FDI and Unit Values of Exports

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Abstract
The debate on trade and growth increasingly focuses on the composition of exports, as exports of more "sophisticated" products appear to be positively correlated with growth. Upgrading the quality of exports is also high on the policy agenda of many countries. This study argues that policies aimed at attracting FDI inflows offer potential for upgrading the country's export basket. To examine this question, this study relates unit values of exports measured at the 4-digit SITC level available for 116 countries for the period 1984-2000 to FDI inflows. FDI inflows are proxied by recently collected information on sectors treated by national investment agencies as priority in their efforts to attract FDI. Our findings are consistent with a positive effect of FDI on within-sector unit values in developing countries, while such a relationship is less evident in developed countries. These findings are consistent with FDI bridging gaps in production and marketing techniques between developing and developed economies.

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1. Introduction

While export-led growth has often been cited as the engine behind the Asian miracle, more recent research has shifted the focus of the debate on trade and growth away from the mere fact of exporting and towards the importance of export composition for growth. For instance, in Dani Rodrik's view one of the key stylized facts of development is the finding that countries promoting exports of more "sophisticated" goods grow faster (Rodrik 2006; Hausmann, Hwang and Rodrik 2006). Similarly, Schott (2004) finds that trade specialization has been happening within rather than between sectors and that the quality of exports (proxied by unit values) tends to be positively correlated with the level of development, and more specifically with the relative capital- and skill-abundance. Likewise, Hummels and Klenow (2005) show that rich countries tend to export higher quantities of goods at modestly higher prices, while more labor-abundant countries export higher quantities, but not at higher prices.

The importance of product upgrading and climbing up the export value chain has been instinctively accepted by politicians who, to quote Ross Perot's famous line, tend to believe that it's better to make computer chips than potato chips. Yet, upgrading the quality of exports, especially in a developing country, is not a trivial task given the resources and time needed to build up the capital stock and the skills of the labor force.

Attracting inflows of foreign direct investment (FDI), which bring not only new capital but also new knowledge, may be a way of accelerating this process. A basic tenet of the theory of the multinational firm is that such firms rely heavily on intangible assets which can be easily transferred to foreign subsidiaries and their productivity is independent of the number of facilities in which they are employed (Markusen 2002). Multinationals are producers of innovations, and they are responsible for most of the world's research and development (R&D) activities. For instance, in 2002, 700 firms, 98 percent of which are multinational corporations, accounted for 46 percent of the world's total R&D expenditure and 69 percent of the world's business R&D. In 2003, the gross domestic expenditure on R&D of 3.84 billion dollars by the eight new members of the EU[1] was equal to about half of the R&D expenditure of the Ford Motor (6.84 billion), Pfizer (6.5 billion), DaimlerChrysler (6.4 billion) and Siemens (6.3 billion) during the same year. It was comparable to the R&D budget of Intel (3.98 billion), Sony (3.77 billion), Honda and Ericsson (3.72 billion each) (see UNCTAD 2005). More than 80 percent of global royalty payments for international transfers of technology in 1995 were made from subsidiaries to their parent firms (UNCTAD 1997).

The purpose of this study is to examine whether FDI can indeed serve as a catalyst for upgrading of export products. Such upgrading can happen in two ways. First, multinationals using a country as an export platform may engage in production of more sophisticated goods that those previously exported by their host country. Second, the presence of multinationals may lead to knowledge spillovers to local firms in the same industry or in the supplying sectors, which will in turn facilitate product upgrading. For instance, in a recent World Bank survey 24 percent of local enterprises in the Czech Republic and 15 percent in Latvia reported that they have learned about availability of new technologies by observing multinational enterprises operating in their

[1] The group includes the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia. As the 2003 figures were not available for Lithuania and Slovenia, the 2002 data were used for these countries.

country and their sector. Fifty percent of suppliers of multinationals surveyed in the Czech Republic reported improving their quality control systems in response to the request of their multinational customer (Javorcik 2007).[2]

A cross-country analysis of the relationship between upgrading of export products and FDI poses several challenges. First, in order to distinguish the effects of FDI inflows from all other country-specific shocks and policies ideally one would like to use sector-level information on FDI inflows. Unfortunately, such data are difficult to come by, particularly in a developing country context. To the best of our knowledge, the only relatively comprehensive data set on sectoral FDI figures for a large number of host countries is available from the US Bureau of Economic Analysis (BEA). This data set, however, covers only US FDI. Although US FDI is likely to constitute a considerable share of total FDI in certain countries, in others it might not. Using direct FDI measures would therefore be likely to give a less than complete picture of the actual foreign presence in many country-sector combinations. In addition, the time period covered by the BEA data is quite short, as the FDI stock information starts in 1989. Moreover, in some cases figures in particular country-industry-year cells are suppressed for confidentiality reasons. The second challenge in the analysis is to identify the direction of causality. FDI may promote upgrading of export products but it may also be attracted to countries and sectors that are already exporting higher value products.

To address these challenges, our study utilizes a new data set on industry-level targeting done by national investment promotion agencies (IPA) rather than data on actual FDI inflows. The information on whether or not a particular country has been targeting a particular sector in its effort to attract FDI, the timing of such activities and the list of priority sectors is available from the World Bank Census of Investment Promotion Agencies covering over one hundred countries around the world. Sector targeting is considered to be best practice by investment promotion professionals, as it is believed that more intense efforts concentrated on a few priority sectors are likely to lead to greater FDI inflows than less intense across-the-board attempts to attract FDI (Loewendahl 2001; Proksch 2004). And indeed, in the World Bank Census a vast majority of IPAs reported being involved in sectoral targeting. Moreover, a recent empirical analysis by Harding and Javorcik (2007) shows that sector targeting leads to higher inflows of FDI into developing countries. More specifically, the study finds that FDI inflows into sectors explicitly targeted by IPAs more than double in the post-targeting period relative to the pre-targeting period and non-targeted sectors.

Our empirical analysis, based on export data from Feenstra et al. (2005), examines whether export products in sectors targeted by IPAs tend to have higher unit values post-targeting relative to the pre-targeting period and non-targeted sectors. The data set covers 116 countries during the 1984-2000 period. Unit values of export products are calculated at the 4-digit SITC level, while sector targeting information is available at the 3-digit NAICS level.[3] To take into account country endowments and other time-invariant unobservables that may influence unit values of

[2] In the same survey, a quarter of local suppliers of multinationals operating in the Czech Republic reported that the knowledge gained by doing business with a multinational helped them become an exporter, 12% said that they started supplying foreign sister companies of their multinational customer and 9% benefited from the multinational customer recommending them to other companies abroad.

[3] Examples of 4-digit SITC products include SITC 8434 Skirts, women's of textile fabric, SITC 8435 Blouses of textile fabric, SITC 6412 Printing paper and writing paper, in rolls or sheets, SITC 6612 Portland cement, ciment fondu, slug cement.

exports from a particular country-sector combination, the empirical specification includes country-sector fixed effects. In other words, our analysis focuses on within country-sector variation in unit values. To control for differences in unit values between products (e.g., the fact that pencils have lower unit values than computers), the empirical specification includes product-year fixed effects. These fixed effects also control for factors that might cause the relative price of pencils to computers to change over time. Finally, the empirical model includes country level controls.

