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Foreign direct investment in developing countries: the case of Germany

Kieler Studien, No. 238

Provided in Cooperation with:

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

Suggested Citation: Agarwal, Jamuna Prasad; Gubitz, Andrea; Nunnenkamp, Peter (1991) : Foreign direct investment in developing countries: the case of Germany, Kieler Studien, No. 238, ISBN 3161457889, Mohr, Tübingen

This Version is available at:

<https://hdl.handle.net/10419/423>

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Kieler Studien

Institut für Weltwirtschaft an der Universität Kiel

Herausgegeben von Horst Siebert

238

Jamuna P. Agarwal · Andrea Gubitz · Peter Nunnenkamp

Foreign Direct Investment in Developing Countries

The Case of Germany

Ag 3277 / 91
Weltwirtschaft
Kiel



J.C.B. MOHR (PAUL SIEBECK) TÜBINGEN

ISSN 0340-6989

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

Agarwal, Jamuna P.:

Foreign direct investment in developing countries : the case of
Germany / Jamuna P. Agarwal ; Andrea Gubitz ; Peter
Nunnenkamp. - Tübingen : Mohr, 1991

(Kieler Studien ; 238)

ISBN 3-16-145788-9 brosch.

ISBN 3-16-145789-7 Gewebe

NE: Gubitz, Andrea.; Nunnenkamp, Peter.; GT

Schriftleitung: Hubertus Müller-Groeling



Institut für Weltwirtschaft an der Universität Kiel
J. C. B. Mohr (Paul Siebeck) Tübingen 1991

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Printed in Germany
ISSN 0340-6989

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Preface

There is an increasing tendency to expect that foreign direct investment will satisfy the Third World's need for financial, technical and entrepreneurial resources. However, heavily indebted developing countries may not only be constrained in terms of new private lending but also in terms of equity capital inflows. Therefore, this study reconsiders the determinants of foreign direct investment under the changed international capital market conditions of the 1980s. In addition to traditional explanations, the relevance of political and economic instability as well as sovereign risk and debt overhang arguments is assessed empirically. Moreover, the host countries' attitudes towards foreign direct investment are explicitly taken into account. The analysis focuses on German equity participation in developing countries and compares the investment behaviour of German investors with that of foreign investors from other source countries.

The study reveals that the reaction of German investors to economic problems of host countries was not as pronounced as the response of investors from other source countries. Due to their traditionally strong market orientation, the former became trapped in economically and politically unstable host countries with considerable debt problems. This rendered it more difficult for German investors to devote more investment funds to well-performing developing countries which had been largely neglected before. Notwithstanding the relatively stable German investment behaviour, the study suggests that economic reforms are indispensable in developing countries experiencing serious economic problems in order to restore their overall attractiveness for foreign capital. The chances of those countries to restructure the external financing significantly by narrowly defined and costly promotion schemes for foreign investors are considered as limited at best. It is argued that host countries should rather improve the general policy framework for more competition and real capital formation. Openness towards world markets appears to be crucially important in this respect, as is the revitalization of domestic investment. The authors conclude that developing countries succeeding in this respect will remain or become attractive locations for foreign capital. Otherwise, however, the prospects for the inflow of foreign direct investment look fairly bleak.

The study was commissioned and partly financed by the World Bank's International Economics Department. It represents the joint efforts of Jamuna P. Agarwal and Peter Nunnenkamp from the Kiel Institute of World Economics and Andrea Gubitz who worked as a consultant to the World Bank. The authors are indebted to the Deutsche Bundesbank for generous help in collecting and interpreting essential data on German direct investment in developing countries.

Thanks are also due to all those individuals who provided valuable information and participated in the discussion of the research project. The authors benefited especially from the constructive criticism and many helpful suggestions by their colleagues at the Debt and International Finance Division of the World Bank and the Development Economics Department of the Kiel Institute. They wish to thank Gretel Glissmann and Christiane Schröder for typing and retyping many parts of the study, and Angela Husfeld and Michaela Rank for extensive statistical computations. Bernhard Klein and Sibylle Ruhnke of the editing staff deserve credit for painstakingly checking the manuscript.

May 1991

Horst Siebert

I. Introduction

During the 1970s and early 1980s the share of foreign direct investment (FDI) in net resource flows to developing countries (DCs) from all sources dwindled from 20 per cent to about 10 per cent [World Bank, a, p. 21]. The subsequent increase of FDI flows remained insufficient to match the drastic decline of other types of private capital transfers (especially bank loans) to the Third World [OECD, b, p. 224]. Recently, overall FDI flows have been increasingly concentrated in the industrialized world although many Third World economies have adopted more favourable attitudes and policies towards FDI since the beginning of the 1980s [Alworth, Turner, forthcoming; UNCTC, b]. Economic reforms in Eastern European countries may render it even more difficult for DCs to attract further FDI in the future.

The question of how to revitalize FDI flows to DCs is today all the more relevant, as expectations are being pinned increasingly on FDI to alleviate foreign debt problems and to satisfy the need of these countries for financial, technical and entrepreneurial resources. However, many heavily indebted countries may not only be constrained in terms of new private lending but also in terms of FDI inflows. Attempts to alter the external financing structure towards increasing the role of transfers involving some form of risk- and profit-sharing may suffer from substantial bottlenecks. In order to overcome constraints in the supply of FDI, the determinants of FDI flows have to be identified in the first place. It is the major aim of this study to provide empirical evidence in this respect. A reconsideration of the major factors determining FDI in DCs is required for several reasons:

- Most of the available studies are rather outdated. They mainly refer to conditions prevailing in the 1960s and 1970s. However, the climate for international capital transfers has changed dramatically since the debt crisis erupted in the early 1980s. It is open to question whether traditional arguments still hold.
- Typically, FDI flows to DCs have been analysed in the literature at a very aggregated level. But the determinants of FDI are likely to differ between the home countries of investors and major sectors in which foreign investors are engaged. Most importantly, FDI in the primary

commodity sector, in manufacturing and in the service sector has to be dealt with separately.

- The question of sovereign risk was largely neglected in earlier studies. Arguably, the decisions of foreign investors are affected by sovereign risk considerations in a similar way as the decisions of foreign creditors. The set of explanatory variables has thus to be extended to include aspects of sovereign risk, possible disincentives for FDI arising from a debt overhang, and elements of political and economic instability of host countries.
- In previous empirical research, the host countries' attitudes towards FDI were hardly considered as an important factor influencing FDI flows. Whatever the determinants of the decisions of foreign investors on their engagement in DCs might be, however, the role of supply factors will be partially disguised by the rules and regulations governing the demand for FDI in these countries. Therefore, host DCs have to be grouped according to the degree of restrictions imposed on the activities of foreign investors in order to achieve a less distorted picture of the relevance of supply factors.

This study aims at overcoming the above-mentioned conceptual weaknesses that characterize the current state of research on the determinants of FDI. The analysis focuses on German FDI in DCs and compares the investment behaviour of German investors with that of the "average" foreign investor from all other source countries.¹ In addition to Japan, the United Kingdom and the United States, Germany is one of the most important sources of FDI for the Third World. Moreover, the case of Germany provides an interesting example to discuss the possible consequences of recent developments affecting the worldwide competition for foreign capital on the relative attractiveness of DCs for FDI. Especially the German unification, the completion of the internal market in the EC and the recent economic and political reforms in Eastern Europe may prove relevant in this respect.

The study is organized as follows. Chapter II lays the ground for the subsequent empirical analysis. It provides an overview of major hypotheses on the determinants of FDI in DCs as well as the theoretical

¹ In the following, the notion "Germany" refers to the former Federal Republic of Germany, i.e. West Germany.

foundations of these hypotheses. In addition, previous empirical results are summarized. Chapter III portrays current patterns and past developments of German FDI in DCs. After shortly describing the principal data sources and discussing the constraints that empirical analyses on FDI have typically to face, German FDI is considered in relation to other types of international activity. Furthermore, the structure of German FDI is presented with respect to major destinations and sectoral distribution.

The purpose of Chapter IV is to give an overview of the most important rules and regulations governing the demand for FDI in major host DCs of German FDI. This information is then compressed into an indicator for the degree of openness of the host countries towards FDI. Finally, this indicator is used to assess empirically whether differences in the host countries' attitudes towards FDI had a significant impact on German FDI flows to these countries. The results presented in Chapter IV provide some evidence that the degree of openness should be taken into account in the empirical analysis of Chapter V, as it captures a specific characteristic of host countries, which helps to improve the specification of the equations. Data problems render it impossible to subject the hypotheses on the supply of German FDI to a single equation. Chapter V rather proceeds by analysing major clusters of hypotheses one by one:

- It is evaluated whether traditional trade relations give a particular incentive for FDI as suggested by the theory of optimal timing of FDI. Import restrictions of host countries are taken into account in order to assess the chances to attract FDI through import substitution policies (Section V.2).
- The issue of whether relatively low production costs abroad stimulate German FDI flows is investigated in Section V.3. It is argued that especially the role of labour costs is likely to depend on the type of investment and the specific motivation of German investors.
- Subsequently, the hypothesis that Third World economies offering promising markets and cost advantages may nevertheless not be considered as attractive locations by foreign investors is tested empirically. In Section V.4, efforts are made to find out how far German FDI in DCs was affected by economic and political instability as well as the overall investment climate. Section V.5 analyses whether the existence

of a debt overhang has not only discouraged further lending, but also the inflow of FDI. Moreover, the recent discussion of sovereign risk in the case of foreign debt is applied to the case of FDI by hypothesizing that FDI is related to the potential benefits and costs of sovereign measures against foreign investors.

- Finally, Section V.6 investigates how far the risk perception of German investors was reduced by public investment guarantees granted by the German government.

