

Nunnenkamp, Peter; Spatz, Julius

Article — Manuscript Version (Preprint)

Determinants of FDI in Developing Countries: Has Globalization Changed the Rules of the Game?

Transnational Corporations

Provided in Cooperation with:

Kiel Institute for the World Economy – Leibniz Center for Research on Global Economic Challenges

Suggested Citation: Nunnenkamp, Peter; Spatz, Julius (2002) : Determinants of FDI in Developing Countries: Has Globalization Changed the Rules of the Game?, Transnational Corporations, ISSN 1014-9562, United Nations Publications, New York, NY, Vol. 11, Iss. 2, pp. 1-34

This Version is available at:

<https://hdl.handle.net/10419/2976>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

revised version
November 2002

**Determinants of FDI in Developing Countries:
Has Globalization Changed the Rules of the Game?**

Peter Nunnenkamp

and

Julius Spatz*

Kiel Institute for World Economics

* We appreciate the comments and suggestions made by three anonymous referees.

Abstract

There is a startling gap between current thinking on, allegedly, globalization-induced changes in international competition for foreign direct investment (FDI) and the lack of recent empirical evidence on shifts in the relative importance of traditional and non-traditional determinants of FDI in developing countries. We attempt to narrow this gap by making use of comprehensive survey data, collected by the European Round Table of Industrialists, on investment conditions in 28 developing countries since the late 1980s. Applying Spearman correlation coefficients and panel-data regression models, we show that surprisingly little has changed so far. Traditional market-related determinants are still dominant factors shaping the distribution of FDI. If at all, the importance of non-traditional FDI determinants has increased only modestly.

Keywords: foreign direct investment, market size, cost factors, human capital, openness to trade

JEL classification: F21

I. INTRODUCTION

It is widely believed that the trend towards globalized production and marketing has major implications for developing countries' attractiveness to foreign direct investment (FDI). The boom of FDI flows to developing countries since the early 1990s indicates that multinational enterprises have increasingly discovered these host countries as competitive investment locations. At the same time, various experts argue that the determinants of and motivations for FDI in developing countries have changed in the process of globalization. As a result, it would no longer be sufficient to offer promising markets in order to induce FDI inflows and policymakers would face more complex challenges in striving for locational attractiveness to FDI (Kokko 2002).

It is beyond serious doubt that the rules of the game have changed in some respects. For instance, tariff-jumping FDI to serve large protected markets should have become less relevant as various developing countries have liberalized their import regime. Apart from unilateral liberalization, successive rounds of multilateral trade liberalization have decreased the relevance of market access through FDI for many products (UNCTAD 1998: 115). Recent studies also suggest that FDI is increasingly used in some industries as a means to slice up the value chain and to outsource less human capital intensive stages of the production process to lower-income countries which offer the relevant comparative advantages.¹

Yet, the notion that traditional FDI determinants are on the decline has to be qualified. The reasoning on globalization-induced changes in FDI patterns mainly refers to the manufacturing sector. However, the recent boom of FDI in developing countries is largely due to a stronger engagement of multinational enterprises (MNEs) in the services sectors of developing countries.² Except for some services such as data processing and software programming, FDI in services is almost by definition market-seeking, rather than efficiency-seeking. It was encouraged by the wave of privatizing public companies in services sectors such as transport, telecommunication, energy and finance in various developing countries,

¹ See, e.g., Spatz and Nunnenkamp (2002) on the automobile industry; see also Dunning (2002).

² UNCTAD (1998: 113) notes "an explosion of FDI in the services sector as a result of the general trend towards the liberalization of FDI frameworks for services".

notably in Latin America.³ Moreover, regional integration schemes such as Mercosur (Argentina, Brazil, Paraguay and Uruguay) provided incentives for market-seeking FDI even in manufacturing by expanding the relevant market. Hence, it remains open to debate whether the new rules of the game apply to a sufficiently large segment of FDI for non-traditional FDI determinants to be able to shape the locational attractiveness to FDI.

In classifying FDI determinants as traditional or non-traditional, we largely follow UNCTAD's line of reasoning. UNCTAD (1996: 97) argued that, as a consequence of globalization, "one of the most important traditional FDI determinants, the size of national markets, has decreased in importance. At the same time, cost differences between locations, the quality of infrastructure, the ease of doing business and the availability of skills have become more important." Non-traditional determinants are considered important for efficiency-seeking FDI (i.e., FDI motivated by creating new sources of competitiveness for firms and strengthening existing ones), which is regarded as the hallmark of foreign investors' responses to the changing international environment. Nevertheless, as shown in Section II, recent empirical studies on FDI determinants in developing countries hardly address the question of globalization-induced changes. The shortage of relevant empirical studies is probably mainly because non-traditional determinants, including cost factors and complementary factors of production, are difficult to capture for a sufficiently large sample of developing countries and over a sufficiently long time span. This is in marked contrast to traditional determinants such as the size and growth of local markets.

In Section III, we argue that the gap between theoretical arguments and empirical evidence may be narrowed by drawing on survey results presented by the European Round Table of Industrialists (ERT 2000). Though subjective by nature, this source offers valuable insights into various variables on which hard data are almost impossible to come by. In Section IV, we use these survey results, supplemented by more conventional sources, to evaluate whether the distribution of (inward) FDI stocks reveals significant changes over time. Section V applies Spearman rank correlation analysis in order to assess whether traditional FDI determinants have become less important, while non-traditional determinants have become more important. In the subsequent regression analysis, we examine in Section VI to what extent non-traditional determinants provide explanatory power for the distribution of FDI in developing countries over and above host countries' population and GDP per capita; testing for time-

³ Sader (1993) shows that foreign investors participated significantly in the wave of privatizations in 1988–1992. In this period, Latin America attracted almost two thirds of the foreign exchange from privatizations in the developing world.

varying regression coefficients we also account for changes in their additional explanatory power over time. We summarize in Section VII that surprisingly little has changed so far as concerns the driving forces of FDI in developing countries.

II. STRONG ARGUMENTS, LIMITED EVIDENCE

UNCTAD (1998: 108 ff.) argues that globalization has led to a reconfiguration of the ways in which MNEs pursue their resource-seeking, market-seeking and efficiency-seeking objectives. The opening of markets to trade, FDI and technology flows has offered MNEs a wider range of choices on how to serve international markets, gain access to immobile resources and improve the efficiency of production systems (see also Dunning 1999). Reportedly, MNEs are increasingly pursuing complex integration strategies, i.e., MNEs "increasingly seek locations where they can combine their own mobile assets most efficiently with the immobile resources they need to produce goods and services for the markets they want to serve" (UNCTAD 1998: 111). This is expected to have two related consequences regarding the determinants of FDI:

- Host countries are evaluated by MNEs on the basis of a broader set of policies than before. The number of policies constituting a favorable investment climate increases, in particular with regard to the creation of location-specific assets sought by MNEs.
- The relative importance of FDI determinants changes. Even though traditional determinants and the types of FDI associated with them have not disappeared with globalization, their importance is said to be on the decline (UNCTAD 1996: 97).

Likewise, Dunning (1999) argues that the motives for, and the determinants of FDI have changed. According to Dunning (2002: exhibit 5), FDI in developing countries has shifted from market-seeking and resource-seeking FDI to (vertical) efficiency-seeking FDI. Due to globalization-induced pressure on prices, MNEs are expected to relocate some of their production facilities to low cost developing countries. Nevertheless, and in contrast to FDI in industrial countries, FDI in developing countries still is directed predominantly to accessing natural resources and national or regional markets according to this author.⁴

⁴ In an earlier paper, Dunning (1999: 24) states: "There remains comparatively little North-South asset augmenting FDI."