The results suggest a positive relationship between FDI and unit values of exports in developing countries. We find a positive and statistically significant association between sectoral targeting (proxied by an indicator variable or by the number of years targeting has been in place) and unit values. This result can be found in a contemporaneous specification as well as specification with one, two or three lags. To check that our results are not subject to a reverse causality problem, we show that sectors that will be targeted next period (or in two or three periods, depending on the specification) do not have higher unit values before the start of targeting.

Next we ask whether the association between FDI and unit values tends to be stronger in differentiated products. Differentiated products are defined based on Rauch (1999) classification. Differentiated products are goods lacking a reference price because of their intrinsic features or goods whose price is not set on organized exchanges. Examples of differentiated products include women's skirts and blouses (SITC 8434 and 8435). In contrast, cement and printing paper (SITC 6412 and 6612) are not considered to be differentiated products. While in the developing country subsample, we find no difference between the effect of FDI on differentiated and homogenous products, in the developed country subsample FDI matters only in the former product category. A potential explanation for this finding is that in developed countries there is little room for upgrading of exported homogenous goods as these countries already possess sophisticated technologies for production of goods such as cement or paper. In contrast, FDI inflows into developing countries may facilitate upgrading of both homogenous and differentiated products.

While our results cannot distinguish between export upgrading being due to exporting by multinationals themselves or due to indigenous producers learning from foreign investors, they suggest that FDI can play an important role in helping developing countries move up the production value chain. They also suggest that the fears that FDI will relegate developing countries to producing only simple low value added products are not warranted.

This study is structured as follows. The next section reviews the related literature. Section 3 describes the empirical strategy and the data. Section 4 presents the empirical findings, and Section 5 concludes.

2. Literature review

Our study is related to the literature on export specialization and the literature on host country effects of FDI. Starting with the first literature, Schott (2004) finds that developed and developing economies often engage in exporting the same product categories, but exports of developed economies typically have higher unit values than do exports from developing

countries. Schott interprets this as indicating that developed countries take advantage of their relative capital- and skill-abundance to produce higher quality goods than developing countries. Hummels and Klenow (2005) investigate how exports relate to the size of the exporting economy. They find that larger economies export more in absolute terms than do smaller economies. The extensive margin (the range of goods) accounts for about 60 percent of the greater exports of larger economies. They further decompose the intensive margin into unit value and quantity components in order to focus on quality differences within product categories. They find that the intensive margin is dominated by higher quantities of each good rather than higher unit values. They also show that rich countries export higher quantities of each good at modestly higher prices. On the other hand, countries with more workers export higher quantities, but not at higher prices. Hausmann et al. (2007) suggest that countries moving into exports of more sophisticated products (i.e., those exported by rich countries), tend to experience faster economic growth.

The second literature, relevant to this study, examines host country effects of FDI including export and productivity externalities associated with the presence of multinationals. In a widely-cited study, Aitken, Hanson and Harrison (1997) use panel data on 2104 Mexican manufacturing plants from the period 1986-1990 to demonstrate that the presence of exporting multinationals in the same region reduces the costs of exporting for Mexican firms. No such externalities are found for exporting firms in general. Based on detailed Chinese trade statistics identifying the type of exporters and their location, Chen and Swenson (2007) find that the presence of multinationals in the same industry is associated with more and higher quality trade transactions by Chinese firms.[4] In the same data set, Swenson (2007) finds that the positive association between the presence of multinationals and new export connections by private Chinese exporters may be driven by information spillovers. She also shows that the effects are strongest in differentiated products and in China's interior.

As far as productivity spillovers from FDI are concerned, the conclusions are more mixed. A large number of papers consider the effect of foreign entry on indigenous producers operating in the same sector, postulating that foreign entry may result in knowledge spillovers to local firms (which would have a positive effect on the performance of the latter) as well as in local producers losing part of their market share to foreign entrants (which would have a negative effect as local producers would have to spread their fixed cost over a smaller scale of production). Aitken and Harrison (1999), Djankov and Hoekman (2000), Konings (2001) and Javorcik (2004) find that the overall effect of these two forces is either negative or statistically insignificant, while Haskel, Pereira and Slaughter (2002) and Keller and Yeaple (2003) find a positive effect. More recently researchers have also analyzed inter-industry effects of foreign entry. Javorcik (2004) finds a positive effect of FDI on local producers in upstream industries in Lithuania. Blalock and Gertler (2007) find similar evidence for Indonesia. Kugler (2006) documents a positive effect of FDI inflows on Colombian producers in other sectors, i.e. sectors other than the sector receiving FDI. He considers the pairwise effects between sectors without distinguishing between the effects on downstream versus upstream sectors. For a more detailed literature review see Görg and Strobl (2001) and Görg and Greenaway (2004).

[4] Chen and Swenson (2007) also find that multinational presence in other industries was associated with more frequent export introductions and longer survival, but also with lower-valued export introductions.

Building on the conclusions of the latter literature, which suggests that FDI inflows stimulate exports and productivity growth in host countries, this study examines the relationship between FDI and upgrading of export products. If one believes the conclusions of Hausmann et al. (2007), finding a positive relationship would suggest yet another channel through which FDI may stimulate growth recipient countries.

3. Empirical strategy and data

3.1. Empirical strategy

To examine the relationship between the quality of export product and FDI, we estimate the following model:

$$\ln Unit\_value_{pct} = \alpha_1 + \beta_1 Sector\_targeted_{sct} + \pi_1 \ln Export\_value_{pct} + X_{ct}\theta_1 + \gamma_{cs} + \gamma_{pt} + \varepsilon_{cpt}$$

where $Unit\_value_{pct}$ is the unit value (value of exports/quantity of exports) of product p exported by country c at time t, which is our measure of export quality. Products are defined at the 4-digit SITC level. $Sector\_targeted_{sct}$ is a dummy taking the value one if country c's investment promotion agency considered sector s as its priority (targeted) sector for attracting FDI inflows at time t, and zero otherwise. Sectors are classified according to the 3-digit NAICS 1997 classification. $Sector\_targeted_{sct}$ also takes the value of zero if country c did not have an investment promotion agency at time t.

The empirical specification also incorporates a number of controls, including the size of the exporting industry proxied by the value of country c's exports of product p at time t ($Export\_value_{pct}$) and several country-level characteristics (X_{ct}). As suggested by the findings of Hummels and Klenow (2005), we control for the size of the exporting economy with the logarithm of the population size. To control for the level of development, we include the logarithm of the GDP per capita (in current USD). Finally, to take into account macroeconomic stability in the exporting country, we add inflation.