The chances of DCs to restructure their external financing by referring to German FDI are discussed in Chapter VI. First, the current role of German FDI in the external financing of major host countries is summarized. Second, it is assessed if the potential for financial restructuring may be enhanced by implementing debt-equity swap programmes. For this purpose, the relationship between debt conversions and German FDI flows is analysed empirically. Third, the prospects of German FDI in DCs are evaluated by discussing to which extent significant changes in the international economic environment (e.g. German unification, EC internal market, reforms in Eastern Europe) may affect the Third World's position in the worldwide competition for foreign capital. Chapter VII summarizes and draws policy conclusions.

II. Determinants of FDI in Developing Countries - Theoretical Considerations and Major Hypotheses¹

1. An Introductory Review of the Theoretical Literature

The inflow of FDI in developing countries depends on various factors in both host and home countries of investors. But there is as yet no well-developed and generally applicable theory of FDI encompassing all these factors. Even the most popular and comprehensive "eclectic theory of international production" [Dunning, 1973; 1977; 1988] falls short of being a general theory of FDI. Moreover, it is almost impossible to verify this theory in its existing form by means of empirical tests. Whatever empirical work has been published, is usually related to one or several of the components of this theory [Dunning, 1980; Casson, 1987a; Clegg, 1987; Kumar, 1987]. Notwithstanding, the causes and effects of FDI have occupied the attention of economists for a long time, especially since the international flow of FDI began to take on impressive dimensions in the 1960s. This chapter seeks to give a short review of selected literature² on those theories or hypotheses that tend to explain the determinants of FDI either in host or home country or both.

The subsequent presentation concentrates on major factors that may determine the supply of FDI to DCs. First and foremost, however, FDI flows are likely to depend on the host countries' demand, i.e. their general attitudes towards FDI. The degree of restrictions imposed on the activities of foreign investors varies greatly between different DCs (see e.g. Corsepius et al. [1989]; for a detailed analysis, see Chapter IV of this study). Since the early 1980s, many Third World economies have adopted more favourable policies towards FDI, sometimes in the context of structural reform packages [UNCTC, b]. Because of the relaxation of restrictions on FDI, supply factors have probably gained in importance as far as FDI flows in the 1980s are concerned. Nonetheless, the relative importance of supply factors is likely to differ between host countries with relatively restrictive attitudes towards FDI and host countries that

¹ The generous help received from Horst Thomsen of our library while researching the literature for this chapter is thankfully acknowledged.

² For a comprehensive survey, see Agarwal [1980].

are more open to FDI. That is why the role of supply factors is assessed for subgroups of host countries displaying different attitudes towards FDI in Chapter V.

The difficulties in developing a general theory of FDI also stem from the fact that the determinants of FDI are likely to differ between major sectors in which foreign investors are engaged. For example, FDI in the primary commodity sector may be motivated by the investor's desire to secure access to important raw materials in the first place. In contrast to this, considerations of production costs and market access may be more important for FDI in manufacturing. In the literature, FDI flows to DCs are generally analysed on a very aggregated level. Since the bulk of FDI takes place in manufacturing, most of the theoretical work implicitly deals with this sector. However, for the purpose of this study it is crucially important to distinguish between major sectors in assessing the empirical relevance of possible FDI determinants (see Chapter V).

The following review starts with a brief description of three traditional micro-theories of FDI. They are: (1) the theory of differential rate of return, (2) the portfolio theory, and (3) the product-cycle theory. These theories enable us to understand the objectives of the decision-making process of firms. At the second stage, the eclectic theory of FDI is briefly discussed. It combines both micro- and macro-factors to explain the flow of FDI. In Section II.2, major hypotheses and previous empirical findings on macroeconomic determinants of FDI are surveyed. As is shown in Chapter V, they are of main concern to this study. This should not imply that micro-factors are unimportant for FDI. In practice, every FDI is a micro-event and the conditions in and around the investing firm are likely to play the primary role in its FDI decisions. Yet, the selection of host country, site of factory, form of investment (joint venture or fully owned subsidiary), mode and extent of financing, etc., is bound to be influenced by conditions prevailing at the macro-level. An analysis of these macro-variables in relation to FDI may enable us to draw conclusions with regard to the general behaviour of investors and thus prove useful for those interested in the monitoring of the flow of productive capital especially to DCs.

a. Micro-Theories

Rate of return: This theory postulates that FDI is a function of international differences in rates of return on capital investment. Capital flows from low to high return countries. Among those who found evidence in support of this hypothesis are Popkin [1965], Stevens [1969a], Reuber et al. [1973], and Blais [1975]; and those who did not are R. Weintraub [1967], Bandera and White [1968], Bandera and Lucken [1972], Hufbauer [1975], and Walia [1976]. The results are ambiguous mainly because an empirical test of this hypothesis is faced with serious problems. Firstly, the underlying reasoning behind this theory is that FDI is a function of expected profits. But the available data are on reported profits which need not be the same or similar. Moreover, it is not always sure that investors try to maximize profits in the short run or are necessarily interested in earning a higher rate of profit on FDI than on domestic investment [see Clark, 1940; Baumol, 1959; Cyert, March, 1963].

Portfolio theory: Much like the above differential rate of return theory, the portfolio theory is an extension of domestic observations to international investment. Stevens [1969b], Prachowny [1972], Cohen [1975], and Rugman [1979] have attempted to apply the theory of portfolio selection developed by Markowitz [1959] and Tobin [1958] to FDI. The main hypothesis is that besides maximizing profits, investors try to reduce total risk by distributing their direct investments among various countries. It is possible that corporations with a wider international dispersion of their productive activities have smaller fluctuations in their global profits. But on the whole the empirical evidence in favour of this theory is weak. Risk diversification is, of course, only one of the objectives of investors. Otherwise they would be contented by portfolio investments and would not undertake FDI.¹

Product cycle theory: According to product cycle theory, FDI is associated with the life cycle of goods [Vernon, 1966; Hirsch, 1967; 1976]. It says that the maturity of a product in terms of standardization

¹ In DCs, however, securities markets are usually not well developed and their governments impose severe restrictions on the movement of capital across borders. In such cases, capital inflows can occur only in the form of FDI.

of its quality and production techniques forces firms to produce near the final market, instead of exporting from their home countries, in order to face successfully the competition from local firms. Gruber et al. [1967], Juhl [1979] and Parry [1975] have found some evidence for this theory at the empirical level. They have investigated the US, German and British FDI, respectively. The scope of this theory has often been widened [Vernon, 1974; Hirsch, 1976; Agmon, Hirsch, 1979]. It takes into account not only labour costs as locational advantage of host countries but other factor costs also, and it is no longer strictly dependent on a sequential relation between product innovation, export and FDI. Notwithstanding, its power to explain FDI is limited to highly innovative industries [Solomon, 1978], and with shortened product cycles even in these industries, this theory has lost much of its importance for FDI flows.

The micro-theories show that firms may have different objectives when investing abroad. Profit maximization - though of primary importance in the long run - may be overruled in the short run by other objectives such as risk diversification or market access. They may be of alternative or of simultaneous importance for the investors' decisions depending on a particular case. A generalization in this regard is not possible on the basis of these micro theories of FDI. A more modern theory, which seeks to give a general answer to locational questions related with FDI, is the eclectic theory which is summarized in the following.

b. Eclectic Theory

During the last two decades, the main attention has been focused on the eclectic theory of FDI. It has picked up ideas from various fields and combined them into a broader theory of FDI. It postulates the following three necessary and sufficient conditions for an FDI to be undertaken by a firm:

- 1) Firm-specific advantages: Foreign investors must possess some competitive advantages over firms in host countries such as patented or unpatented proprietary technology, trade marks, managerial or marketing know how, and control of market entry. These specific advantages should be able to compensate the foreign firm for disad-

vantages and costs arising from operating from abroad in a foreign environment where local firms may have cheaper access to required information, labour and capital markets or benefit from preferential treatment in government procurement. This condition in Dunning's [1977] eclectic theory is in line with Hymer's [1976] and Kindleberger's [1969] approach to FDI. It is, however, not a sufficient condition for FDI. In order to be able to undertake FDI in a particular case, the following two other conditions have to be fulfilled as well [see also Stehn, 1989].

- 2) Internalization incentives: The costs of exploitation of the above intangible assets through FDI by the firm should be less than those of any other means such as licensing or outright sale of a patent or even export of the final product.¹ This is the well-known internalization hypothesis. It draws on the market failure and information asymmetry hypotheses of Coase [1937], Arrow [1962] and Williamson [1975]. Its initial proposition by McManus [1972] and Buckley and Casson [1976] has been further developed by many other authors [e.g. Magee, 1977; Casson, 1979; Dunning, 1981; Rugman, 1981; Teece, 1981; 1983; Caves, 1982; Hennart, 1982]. Its main proposition is that external markets for the transfer of intangible assets from sellers to buyers are inefficient especially in terms of their transaction costs. Therefore, owners of these assets prefer to transfer them internationally only to their affiliates.

Market failure and inefficiency arise from the nature of intangible goods. For example, they are sometimes embodied in the skills of personnel which the owning firm may not like to part with. Further, in some cases (e.g. unpatented process technology) the owner is not willing to disclose all the details to an interested third party. Otherwise he will lose the monopoly of that asset and thus the rent which accrues from it. For assets like goodwill based on brand names, owners are afraid that buyers may not be able to maintain the quality standards. Quite often sellers and buyers of an intangible asset may have very different opinions about its market value involving high

¹ The latter is, however, not always an alternative to FDI, especially in DCs with import restrictions.

costs of transfer negotiations. As a result firms have an incentive to opt for internal in place of external markets of intangible assets.