It would have important policy implications if globalization had changed the rules of the game in competing for FDI. The policy challenge would become fairly complex in that host country governments would have "to provide and publicize a unique set of immobile assets, pertinent to the types of economic activity they wish to attract and retain, vis-à-vis those offered by other countries" (Dunning 1999: 17 f.). Additionally, policymakers could no longer rely on the previous empirical literature stressing the overriding role of some clearly defined factors shaping the distribution of FDI.

Among traditional FDI determinants, market-related factors clearly stand out. In a frequently quoted survey of the earlier literature on FDI determinants, Agarwal (1980) found the size of host country markets to be the most popular explanation of a country's propensity to attract FDI, especially when FDI flows to developing countries are considered. Subsequent empirical studies corroborated this finding.⁵ Even authors who dismissed earlier studies as seriously flawed came up with results supporting the relevance of market-related variables such as GDP, population, GDP per capita and GDP growth; examples are: Schneider and Frey (1985), Wheeler and Mody (1992), Tsai (1994), Jackson and Markowski (1995) and, more recently, Taylor (2000).⁶ Chakrabarti (2001), while questioning the robustness of various other FDI determinants, finds the correlation between FDI and market size to be robust to changes in the conditioning information set.

Against this backdrop, the obvious question is whether the dominance of market-related factors no longer holds under conditions of proceeding globalization, while non-traditional FDI determinants have become more important. Recent empirical studies on FDI determinants in developing countries hardly address this question explicitly.⁷ Yet, some of these studies offer at least tentative insights, e.g. on changes in the relevance of market-related and trade-related variables.

⁵ Shamsuddin (1994) reiterated Agarwal's finding some 15 years later: "Most empirical studies support the market size hypothesis."

⁶ Schneider and Frey (1985) criticize that previous studies dealt insufficiently with the *joint* influence of economic and political factors. Tsai (1994) supposes empirical results to be unreliable unless the simultaneity between determinants and consequences of FDI is taken into account.

⁷ According to UNCTAD (1998: 135), "it is hard to derive any conclusion from these studies as to whether the list of determinants has changed over time or whether some have gained or lost importance".

As concerns market-related variables, Loree and Guisinger (1995) find per capita GDP of host countries to be a driving force of FDI from the United States in 1977, but not in 1982.⁸ The authors presume that this rather surprising result is due to a shift from local market-seeking FDI towards more world market-oriented FDI. This reasoning suggests that the motives for FDI may have changed well before globalization became a hotly debated issue. However, data constraints prevented Loree and Guisinger from testing this proposition. Moreover, industrialized host countries constitute about half of the sample analyzed in this study. Hence, it remains open to question whether the presumed shift in FDI motives applies to both industrialized and developing host countries. The results of Tsai (1994), whose sample consists almost exclusively of developing countries, indicate that the role of market-related variables in attracting FDI did not decline from the 1970s to the 1980s. In the same vein, econometric tests performed by UNCTAD (1998: 135–140) reveal that, in some contrast to UNCTAD's reasoning elsewhere in the same World Investment Report, market size-related variables remained the dominant influence on inward FDI even in the mid-1990s.⁹

Recent empirical studies on trade-related determinants of FDI render the following picture:¹⁰

- Lucas (1993) shows that FDI in East and Southeast Asian countries between 1960 and 1987 was more elastic with respect to aggregate demand in export markets than with respect to demand in the host country. From this result he infers that the importance of local market size is overstated in various empirical studies because they omit export markets as a determinant of FDI.¹¹
- According to Tsai (1994), FDI and growth of host country exports were positively correlated in the 1970s, but no longer in the 1980s. This finding is at odds with the widely

⁸ These authors use detailed data from the benchmark surveys of the US Department of Commerce for 1977 and 1982. The focus of their study is on policy factors such as investment incentives, performance requirements and tax rates.

⁹ UNCTAD (1998: 14) qualifies this finding by noting that market size-related variables "explain less of the variation across countries in more recent years than in earlier periods". However, exactly the opposite is true for regressions run for the subsample of developing countries (ibid: Table IV.A.4).

¹⁰ In Section III, we discuss in detail why trade-related variables are considered a non-traditional determinant of FDI in the present study.

¹¹ Note, however, that Lucas (1993) does not address changes in the importance of FDI determinants over time. Furthermore, it is questionable whether the results for world market-oriented Asian economies would hold in other regions, too.

held view that FDI has shifted towards world-market orientation. If this hypothesis were true, one would have expected the opposite correlation pattern.

- Singh and Jun (1995) find export orientation to be the strongest variable for explaining why a country attracts FDI. At the same time, however, this study also supports the tariff-jumping hypothesis of FDI.
- Gastanaga, Nugent and Pashamova (1998) address the tariff-jumping hypothesis by using panel data. While cross-section results suggest that FDI flows were motivated more strongly by tariff jumping than by potential exports, the effects of import tariffs on FDI tend to be negative in a time-series context.¹² These authors conclude that "over time in individual countries trade liberalization has become the more important motive for FDI" (ibid.: 1312).
- According to Chakrabarti (2001), openness to trade (proxied by exports plus imports to GDP) has the highest likelihood of being correlated positively with FDI among all explanatory variables classified as fragile. Asiedu (2002), using the same proxy for openness, comes to a similar conclusion when separating Sub-Saharan host countries from host countries in other regions.

The problem with essentially all these studies is that they use trade-related variables that are seriously flawed.¹³ Import tariff rates capture at best part of the trade policy stance of host countries. The ratio of exports plus imports to GDP suffers from a large-country bias and may, thus, lead to unreliable results. We are aware of just one recent study on FDI determinants which takes a different route, as we do below, in assessing openness. Taylor (2000) refers to survey results (from the World Competitiveness Report) on the degree to which government policy discourages imports. This measure of openness to trade is shown to be positively correlated with FDI undertaken by MNEs from the United States. By contrast, alternative measures tried as proxies of openness (tariff rates, coverage of non-tariff barriers) turned out to be insignificant when correlated with FDI.

Taylor (2000) resembles most other studies in that he does not assess changes over time in the importance of openness as an FDI determinant. His results do suggest, however, that a globalization-induced increase in the relevance of openness cannot be taken for granted. The

¹² However, both the direction and magnitude of effects are sensitive to the specification of the test equation.

¹³ For a more detailed discussion of different measures of openness to trade, see Edwards (1998).

positive correlation between openness and FDI is restricted to the manufacturing sector, whereas the correlation is insignificant for FDI by MNEs from the United States in the services sector. Considering that the recent boom of FDI in developing countries is largely because of FDI in services (see Section I), the relevance of openness even may have declined.

Finally, the study by Noorbakhsh, Paloni and Youssef (2001) offers insights on non-traditional determinants of FDI in developing countries, though not with regard to trade-related variables.¹⁴ The focus of this study is on human capital as a determinant of FDI. Most importantly, "the results ... are suggestive of an increasing importance of human capital through time. The estimated coefficients of the variables used as proxies for human capital as well as their t-ratios increase in magnitude across the consecutive sample periods" (ibid: 1602 f.). The authors attribute this finding explicitly to the process of globalization. The limitations of this study are twofold: The period of observation is restricted to 1983–1994, and changes over time are not studied for FDI determinants other than human capital.