Our specification also includes country-sector (γ_{cs}) and product-year (γ_{pt}) fixed effects. The former take out all time-invariant characteristics specific to a particular country-sector combination that might be important for unit values. Examples of such characteristics include availability of natural resources or climatic conditions. In other words, our analysis focuses on within-country-sector variation in unit values. As there are large differences in unit values between products, e.g., pencils are cheaper than computers, we include product-year fixed effects. These fixed effects not only take out unit value differences across products, but they also take out all observed and unobserved global factors that might change the relative unit values over time. For instance, if the relative prices of computers to pencils goes down in year t due to technological progress or changes in demand, this effect will be absorbed by the product-year fixed effect.

As our variable of interest, sector targeting, is at the country-sector-year level and our dependent variable is at the more disaggregated country-product-year level, we cluster standard errors at the country-sector-year level.

3.2. Using information on sector targeting to proxy for FDI inflows

To proxy for inflows of FDI to a given sector in a given country in a given year we exploit data form the 2005 Census of Investment Promotion Agencies described in Harding and Javorcik (2007). The Census includes information on whether a country was engaged in sector targeting, and if so, what sectors were targeted, the year when targeting started and ended. As Harding and Javorcik (2007) find that targeting on average doubles inflows of FDI to priority sectors in developing countries (relative to non-priority sectors or priority sectors in the pre-targeting period), we believe the information on targeting is a good proxy for inflows of FDI.[5]

Based on the Census information, we construct two variables. The first one, called *Sector targeting*, is an indicator variable taking one for country-sector-year combinations that were subject to targeting, and zero otherwise. The second, called *Length of sector targeting*, is defined as the number of years targeting has been in place in a particular country-sector-year combination.[6] We think of *Sector targeting* as a proxy for additional FDI inflows taking place in a given time period, and of *Length of sector targeting* as a proxy for the stock of FDI.

The main advantage of using information on targeted sectors rather than information on actual FDI inflows is that the latter are not readily available for developing countries. We are particularly interested in exploring this question in a developing country context because we believe that the effects of FDI are likely to be more pronounced in developing countries which often lag in terms of technological capabilities. The most comprehensive source of sectoral FDI is provided by the US Bureau of Economic Analysis (BEA). Unfortunately, BEA only collects information on US FDI which gives a less than complete picture of the actual foreign presence in many country-sectors, covers a relatively short time period (the data start in 1989) and suppresses quite a few country-sector-year cells for confidentiality reasons. The information is suppressed if only a few investments were made in a particular country-sector-year combination, which means that often we would miss information on entry of the first few foreign investors, which are likely to have the most pronounced effect.

The key concern in this type of analysis is the exogeneity of the variable of interest. Country-sector combinations with high unit value of exports might attract FDI with greater ease than sectors with relatively low unit values. This would manifest itself as a positive association between FDI and unit values, but the direction of causation would run from high unit values to high FDI inflows. By employing information on sector targeting we should have less of a problem with reverse causality. Targeting is a policy tool based on many factors and thus the choice of priority sectors is less likely to be driven by the quality of exports from that sector. Nevertheless, we will test and show that this assumption is reasonable.

3.3. Other data

We use export data compiled by Feenstra et al. (2005) and covering the period 1984-2000.[7] The trade data are available at the 4-digit SITC Rev. 2 classification. Unit values are calculated by

[5] Charlton and Davis (2004) draw similar conclusions for OECD countries.

[6] We include *Length of sector targeting* in the log form (adding one before taking logs).

[7] For additional information on the data set, see http://cid.econ.ucdavis.edu/data/undata/FAQ_on_NBER-UN_data.pdf and http://cid.econ.ucdavis.edu/data/undata/undata.html.

dividing the export value by the quantity of exports. Value of exports is measured in current USD. For some country-product-years there are multiple observations on value and corresponding quantities, as for instance part of exports is measured by weight and part by number of units. In such cases, we follow Schott (2004) and calculate the unit value as the weighted average where the shares of total country-product-year value are used as weights.

As information on sectoral targeting is available in the NAICS (1997) classification, we use a concordance between NAICS and SITC classification.[8] Thus the term 'sector' refers in the paper to the 3-digit NAICS aggregates, while the term product is used to denote 4-digit SITC codes.

As trade flows in agricultural products tend to be restricted via tariff and non-tariff barriers, we exclude the following NAICS-sectors: Crop Production (111), Animal Production (112), Forestry and Logging (113), Fishing, Hunting and Trapping (114), Oil and Gas Extraction (211), Mining (except Oil and Gas) (212). We end up with 23 sectors with non-missing unit value observations. These are listed in Table 1. Table 2 shows that the potential number of products that could be covered by our sample is 1124.

Table 3 compares the median unit values of products exported by developing and developed countries in each sector in year 2000. With the exception of three sectors (Water Transportation (483), Motion Picture and Sound Recording Industries (512)), the unit values of exports from developing countries are lower than the unit values from developed countries. Consistent with Schott (2004), the systematically lower unit values of developing countries' exports in our data point to within sector specialization. Schott interprets his finding – within product specialization rather than between product specialization – as support for the view that capital- and skill-abundant countries use their endowment advantage to produce vertically superior varieties.

Table 4 presents detailed information on the sample used in the empirical analysis. It lists the minimum and maximum number of sectors available in each country, the number of observations and the number of observations pertaining to targeted sectors. Note that our targeting information starts with 91 countries whose IPAs responded to the question on targeting and 25 countries which did not have an investment promotion agency in 2004 and thus are assumed not to have engaged in targeting. 52 of 91 countries reported having been engaged in targeting at any point in the period covered by our sample (1984-2000). 30 of them gave us the exact timing information on at least one priority sector. In our analysis, we include all country-sector combinations for non-targeted sectors and all country-sector combinations for priority sectors for which the exact information on the timing of targeting is available. This leaves us with 116 countries of which 30 practiced targeting during the time period considered.

Data on population and GDP per capita are from the World Bank's *World Development Indicators* (WDI).[9] Inflation figures are provided by the IMF's *International Financial Statistics*.[10]

The summary statistics are presented in Table 5.

[8] The concordance comes from http://www.nber.org/lipsey/sitc22naics97.
[9] http://publications.worldbank.org/WDI/
[10] http://ifs.apdi.net/imf/

4. Results

As we argued before, foreign companies, typically employing more advanced technologies than national firms, are likely to export products with higher values than local firms. This would be consistent with Schott's (2004) finding of a positive association between export unit values and the capital intensity of exporters' production techniques. Foreign companies may affect a sector's export unit values in several ways. First, they may move the sector along the intensive margin by exporting relatively larger quantities of higher valued products than domestic firms. Second, multinationals may induce a movement along the extensive margin by producing higher quality, and therefore higher priced, versions of already exported product categories or by introducing new, higher value products, to the country's export basket. Third, multinationals may facilitate movement of local producers along either the intensive or the extensive margin through knowledge spillovers. As trade statistics available to us do not distinguish between exports by domestic and foreign companies, in analysis will capture the sum of the above effects.