However, internalization of markets also involves costs, for example, for administration and communication across national boundaries. Therefore, internalization is useful only if these costs are not more than the benefits of internalization arising from reduction of time lags, avoidance of bargaining and buyer uncertainty, minimization of the impact of government intervention with the help of transfer pricing by the firm and from ability to use discriminatory pricing. The internalization hypothesis has been tested empirically by many economists [see, for example, Casson, 1987a; Kumar, 1987]. It is particularly relevant for the horizontal type of FDI in industries characterized by high R&D intensity, advertising and product differentiation.

- 3) Locational advantages: The third essential condition of the eclectic theory is that the host country must possess one or more locational advantages over the home country of the investor, in order to motivate him to directly invest there instead of exploiting his competitive advantage through exporting or any other channel. These advantages could emanate from the host country's relatively lower wage costs, cheaper energy or raw materials, investment incentives, membership of preferential trade areas, tariff and non-tariff protection, creation of free trade zones, etc. These or other means with which governments compete with each other to attract foreign resources for productive purposes fall under this category of locational advantages of host countries.

A great part of empirical research on FDI has concentrated on this point in attempting to find out the determinants of FDI, especially in DCs [Baldwin, 1979; Pugel, 1981; Owen, 1982; Saunders, 1982; Lall, Mohammad, 1983]. The analysis in this study is also devoted mainly to these factors. Before we discuss them in detail in the following, it may be reiterated that the eclectic theory is the most comprehensive explanation of FDI. It is difficult to be mathematically formulated or empirically tested in a single model. Nonetheless, it does offer plausible explanations why and where FDI is most likely to flow.

2. Overview of Major Empirical Hypotheses

In this section a short survey is given on those macroeconomic factors that have been - relatively speaking - often considered in the literature to be of major importance in determining the movement of FDI, especially in DCs. These are: size and growth of the host country market, trade relations, import protection, currency valuation, and labour costs. In addition to these, a brief review of the discussion on internal liquidity of firms is also included. This is because some researchers are of the opinion that investors are normally not neutral with regard to sources of financing of their FDI. Moreover, hypotheses on the impact of political and economic instability as well as sovereign risk on FDI flows are discussed.

Size and growth of host country market: These are the most popular variables in empirical research done on determinants of FDI. The rationale of hypothesizing a positive relation between FDI and the size and growth of markets is derived from the domestic experience that investment and economic growth are associated with each other. Bandera and White [1968] as well as Scaperlanda and Mauer [1969] found a statistically significant relation between US FDI in EC member countries and their GNP. The main motive of US investors was to penetrate the large and growing EC market. But it is a controversial point whether the size or growth of a market is a stronger pulling factor for FDI [Morley, 1966; Goldberg, 1972; Stevens, 1972; Reuber et al., 1973; Ahmed, 1975; Schwartz, 1976; Sabirin, 1977; Torrisi, 1985].

Takahashi [1975] found GNP of the host country as well as the difference between the GNP growth rates of the host and home countries to be relevant for his analysis of short-run fluctuations in US FDI. He applied his model, however, only to domestically and not to export-oriented FDI. Schwartz [1976] distinguished between initial and later investments of a firm; she concluded that the former are dependent on the size and growth of host country markets, but the latter more on sales and profits of the affiliates [see also Barlow, Wender, 1955; Penrose, 1956; Richardson, 1971a; 1971b]. In contrast to Takahashi and Schwartz, most of the studies have not distinguished between different kinds of FDI. This is rendered difficult, if not impossible, by the absence of FDI statistics required for that purpose.

Market access has been the main motive of German FDI in DCs. About two fifths of the firms interviewed voted in favour of this variable [Schröder, 1986]. A similar opinion was expressed by the German investors in the early 1970s [Jungnickel et al., 1974]. Market access is, of course, interesting for the investors only in those countries which already have a certain minimum size of markets or are growing fast enough to offer good prospects for future sales. Otherwise firms are likely to remain contented with servicing these markets through exports in the short run. Later, when growth prospects improve, they may think of investments. This leads us to the relation between trade and FDI.

Trade relations and FDI: From historical observation and theory it can be deduced that trade is generally followed by FDI, both at micro- and macro-level. The theory of optimal timing of FDI states that once a company has developed a certain market share in a foreign market by exporting, it is likely to become a foreign direct investor. This is because higher fixed costs associated with a production plant abroad (as compared to exports) are compensated by lower variable costs when economies of scale can be realized [Buckley, Casson, 1985]. Roch [1973] found a significant correlation between US trade with DCs and US FDI there. He also argued that firms supply a foreign market initially with exports. But when it reaches a critical size or when it is threatened by tariff or non-tariff barriers the exporter may have to shift to local production involving FDI. Roemer [1975] examined the historical development of trade and foreign investment of the United States, the United Kingdom, Germany, and Japan. He found a country passing through different stages demarcated in terms of changing mutual strength of its trade and FDI. Trade comes first and then it is followed by FDI.

For Germany, Agarwal [1978] found that its FDI is significantly related to its foreign trade with respect to both regional and sectoral distribution. Baumann et al. [1977] and Milton [1984] have come to similar conclusions. This is confirmed also by more recent studies for Germany [Schröder, 1986; Gubitz, 1988]. The former study reveals that 17 per cent of the firms which started business with exports entered into cooperation agreements with foreign firms in the same year [Schröder, 1986, pp. 267-272]. Trade relations enable investors to gain more knowledge not only about the final demand for their products in the partner

country but also about its factor markets which are essential for FDI decisions.

Import protection: The observation that trade is frequently followed by FDI is also due to import substitution policies that most of the DCs have followed since the 1950s, albeit in varying degrees. Policy-induced import substitution implies protection of local markets against foreign goods. If this protection is prohibitive, foreign firms may be compelled to invest in that country in order to keep that market, depending on the size and growth prospects of that economy. Sometimes only a prospect of impending protection may encourage foreign suppliers to opt for local production in place of their exports, as is the case with some of the Japanese car makers in the United States. In small economies, however, this strategy may not at all be successful. In the long run, import protection as an instrument for attracting FDI is likely to be inefficient for larger countries as well. The goods produced in sheltered economies involve usually high costs and are not competitive in international markets [Donges, 1976b; Hiemenz, Langhammer, 1986; Hiemenz, 1987].

Several studies have assessed the impact of import protection on FDI flows. In a study on India, Kumar [1987] found the import substitution variable to be significant in explaining foreign involvement in Indian industry. Also in the case of FDI in the United States, protection was found to be a significant explanatory variable of the share of foreign-controlled companies in total net sales of an industry [Lall, Siddharthan, 1982]. Import restrictions have motivated South Korean firms in the case of electronic goods to undertake FDI in America and Europe to escape quota restrictions [Euh, Min, 1986]. In a very extensive study, the German Association of Industry and Trade [Kayser et al., 1981] came to the conclusion that FDI is often undertaken by the German firms to overcome trade restrictions in DCs. However, no such relation between protection and FDI could be detected in the Canadian case [Caves, 1974; Caves et al., 1980; Owen, 1982; Gupta, 1983].

Currency valuation: Exchange rate effects represent another factor that may influence the relation between trade and FDI. Aliber [1970; 1971] in his currency area theory of FDI maintained that firms from countries with harder currencies are able to borrow at lower rates of interest than firms from countries with weak currencies. As a result, FDI is likely to flow from the former into the latter depending on the

share of capital in value added and the valuation of the host country's currency vis-à-vis the source country's currency. Empirical studies available on this subject have tried to find out an association between FDI flows and exchange rate changes of home and host countries. Many of them have shown that devaluation of the local currency encourages the inflow of FDI and discourages the outflow of FDI [Alexander, Murphy, 1975; Logue, Willet, 1977; Kohlhagen, 1977; Sachchamarga, 1978]. The results are, however, not very dependable. Some other studies [Scaperlanda, 1974; Boatwright, Renton, 1975] have shown that the opposite effect of devaluation on FDI is also possible.

Aliber's theory had been able to draw considerable attention because of its simplicity and success in explaining the outflow of the US FDI during the 1950s and 1960s. But in the later decades, which have been marked by flexible exchange rates and greater participation of a larger number of countries in international direct investments, the scope for application of this theory may have been considerably reduced. In a world with mobile capital, the possibility of a relationship between foreign acquisitions and exchange rates is dismissed by most international economists (for the following reasoning, see Froot and Stein [1989]). Assuming that all investors - domestic and foreign - have access to the same international capital market, it is argued that a country becomes a cheaper place for any firm to produce when its currency depreciates; i.e. depreciation does not alter foreigners' opportunities relative to those of domestic investors. Froot and Stein have shown, however, that this conclusion cannot be maintained once wealth effects influence the agents' demand for investment and globally integrated capital markets are subject to informational asymmetries. Informational imperfections cause external financing to be more expensive than internal financing. It then follows that, to the extent that foreigners hold more of their wealth denominated in their home currency, a depreciation of the currency of the host country increases the relative wealth position of foreigners and hence lowers their relative cost of capital. This allows them to bid more aggressively for assets than domestic investors of the host country.

Another important question is about the effect of the prevailing high volatility of exchange rates on FDI flows. Since trade is likely to be negatively affected by this volatility [S. Weintraub, 1981; Davidson, 1982], it is possible that firms may be encouraged to substitute trade by

FDI with a view to bypass the foreign exchange market to some extent. Harvey [1989/90] has examined this question recently for US FDI and concluded that exchange rate variation is a factor influencing FDI decisions. But a general answer to our question with regard to all industries or with respect to short- and long-run effects on FDI flows is not possible from his empirical results.

Labour costs: Exchange rate movements may affect FDI flows also through their effect on production costs in the source country and potential host countries. As far as DCs are concerned, availability of cheap labour as a determinant of FDI inflows has attracted much attention in research since the 1970s. Riedel's [1975] study on Taiwan showed that relatively lower wage costs had been one of the major causes of the export-oriented FDI in that country. Similar conclusions were reached by Donges [1976a; 1980] in the case of Spain and Portugal. Agarwal's [1978] study showed that a higher increase in labour costs in Germany than in Brazil, India, Iran, Israel, Mexico, and Nigeria led to higher flow of FDI from Germany to these host countries. Similar results were achieved by Juhl [1979] at the sectoral level for German investments in Colombia, Ecuador, El Salvador, and Mexico. In a study based on survey data of German firms [Schröder, 1986], 20 per cent of them declared to have undertaken FDI in DCs in order to achieve lower costs of production and labour costs were one of them.