III. DATA AND APPROACH

Before presenting our own approach and data base, it may be useful to justify the classification of variables as traditional or non-traditional determinants of FDI. As mentioned in Section I, the classification is essentially based on the overview of host country determinants of FDI presented in UNCTAD (1998: Table IV.1).¹⁵ Furthermore, we take into account that FDI in developing countries traditionally concentrated in market-seeking and resource-seeking activities, while efficiency-seeking FDI is of a more recent nature in these host countries (Dunning 1999). Hence, variables that are typically regarded as driving forces of efficiency-seeking FDI are considered non-traditional determinants of FDI in developing countries in the following.

Against this backdrop, it is obvious that market-related variables such as GDP, population, GDP per capita and GDP growth constitute traditional FDI determinants. In addition, the subsequent list of traditional determinants includes some factors which UNCTAD (1998) considers to be part of the overall policy framework for FDI and business facilitation measures of host countries. This is because factors such as entry restrictions, so-called hassle

¹⁴ These authors, too, use the ratio of exports plus imports to GDP as a measure of openness.

¹⁵ For a slightly modified version, see Nunnenkamp (2001: Figure 7). The major difference to UNCTAD (1998) is on trade policy; the reasons are given below.

costs, and economic as well as political stability are relevant, in principle, for all types of FDI. However, other elements of the policy framework for FDI may affect specific types of FDI differently. For example, performance requirements related to local content and imported inputs are likely to discourage efficiency-seeking FDI more than purely market-seeking FDI.¹⁶

Apart from data availability, our selection of non-traditional determinants is guided by UNCTAD's proposition that cost differences between locations and the availability of complementary local factors of production have become more important in the process of globalization (UNCTAD 1996: 97). As concerns differences in labor costs, our classification may be disputed on the grounds that the search for relatively cheap labor represented a rather traditional driving force of FDI in labor-intensive industries of developing countries; a shift towards more capital- and technology-intensive FDI projects may even have diminished the relevance of labor costs recently.¹⁷ However, our measure of cost differences goes beyond labor costs and includes other cost factors such as taxes (see Annex). Moreover, it was only under conditions of globalization that MNE strategies gave rise to vertically integrated production structures (UNCTAD 1998: 109). The fragmentation of production processes and the relocation of relatively labor-intensive segments of the value chain is no longer restricted to labor-intensive industries such as clothing, but extends to technologically advanced industries such as transport equipment (Spatz and Nunnenkamp 2002). As argued by Dunning (2002), globalization-induced pressure on prices increasingly encourages MNEs to relocate some of their production facilities to low cost developing countries. Hence, one can reasonably expect cost differences to have become more relevant in the process of globalization.

This should apply even more so to complementary factors of production which include business-related services such as access to local finance, and the strength and efficiency of local enterprises on which MNEs would like to draw as suppliers of inputs and potential customers. Both analytical reasoning and previous empirical findings (Noorbakhsh, Paloni

¹⁶ On performance requirements, see Loree and Guisinger (1995). These authors find performance requirements to be negatively correlated with FDI by MNEs from the United States in 1977, whereas the correlation turned insignificant in 1982.

¹⁷ We owe these arguments to one of the referees.

and Youssef 2001) clearly suggest to regard the availability of local skills as a particularly important complementary factor of production.¹⁸

The classification of trade-related variables as non-traditional FDI determinants may be contentious. In UNCTAD (1998: Table IV.1), trade policy is part of the overall policy framework affecting all types of FDI. By contrast, Nunnenkamp (2001: Figure 7) lists trade policy as an economic determinant of efficiency-seeking FDI. This is not to ignore the relevance of trade policy for market-seeking FDI in the past. As a matter of fact, the tariff-jumping hypothesis figured prominently in earlier research on FDI determinants (Section II; see also Taylor 2000: 637). Lacking a promising alternative to FDI in the presence of significant trade barriers, it was reasonable indeed to expect higher FDI flows to large and protected markets. However, widespread trade liberalization, both multilaterally and unilaterally, should have eroded the tariff-jumping motive for FDI.

Trade liberalization has led Loree and Guisinger (1995: 285) to suspect FDI determinants other than trade policy to have gained relative importance. Current thinking on the interface between trade and FDI, however, invites a different hypothesis. According to Markusen (1995), trade barriers cause a substitution towards FDI; at the same time, they reduce the level of both trade and FDI. The balance of the two opposing effects of trade barriers on FDI is likely to have become negative due to trade liberalization and the shift in MNE strategies towards efficiency-seeking FDI. Restrictions on foreign trade impede an internationally competitive production by MNEs in host countries and, thus, tend to discourage efficiency-seeking FDI. To the extent that the shift in MNE strategies applies to developing countries, too, the impact of trade barriers on FDI in these countries should have changed from positive (or insignificant) to negative. Put differently, the removal of trade barriers may induce higher FDI flows by giving rise to new types of FDI. That is why we regard openness to trade as a non-traditional determinant of FDI in developing countries.

The following empirical analysis mainly draws on survey data on investment conditions in 28 developing countries. The European Round Table of Industrialists (in cooperation with the United Nations and the International Chamber of Commerce) conducted three surveys on

¹⁸ For example, Zhang and Markusen (1999) present a model in which locally available skills constitute a relevant factor of MNE production and affect the magnitude of FDI flows. Noorbakhsh, Paloni and Youssef (2001) attribute it explicitly to the process of globalization that skilled labor has become more attractive to MNEs relative to low labor costs per se. Dunning (1999: 28) argues that a knowledge supporting human and physical infrastructure is increasingly important as a locational pull to mobile investment.

investment conditions in the developing world; results are summarized in ERT (2000). The main sources of information on which ERT drew were the developing countries themselves. In the latest survey, the authorities of 33 countries participated by returning questionnaires, designed by ERT, on important improvements in investment conditions. Replies were restructured and completed by ERT, in order to prepare country files on improvements and remaining impediments to investment; additional sources used by ERT were exclusively from the public domain.

The checklist of the survey covers 33 items, most of which are considered in subsequent sections of this paper by aggregating them into several indices (see Annex for the definition of items and the aggregation). For each of these items, ERT presents country-wise improvements and remaining impediments on a scale ranging from 0 to 6. The three surveys report improvements for 1987–1992, 1993–1996 and 1997–1999, as well as remaining impediments at the end of 1992, 1996 and 1999, respectively.

The major strength of the ERT surveys, e.g. compared to the Global Competitiveness Report of the World Economic Forum in Geneva, is that comparability between the three surveys is ensured. The original questions of the first survey and the criteria according to which investment conditions are measured remained unchanged. As a result, a consistent data set is available for 28 developing countries that participated in all three surveys.¹⁹

The weaknesses are twofold. First, the assessment of improvements and remaining impediments, especially the weighting done by ERT, "can be rather subjective" (ERT 2000: 29). This drawback is common to all surveys and has to be accepted unless hard data are available (which is not the case in many regards, including FDI restrictions). Second, the sample is limited to 28 developing host countries and the time span covered by the surveys is only twelve years. Yet, the results presented in the following should be fairly representative. The ERT sample accounted for 56 percent of inward FDI stocks in all developing countries in 1999, and for 62 percent of FDI flows to all developing countries in 1997–2000 (UNCTAD online data base). Furthermore, even though long-term shifts in the importance of FDI determinants may not be captured fully, the survey data are expected to provide valuable insights. They cover the period during which FDI in developing countries boomed and globalization became a hotly debated issue.