The results presented in 6 are consistent with higher export unit values being found in sectors experiencing increased foreign presence. We find a positive and statistically significant coefficient on the *Sector targeting* variable in the subsample of developing countries (columns 1 through 4). This is true in a specification with contemporaneous *Sector targeting* as well as in the specifications where the variable of interest enters as the first, sector or third lag. The magnitude of the effect is economically meaningful; sectoral targeting is found to be associated with an 11 percent higher unit values of products exported by the targeted sector. This magnitude is plausible as it captures the average effect found during the duration of targeting. It is also sensible when one considers the fact that the median unit value of exports from developing countries is on average (across all years and products) equal to 62 percent of the unit value of products exported form developed countries, suggesting that there is a lot of room for catching up.[11]

In contrast to the strong association found for developing countries (significance at the one percent level), the results for developed countries (columns 5 through 8) are less robust. The contemporaneous effect is not statistically significant while lags are significant only at the 10 percent level. The magnitude of the coefficients is also much smaller. A weaker and quantitatively smaller effect for developed countries is consistent with the view that foreign presence is closing a technology gap. For a developed economy, there is less of a technology gap to close and the foreign presence has a minor effect on the unit values of exports.

As for the other controls, we find that a positive correlation between GDP per capita and unit values, which, as expected, suggests that more developed countries export more sophisticated products. The data also indicate a negative correlation of the population size with export unit values which is consistent with the finding of Hummels and Klenow (2005) that more labor-abundant countries tend to export lower priced products. Additionally, in the developed country subsample we find that products with a higher volume of exports tend to have higher unit values.

In Table 7 we include the length of sector targeting instead of the indicator variable. It is reasonable to expect that sectors targeted for a longer time period will attract larger inflows of

[11] If the mean is used, rather than the median, the unit values of the exported products from developed countries are 68 percent of the unit values of products exported for developed countries.

FDI by the virtue of greater effort on the part of the IPA. The results confirm our earlier finding. We find a strong positive association between sector targeting and unit values in developing countries. The results for developed countries indicate no association between the length of sector targeting and unit values. Taken together, Table 6 and Table 7 point to a weaker, if any, effect of foreign presence on unit values of exports in developed countries. This is what we would expect from a simple framework where foreign presence may reduce some kind of gap between the source-country and host-country firms/sectors.

One may be concerned about investment promotion agencies choosing to target sectors with more sophisticated exports (that is with higher unit values of exports). To attenuate this concern, we add an additional regressor which takes the value of one for the year immediately preceding targeting of sector s by country c at time t, and zero otherwise. A statistically significant coefficient on this dummy would indicate that targeted sectors had higher unit values (relative to other sectors) even before targeting started. The first column of Table 8, however, suggests that this was not the case. The dummy bears a negative coefficient that is not statistically significant. Moreover, the F-test reported at the bottom of the table indicates that the difference between the coefficients on the dummy and the *Sector targeted* variable is statistically significant at the 5 percent level. In the second column, we repeat the exercise asking whether targeted sectors exhibited higher unit values during the two-year period preceding targeting. In column 3 and 4, we do so for three- and four-year periods, respectively. We find no indication that sectors with higher unit values were chosen for targeting. The additional regressors are never statistically significant, and the F-tests reject the equality between the coefficients on each dummy and *Sector targeting.* In all 4 models, the coefficients on *Sector targeting* are larger in magnitude than the coefficients on pre-targeting dummy. P-values below 0.05 indicate that sector targeting had an additional effect on export unit values in developing economies. This exercise of makes us confident that FDI presence actually is causing higher export unit values, rather than the other way around. This is, however, not the case in the developed country subsample. The coefficients on pre- and post-targeting periods are not statistically significant. Even though the former coefficients bear negative and the latter positive signs, the hypothesis of equality of coefficients cannot be rejected.

Next we examine whether the association between FDI and unit values tends to be stronger in differentiated products. Differentiated products are goods lacking a reference price because of their intrinsic features or goods whose price is not set on organized exchanges. Examples of differentiated products include women's skirts and blouses (SITC 8434 and 8435), while non-differentiated products include cement and printing paper (SITC 6412 and 6612). The classification of differentiated products was compiled by Rauch (1999) and is based on 4-digit SITC Rev. 2 classification. Rauch suggested two definitions, a conservative and a liberal one, in order to account for the ambiguities arising in the classification. The conservative definition minimizes the number of commodities that are classified as homogeneous goods, while the liberal definition maximizes this number. We employ the liberal definition of differentiated products. We hypothesize that differentiated products offer more room for quality upgrading and thus the effect of FDI could be stronger in those product categories.

The results in Table 9 show different patterns in the developing and developed country subsample. In the former, we find no difference between the effect of FDI on differentiated and

homogenous products, while in the latter FDI matters only in the differentiated product category. A potential explanation for this finding is that in developed countries there is little room for upgrading of exported homogenous goods as these countries already have access to sophisticated technologies for production of goods such as cement or paper. In contrast, FDI inflows into developing countries may facilitate upgrading of both homogenous and differentiated products.

In the Appendix, we present additional robustness checks. In Table 10, we show that our findings are robust to including GDP per capita squared. And in Table 11, we show that lagging export volume by two rather than one period does not affect our conclusions about the absence of reverse causality and the effect of sector targeting.

5. Conclusion

The recent literature has postulated that the sophistications of the country's exports has strong implications for its future economic growth (Hausmann, Hwang and Rodrik 2006). If it is indeed true that you become what you export, introducing measures facilitating export upgrading becomes an important policy issue.

This study argues that policies aimed at attracting FDI inflows offer potential for upgrading the country's export basket. Entry of multinationals may affect the quality of the export basket through several channels. First, multinationals may move a sector along the intensive margin by exporting larger quantities of higher valued products than domestic firms. Second, multinationals may induce a movement along the extensive margin by producing higher quality, and therefore higher priced, versions of already exported product categories or by introducing new, higher value products, to the country's export basket. Third, multinationals may facilitate movement of local producers along either the intensive or the extensive margin through knowledge spillovers.

To examine this question, this study relates unit values of exports measured at the 4-digit SITC level available for 116 countries for the period 1984-2000 to FDI presence. FDI inflows are proxied by recently collected information on sectors treated by national investment agencies as priority in their efforts to attract FDI. The proxy is either an indicator variable for whether or not a particular sector was targeted by a particular country in a given time period, or by the number of years such policy has been in place. The former proxy can be thought of as capturing FDI inflows while the latter as capturing FDI stocks. The analysis also controls for country-level characteristics as well as country-sector and product-year fixed effects.

The results of the empirical analysis indicate a positive relationship between FDI and export sophistication in developing countries. The magnitude of the effect seems plausible. Targeted sectors are found to have 11 percent higher unit values of exported products than non-priority sectors or priority sectors in the pre-targeting period. This magnitude is sensible when one considers the fact that the median unit value of exports from developing countries is on average (across all years and products) equal to 62 percent of the unit value of products exported form developed countries, suggesting that there is a lot of room for catching up. Further, there is no indication of a reverse causality problem as there is no evidence of priority sectors exhibiting

higher unit values in the pre-targeting period. The results for developed countries are less robust and suggest that such an effect may be present only in differentiated products.