However, the relative importance of labour costs for FDI decisions is not as straightforward as it might appear from the above-mentioned studies [e.g. Kravis, Lipsey, 1982]. A more recent analysis [Agarwal, 1989] on the effect of relative changes in real earnings of employees in host and source countries on FDI revealed mixed results. While Japanese FDI in DCs was responsive to labour costs, this was not the case for investments from the United States, West Germany and the United Kingdom. The difference between this study and earlier ones may be because Agarwal's analysis is confined to Pacific-rim developing countries where wage costs have risen considerably during the 1980s. But it is also possible that the increasing robotization of production processes has generally reduced the importance of low-skilled human labour and thus of wage costs as a locational advantage of many countries in the Third World. Furthermore, rising labour costs may encourage foreign investors

who are already holders of FDI in a country to substitute capital for labour [Stevens, 1973].

Internal liquidity: Research on domestic investment seeks to establish a relation between internal cash flow (undistributed profits, depreciation allowances) and investment outlays of a firm. It is based on the assumption that the cost of internal funds is viewed by investors to be lower than the cost of external funds [Meyer, Kuh, 1957; Duesenberry, 1958]. Drawing on this literature, some economists have attempted to examine the effect of cash flow of parent companies or their affiliates on investments in the host countries. Barlow and Wender [1955] are of the opinion that local profits of the affiliates are treated as "gambler's earnings" and firms are more easily prepared to reinvest them than to commit fresh capital for expansion of their operations. Brash [1966], Safarian [1969], Kwack [1972], and Hoelscher [1975] have also produced evidence in favour of this hypothesis. Brash examined the US FDI in Australia and Safarian examined the same in Canada. In both cases, a strong relation was established between internal cash flow (undistributed profits, depreciation allowances) and expansionary investments of the US subsidiaries. Kwack found a statistically significant relation between the US corporate cash flow (net of dividends) and the US FDI. He concluded that changes in US tax policies to increase the cash flow would have a positive effect on FDI. Some other studies [Stevens, 1969a; Severn, 1972] have failed to find any evidence to support the internal liquidity hypothesis.

Another group of economists has made a more differentiated approach to this problem. Stobaugh [1970] concluded on the basis of interview data that smaller firms with sales of less than US\$ 50 mill. are less willing to make additional investments in already established subsidiaries abroad. Reuber et al. [1973] distinguished between parent companies and their subsidiaries. They found on the basis of firm interviews that the cash flow of subsidiaries in DCs exercises a substantial influence on their new investment outlays. This is, among other things, also the result of the existing restrictions on repatriation of funds in these countries. Though the extensive study of Reuber et al. is nearly two decades old, their conclusion that internal liquidity of the subsidiaries in DCs has a role to play in total flow of FDI to the Third World may hold today no less than in the past. With the exception of some of the newly

industrializing countries (NICs) in Asia, economic conditions have generally worsened in DCs after the debt crisis. This has rendered the transfer of funds from there more difficult, if not impossible. Consequently, there may be often no alternative but to reinvest the profits of subsidiaries.

Political and economic instability: Third World economies offering promising markets and cost advantages may nevertheless be often unattractive for foreign investors. The aforementioned economic determinants of FDI may be overruled if host countries are found politically and economically instable. It is widely believed that the flow of FDI to DCs has not been sufficient to foster rapid economic growth. Therefore, economists have been looking for factors which may have hindered the flow of private capital to these countries. One of these factors may be political and economic instabilities of these countries.

Political instability has been found by a majority of survey reports as discouraging for foreign investors [see, e.g., US Department of Commerce, 1954; Robinson, 1961; Basi, 1963; Aharoni, 1966; Swansbrough, 1972; Reuber et al., 1973]. But econometric studies based on cross-country data have produced only mixed results. Among those who have discerned a negative association between FDI and political instability are Ahmed [1975], Levis [1979], and Schneider and Frey [1985]. Some others who have not been able to find out any such relation between these two variables are Green [1972], Green and Cunningham [1975], Kobrin [1976], and Situmeang [1978].

The most important reason for differences among the quoted studies is the concept of political instability, which has often been defined in different ways in these studies. Further, the degree of risk arising from political and economic instabilities in a host country is likely to vary for FDI of different origins and in different industries [Thunell, 1977],¹ which has not always been taken into account in previous studies. Moreover, the influence of political risk on FDI flows may have abated since the introduction of various guarantee schemes in developed countries. Roch [1973] showed that in the period before the introduction of investment guarantees in the United States, political instability of host coun-

¹ Köpplinger and Wolfram [1986, p. 227] suggest that an evaluation of political risks should be carried further to firm-specific aspects.

tries was negatively related with FDI; but in the period after the implementation of guarantees such an association no longer existed. Thus it may be correct to conclude that investment guarantees have reduced the negative effect of political instability on the inflow of FDI in host DCs. However, according to recent evidence presented by Wallace [1989, p. 11] there are also companies which "are simply not conducting operations in areas where the risk is so great as to necessitate insurance".

Debt overhang and sovereign risk: Many DCs have been badly affected by the international debt crisis since the beginning of the 1980s. Failure or less than expected success to solve this crisis have led many people to think that equity capital is a real and promising alternative to existing and future loans to the Third World. But little research has been done on the feasibility of this alternative (on debt vs. equity finance, see Corsepius et al. [1989]). The prevalence of considerable discounts on existing Third World debt in the secondary markets is a serious obstacle to new voluntary lending (see Nunnenkamp [1989a] and the literature given there). Similarly, the profitability of new FDI may be impaired by a debt overhang. The expected income from productive investment which remains with the foreign investor is likely to decline due to higher expected taxes and stagnating markets. In other words, once a country is trapped into a foreign debt burden and the economic consequences of it, the determinants of the inflow of equity capital and private credits from abroad may not be very different.

Related with this is the discussion on sovereign risk in the case of foreign debt [e.g. Eaton, Gersovitz, 1981; Sachs, 1984; Stüven, 1988]. The risk of willful default on external debt may have its counterpart in the risk of expropriation and restrictions on profit and capital remittances in the case of FDI. So FDI may be negatively related to the potential benefits which the host countries may reap from sovereign measures against FDI and positively related to the potential costs of such a behaviour. Empirical evidence in this respect is largely lacking and extremely sketchy (for an exception, see Picht and Stüven [1988]). Moreover, it is open to question whether subsidies for FDI granted in the context of debt-equity swaps provide an adequate means to compensate for sovereign risk (for a detailed discussion, see Section VI.2).

III. German FDI in Developing Countries: Patterns and Past Developments

1. Data Sources

Before entering into the analysis of patterns and determinants of German FDI in developing countries some comments on the data base are necessary. The statistical information on FDI at an aggregate level, i.e. stocks and flows, is based on the collection and compilation of data by the Deutsche Bundesbank. Data collection is based on federal law¹ (as is generally the case in Germany), which provides regulations for reporting acquisitions and/or liquidations of assets (including reinvested earnings), which give the owner an effective voice in the management of an enterprise in the host country.² In principle, all financial transactions between parent and affiliated companies are covered. Short-term liabilities and trade credits are, however, excluded and reported in the short-term capital account. The flow data on FDI in the balance of payments as well as the data published by the Bundesministerium für Wirtschaft (Ministry of Economic Affairs) are based on this reporting system.³ Under the same law companies are also obliged to report stock data once a year.⁴ These stock data, compiled since 1976, contain the most detailed information on German FDI on a country-by-country basis and with re-

¹ Foreign Trade and Payments Law (Außenwirtschaftsgesetz).

² Usually shares of 25 per cent or more are considered as FDI. Shares in non-equity enterprises are generally assumed to be FDI regardless of the size of the share. Transactions below DM 20,000 are usually not reported. Data are collected on a monthly basis; for details see Wolff [1987].

³ Deutsche Bundesbank [a]; BMWi [various issues]. A regional breakdown is published annually as a supplement to the above-mentioned publication of the Bundesbank.

⁴ The data cover all financial linkages between the parent companies and their foreign affiliates, i.e.: (own capital + reserves + profit carried forward - loss carried forward) + capital share of the German parent company + liabilities of the affiliate vis-à-vis the German parent company, including trade credits.

spect to sectors.¹ In addition to primary FDI as covered in the transaction data the stock numbers also include secondary FDI, i.e. the appropriate share of FDI of holding companies with German participation minus German FDI in those holding companies.² This data base also includes total assets, annual turnover and employment of enterprises with German participation. Due to the different valuation principles the difference of the increase in primary FDI stocks and FDI flows can be large.

2. German FDI and Related Activities

Germany used to be a fairly good example of what is called a "small open economy". It exports roughly a third of its GNP and imports about a quarter in relation to GNP. It has also been a major recipient of FDI, which played a major role in turning what was at that time called Germany into an industrialized country in the 19th century, and the Federal Republic of Germany to become one of the wealthiest countries after the Second World War. In 1976, FDI stock in Germany (DM 63.5 bill.) exceeded German FDI stocks abroad by DM 14.5 bill. [Deutsche Bundesbank, b]. In 1988, the picture looked quite different: German FDI stocks abroad amounted to DM 184 bill., exceeding FDI stock in the country by DM 75 bill. Transaction data for 1989, although only a rough

¹ Foreign shares of less than DM 500,000 (book value converted to DM at the end of the year) are usually not reported. Data are published once a year as a supplement of the regular balance-of-payments publication: "Die Kapitalverflechtung der Unternehmen mit dem Ausland nach Ländern und Wirtschaftszweigen" (International capital links between enterprises) [Deutsche Bundesbank, b].