¹⁹ The countries are: Argentina, Bangladesh, Brazil, China, Colombia, Ecuador, Egypt, Ghana, Guatemala, India, Indonesia, Iran, Kenya, Korea, Malaysia, Mexico, Nigeria, Pakistan, Philippines, Saudi Arabia, Sri Lanka, Syria, Taiwan, Thailand, Tunisia, Turkey, Viet Nam, Zimbabwe.

Survey results presented in ERT (2000) are supplemented by World Bank data on variables that are typically considered important determinants of FDI, including market size proxied by the host countries' population and the level of GDP per capita, as well as the growth of local markets, proxied by GNP growth (see Annex for details). All in all, we deal with 12 possible determinants of FDI in developing countries. The classification into traditional and non-traditional determinants is based on the reasoning in the beginning of this section. The following variables are considered traditional determinants:

- population of host countries;
- GDP per capita in host countries;
- GNP growth of host countries;
- administrative bottlenecks;
- entry restrictions;
- risk factors.

By contrast, the following (non-traditional) variables should have become more important if globalization has changed the rules of the game in competing for FDI:

- complementary factors of production, i.e. local inputs required for an internationally competitive production in developing host countries;
- average years of schooling, drawn from Barro and Lee (2000), in order to assess more accurately one particular complementary factor of production, namely the availability of sufficiently qualified labor in host countries;
- cost factors, relating to taxes, employment conditions, labor market regulations and the leverage of trade unions;²⁰
- restrictions of foreign trade, which may impede an internationally competitive production in developing host countries.

Some further variables cannot easily be classified as either traditional or non-traditional. This applies to:

²⁰ Productivity adjusted labor costs would be a clearly superior measure. However, survey results, presented by World Economic Forum (2002), on this measure are not available over a longer time span.

- post-entry restrictions, some of which may discourage all foreign investors whereas other restrictions (notably performance requirements) may discourage efficiency-seeking FDI more than purely market-seeking FDI;
- technology-related regulations, which may be as multi-faceted as post-entry restrictions.

FDI in sample countries is defined in different ways. The subsequent section refers to inward FDI stocks in absolute (US\$) terms, in order to assess changes in the distribution of FDI over time. For the correlation and regression analyses in Sections V and VI, we use FDI stocks and FDI inflows.

IV. CHANGES IN THE DISTRIBUTION OF FDI STOCKS

This section portrays the distribution of FDI stocks in the 28 sample countries according to the (traditional and non-traditional) determinants listed above. For all determinants,²¹ we group the sample countries into two categories of weak and strong attractiveness. For example, strong attractiveness means large markets, a high income level, low FDI restrictions, favorable cost conditions and good endowment of complementary factors of production. In all respects, the median is taken as the dividing line between weak and strong attractiveness.

Annex Table 1 presents average indicator values for the subgroups of sample countries with weak and strong attractiveness. It is interesting to note that indicators improved with few exceptions from 1992 to 1999 for both subgroups of countries.²² In other words, almost all developing countries offered more favorable investment conditions in the late 1990s, especially by liberalizing FDI restrictions. For example, entry restrictions were relaxed considerably by countries with relatively weak attractiveness (from an indicator value of 3.3 in 1992 to 1.7 in 1999). Minor improvements are reported for cost factors (albeit from a lower level of impediments in 1992). This may be surprising as this variable belongs to the list of non-traditional FDI determinants which are widely believed to have become more important in shaping the distribution of FDI.

Due to across-the-board liberalization of FDI restrictions, even the less attractive developing host countries within the sample score, on average, below 2 in 1999 with regard to almost all indicators derived from the ERT survey. For various countries with relatively strong attractiveness, the ERT survey reports no remaining impediments in 1999 so that the average of all indicators derived from this source is below 1 for this subgroup of countries. Across-the-board liberalization notwithstanding, distinct differences between the two subgroups of sample countries remained. This applies to survey results for both traditional determinants (e.g., administrative bottlenecks) and non-traditional determinants (e.g., complementary factors of production). Data drawn from other sources fit into this picture. For instance, GNP continued to grow more than twice as fast in countries with relatively strong attractiveness than in countries with relatively weak attractiveness.

²¹ GNP growth is not considered in this section, as this variable relates to FDI flows rather than stocks.

²² The exceptions are: declining GNP growth for both subgroups of countries.

The distribution of FDI stocks between countries with relatively strong and weak attractiveness, as defined above, is shown in Table 1.²³ It may be surprising that countries with strong attractiveness hosted less than half of FDI stocks in 1999 according to various indicators. This applies not only to traditional determinants, but also to some non-traditional determinants (including complementary factors of production and cost factors). This is largely due to FDI stocks in China, whose share in FDI stocks in all sample countries soared from 8 percent to 31 percent in 1999.

Table 1 — Distribution of FDI Stocks in 28 Developing Countries: Share of Countries with Strong Attractiveness According to Selected Indicators^a (in percent)

Indicators ^b	1987	1992	1999
population	68.0 (65.2)	68.8 (64.0)	75.3 (64.1)
GDP per capita	64.1 (69.1)	60.3 (70.1)	51.2 (75.3)
administrative bottlenecks ^c	n.a.	60.0 (69.3)	49.1 (71.5)
entry restrictions ^c	n.a.	32.7 (36.2)	39.3 (57.2)
risk factors ^c	n.a.	46.3 (42.7)	37.1 (54.0)
complementary factors of production ^c	n.a.	35.8 (40.9)	49.0 (57.0)
years of schooling	46.0 (61.8)	56.4 (48.7)	64.6 (50.0)
cost factors ^c	n.a.	40.9 (47.2)	41.1 (59.9)
restrictions on foreign trade ^c	n.a.	40.2 (46.4)	81.7 (73.3)
post-entry restrictions ^c	n.a.	41.2 (47.6)	39.3 (57.2)
technology-related regulations ^c	n.a.	31.8 (36.8)	41.4 (60.2)

^a Strong attractiveness defined as countries with indicator values better than the median. Figures in brackets: excluding China. – ^b See Annex for definition of variables. – ^c Based on survey results in ERT (2000).

Source: UNCTAD online data base; ERT (2000); World Bank (2001); Barro and Lee (2000).

Much of the literature attributes China's attractiveness to a host of locational advantages, including market size and growth prospects, the cost and productivity of labor, openness to international trade, and FDI promotion packages.²⁴ While this list comprises traditional and non-traditional FDI determinants, ERT survey results suggest that the boom of FDI in China was driven more by market-related determinants than by non-traditional determinants. In all three ERT surveys, China is shown to be on a "very fast track of opening" (ERT 2000: 348–

²³ While survey results on remaining impediments are available since 1992, indicators derived from other sources are reported since 1987.

²⁴ See, for example, Japan Bank for International Cooperation (2002) and the literature given there.

350). As a result, China is rated "moderately open" in terms of remaining impediments by the end of 1999. However, the large majority of sample countries are still considered more open than China. More specifically, in 1999, FDI impediments in China continued to be above the median with regard to non-traditional determinants such as the availability of complementary factors of production and cost factors. Hence, the steeply increased FDI share of China may be taken as a first indication that market size has remained a major driving force of FDI in developing countries in the era of globalization.