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7. Appendix: tables

Table 1: Sectors with non-missing unit values

NAICS97	NAICS97 description	No. of observations	Percent
221	Electric current*	158	0.04
311	Food Manufacturing	51,136	12.79
312	Beverage and Tobacco Product Manufacturing	5,011	1.25
313	Textile Mills	20,324	5.08
314	Textile Product Mills	10,322	2.58
315	Apparel Manufacturing	24,430	6.11
316	Leather and Allied Product Manufacturing	8,900	2.23
321	Wood Product Manufacturing	9,988	2.5
322	Paper Manufacturing	10,683	2.67
323	Printing and Related Support Activities	4,169	1.04
324	Petroleum and Coal Products Manufacturing	6,340	1.59
325	Chemical Manufacturing	63,218	15.81
326	Plastics and Rubber Products Manufacturing	9,891	2.47
327	Nonmetallic Mineral Product Manufacturing	17,375	4.35
331	Primary Metal Manufacturing	26,525	6.63
332	Fabricated Metal Product Manufacturing	19,813	4.96
333	Machinery Manufacturing	48,989	12.25
334	Computer and Electronic Product Manufacturing	26,135	6.54
335	Electrical Equipment, Appliance, and Component Manufacturing	12,282	3.07
336	Transportation Equipment Manufacturing	21,249	5.32
337	Furniture and Related Product Manufacturing	2,014	0.5
483	Ships and boats and other vessels for breaking up**	429	0.11
512	Motion Picture and Sound Recording Industries	411	0.1
Total		399,792	100

* NAICS sector 221 covers utilities; in the study we use only one product from this sector SITC 3510 (Electric current)
** NAICS sector 483 covers Water transport; in the study we use only one product from this sector SITC 7933 (Ships, boats and other vessels for breaking up)

Table 2: Number of potential products by sector

NAICS97	Average	Std. dev..	Min	Max
221	1.3	0.5	1	3
311	115.1	17.3	95	149
312	11.0	1.6	9	14
313	41.7	11.4	27	58
314	17.5	2.6	14	21
315	29.9	14.8	8	48
316	16.7	3.9	13	25
321	20.3	2.6	18	27
322	20.1	2.6	17	24
323	7.5	0.7	7	9
324	12.2	2.3	9	16
325	129.9	38.1	83	183
326	19.1	7.6	9	30
327	41.0	5.2	35	50
331	65.3	13.5	51	94
332	39.1	6.1	33	50
333	92.1	36.3	42	141
334	47.8	23.2	17	79
335	20.3	8.2	9	30
336	42.1	11.2	29	60
337	2.9	1.6	1	6
483	1.0	0.0	1	1
512	1.4	0.6	1	3
Sum				1124

Note: The average gives the average potential number of products in the period 1962-2000.

Table 3: Median unit values in USD, year 2000, by sector

	Developing countries		Developed countries		Median developing/Median developed
NAICS97	No. of observations	Median	No. of observations	Median	
221	4	0.019	6	0.046	0.42
311	2177	1.133	1392	1.501	0.75
312	224	1.456	147	3.238	0.45
313	809	4.079	554	6.827	0.60
314	428	3.561	274	5.541	0.64
315	1166	16.590	520	27.551	0.60
316	400	8.382	228	13.597	0.62
321	469	0.688	276	1.067	0.64
322	430	0.758	327	0.891	0.85
323	170	2.825	123	3.966	0.71
324	246	0.262	167	0.287	0.91
325	2374	1.083	1954	1.620	0.67
326	392	1.941	279	3.230	0.60
327	664	0.892	535	2.130	0.42
331	1067	0.605	755	0.887	0.68
332	805	2.131	577	4.583	0.46
333	1956	5.700	1554	11.711	0.49
334	1035	24.750	827	46.632	0.53
335	502	4.834	361	7.716	0.63
336	880	6.797	625	12.594	0.54
337	99	2.533	46	3.624	0.70
483	14	688.750	15	525.131	1.31
512	11	96.833	13	36.761	2.63

Note: The table shows the median unit values of exports by NAICS 1997 sectors in the year 2000. The number of observations reflects that there are several countries exporting products corresponding to the particular sector and that there are several products within each sector. The median is other words calculated across products and countries for the given sector in the year 2000.

Table 4: Number of observations by country

Count	Country	First year	Last year	Min no. of sectors#	Max no. of sectors#	Min no. of prod.#	Max no. of prod.#	No of non-missing unit values	No of obs in reg.	No. of targeted obs.
1	Albania	1984	2000	11	23	40	106	1090	1090	0
2	Algeria	1984	2000	16	22	57	130	1796	1796	0
3	Argentina	1984	2000	20	24	320	518	7719	7719	0
4	Armenia	1992	2000	2	16	2	81	338	338	0
5	Australia	1984	2000	21	23	482	585	9295	9295	1850
6	Bangladesh	1984	2000	12	22	48	119	1433	204	0
7	Belize	1984	2000	5	22	11	39	472	472	0
8	Benin	1984	2000	1	21	8	29	225	225	0
9	Bosnia and Herzegovina	1992	2000	14	20	40	139	843	843	183
10	Brazil	1984	2000	20	23	548	582	9634	9634	0
11	Bulgaria	1984	2000	20	23	259	438	5863	5863	0
12	Burkina Faso	1989	2000	1	2	1	4	16	16	0
13	Cambodia	1984	2000	1	20	1	63	419	418	330
14	Cameroon	1984	2000	11	22	30	63	735	735	0
15	Canada	1984	2000	22	23	542	594	9889	9889	190
16	Central African Republic	1984	2000	4	18	6	15	175	175	0
17	Chad	1984	2000	2	17	3	11	108	108	0
18	Chile	1984	2000	19	23	130	412	5239	5239	187
19	China	1984	2000	20	23	493	609	9873	9873	0
20	Colombia	1984	2000	19	23	202	401	5436	3149	0
21	Congo, Dem. Rep.	1984	2000	6	22	15	41	498	498	0
22	Congo, Rep.	1984	2000	5	21	11	32	311	311	0
23	Costa Rica	1984	2000	15	22	59	190	2220	2220	203
24	Cuba	1984	2000	13	23	42	104	972	972	0
25	Cyprus	1984	2000	20	23	121	216	2944	2944	0
26	Czech Republic	1993	2000	20	21	555	569	4481	3600	168
27	C“te d'Ivoire	1984	2000	13	22	54	112	1432	1431	578
28	Denmark	1984	2000	21	24	555	582	9604	6644	0
29	Djibouti	1984	2000	1	22	3	18	146	146	0
30	Ecuador	1984	2000	16	22	61	213	2338	2338	0
31	Egypt, Arab Rep.	1984	2000	17	22	111	317	4079	4079	0
32	El Salvador	1984	2000	11	22	25	87	963	963	52
33	Equatorial Guinea	1984	2000	1	16	2	8	76	76	0
34	Ethiopia	1984	2000	6	22	23	42	573	573	0
35	Fiji	1984	2000	6	22	21	71	754	754	225
36	Finland	1984	2000	20	24	485	548	8704	8704	0
37	France	1984	2000	22	24	618	670	10846	4994	0
38	Gabon	1984	2000	6	20	13	35	379	379	0
39	Gambia, The	1984	2000	1	19	4	12	122	122	0
40	Georgia	1992	2000	6	19	25	144	639	639	0
41	Ghana	1984	2000	8	22	18	72	715	714	99
42	Greece	1984	2000	21	23	348	489	7319	7318	1436
43	Guatemala	1984	2000	9	22	46	126	1602	1602	0
44	Guinea	1984	2000	4	21	7	24	223	179	19
45	Guinea-Bissau	1984	2000	3	20	3	33	213	213	0
46	Guyana	1984	2000	8	21	16	40	447	49	0
47	Haiti	1984	2000	10	22	21	85	752	752	0
48	Hungary	1984	2000	20	24	426	537	8309	5881	0
49	Iceland	1984	2000	16	22	63	139	1619	1619	309
50	Iran, Islamic Rep.	1984	2000	11	22	37	327	2733	2733	0
51	Iraq	1984	2000	5	22	6	83	554	554	0
52	Ireland	1984	2000	20	23	517	543	9005	4332	0
53	Israel	1984	2000	20	23	313	452	6963	4692	0
54	Italy	1984	2000	22	24	610	658	10684	10684	0
55	Jamaica	1984	2000	10	22	50	115	1445	265	0
56	Japan	1984	2000	22	23	590	618	10224	10224	0
57	Jordan	1984	2000	17	22	73	161	1887	1887	692
58	Kazakhstan	1992	2000	13	20	63	341	1785	1785	442
59	Kenya	1984	2000	13	23	54	107	1492	1492	0
60	Korea, Rep.	1984	2000	20	23	467	569	9216	9216	0
61	Kuwait	1984	2000	16	23	75	257	2711	2711	0
62	Kyrgyz Republic	1992	2000	7	20	18	129	697	697	0