² Brazil, for example, hosts DM 6.4 bill. FDI invested directly from German companies, of which DM 0.9 bill. are in holding companies with German participation, including those located in Brazil itself. In order to avoid double counting and assure an appropriate regional breakdown, the net investment via the holding companies is added to the directly invested capital. Total FDI stocks in Brazil (DM 8.5 bill.) would be underestimated, if only primary FDI is taken into account. The contrary, for example, applies to the Netherlands Antilles, where primary FDI amounts to DM 1.3 bill., while total FDI after correcting for investments to and from holding companies is only DM 0.6 bill. All numbers refer to the end of 1987.

indicator for the increase of the stock data, indicate a further development in this direction.

German FDI outflows have grown rapidly in recent years, in fact much faster than, for example, exports.¹ But they are still of minor importance compared to other international transactions. FDI is only one option in a set of several possible international economic activities. There are two alternatives: (i) the investment could be undertaken at home and the product exported, or (ii) a licence could be given to a company outside the home country. In the case of an investment in the primary commodity sector the option to invest at home is often not available; however, instead of producing the raw materials abroad and importing from the subsidiary, they could be bought from an independent supplier. Price and quantity risks can be reduced by long-term contracts and insurance contracts. Also, investments in the service sector could be substituted by long-term contracts with local companies, i.e. agency agreements. Thus, the existence of FDI indicates that internalization pays, or to put it differently, that markets fail to offer suitable contracts (see Section II.1).

In Table 1 the size of the related international transactions is shown. It clearly reveals the strong preference of the German economy to export, no matter whether it is to the EC or to DCs. In fact, the regional pattern of FDI roughly reflects the regional pattern of exports.² The average ratio of net FDI outflows to exports is 3.7 per cent (United

¹ Also in relation to German (non-residential) gross domestic investment (GDI), gross German FDI outflows increased steadily, from 5 per cent, on average, in 1970-1975 to 9 per cent, on average, in 1982-1987 [Deutsche Bundesbank, b]. This ratio is, however, of limited informative value. The two data sets on FDI and GDI are not strictly comparable because conceptually, balance-of-payment data on FDI do not capture the increase in the capital stock abroad, not even its financing, as the part that is financed from other than domestic sources is not covered in the balance of payments.

² There is, however, one exception in the overall picture of the overly strong weight of exporting: In 1988, German net FDI outflows to the United States were 21 per cent in relation to exports respectively. The United States offer a large market with attractive investment opportunities in new as well as in existing enterprises and the US market for German products is well established. The ratio between German FDI and exports increased steadily as far as transactions with the United States are concerned; in 1976, this ratio was much more in line with today's overall pattern [Deutsche Bundesbank, a; b; c]. This indi-

Table 1 - German FDI and Related International Transactions, 1988 (DM bill.)

	Total	ICs(a)		DCs	
		EC	United States	total(b)	excluding offshore banking centres(c)
Merchandise exports	538.5	288.9	44.2	52.1	70.0
FDI					
net outflow	19.8	7.1	9.3	0.4	1.4
stocks(d)	184.1	72.4	49.7	22.6	n.a.
Revenues on FDI stocks	4.6	1.8	1.0	0.9	n.a.
Licences and patents (revenues)	2.2	0.7	0.5	0.2	n.a.
(a) Industrialized countries. - (b) Country list: Bundesbank (excluding European DCs and centrally planned economies). - (c) Country list according to OECD [b]. - (d) Primary and secondary FDI.					

Source: Deutsche Bundesbank [a; b; c].

States: 15.4 per cent).¹ In sharp contrast to that, licensing is negligible. Income from licences and patents is only less than half the revenue from FDI, for the DCs it is only about a fourth. These numbers, however, have to be taken with great caution: Both revenues on FDI and income from licences and patents are most likely highly underreported, as there are strong incentives to hide these yields due to tax reasons and repatriation restrictions.² As the downward bias is, however, likely to be similar, the numbers indicate that FDI is the preferred activity in relation to licensing.

Exporting, licensing and FDI can be considered as three different modes of servicing a foreign market in ascending order of fixed costs

ates that apart from favourable investment conditions well-established trade relations are an important stimulus for German FDI outflows. This hypothesis will be tested in a DC context in Section V.2.

¹ Average capital outflows of 1986 and 1987 as a ratio of total exports in the respective years [IMF, d].

² This view was supported in interviews with representatives from private and public institutions dealing with projects in DCs.

and descending order of variable costs [Buckley, Casson, 1985]. Thus, one would expect activity shifting from exporting to licensing to FDI as foreign markets grow. Licensing can, however, be an inefficient way of servicing a market, because costs of monitoring and controlling the licensee are particularly high. In that case the firm would switch from exporting to FDI immediately (see also Chapter II). This might be one reason why licensing is the least important international activity of German companies.

3. The Importance of DCs as Hosts for German FDI

Typically the ICs invested relatively more in other ICs than in DCs. This has been particularly true for Germany, where FDI stocks in DCs as well as net outflows to DCs declined at least in relative terms.

Excluding the OPEC countries, the German FDI stock in DCs was DM 20.7 bill. by the end of 1988 which is almost the maximum value of DM 21 bill. reached at the end of 1984 [Deutsche Bundesbank, b]. The declining share of FDI in DCs (Table 2) is mainly due to Latin America, while FDI stocks in the Asian countries, although small in absolute magnitude, increased steadily [Deutsche Bundesbank, a]. The flow figures of Table 3 underscore the dramatic decline of the share of the DCs after the eruption of the debt crisis.

The regional picture of FDI stocks is somewhat distorted by valuation effects, especially by the high volatility of the DM/US\$ rate. The increase in total FDI stocks (primary FDI only) over the two years of 1986 and 1987 was only DM 1.2 bill., while the net outflow during the same period amounted to DM 19.1 bill. [Deutsche Bundesbank, a; b]. For similar reasons the stock of FDI in DCs declined by DM 0.7 bill., while there was a positive outflow of DM 1.4 bill. The Bundesbank estimates that total valuation losses in those two years amounted to about DM 15 bill., which is to a great extent due to the depreciation of the US\$ vis-à-vis the DM to the extremely low value of DM 1.58 at the end of 1987 (for details, see Deutsche Bundesbank [e]).

Apart from the peculiar regional pattern of German FDI stocks within the group of DCs characterized by the high weight of problem countries in Latin America, there are other reasons for the strong orientation

Table 2 - Regional Shares of German FDI Stocks Abroad: 1976, 1982 and 1988 (per cent)(a)

	ICs			DCs			
	total	EC	United States	total	OPEC	non-OPEC	Brazil
1976	74	34	14	20	3.5	17	9.5
1982	76	29	26	18	3	15	7.5
1988	84	39	27	12	1	11	5

(a) Numbers do not add up to 100 per cent mainly due to FDI-related loans of holding companies which cannot be broken down by region.

Source: Deutsche Bundesbank [b].

Table 3 - German Net FDI Outflows by Area, 1976-1989 (DM bill.)(a)

Period averages	ICs			DCs		
	total	EC	United States	total	OPEC	non-Opec
1976-1979	22.4 (83.6)	8.4 (31.4)	9.5 (35.5)	4.5 (16.2)	0.2 (0.7)	4.3 (15.5)
1980-1983	25.5 (84.7)	8.9 (29.5)	10.2 (33.9)	4.6 (15.3)	-0.2 (-0.7)	4.8 (15.9)
1984-1987	59.3 (93.0)	20.2 (31.7)	30.6 (48.0)	4.4 (6.9)	0.7 (1.1)	3.6 (5.6)
1988	19.4 (98.0)	7.1 (35.9)	9.3 (47.0)	0.5 (2.5)	0.3 (1.5)	0.1 (0.5)
1989	24.2 (95.7)	15.4 (60.9)	5.1 (20.2)	1.0 (4.0)	0.3 (1.2)	0.7 (2.8)

(a) Percentage shares in parentheses.

Source: Deutsche Bundesbank [a].

of German FDI towards ICs. First, the coming of the Single Market in the EC in 1993 gave a special stimulus to invest in Europe rather than outside (see also Section VI.3). Second, there has been a growing tendency to buy existing companies, especially so within the wave of take-overs in the United States, instead of establishing new production

plants. Third, participation of German companies in the increasing trend of becoming a multinational enterprise is a relatively new phenomenon, as more and more German companies are growing beyond a certain size, which gives them the capacity to become a foreign direct investor. Companies which are relatively unexperienced investors are more likely to stick to areas they feel more familiar with.

4. Major Destinations of German FDI in the Third World

Whatever flaws the stock data might have, in the case of Germany it is the only data base that shows the amount of FDI in single countries over a longer period of time in a consistent way.¹ Table 4 lists the ten major host countries in the developing world.

Table 4 - The Ten Major Host Countries of German FDI in the Third World, 1988(a)

	Primary and secondary FDI stocks	Memo item:	
		population	GDP
	DM mill.	mill.	US\$ bill.(b)
Brazil	8997	144.4	354.9
Mexico	2451	82.7	172.8
Argentina	1877	32.0	89.7
Singapore	1146	2.6	24.5
Cayman Islands	1075	n.a.	n.a.
Hong Kong	921	n.a.	55.3
Libya	589	4.2	26.2(c)
Egypt	472	51.9	36.1
Netherlands Antilles	403	0.2(d)	1.2(e)
India	368	796.6	270.2

(a) In all other countries the stock figures are below DM 300 mill. -
 (b) Current values. - (c) 1987. - (d) 1986. - (e) 1985.

Source: Deutsche Bundesbank [b]; IMF [d]; World Bank [c].