If China is excluded from the sample, the share of more attractive countries in overall FDI stocks has increased in all respects since 1992 (see figures in brackets in Table 1). This increase was most pronounced for the following indicators: entry restrictions, complementary factors of production, restrictions on foreign trade, and technology-related regulations. Even though this list includes two non-traditional determinants of FDI (complementary factors of production, restrictions on foreign trade), it is difficult to draw clear conclusions from these shifts in the distribution of FDI on whether non-traditional determinants have become more important. This is not only because the distribution of (absolute) FDI stocks is dominated by some large host countries. Furthermore, shifts of FDI towards more attractive host developing countries are observed for both non-traditional and traditional determinants. For example, the concentration of FDI in relatively advanced developing countries, measured by GDP per capita, was even stronger in 1999 than in 1987 and 1992, once China is excluded from the sample. All in all, the distribution of FDI tends to confirm the reasoning of Dunning (2002) that traditional economic determinants remain important in shaping the attractiveness of developing countries.

V. CORRELATION RESULTS

The relevance of traditional and non-traditional determinants of FDI may be better captured by the subsequent correlation analysis. The distribution of absolute FDI is closely related to the host countries' population (or GDP). However, as shown elsewhere (Nunnenkamp 2001), various small developing countries were more successful in attracting foreign investors than the largest recipients of FDI, once FDI is measured in per capita terms. Avoiding the large-country bias may, thus, offer better insights into the relevance of traditional and non-traditional determinants of FDI, and possible changes over time. We take account of the large-country bias by correlating only population with FDI in million US\$. All other FDI determinants are correlated with FDI in US\$ per capita. In addition to FDI stocks, we perform correlations with FDI flows. FDI flows can be expected to be less path dependent than FDI stocks. Any changes in the relevance of determinants may, thus, affect FDI flows more strongly than FDI stocks. Moreover, additional determinants can be taken into account in the case of FDI flows. We add GNP growth to the list of traditional determinants.

Before analyzing FDI flows, Table 2 reports Spearman rank correlation coefficients for FDI stocks on the one hand, and possible determinants of FDI on the other hand.²⁵ Almost all correlation coefficients have the sign to be expected, although various coefficients lack statistical significance at conventional levels. Typically, stronger FDI impediments reported in ERT surveys are negatively correlated with FDI stocks per capita of the host countries' population. Among the indicators with significant coefficients in 1999, all but one were significantly correlated with FDI stocks throughout the 1990s (complementary factors of production representing the exception). On the other hand, none of our indicators that had been significantly correlated with FDI stocks earlier in the 1990s turned insignificant at the end of this decade. Taken together, these two observations suggest that changes in the importance of determinants of FDI remained modest so far.

Correlations between FDI stocks and traditional determinants strengthened, rather than weakened, in some respects. Booming FDI in China explains why market size, proxied by population, was more strongly associated with absolute FDI stocks (in million US\$) in the second half of the 1990s. GDP per capita and risk factors gained influence in shaping the distribution of FDI stocks per capita, indicating a shift of FDI towards more developed and

²⁵ We are grateful to one referee for pointing out that the Spearman rank correlation index, rather than the Pearson correlation coefficient is the appropriate methodology for our purposes.

stable host countries. Among traditional determinants, only administrative bottlenecks lost influence.

Table 2 — Correlation Results for FDI Stocks^a in 28 Developing Countries

Indicators ^b	1987	1992	1996	1999
population ^c	0.26	0.37*	0.40**	0.42**
GDP per capita	0.62***	0.73***	0.70***	0.73***
administrative bottlenecks ^d	n.a.	-0.76***	-0.63***	-0.53***
entry restrictions ^d	n.a.	-0.13	0.06	-0.09
risk factors ^d	n.a.	-0.43*	-0.59***	-0.62***
complementary factors of production ^d	n.a.	-0.31	-0.25	-0.39**
years of schooling	0.34*	0.42**	0.53***	0.52***
cost factors ^d	n.a.	-0.49***	-0.67***	-0.67***
restrictions on foreign trade ^d	n.a.	-0.45**	-0.55***	-0.39*
post-entry restrictions ^d	n.a.	-0.30	-0.03	-0.01
technology-related regulations ^d	n.a.	-0.00	0.00	-0.01

*, **, *** significant at 10 percent, 5 percent and 1 percent level, respectively (two-tailed); see Annex Table for missing observations. ^a US\$ per capita of the host countries' population, if not stated otherwise. – ^b See Annex for definition of variables. – ^c Correlated with FDI in million US\$ – ^d Based on survey results in ERT (2000).

Source: Own calculations based on UNCTAD online data base; ERT (2000); World Bank (2001); Barro and Lee (2000).

Nevertheless, Table 2 provides some support to the view that non-traditional determinants of FDI gained importance in developing countries. For all non-traditional determinants except restrictions on foreign trade, correlation coefficients were higher in 1999 than in 1992. The increased importance of schooling underscores the findings of Noorbakhsh, Paloni and Youssef (2001) and it is also consistent with survey results: FDI stocks per capita in 1999 were relatively low in sample countries for which the lack of basic and higher education, one of the complementary factors of production (see Annex), was regarded an important impediment to investment.

The results reported for restrictions on foreign trade are in conflict with the view that non-traditional determinants have gained relevance. The correlation with FDI stocks per capita turned less significant in 1999. In interpreting this surprising result, it must be recalled that the debate on the relevance of openness to trade for FDI focuses on FDI in the manufacturing sector (Section III), while booming FDI in developing countries in the 1990s was largely because of FDI in services. For FDI stocks of all investor countries held in developing

countries, we cannot differentiate between manufacturing and services sectors.²⁶ Hence, we cannot separate potentially opposing effects.

However, sectorally disaggregated data are available for US FDI stocks in developing countries. We use the online data base of US Department of Commerce, Bureau of Economic Analysis and run our correlations for the manufacturing and services sector separately. Thereby we get an idea on whether the continuous importance of market-related FDI determinants is mainly because of the rise of FDI in services, and we can test the hypothesis that it is mainly in manufacturing that non-traditional FDI determinants have become more important. We consider the difference of total US FDI stocks and US FDI stocks in manufacturing to proxy US FDI stocks in the services sector.

In Table 3, we first reproduce the Spearman rank correlation coefficients of Table 2 for total US FDI stocks. The results achieved deviate just slightly from the pattern described before. Similar to FDI stocks held by all investor countries, the importance of non-traditional FDI determinants in shaping the distribution of US FDI stocks in developing countries increased modestly. Hence, the United States appear to be fairly representative among major investor countries.

Against this backdrop, we compare the correlations for US FDI in manufacturing and in other sectors. The differences are much less pronounced than one would expect, if non-traditional determinants had gained significant importance in manufacturing only:

- The correlations of US FDI in manufacturing with non-traditional determinants are somewhat stronger in 1999 than in 1992. However, the same is true for US FDI in other sectors.
- In 1999, the correlation coefficients with regard to non-traditional determinants deviate only marginally between FDI in manufacturing and other sectors.
- Market-related FDI determinants had a somewhat larger say in shaping the distribution of FDI in other sectors than in manufacturing in 1992. However, this difference weakened, rather than strengthened until 1999. Furthermore, GDP per capita in developing host countries continued to be the variable with which FDI in manufacturing was correlated most strongly.

²⁶ We are grateful to UNCTAD colleagues who provided us with unpublished FDI stock data in the tertiary sector of some (developed and developing) host countries. However, this information is only available since 1995. Moreover, the list of countries includes just 2 (out of our 28) sample countries for which the data set is complete. For this reason, we chose to refer to US FDI data only.

- As concerns other traditional FDI determinants, Table 3 does not provide clear evidence that they have become less important in manufacturing since 1992.

Taken together, the sector-specific evidence for US FDI stocks in our sample countries suggests that increases in the relative importance of non-traditional FDI determinants are not seriously understated in the analysis of total FDI held by all investor countries.