Note: #: given non-missing unit values

Count	Country	First year	Last year	Min no. of sectors#	Max no. of sectors#	Min no. of prod.#	Max no. of prod.#	No of non-missing unit values	No of obs in reg.	No. of targeted obs.
63	Lao PDR	1984	2000	1	19	1	63	401	44	0
64	Latvia	1992	2000	17	22	112	269	1927	1312	0
65	Lebanon	1984	2000	18	23	68	162	2179	2179	215
66	Libya	1984	2000	7	21	29	74	894	894	0
67	Lithuania	1992	2000	19	22	141	335	2354	2354	1079
68	Macedonia, FYR	1993	2000	18	21	149	223	1467	1467	0
69	Madagascar	1984	2000	7	22	18	79	782	782	0
70	Mali	1984	2000	4	20	9	44	347	347	0
71	Malta	1984	2000	19	23	102	184	2506	2504	0
72	Mauritania	1984	2000	4	20	7	19	224	206	111
73	Mauritius	1984	2000	9	22	27	101	1237	1237	0
74	Mexico	1984	2000	20	22	314	551	8241	8241	0
75	Moldova	1992	2000	19	20	84	186	1243	357	0
76	Mongolia	1984	2000	6	19	13	53	495	491	256
77	Mozambique	1984	2000	10	22	30	62	771	646	56
78	Netherlands	1984	2000	22	24	609	648	10616	8651	0
79	New Zealand	1984	2000	19	23	239	433	5921	5921	0
80	Nicaragua	1984	2000	5	22	10	52	528	528	0
81	Norway	1984	2000	21	24	436	523	8249	8249	0
82	Oman	1984	2000	11	22	43	186	1877	1877	318
83	Pakistan	1984	2000	20	22	153	244	3385	3385	706
84	Panama	1984	2000	19	23	160	239	3529	1908	0
85	Peru	1984	2000	18	22	163	274	3616	3613	0
86	Poland	1984	2000	21	24	424	565	8610	1799	0
87	Portugal	1984	2000	20	23	415	542	8490	8490	0
88	Romania	1984	2000	20	23	303	448	6326	6326	0
89	Samoa	1984	2000	1	21	1	13	100	96	4
90	Saudi Arabia	1984	2000	20	23	134	415	4925	4925	0
91	Senegal	1984	2000	7	22	24	41	603	590	27
92	Serbia and Montenegro	1992	2000	17	22	94	495	2226	1862	0
93	Singapore	1984	2000	21	23	494	572	9269	9269	0
94	Slovak Republic	1993	2000	20	22	476	502	3917	3917	0
95	Slovenia	1992	2000	20	21	451	482	4192	4192	1475
96	Somalia	1984	2000	3	19	7	17	201	201	0
97	South Africa	1984	2000	20	23	309	566	7471	7471	0
98	Sri Lanka	1984	2000	16	22	89	185	2403	1	0
99	Sudan	1984	2000	7	22	26	42	541	541	0
100	Suriname	1984	2000	3	22	9	26	301	301	0
101	Sweden	1984	2000	22	24	572	603	9924	9924	1344
102	Switzerland	1984	2000	21	24	566	624	10026	10026	0
103	Taiwan	1984	2000	20	23	516	574	9527	4035	0
104	Tajikistan	1992	2000	4	16	6	61	348	348	0
105	Thailand	1984	2000	20	22	293	544	7801	2322	0
106	Togo	1984	2000	4	22	7	32	261	261	0
107	Tunisia	1984	2000	20	23	151	340	4584	4067	1018
108	Turkey	1984	2000	20	23	285	540	7999	7999	0
109	Turkmenistan	1992	2000	8	16	18	54	352	352	0
110	Uganda	1984	2000	2	20	6	25	231	226	22
111	United Kingdom	1984	2000	22	24	618	668	10848	10848	0
112	Uruguay	1984	2000	18	22	183	314	4227	4227	0
113	Uzbekistan	1992	2000	10	21	21	169	949	949	0
114	Venezuela, RB	1984	2000	17	23	146	341	4713	4713	1579
115	Zambia	1984	2000	5	22	15	40	481	481	0
116	Zimbabwe	1984	2000	12	22	46	201	1883	585	0

Note: #: given non-missing unit values

Table 5: Summary statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Developing					
log Unit value	135489	1.029	1.848	-11.860	11.110
Sector targeting	135489	0.057	0.233	0.000	1.000
log Export value product	135489	5.569	2.025	-9.220	2.950
log GDP per captia	135335	7.717	0.897	4.455	9.413
log Population	135489	17.060	1.576	11.961	20.956
Inflation	135489	1.105	5.266	-0.176	237.731
Developed					
log Unit values	150302	1.519	1.890	-9.634	11.252
Sector targeting	150302	0.032	0.175	0.000	1.000
log Export value product	150302	-4.449	2.246	-9.220	3.733
log GDP per captia	150302	9.742	0.524	7.737	10.708
log Population	150302	16.325	1.262	12.384	18.659
Inflation	150302	0.048	0.165	-0.032	3.738

