Wald-Chi Square	43698.43			2145.99		
Hansen test	29.3			27.71		
(p-value)	*(.45)*			*(.53)*		
AR(1) test	-3.3			-3.23		
(p-value)	*(.)*			*(.)*		
AR(2) test	-1.4			-1.47		
(p-value)	*(.16)*			*(.14)*		

Notes: standard errors in parenthesis. ***; **, * indicate significance at 1%, 5% and 10% level, respectively.