Table 3 — Correlation Results for US FDI Stocks^a in Manufacturing and Other Sectors in 28 Developing Countries

Indicators ^b	1992			1999		
	all sectors	manu-facturing	other sectors	all sectors	manu-facturing	other sectors
population ^c	0.48**	0.26	0.40*	0.39**	0.17	0.27
GDP per capita	0.86***	0.79***	0.87***	0.68***	0.71***	0.68***
administrative bottlenecks ^d	-0.63***	-0.73***	-0.61***	-0.51***	-0.43**	-0.56***
entry restrictions ^d	0.02	-0.30	0.00	-0.22	-0.22	-0.22
risk factors ^d	-0.31	-0.43**	-0.31	-0.62***	-0.59***	-0.67***
complementary factors of production ^d	-0.24	-0.34	-0.14	-0.41**	-0.50***	-0.45**
years of schooling	0.48**	0.47**	0.45*	0.48**	0.59***	0.55***
cost factors ^d	-0.57***	-0.51**	-0.56**	-0.59***	-0.62***	-0.55***
restrictions on foreign traded ^d	-0.43**	-0.53**	-0.48**	-0.55***	-0.62***	-0.66***
post-entry restrictions ^d	-0.29	-0.44**	-0.45**	-0.31	-0.33	-0.35*
technology-related restrictions ^d	-0.01	0.01	-0.08	-0.16	-0.18	-0.16
*, **, *** significant at 10 percent, 5 percent and 1 percent level, respectively (two-tailed); number of observations in some cases below 28 (due to missing observations).						
^a US\$ per capita of the host countries' population, if not stated otherwise. – ^b See Annex for definition of variables. – ^c Correlated with FDI in million US\$. – ^d Based on survey results in ERT (2000).						

Source: Own calculations based on US Department of Commerce, Bureau of Economic Analysis (online data base); ERT (2000); World Bank (2001); Barro and Lee (2000).

Furthermore, we check the sensitivity of results presented in Table 2 by performing the same analysis for FDI flows. In addition to the previous FDI determinants, Table 4 lists GNP growth (proxying the growth of local markets). FDI flows in 1993–1996 and 1997–2000 are correlated with investment impediments at the end of 1992 and at the end of 1996, respectively. Population and GDP per capita refer to the first year of the respective subperiod (1987, 1993 and 1997). For lack of data, the same procedure could not be followed for average years of schooling; we chose the closest available years (1990, 1995 and 2000).

Annual average GNP growth is lagged by two years. For instance, FDI flows in 1997–2000 are correlated with GNP growth in 1995–1998.²⁷

Table 4 — Correlation Results for FDI Flows^a to 28 Developing Countries

Indicators ^b	1987–1992	1993–1996	1997–2000
population ^c	0.46**	0.55***	0.31
GDP per capita	0.50***	0.50***	0.74***
GNP growth	0.00	0.34*	-0.11
administrative bottlenecks ^d	n.a.	-0.45**	-0.39**
entry restrictions ^d	n.a.	-0.06	-0.01
risk factors ^d	n.a.	-0.18	-0.54***
complementary factors of production ^d	n.a.	-0.34*	-0.43**
years of schooling	0.16	0.65***	0.60***
cost factors ^d	n.a.	-0.41**	-0.62***
restrictions on foreign trade ^d	n.a.	-0.31	-0.53***
post-entry restrictions ^d	n.a.	-0.07	0.04
technology-related regulations ^d	n.a.	0.13	0.02

*, **, *** significant at 10 percent, 5 percent and 1 percent level, respectively (two-tailed); see Annex Table for missing observations. ^a US\$ per capita of the host countries' population, if not stated otherwise. – ^b See Annex for definition of variables. – ^c Correlated with FDI in million US\$– ^d Based on survey results on remaining impediments in ERT (2000).

Source: Own calculations based on UNCTAD online data base; ERT (2000); World Bank (2001); Barro and Lee (2000).

Correlation results achieved for FDI flows to the 28 sample countries largely confirm previous findings for FDI stocks. As before, we find some evidence that the distribution of FDI among developing countries has increasingly been influenced by non-traditional determinants. For all non-traditional determinants, the correlation with FDI flows per capita strengthened in the 1990s. However, the same applies to some traditional determinants of FDI. Table 4 corroborates the finding that GDP per capita and risk factors became more important recently. Similar to FDI stocks, FDI flows in the late 1990s were correlated most strongly with GDP per capita. By contrast, the relevance of administrative bottlenecks in discouraging FDI flows decreased slightly. The correlations with population and GNP growth do not reveal a clear trend.

²⁷ This lag structure accounts for possible reverse causation, i.e., FDI flows stimulating subsequent growth.

VI. REGRESSION RESULTS

In the following, we examine to what extent the FDI impediments presented in ERT (2000) and years of schooling provide explanatory power for the distribution of FDI in developing countries over and above host countries' population and GDP per capita. Furthermore, we test whether the additional explanatory power of the former determinants increased in the era of globalization. To address these two issues, we proceed in two steps. First, for each additional FDI determinant, i.e. the ERT indices and years of schooling, and for each observation period, we run a regression of log FDI (in million US\$) on log host countries' population, log GDP per capita as well as the respective FDI determinant. The t-values of these regressions are used to calculate the partial correlation coefficients of the additional FDI determinants. Second, we pool the observations for the first and the last observation period and augment the regression model with dummies to account for time-varying regression coefficients. We run the augmented regressions for each additional FDI determinant separately and test whether its regression coefficient changed significantly over time.²⁸

We carry out the analysis both for FDI stocks and for FDI flows. The results, which are summarized in Tables 5 and 6, support our previous findings. Controlling for population and GDP per capita, only few partial correlation coefficients are significant. This implies that the role of the additional FDI determinants in explaining the distribution of FDI in developing countries is small. Focusing on the non-traditional FDI determinants, we find that at least for FDI stocks, all partial correlation coefficients developed in the expected direction in the 1990s; the partial correlation coefficients of FDI impediments became more negative, while the partial correlation coefficient of years of schooling became more positive. For FDI flows, no clear trend is discernible. Furthermore, in all cases the changes in the regression coefficients remain insignificant; the p-values for constancy of the regression coefficients lie far above conventional levels of significance. Hence, if there was a rise in the importance of non-traditional FDI determinants, it was relatively small.

²⁸ We perform a t-test of the dummy-interacted FDI determinant.

Table 5 — Partial Correlation Coefficients for FDI Stocks^a in 28 Developing Countries

Indicators ^b	1992	1996	1999	p-value for constancy of regression coefficient
administrative bottlenecks ^c	-0.601***	-0.464**	-0.225	0.235
entry restrictions ^c	0.048	0.083	-0.100	0.610
risk factors ^c	-0.017	-0.067	-0.237	0.370
complementary factors of production ^c	-0.027	-0.057	-0.149	0.720
years of schooling	-0.055	-0.004	0.029	0.786
cost factors ^c	-0.068	-0.430**	-0.308	0.446
restrictions on foreign trade ^c	-0.278	-0.232	-0.386*	0.619
post-entry restrictions ^c	0.035	-0.019	-0.108	0.613
technology-related regulations ^c	0.077	-0.054	0.069	0.996

*, **, *** significant at 10 percent, 5 percent and 1 percent level, respectively (two-tailed). ^a See text for underlying regression and calculation procedure.— ^b See Annex for definition of variables. — ^c Based on survey results in ERT (2000).

Source: Own calculations based on UNCTAD online data base; ERT (2000); World Bank (2001); Barro and Lee (2000).