Table 6: Unit values and sector targeting

	1	2	3	4	5	6	7	8
	Developing	Developing	Developing	Developing	HI	HI	HI	HI
Sector targeting	**0.103*** **				0.013			
	[0.017]				[0.017]			
L. Sector targeting		**0.084*** **				**0.029***		
		[0.018]				[0.017]		
L2. Sector targeting			**0.069*** **				**0.037***	
			[0.021]				[0.019]	
L3. Sector targeting				**0.047*** *				**0.044***
				[0.021]				[0.024]
L. Export value product	-0.001	-0.001	-0.001	-0.001	0.019***	0.019***	0.020***	0.021***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
L. GDP per capita	0.143***	0.142***	0.141***	0.138***	0.237***	0.237***	0.228***	0.217***
	[0.012]	[0.012]	[0.011]	[0.012]	[0.020]	[0.020]	[0.020]	[0.019]
Population	-0.657***	-0.639***	-0.609***	-0.627***	-0.335***	-0.339***	-0.349***	-0.330***
	[0.068]	[0.068]	[0.067]	[0.070]	[0.068]	[0.068]	[0.067]	[0.068]
Inflation	0.000	0.000	0.000	-0.001	0.008	0.008	0.010	0.006
	[0.001]	[0.001]	[0.000]	[0.001]	[0.015]	[0.015]	[0.015]	[0.014]
Observations	135489	135489	119526	112255	150302	150302	143094	140047
R-squared	0.78	0.78	0.80	0.81	0.83	0.83	0.84	0.85

Note: Robust standard errors are reported in brackets. ***, **, * denotes significance at the 1, 5 and 10% level, respectively. The dependent variable is the log of the unit value of exports of the 4-digit SITC product p from country c in year t. The sample covers the years 1984-2000. Export value is at the 4-digit SITC level and is measured in current USD. Sector targeting is a dummy taking one if the country-sector cs was targeted by the country's IPA in year t, and zero if the sector was not targeted in year t or if the country did not have an IPA in year t. The targeting information is available at the 3-digit NAICS 1997-level. Standard errors are clustered at the country-sector-year level. GDP per capita is measured in current US dollars and inflation in percent. Export value, GDP per capita and population all enter in natural logs. LX means lagged X periods. All regressions include product-year and country-sector fixed effects.

Table 7: Unit values and the length of sector targeting

	1	2	3	4	5	6	7	8
	Developing	Developing	Developing	Developing	HI	HI	HI	HI
Length of sector targeting	**0.072*** **				0.016			
	[0.012]				[0.012]			
L. Length of sector targeting		**0.065*** **				**0.024***		
		[0.014]				[0.015]		
L2. Length of sector targeting			**0.063*** **				0.029	
			[0.019]				[0.020]	
L3. Length of sector targeting				**0.047** **				0.025
				[0.021]				[0.028]
L. Export value product	-0.001	-0.001	-0.001	-0.001	0.019***	0.019***	0.020***	0.021***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
L. GDP per capita	0.143***	0.142***	0.142***	0.138***	0.238***	0.238***	0.228***	0.217***
	[0.012]	[0.012]	[0.011]	[0.012]	[0.020]	[0.020]	[0.020]	[0.019]
Population	-0.659***	-0.642***	-0.617***	-0.632***	-0.335***	-0.338***	-0.348***	-0.330***
	[0.068]	[0.068]	[0.068]	[0.070]	[0.068]	[0.068]	[0.067]	[0.068]
Inflation	0.000	0.000	0.000	-0.001	0.008	0.008	0.010	0.006
	[0.001]	[0.001]	[0.000]	[0.001]	[0.015]	[0.015]	[0.015]	[0.014]
Observations	135489	135489	119526	112255	150302	150302	143094	140047
R-squared	0.78	0.78	0.80	0.81	0.83	0.83	0.84	0.85

Note: Robust standard errors are reported in brackets. ***, **, * denotes significance at the 1, 5 and 10% level, respectively. The dependent variable is the log of the unit value of exports of the 4-digit SITC product p from country c in year t. The sample covers the years 1984-2000. Export value is at the 4-digit SITC level and is measured in current USD. Length of sector targeting is the number of years the country-sector ci has been targeted by the country's IPA in year t. Length of sector targeting equals zero if the sector was not targeted in year t or if the country did not have an IPA in year t. The targeting information is available at the 3-digit NAICS 1997-level. Standard errors are clustered at the country-sector-year level. GDP per capita is measured in current US dollars and inflation in percent. Export value, GDP per capita and population all enter in natural logs. LX means lagged X periods. All regressions include product-year and country-sector fixed effects.

Table 8: Are sectors with higher unit values of exports chosen for targeting?

	1	2	3	4	5	6	7	8
	Developing	Developing	Developing	Developing	HI	HI	HI	HI
Sector targeting	**0.059*** **	**0.059*** **	**0.057*** **	**0.061*** **	0.019	0.019	0.020	0.017
	[0.020]	[0.020]	[0.021]	[0.021]	[0.019]	[0.019]	[0.019]	[0.020]
1 year before sect. targ.	-0.018				-0.031			
	[0.036]				[0.031]			
1 and 2 years before sect. targ.		-0.011				-0.011		
		[0.021]				[0.026]		
1, 2 and 3 years before sect. targ.			-0.014				-0.001	
			[0.018]				[0.021]	
1, 2, 3 and 4 years before sect. targ.				0.002				-0.012
				[0.017]				[0.019]
L. Export value product	-0.005**	-0.005**	-0.005**	-0.005**	0.005**	0.005**	0.005**	0.005**
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
L. GDP per capita	0.104***	0.104***	0.104***	0.104***	0.232***	0.232***	0.232***	0.232***
	[0.009]	[0.009]	[0.009]	[0.009]	[0.014]	[0.014]	[0.014]	[0.014]
Population	-0.009	-0.009	-0.009	-0.008	0.110***	0.110***	0.109***	0.110***
	[0.007]	[0.007]	[0.007]	[0.007]	[0.017]	[0.017]	[0.017]	[0.017]
Inflation	0.001	0.001	0.001	0.001	0.041***	0.041***	0.041***	0.041***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.015]	[0.015]	[0.015]	[0.015]
Observations	135489	135489	135489	135489	150302	150302	150302	150302
R-squared	0.76	0.76	0.76	0.76	0.82	0.82	0.82	0.82
Test coeff F	4.33	8.36	10.77	7.80	2.21	1.01	0.67	1.46
Test coeff p	**0.04**	**0.00**	**0.00**	**0.01**	0.14	0.32	0.41	0.23

Note: Robust standard errors are reported in brackets. ***, **, * denotes significance at the 1, 5 and 10% level, respectively. The dependent variable is the log of the unit value of exports of the 4-digit SITC product p from country c in year t. The sample covers the years 1984-2000. Export value is at the 4-digit SITC level and is measured in current USD. Sector targeting is a dummy taking one if the country-sector cs was targeted by the country's IPA in year t, and zero if the sector was not targeted in year t or if the country did not have an IPA in year t. The variable "1 and 2 years before sect. targ." is a dummy variable taking 1 in year t-1 and t-2 for country-sector cs, if targeting of that sector started in year t. The other versions of this variable are defined in a corresponding way. The targeting information is available at the 3-digit NAICS 1997-level. Standard errors are clustered at the country-sector-year level. GDP per capita is measured in current US dollars and inflation in percent. Export value, GDP per capita and population all enter in natural logs. LX means lagged X periods. All regressions include product-year and country-sector fixed effects.