¹ The Ministry of Economic Affairs [BMWi, various issues] publishes transaction data on a single country basis or by sector since 1986. However, due to major changes in the methodology of compilation, only the numbers for 1987 and 1988 are comparable. Furthermore, data do not include reinvested earnings and investment in real estate.

Although not generally the biggest recipient any more, Brazil is still by far the most important single host country of German FDI. In terms of GDP it is also the biggest country in the "top ten" list. However, size is not all that matters; India, the second largest economy, is at the very bottom of this list. Four of the major host countries are offshore banking centres. It should also be noted that some of the latter countries are also major hosts of non-financial FDI. In Singapore, for example, almost a third of the total stock is in manufacturing, of which half is in electrical engineering [Deutsche Bundesbank, unpubl. data].

5. Sectoral Distribution of German FDI in DCs

Germany has traditionally held a strong competitive position in the manufacturing sector, especially in the chemical industry, in vehicle production and in electrical engineering. Being a country short of natural resources, one might expect FDI in the mining sector to constitute a large share of total FDI stocks. Although significantly higher than in the ICs, the share of German FDI in the mining sector of all DCs (OPEC and non-OPEC) is only 8.7 per cent (weighted average of figures given in Table 5 for OPEC and non-OPEC). The breakdown by sectors in DCs reflects the preference to do in DCs what has been successful at home: the average share of FDI in manufacturing of OPEC and non-OPEC DCs is 63.4 per cent. In ICs the respective share is only 42.4 per cent [Deutsche Bundesbank, b]. Here, investment in the service sector is much higher.

The breakdown by domestic branches shows an even higher concentration in manufacturing; i.e. companies in manufacturing also invest in other sectors, namely mining and, especially in ICs, in distribution [Deutsche Bundesbank, b]. With company size being a prerequisite to becoming a foreign direct investor it is not surprising that FDI is concentrated in the German manufacturing sector, where the largest companies are (Volkswagen, Hoechst, Siemens, etc.). On an aggregated basis these companies diversify their FDI between sectors more in the industrialized world than in DCs. In the latter, especially investment in distribution is much lower. This might suggest that export-substituting

Table 5 - German FDI Stocks by Branches in the Third World, 1988
(percentage shares of total)

Branches	Classification according to host countries' industries		Classification according to source country's industries	
	OPEC	non-OPEC	OPEC	non-OPEC
Mining	54.8	4.5	44.9	4.3
Manufacturing	21.4	67.2	38.0	71.7
Chemical industry	10.3	18.9	15.2	22.2
Steel production	.	3.0	n.a.	3.5
Machinery	0.9	5.9	.	5.8
Vehicle industry	.	22.4	.	23.6
Electrical engineering	.	10.2	5.8	12.0
Distribution	9.5	6.5	1.5	1.8
Financial institutions	.	11.5	.	16.8
. : data not shown due to confidentiality.				

Source: Deutsche Bundesbank [b].

FDI is relatively higher in DCs than in ICs (a related hypothesis will be tested in Section V.2).

The breakdown by branches within the manufacturing sector in the non-OPEC DCs shows in more detail where FDI comes from and where it goes. The biggest shares come from the German vehicle industry (23.6 per cent) and the German chemical industry (22.2 per cent), and the biggest shares go to the respective sectors abroad (22.4 and 18.9 per cent). The other important sector is electrical engineering. The sectoral distribution is strongly determined by the pattern in a few major host countries. In Brazil, which hosts 43.5 per cent of the FDI stock in non-OPEC DCs, almost 90 per cent of FDI is in manufacturing, about a third in vehicle production alone [Deutsche Bundesbank, unpublished data]. A similar picture arises for Mexico: of the DM 2.5 bill. FDI stock DM 2.2 bill. is in manufacturing. Within the manufacturing sector in Mexico about half is invested in the chemical industry. As mentioned above, within Asia, Singapore attracted FDI in electrical engineering. In Africa

the most important host country is Egypt (DM 0.5 bill.). Here a breakdown by sector is not possible, because the numbers get too small to be shown due to confidentiality. Among the OPEC countries Libya is by far the biggest recipient (DM 0.6 bill.) and investment is almost completely allocated in the mining sector.

A breakdown of German FDI stocks by country and sector is - due to confidentiality - available only for a small number of countries. This demonstrates how highly concentrated German FDI is in a few countries in the developing world. It has to be mentioned that this is not a special characteristic of the German FDI structure, but reflects the overall picture of FDI in DCs.

6. Summary and Conclusions

Among the overall international economic activities FDI still plays a rather limited role for the German economy. But its weight is increasing in the international as well as in the domestic context. FDI itself is highly and increasingly concentrated in the industrialized world. Within the group of DCs there is a high concentration by sector in manufacturing and by region in Latin America.

While high concentration with respect to sectoral distribution helps to explain FDI data, as they measure a rather homogeneous activity compared to FDI data for the ICs, the high concentration with respect to countries will cause some difficulties in the empirical analysis. To analyse many of the determinants of FDI in host DCs, cross-section or panel data have to be used. Taking into account all countries, for which stock data are reported (about 50), most of the numbers will be small. Thus we get a low sample mean and high variation. As the explaining variables are likely not to follow the same kind of dynamic behaviour, the explanatory power of some equations might be lower compared to what empirical researchers are normally used to. Probit and logit models are often a reasonable way to tackle that kind of data. Unfortunately these approaches are not applicable here, because there are no rules according to which certain values can be assigned to certain activities. A decrease of a stock value can be (and often is) caused by a negative valuation effect higher than a positive transaction value, i.e. it cannot be asso-

ciated with a disinvestment. For similar reasons zero values cannot be interpreted as inactivity. Transaction data, which would reveal that kind of information, are in general not published on a country-by-country basis and were made available for the purpose of this study only for a rather limited number of countries. In any case, a selection bias cannot be avoided completely, as those countries which host only one or two projects are not covered in the data base due to confidentiality reasons.

Another problem is that a major part of FDI in DCs, namely reinvested earnings, are estimated by the compiler. The regional breakdown is particularly unreliable, and there is no a priori reason to assume that errors of reinvested earnings in single countries are uncorrelated.

After having raised the problems that have to be faced one way or the other, it has to be mentioned that explaining FDI in DCs from source countries' data has major advantages over explaining host country data. The major source countries have comprehensive statistics on FDI and the performance of their company sector. Most measurement problems can at least be traced. Although the regression results cannot be expected to meet the same standards as those in related fields, for example, in trade analysis where much more comprehensive data are available, understanding of the determinants of FDI can be improved.

IV. Economic Policies of the Developing Countries towards FDI

Whatever the economic determinants of FDI in DCs are (see Chapter II for an overview of major hypotheses), their empirical investigation will be partially disguised by the rules and regulations governing the inflow of foreign capital in DCs. The purpose of this chapter is twofold: first, to give an overview of the most important aspects of investment legislation and policy in the host countries and, second, to develop and test indicators for the degree of openness of the host countries.

The first issue has been covered thoroughly in various studies [e.g. IMF, e; Becsky et al., 1989; Rosenn, 1989]. Apart from special studies, the IMF [c] and the UNCTC [c] supply regular information on this topic. So only a few illustrative examples are described here. A synopsis of selected aspects of host countries' investment policies is given in Appendix 2 for major recipients of German FDI.

As the major aim of this study is a quantitative assessment of the determinants of FDI, the qualitative information of the above-mentioned sources has to somehow be quantified in order to fit into the regression analysis. For this purpose it is translated into an indicator that describes the degree of openness of a country.¹ It can be argued that this procedure is rather arbitrary. Moreover, as the available indicators rely on "expert knowledge", they are likely to have some common bias. However, these problems can be partly overcome by developing one's own assessment and by choosing indicators from rather separated sources.

1. Obstacles to FDI: Some Major Issues

The regulations and policies of DCs to influence the inflow of foreign capital can be quite complex and are often rather inconsistent. When relating the actual size of German FDI stock in a single country to the country's regulatory framework one has to keep in mind that in most cases the FDI stock is the result of decisions of very few companies

¹ It should be mentioned that measurements of the investment climate are more readily available (see Section V.4). They include, however, economic performance and stability aspects. The focus here is narrower, i.e. restricted to institutional rules and habits.

(sometimes only one), for which a particular component of the regulatory framework - at that point in time - might have outweighed all the others. On an aggregate level, however, there are a few components of the rules and regulations that are generally considered to be crucial.

A major if not the most serious obstacle to FDI is restrictions on ownership. German companies have a strong preference for 100 per cent ownership. The reasoning for this is similar to the one for the preference for direct investment over licensing. It eases the decision process inside the company and allows for a better control over intangible assets such as technology, product quality and credibility (see also Section II.1.b). But joint ventures have their particular advantages too. Country-specific aspects of production and distribution can be more easily handled with a local partner sharing the risk burden. Especially small and medium-sized companies appreciate these advantages of joint ventures.

According to a study of the HWWA Institute, companies own on average 84 per cent of their affiliates abroad [Scharrer, Krägenau, 1988]. In Latin America the percentage share is even higher (87.3 per cent), in Asia significantly lower (56.3 per cent). Companies are generally more restricted with respect to 100 per cent ownership (often even with respect to majority ownership) in DCs than in ICs. This is clearly reflected in the concentration of companies with respect to their ownership in their foreign affiliates (Table 6).¹

As listed in Appendix 2, many DCs prefer joint ventures. Some countries have codified limits varying from sector to sector with a total foreign ownership being the exception, often approved particularly to export-oriented companies (for example in Malaysia). Other countries decide on a discretionary basis (like Thailand), and many countries' regulations require a gradual increase in national participation (for example, Peru). An important qualification to the above-described regional pattern of shares has to be made, however. Most DCs, especially so in Asia and Mexico, liberalized their investment policies substantially

¹ The percentage shares given in Table 6 are based on a survey conducted by the HWWA Institute for Economic Research in Hamburg on financing German FDI. The survey covers 144 German companies and information about 233 of their foreign affiliates [Scharrer, Krägenau, 1988].