Table 6 — Partial Correlation Coefficients for FDI Flows^a to 28 Developing Countries

Indicators ^b	1993–1996	1997–2000	p-value for constancy of regression coefficient
administrative bottlenecks ^c	-0.208	-0.170	0.738
entry restrictions ^c	0.161	-0.169	0.274
risk factors ^c	0.162	-0.027	0.607
complementary factors of production ^c	-0.208	-0.170	0.581
years of schooling	0.200	0.134	0.742
cost factors ^c	-0.149	-0.387*	0.601
restrictions on foreign trade ^c	-0.351	-0.331	0.647
post-entry restrictions ^c	0.137	-0.176	0.297
technology-related regulations ^c	0.053	-0.116	0.580

*, **, *** significant at 10 percent, 5 percent and 1 percent level, respectively (two-tailed). ^a See text for underlying regression and calculation procedure. — ^b See Annex for definition of variables. — ^c Based on survey results on remaining impediments in ERT (2000).

Source: Own calculations based on UNCTAD online data base; ERT (2000); World Bank (2001); Barro and Lee (2000).

VII. SUMMARY AND CONCLUSIONS

There is a startling gap between current thinking on, allegedly, globalization-induced changes in international competition for FDI and the lack of recent empirical evidence on shifts in the relative importance of traditional and non-traditional determinants of FDI in developing countries. The main objective of this paper was to narrow this gap by making use of comprehensive survey data from European Round Table of Industrialists, complemented by more conventional sources, on investment conditions in 28 developing countries since the late 1980s.

We find that surprisingly little has changed so far: Traditional market-related determinants are still dominant factors shaping the distribution of FDI. In particular, the large country bias of foreign direct investors persists. Non-traditional determinants such as cost factors, complementary factors of production and openness to trade typically reveal the expected correlation with FDI. However, the importance of non-traditional determinants has increased at best modestly so far.

Two results are particularly striking. First, the finding of Noorbakhsh, Paloni and Youssef (2001) that the availability of local skills has become a relevant pull factor of FDI in the process of globalization is supported only in bivariate correlation analysis. Once we control for GDP per capita and population of developing host countries in multivariate regression analysis, schooling lacks additional explanatory power. This is not to say that policymakers can do little to improve the attractiveness to FDI by efforts towards more human capital formation in developing countries. Rather, better education and training tend to go hand in hand with both higher per capita income and more inward FDI.

Second, our results are ambiguous as concerns the much debated interface between trade policy and FDI. The notion that trade policy has increasingly shaped the distribution of FDI among developing countries finds little empirical support. Even more surprisingly, sectorally disaggregated correlations calculated on the basis of US data for FDI stocks do not support the view that trade-related restrictions have discouraged FDI in manufacturing more strongly than FDI in the services sector. This result is in conflict with Taylor (2000), who found openness to trade and FDI to be positively correlated in the manufacturing sector only.

It is especially the complex relation between openness to trade and FDI to which future research efforts should be directed. Such efforts may help discriminate between alternative explanations concerning the link between trade policy and FDI. A first possibility, suggested

by significantly negative correlations between trade-related restrictions and FDI in earlier years, is that the tariff-jumping motive for FDI in manufacturing had lost much of its relevance well before globalization became a hotly debated issue. On the other hand, complementarities between efficiency-seeking FDI in manufacturing and market-seeking FDI in services may be underlying the striking similarities in determinants of FDI in both sectors. In addition, complementarities in reform programs, e.g., trade liberalization going along with privatization of public enterprises in the services sector, may have played an important role.

Similar to most of the existing literature, we dealt with FDI in fairly aggregate terms, even though we separated FDI in manufacturing from FDI in services in parts of our analysis. Future research should aim at providing a more differentiated picture, notably by identifying different types of FDI within the manufacturing sector. For instance, industry-specific characteristics such as factor intensities and export propensity may be referred to in order to separate efficiency-seeking FDI from market-seeking FDI in manufacturing. Such an analysis can help clarify, *inter alia*, the relevance of an open trade policy environment for developing countries striving for efficiency-seeking FDI in manufacturing.

Besides disaggregating the FDI variable, efforts should be directed at expanding the data base on non-traditional FDI determinants, in terms of country coverage and FDI policies. Among FDI policies not covered in the present paper, FDI incentives may be particularly relevant for future research. This is for two reasons: The use of incentives has proliferated (UNCTAD 1998: 102), and globalization may have made incentives a more important determinant of FDI (Kokko 2002).

REFERENCES

- Agarwal, Jamuna P. (1980). Determinants of Foreign Direct Investment: A Survey. *Weltwirtschaftliches Archiv* 116: 739–773.
- Asiedu, Elizabeth (2002). On the Determinants of Foreign Direct Investment to Developing Countries: Is Africa Different? *World Development* 30 (1): 107–119.
- Barro, Robert J., Jong-Wha Lee (2000). International Data on Educational Attainment: Updates and Implications. Center for International Development, Working Paper 42. <http://www.cid.harvard.edu/ciddata/ciddata.html>
- Chakrabarti, Avik (2001). The Determinants of Foreign Direct Investment: Sensitivity Analysis of Cross-Country Regressions. *Kyklos* 54 (1): 89–113.
- Dunning, John H. (1999). Globalization and the Theory of MNE Activity. University of Reading, Discussion Papers in International Investment and Management 264. Reading.
- Dunning, John H. (2002). Determinants of Foreign Direct Investment: Globalization Induced Changes and the Role of FDI Policies. Paper presented at the Annual Bank Conference on Development Economics in Europe, Oslo, mimeo.
- Edwards, Sebastian (1998). Openness, Productivity and Growth: What Do We Really Know? *Economic Journal* 108: 383–398.
- ERT (European Round Table of Industrialists)(2000). *Improved Investment Conditions: Third Survey on Improvements in Conditions for Investment in the Developing World*. Brussels.
- Gastanaga, Victor M., Jeffrey B. Nugent, Bistra Pashamova (1998). Host Country Reforms and FDI Inflows: How Much Difference do they Make? *World Development* 26 (7): 1299–1314.
- Jackson, Sharon, Stefan Markowski (1995). The Attractiveness of Countries to Foreign Direct Investment: Implications for the Asia-Pacific Region. *Journal of World Trade* 29 (5): 159–179.
- Japan Bank for International Cooperation (2002). Foreign Direct Investment and Development: Where Do We Stand? JBICI Research Paper 15. Tokyo.
- Kokko, Ari (2002). Globalization and FDI Incentives. Paper presented at the Annual Bank Conference on Development Economics in Europe, Oslo, mimeo.
- Loree, David W., Stephen E. Guisinger (1995). Policy and Non-Policy Determinants of U.S. Equity Foreign Direct Investment. *Journal of International Business Studies* 26 (2): 281–299.
- Lucas, Robert E.B. (1993). On the Determinants of Direct Foreign Investment: Evidence from East and Southeast Asia. *World Development* 21 (3): 391–406.
- Markusen, James R. (1995). The Boundaries of Multinational Enterprises and the Theory of International Trade. *Journal of Economic Perspectives* 9 (2): 169–189.
- Noorbakhsh, Farhad, Alberto Paloni, Ali Youssef (2001). Human Capital and FDI Inflows to Developing Countries: New Empirical Evidence. *World Development* 29 (9): 1593–1610.
- Nunnenkamp, Peter (2001). Foreign Direct Investment in Developing Countries: What Policymakers Should Not Do and What Economists Don't Know. Kiel Institute for World Economics, Discussion Papers 380. Kiel.