Table 9: Differentiated products

	1	2	3	4	5	6	7	8
	Developing	Developing	Developing	Developing	HI	HI	HI	HI
Sector targeting	**0.077*** **				**-0.032***			
	[0.021]				[0.017]			
Sect targ*diff prod lib	0.025				**0.045***			
	[0.025]				[0.027]			
L. Sector targeting		**0.066*** **				-0.024		
		[0.021]				[0.018]		
L. Sect targ*diff prod lib		0.009				**0.065** **		
		[0.027]				[0.028]		
L2. Sector targeting			**0.067*** **				-0.010	
			[0.022]				[0.020]	
L2. Sect targ*diff prod lib			-0.001				**0.059***	
			[0.030]				[0.035]	
L3. Sector targeting				**0.065*** **				-0.004
				[0.025]				[0.027]
L3. Sect targ*diff prod lib				-0.018				0.077
				[0.034]				[0.048]
L2. Export value product	-0.004*	-0.004*	-0.004*	-0.005**	0.014***	0.014***	0.014***	0.015***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
L. GDP per capita	0.143***	0.143***	0.142***	0.139***	0.210***	0.211***	0.212***	0.202***
	[0.012]	[0.012]	[0.012]	[0.012]	[0.020]	[0.020]	[0.020]	[0.019]
Population	-0.633***	-0.612***	-0.606***	-0.620***	-0.348***	-0.349***	-0.348***	-0.344***
	[0.068]	[0.068]	[0.068]	[0.071]	[0.069]	[0.069]	[0.069]	[0.070]
Inflation	0.000	0.000	0.000	-0.001*	0.014	0.014	0.014	0.012
	[0.000]	[0.000]	[0.000]	[0.000]	[0.016]	[0.016]	[0.016]	[0.015]
Observations	111498	111498	111498	100608	130693	130693	130693	125769
R-squared	0.79	0.79	0.79	0.81	0.85	0.85	0.85	0.85

Note: Robust standard errors are reported in brackets. ***, **, * denotes significance at the 1, 5 and 10% level, respectively. The dependent variable is the log of the unit value of exports of the 4-digit SITC product p from country c in year t. The sample covers the years 1984-2000. Export value is at the 4-digit SITC level and is measured in current USD. Sector targeting is a dummy taking one if the country-sector cs was targeted by the country's IPA in year t, and zero if the sector was not targeted in year t or if the country did not have an IPA in year t. The targeting information is available at the 3-digit NAICS 1997-level. The dummy for differentiated products, which is interacted with Sector targeting, takes the value 1 if Rauch classified the SITC-4 code as a differentiated product according to the liberal definition. Standard errors are clustered at the country-sector-year level. GDP per capita is measured in current US dollars and inflation in percent. Export value, GDP per capita and population all enter in natural logs. LX means lagged X periods. All regressions include product-year and country-sector fixed effects.

8. Appendix: Robustness checks

Table 10: Controlling for GDP per capita squared

	1	2
	Developing	HI
Sector targeting	**0.104*** **	0.016
	[0.017]	[0.017]
L. Export value product	-0.001	0.019***
	[0.002]	[0.002]
L. GDP per capita	0.338***	-0.274**
	[0.072]	[0.124]
L. (GDP per capita)^2	-0.013***	0.028***
	[0.005]	[0.007]
Population	-0.686***	-0.328***
	[0.068]	[0.068]
Inflation	0.000	0.001
	[0.001]	[0.015]
Observations	135489	150302
R-squared	0.78	0.83

Note: Robust standard errors are reported in brackets. ***, **, * denotes significance at the 1, 5 and 10% level, respectively. The dependent variable is the log of the unit value of exports of the 4-digit SITC product p from country c in year t. The sample covers the years 1984-2000. Export value is at the 4-digit SITC level and is measured in current USD. Sector targeting is a dummy taking one if the country-sector cs was targeted by the country's IPA in year t, and zero if the sector was not targeted in year t or if the country did not have an IPA in year t. The targeting information is available at the 3-digit NAICS 1997-level. Standard errors are clustered at the country-sector-year level. GDP per capita is measured in current US dollars and inflation in percent. Export value, GDP per capita and population all enter in natural logs. LX means lagged X periods. All regressions include product-year and country-sector fixed effects.

Table 11: Unit values, endogeneity of targeting and export value at product level lagged two periods

	1	2	3	4
	Developing	Developing	Developing	Developing
Sector targeting	**0.087*** **	**0.042** **	**0.041***	**0.047** **
	[0.020]	[0.021]	[0.021]	[0.021]
1 year before sect. targ.	-0.002			
	[0.039]			
1 and 2 years before sect. targ.		-0.018		
		[0.021]		
1, 2 and 3 years before sect. targ.			-0.022	
			[0.018]	
1, 2, 3 and 4 years before sect. targ.				0.008
				[0.017]
L2. Export value product	-0.003	-0.006***	-0.006***	-0.006***
	[0.002]	[0.002]	[0.002]	[0.002]
L. GDP per capita	0.143***	0.110***	0.110***	0.110***
	[0.012]	[0.010]	[0.010]	[0.010]
Population	-0.635***	-0.006	-0.006	-0.006
	[0.069]	[0.007]	[0.007]	[0.007]
Inflation	0.000	0.000	0.000	0.000
	[0.000]	[0.001]	[0.001]	[0.001]
Observations	119526	119526	119526	119526
R-squared	0.80	0.79	0.79	0.79
Test coeff F	7.19	6.33	8.05	3.32
Test coeff p	0.01	0.01	0.00	0.07

Note: Robust standard errors are reported in brackets. ***, **, * denotes significance at the 1, 5 and 10% level, respectively. The dependent variable is the log of the unit value of exports of the 4-digit SITC product p from country c in year t. The sample covers the years 1984-2000. Export value is at the 4-digit SITC level and is measured in current USD. Sector targeting is a dummy taking one if the country-sector cs was targeted by the country's IPA in year t, and zero if the sector was not targeted in year t or if the country did not have an IPA in year t. The variable "1 and 2 years before sect. targ." is a dummy variable taking 1 in year t-1 and t-2 for country-sector cs, if targeting of that sector started in year t. The other versions of this variable are defined in a corresponding way. The targeting information is available at the 3-digit NAICS 1997-level. Standard errors are clustered at the country-sector-year level. GDP per capita is measured in current US dollars and inflation in percent. Export value, GDP per capita and population all enter in natural logs. LX means lagged X periods. All regressions include product-year and country-sector fixed effects.