Table 6 - Percentage Shares of Ownership of German Companies, 1985
(per cent of all companies)

Region	Percentage share of ownership		
	below 50	between 50 and 99	100
World total	3	24	73
Europe	8	25	67
North America	6	15	79
Latin America	20	25	55
Asia	24	52	24

Source: Scharrer, Krägenau [1988].

and received increased FDI inflows in recent years. In particular, possibilities for fully foreign-owned investment projects were extended. The most important holder of German FDI, Brazil, is, however, following a more restrictive stance, at least in comparison to other countries.

Another important factor indicating a DC's attitude towards FDI concerns restrictions on the repatriation of profits and capital. This issue also involves the access to foreign exchange (for detailed information on single countries, see IMF [c]). Even if the repatriation of profits and capital is granted under the investment code of the country or by a bilateral investment treaty, this is not of much use if access to foreign exchange is restricted. This is especially true for companies which mainly operate in the domestic market of the host country. Most countries with severe debt problems restrict repatriation of profits and capital. Argentina, for example, used to prohibit the repatriation of capital under an emergency legislation due to foreign exchange shortages, and capital acquired under the debt-equity conversion programme cannot be repatriated for ten years.¹ Other countries, for example, Kenya, restrict the repatriation of capital gains.

Although no country completely prohibits the repatriation of profits, many countries have certain restrictions which distort optimal financing conditions. In Kenya the repatriation of profits is restricted to the current year. Although reinvested earnings can in principle be repatriated

¹ Exchange controls started being liberalized in October 1987 and are completely abolished by now.

as capital, this rule gives incentives to repatriate earnings immediately and therefore reduces the flexibility of financing decisions. Many countries restrict the repatriation of profits to a certain percentage of the registered capital. Earnings repatriated above that amount are highly taxed. Brazil, for example, restricts the repatriation of profits to 12 per cent of the registered capital (in foreign currency) calculated over a three year average. Although this regulation might appear harmless at first sight, it turns out to be a major flaw, because registered capital is usually not allowed to be adjusted for inflation; as a lot of FDI stock is registered a long time ago, often only a small porportion of the actual profit can be remitted. This gives a strong incentive to invest in form of a loan rather than in form of equity capital, because remittance of interest earnings on foreign loans is geared to market rates (for a detailed discussion, see Rosenn [1989]).

According to a survey on German firms' investment behaviour in DCs, done by the Ifo Institute in Munich dating back to 1980, "the most important individual factor for German investors is the difficulties in dealing with the state authorities (bureaucracy) in developing countries. Only just under one-fifth of the ratings classified this as a minor factor" [Pollak, Riedel, 1984, p. 29]. Obtaining a complete picture of this issue for all the countries included in the investigation is, of course, beyond the scope of this study. There are countries which are known to have a particular tedious **approval procedure**, for example, Nigeria and Kenya. On the other hand, there are a few countries which have a codified, straightforward approval process. In South Korea, for example, many investment projects are approved automatically. Other countries made their approval procedures more straightforward recently, most notably Mexico [Shah, Slemrod, 1990]. In the discussion on improving FDI policies in DCs some emphasis was given to the establishment of a "one-stop" agency, which is the only institution a foreign investor then has to deal with [e.g. Becsky et al., 1989, Chapter 8]. A lot, however, depends not only on the way the approval procedure is formally institutionalized, but on how it is handled in practice. Thus the pure existence of a one-stop agency alone is a rather poor indicator for the classification of the approval process. For most countries the approval process is evaluated by scoring it on the basis of expert knowledge.

Apart from the three issues discussed above, there are many others which are crucial for assessing the FDI policies of a DC. Countries which are restrictive with respect to the above-mentioned factors often have numerous exceptions from their rules for specific purposes. Among those are export processing zones, tax exemptions, and a high degree of industry protection. Other countries, like Chile and recently South Korea, rather rely on a more even treatment for foreign and domestic investors alike. Among the various exemptions from taxes, tariffs and duties, preferential treatment is often available for joint ventures in particular (Algeria, Egypt, Mexico). On the other hand, there are some popular disincentives like quotas mandating employment of host country's nationals (Malaysia) and performance requirements like local-content requirements (Venezuela). The pattern of incentives and disincentives often varies substantially between different sectors and has been changing tremendously in recent years.

2. Measuring the Degree of Openness

Measurements of the degree of openness towards FDI in DCs take the above-mentioned issues into account. However, the perception of the host countries' attitudes towards FDI varies from source country to source country. This is due to traditional and/or cultural links as well as to political factors. Germany never had colonies on a large scale and thus has little particular cultural links to the developing world. On the other hand, it has a strong competitive position in the classical sectors of manufacturing (e.g. chemistry) and thus might find it easier to operate in some DCs than other industrialized countries. Furthermore, Germany has a large number of bilateral investment treaties (63) and double taxation agreements (33) [BMZ, 1986]. In order to measure the degree of openness for German FDI these factors should be taken into account.

For the purpose of this study, the degree of openness has to be quantified in order to be taken into account in the regression analysis. This is of course a rather subjective task. One way to approach it is to summarize the information given in Appendix 2 and classify countries into very restrictive (= 0), restrictive (= 1), semi-open (= 2), and

open (= 3) on the basis of the researcher's own judgement (GU; see Table 7). Another way of dealing with this problem is to rely on the compilation and evaluation of information which other institutions collected. Two sources are available:

- a measurement conducted by Frost & Sullivan, Inc., in 1988 for the United States Agency of International Development based on their own research and expert knowledge [Frost & Sullivan, 1988].
- a measurement conducted by the Ifo Institute in Munich in 1980 based on several sources of expert knowledge from German institutions dealing with foreign affairs (for details, see Osterkamp [1983]).

The advantage of relying on one's own judgement is that the researcher is aware of the limits of the resulting classification, which is in this case purely based on published information. Furthermore, certain bilateral aspects, i.e. investment treaties and double taxation agreements, are explicitly taken into account. Aspects of political and economic stability, however, are explicitly not taken into account. They are a separate issue which will be dealt with in Section V.4. The disadvantage of this option is that the measurement is less comprehensive, as the list of sources is limited and incomplete. This flaw can be avoided by relying on the measurement of other institutions which collect information from various country experts. But there are shortcomings to this approach as well. First, the quality of the index has to be taken for granted, and second, the indices available do not strictly measure the degree of openness, but the investment climate; i.e. they take factors into account that are not strictly institutional.

The index constructed by Frost & Sullivan (FS) is based on 14 different criteria. For each country (the total number of countries covered is 95) a score ranging from 1 (worst case) to 5 (best case) is given for each criterion. For the purpose of this study the five "non-institutional" criteria have been excluded (domestic economic performance, international economic performance, labour conditions, security of operations, regime stability). This index is thus the unweighted average of nine criteria: controls on ownership, approval process, dispute settlement, employment of nationals, performance requirements, exchange controls, repatriation restrictions, investment incentives, and tax rates. An advantage of the FS index is that it is fairly recent. It is, however, uncontrollable, in

Table 7 - Country Classification: Degree of Openness

Developing country	Researcher's judgement(a) (GU)	Frost & Sullivan(b) (FS)	Ifo Institute(c) (IFO)
OPEC			
Algeria	1	3.0	n.a.
Indonesia	2	2.9	36.7
Iran	0	n.a.	n.a.
Libya	0	2.1	n.a.
Nigeria	1	2.3	33.5
Venezuela	1	2.4	34.7
United Arab Emirates	3	n.a.	39.0
Africa			
Ivory Coast	3	3.6	41.5
Egypt	2	3.4	33.7
Kenya	1	2.8	37.7
Morocco	2	3.4	42.0
Tunisia	3	4.0	44.0
America			
Argentina	1	2.8	38.0
Brazil	2	2.4	42.5
Chile	3	3.7	n.a.
Colombia	3	3.8	37.0
Guatemala	1	2.8	n.a.
Mexico	2	3.0	37.3
Peru	1	2.3	36.0
Asia			
Hong Kong	3	4.7	50.0
India	1	2.6	36.0
Israel	3	4.0	n.a.
South Korea	3	3.6	31.5
Malaysia	2	3.4	37.7
Pakistan	3	3.4	36.0
Philippines	2	4.2	37.5
Singapore	3	4.7	48.5
Sri Lanka	3	3.9	n.a.
Syria	1	2.3	n.a.
Thailand	3	3.9	38.0
Turkey	3	3.6	n.a.
(a) For details, see the text. The score ranges from 0 (very restrictive) to 3 (open). - (b) For details, see the text. The score ranges from 1 (most restrictive) to 5 (open). - (c) For details, see the text. The score ranges from 17 (very restrictive) to 51 (little restrictive). - n.a.: not available.			

Source: Frost & Sullivan [1988]; Osterkamp [1983]; own judgement based on Appendix 2.

how far the scoring of one criterion is influenced by the scoring of others including those which are excluded for the purpose of this study.

The index constructed by the Ifo Institute (IFO) is based on 17 criteria for 36 countries and mainly covers regulations, but also aspects of political stability. Information was collected by sending questionnaires to country experts in different institutions located either in Germany (for example, the GTZ)¹ and abroad (for example, German embassies). For each criterion, experts were asked to give a score ranging from 1 for "very restrictive" over 2 for "somewhat restrictive" to 3 for "little restrictive". The index itself is an unweighted sum of the scores, i.e. the maximum value attainable is 51. The IFO index implicitly takes into account German aspects of the investment environment in a DC. Its main flaw is that it is somewhat outdated. Again it is uncontrollable in how far answers to the different criteria were influenced by each other and by outside factors such as the general economic performance of a country.