- Sader, Frank (1993). Privatization and Foreign Investment in the Developing World, 1988–92. World Bank, Policy Research Working Papers 1202. Washington, D.C.
- Schneider, Friedrich, Bruno S. Frey (1985). Economic and Political Determinants of Foreign Direct Investment. *World Development* 13 (2): 161–175.
- Shamsuddin, Abul F.M. (1994). Economic Determinants of Foreign Direct Investment in Less Developed Countries. *Pakistan Development Review* 33 (1): 41–51.
- Singh, Harinder, Kwang W. Jun (1995). Some New Evidence on Determinants of Foreign Direct Investment in Developing Countries. World Bank, Policy Research Working Papers 1531. Washington, D.C.
- Spatz, Julius, Peter Nunnenkamp (2002). Globalization of the Automobile Industry: Traditional Locations under Pressure? *Aussenwirtschaft* 57(4), forthcoming.
- Taylor, Christopher T. (2000). The Impact of Host Country Government Policy on US Multinational Investment Decisions. *World Economy* 23 (5): 635–647.
- Tsai, Pan-Long (1994). Determinants of Foreign Direct Investment and Its Impact on Economic Growth. *Journal of Economic Development* 19 (1): 137–163.
- UNCTAD (1996). *World Investment Report 1996*. United Nations, New York.
- UNCTAD (1998). *World Investment Report 1998*. United Nations, New York.
- Wheeler, David, Ashoka Mody (1992). International Investment Location Decisions: The Case for U.S.Firms. *Journal of International Economics* 33 (1/2): 57–76.
- World Bank (2001). *World Development Indicators 2001*, CD-ROM. Washington, D.C.
- World Economic Forum (2002). *The Global Competitiveness Report 2001–2002*. New York (Oxford University Press).
- Zhang, Kevin Honglin, James R. Markusen (1999). Vertical Multinationals and Host-country Characteristics. *Journal of Development Economics* 59 (2): 233–252.

Annex

Definition of Variables and Statistical Sources

administrative bottlenecks:	inefficient administration and red tape; survey results presented in ERT (2000); 0 = low impediments, 6 = high impediments.
complementary factors of production:	<p>average of survey results presented in ERT (2000) on three factors (0 = low impediments, 6 = high impediments):</p> <ul style="list-style-type: none"> • local finance: inadequate regulatory framework, insufficient links with international financial markets, and discrimination against private investors by state banks; • local private sector: lack of strength and efficiency; inadequate local supplies of goods, services and finance; inefficient distribution systems; • basic and higher education: lack of trained people in terms of quantity and quality; low opinion of apprenticeship schemes.
cost factors:	<p>average of survey results presented in ERT (2000) on four factors (0 = low impediments, 6 = high impediments):</p> <ul style="list-style-type: none"> • taxes: complex tax structure; tax levels; discrimination against FDI and other distortions; inequality and inefficiency in tax collection; international double taxation; • personnel: discriminatory employment conditions compared to local employers; quotas and time limits on work-permits for international staff; • restrictive labor legislation: pressure to employ or retain more or other staff than required; • labor-management relations: trade unions with high leverage in multinational enterprises.
entry restrictions:	<p>average of survey results presented in ERT (2000) on three restrictions (0 = low impediments, 6 = high impediments):</p> <ul style="list-style-type: none"> • ownership restrictions: mandatory state or local partnership; limitations related to industrial property and land; • access to sectors and activities: industries reserved for the state or local enterprises; restrictions related to acquisition of existing enterprises; minimum investment requirements; • approval procedures: discrimination against private business or FDI; complex procedures; rapidly expiring licenses; red tape.
FDI:	flow and stock data, in US\$ million and US\$ per capita, from UNCTAD's online data base.
GNP growth:	annual average of percentage growth rate of GNP at market prices based on constant local currency; World Bank (World Development Indicators 2001 CD-ROM).

GDP per capita:	GDP per capita based on purchasing power parity, in current international US\$; World Bank (World Development Indicators 2001 CD-ROM).
population:	million; World Bank (World Development Indicators 2001 CD-ROM).
post-entry restrictions:	<p>average of survey results presented in ERT (2000) on six restrictions (0 = low impediments, 6 = high impediments):</p> <ul style="list-style-type: none"> • management control/freedom of decision: political pressure on management; discretionary state intervention; • performance requirements: requirements with regard to exports, local content and manufacturing; foreign exchange neutrality; import and local sales licenses depending on export performance; • foreign exchange transactions: restrictions with regard to profit remittances, import financing and payment of fees; delays imposed on transfers; additional taxation of remittances; • exit restrictions: restrictions on repatriation of capital; • price controls: freezing prices and/or wages; • marketing and distribution: interference in the structure of sales organizations and product distribution.
restrictions on foreign trade:	foreign trade monopolies; import/export licensing and quantitative restrictions; level and structure of import duties; regulated access to foreign currency for imports; survey results presented in ERT (2000) ; 0 = low impediments, 6 = high impediments.
risk factors:	<p>average of survey results presented in ERT (2000) on seven factors (0 = low impediments, 6 = high impediments):</p> <ul style="list-style-type: none"> • inconsistent, unclear and/or erratic regulations; • risk of nationalization or expropriation; • shortcomings in legal and regulatory systems; • political instability; • environmental risks (e.g., contingent liabilities for previous environmental damage); • high rates of criminality; • civil disturbances and violence.
technology-related regulations:	<p>average of survey results presented in ERT (2000) on two factors (0 = low impediments, 6 = high impediments):</p> <ul style="list-style-type: none"> • intellectual property protection: insufficient protection for patents, copyrights, trademarks etc.; no, insufficient or highly taxed remuneration for brand use, technical assistance and technology transferred; • technology targeting: interventions into corporate technology transfers; pressure to dissipate a company's R&D efforts; insistence on local R&D.
years of schooling:	average years of schooling of the total population aged 15 and over; Barro and Lee (2000).

Annex Table 1 – Summary Statistics on FDI Determinants^a

Indicators	Countries with weak attractiveness (median and worse)		Countries with strong attractiveness (better than median)	
	1992	1999	1992	1999
population (mill.)	20.0	22.7	225.7	250.8
GDP per capita (US\$)	1848	2421	6221	7720
GNP growth (percent) ^b	3.0	2.5	7.4	5.6
administrative bottlenecks ^c	2.5	1.5	0.6	0.0
entry restrictions ^c	3.3	1.7	1.6	0.7
risk factors ^c	1.3	0.5	0.4	0.1
complementary factors of production ^c	2.9	1.7	1.5	0.5
years of schooling ^d	3.8	4.6	6.5	7.3
cost factors ^c	1.6	1.2	0.8	0.5
restrictions on foreign trade ^c	3.9	2.5	1.6	0.8
post-entry restrictions ^c	1.9	1.0	0.8	0.3
technology-related regulations ^c	2.4	1.6	1.2	0.5

^a Missing observations: Taiwan for GDP per capita and GNP growth; Nigeria, Saudi Arabia and Viet Nam (1999) for average years of schooling. – ^b 1991–1994 and 1995–1998 (instead of 1992 and 1999). – ^c Survey results; range from 0 (no impediments) to 6 (major impediments). – ^d 1990 and 2000 (instead of 1992 and 1999). – ^e 1994 vis-à-vis 1991 and 1998 vis-à-vis 1995 (instead of 1992 and 1999).

Source: ERT (2000); World Bank (2001); Barro and Lee (2000).