Table 7 lists the classification of selected countries with respect to the three different indicators discussed above.² There are a few deviations in the classification of a country depending on which indicator is used. Two of them are worth mentioning. The degree of openness for Brazil is judged to be low by FS and high by IFO. Probably, this is mostly due to a national bias of the two indicators. The sectoral structure of German FDI has made it easier to fit into Brazil's investment regulations. Thus German experts judge Brazil to be more open than US experts. Another reason for the deviation is that the FS index is far more recent, thus taking into account the rather restrictive Informatics Law, which might affect US FDI more than German FDI. Even though Brazil did not change dramatically with respect to its overall openness, other major recipients liberalized FDI regulations, leaving Brazil with a relatively poor image in recent years. Another major deviation occurs with respect to South Korea. The much higher scoring with respect to the FS index is due to the fact that South Korea became more open in recent years, especially so in 1988.

¹ The Gesellschaft für Technische Zusammenarbeit (GTZ) is a government-owned company that advises and conducts projects in DCs. Their services are usually free of charge for the DC.

² The countries are major holders of German FDI stocks.

3. Influence of the Degree of Openness on German FDI Outflows to DCs

The discussion on measuring the degree of openness revealed that an index observed over time would be ideal to explain FDI flows. On the other hand, the perception of the attitudes towards FDI of a country probably changes only slowly. Thus it is quite justified to use a constant indicator to pick up the influence of host countries' policies on their FDI inflows from Germany. In order to find out whether the degree of openness is a significant determinant of FDI and whether the above described indicators behave differently, it is assumed that German FDI outflows to single DCs depend on the host country's market size, measured by its nominal GNP, its real growth rate, its inflation rate, the exchange rate vis-à-vis the DM, entrepreneurs' income of the private sector in Germany, and one of the indicators measuring the degree of openness. Although there are other factors that might play a significant role, let us assume for the purpose of this chapter that these variables explain FDI sufficiently well to lead to unbiased estimators of the coefficients of the equation. Even under this (possibly heroic) assumption, data for some of the explaining variables are not readily available.

The sample that the analysis is based on contains ten years from 1977 to 1986.¹ In order to test the significance of the influence of host countries' investment policies on German FDI, as many flow data to single countries as possible should be taken into account in order to reduce the possibility of a selection bias. Furthermore, as new investments and liquidations are likely to be influenced quite differently by the investment policy of a country, gross flow data would be desirable. However, all the data requirements cannot be met in practice. The most broadly based regional as well as sectoral data set is the stock statistic, which covers time series for 43 countries for the period under investigation. The countries covered are either major holders or holders of several small amounts of German FDI. If a country is not listed or its numbers are not shown, it can, however, not be concluded that its Ger-

¹ The start year is due to the fact that FDI stock data are unavailable before 1976. The final year had to be chosen, because no more recent numbers were available for some of the explaining variables for some countries included in the sample.

man FDI stock is close to zero; it could as well be a holder of one or two large investments which are not shown due to confidentiality.

Another more serious problem occurs when "net outflows" are calculated from an increase in stocks, because capital gains and losses due to valuation changes and exchange rate variations are included. As discussed in the previous chapter, valuation changes due to exchange rate movements are a particularly severe problem in German data. The stock values are usually historical book values converted to DM using end-of-period exchange rates. Thus converting stock values back to the respective local currency, taking first differences and converting those back to DM at period average exchange rates should lead to a better approximation of the transaction data as compiled for the balance of payments. Indeed the correlation between the increases in stocks and the flow data is higher when the increase in stocks is measured the way described above. There are, however, a few major recipient countries for which this kind of adjustment is not applicable, namely those which suffer from high inflation rates and currency depreciations respectively. In these countries book values are usually adjusted for inflation. Thus, first differences of the stock values measured at the period average exchange rate exaggerate the historical transaction values.

In the following, first differences of the original stock data are used as a proxy for net outflows and end-of-period exchange rates are included in the equation to capture both valuation and volume effects.¹ The equation is thus an error correction approach to explain FDI stocks. Among the other explanatory variables the real growth rate and the inflation rate are left out due to missing data.² The only index for the degree of openness available covering all the 43 countries is the FS index. The resulting regression equation is:³

¹ The coefficient of the exchange rate variable can therefore not be interpreted as the effect of exchange rate movements on FDI activity. Cross rates derived from market rates vis-à-vis the US\$ as published by the IMF [d] were used.

² Although the real growth rate turned out to be significant in a subsample the results with respect to the degree of openness did not change much.

³ For detailed definitions of variables and data sources, see the list of variables in Appendix 1. All variables, except FS, are expressed in logarithmic terms. The prefix "d" denotes annual changes. The suffix

$$\begin{aligned}
 \text{[IV.1]} \quad \text{dSITOT} &= -120.2 - 0.05 \cdot \text{SITOT}(-1) - 0.20 \cdot \text{dEXDM} \\
 &\quad (-1.4) \quad (-1.6) \quad \quad \quad (-4.1) \\
 &\quad - 0.01 \cdot \text{EXDM}(-1) + 0.04 \cdot \text{GNP} - 0.51 \cdot \text{BUV} \\
 &\quad (-1.6) \quad \quad \quad (1.5) \quad \quad \quad (-3.2) \\
 &\quad + 4.04 \cdot \text{FS} \\
 &\quad \quad \quad (1.5)
 \end{aligned}$$

$\bar{R}^2 = 0.11$; number of observations: 430
 Chi-squared = 62.8 (critical value: 33.9)

where: SITOT = German FDI stocks;
 EXDM = local currency per DM;
 GNP = gross national product of host countries
 in DM;
 BUV = entrepreneurs' income in the private
 sector in Germany;
 FS = FS index.

Although changes in FDI stocks are measured at an aggregate level the numbers often reflect the behaviour of only a few investors. Thus heteroscedasticity is a potential problem, not only with respect to the different countries, but also over time. Therefore the null hypothesis of homoscedasticity of the error term had to be tested. The null hypothesis was rejected for Equation [IV.1]. Therefore, corrected standard errors of the estimated coefficients were used to calculate the t-values given in parentheses. The OLS estimators of the coefficients are still consistent but not most efficient any more.

The overall explanatory power of the equation is rather weak. Of the coefficients only one is significant at the 5 per cent level and has the expected sign, the rate of change of the exchange rate (dEXDM); i.e. valuation effects strongly determine the development of FDI stocks. The coefficient of entrepreneurs' income (BUV) has an unexpected sign and is significant. This could be due to strong substitution effects between FDI to different DCs as well as between DCs and ICs.¹ The other coefficients, especially that of the degree of openness (FS), turned out to be insignificant (or significant only at a 15 per cent level).

"(-1)" denotes once-lagged variables. Adjusted t-values in parentheses. Chi-squared: White-test on homoscedasticity; for testing for homoscedasticity and correcting the standard errors, see White [1980].

¹ Leaving out BUV does not alter the estimates of the other coefficients much. Host countries' GNP becomes significant at the 5 per cent level.

There are various possible reasons for this outcome: First, the degree of openness might in fact be irrelevant for investment decisions. Second, the FS index might be unsuitable to measure the degree of openness. Third, the measurement of the FDI outflow by changes in stocks is inappropriate as well as it is to look at net outflows. Fourth, the omission of other explanatory variables may lead to biased estimates.

One way to further investigate this issue is to improve the data base. But there is a price to pay: The number of countries for which more data are available decreases to 18, leaving us with a potentially higher selection bias.¹ Estimating Equation [IV.1] in a subsample and varying the indicator for the degree of openness does not lead to any further insight. The results actually become implausible when using the index based on FS and on the researcher's own judgement (GU), and the coefficient for the degree of openness using the IFO index is insignificant.

As argued above what is really influenced by the degree of openness are new investments in DCs as shown in the balance of payments.² These data are less distorted by valuation changes. They do not, however, contain secondary FDI, i.e., the regional distribution is distorted by investment activities of the holding companies especially in the off-shore centres. The regression results based on transaction values for the period 1977-1988 are summarized in Table 8. The lag-endogenous variable (NEW(-1)) is included to capture the dynamic behaviour.³

The results based on gross transaction values are much better than those based on stock values. Apart from the first equation the other two passed the heteroscedasticity test. All three indicators of openness have

¹ These countries are: Argentina, Brazil, Colombia, Egypt, Hong Kong, India, Indonesia, the Ivory Coast, South Korea, Malaysia, Mexico, Morocco, Nigeria, Peru, Singapore, Thailand, Tunisia, and the United Arab Emirates.

² On a bilateral basis these data are published only for outflows to the United States. However, for a selection of DCs the data were kindly made available by the Deutsche Bundesbank.

³ As the sample contains only 12 years for each country a more sophisticated dynamic approach is inapplicable. Note that Equation [IV.1] has the form of an error correction approach (although rudimentary), while the equations of Table 8 are of autoregressive form. As the dependent variable contains zero observations a small constant was added before taking logs.

Table 8 - Host Countries' Openness towards FDI and German Gross FDI Outflows, 1977-1988: Regression Results(a)

	NEW(-1)	EXDM	GNP	BUV	Degree of openness(b)	\bar{R}^2	CHISQ(c)
[1]	0.68** (13.1)	-0.04 (-0.8)	0.15** (3.2)	-0.27** (-2.6)	28.06* (2.3)	0.94	38.8
[2]	0.71** (15.3)	-0.02 (-1.1)	0.09* (2.5)	-0.13* (-1.7)	13.12* (1.7)	0.94	25.9
[3]	0.72** (15.3)	-0.01 (-0.3)	0.09* (2.4)	-0.15 (-1.6)	1.43 (1.0)	0.94	22.4

(a) For the definition of variables and data sources, see Appendix 1. Dependent variable: gross German FDI outflows based on transaction data (NEW). All variables, except openness indicators, expressed in logarithmic terms. The suffix (-1) denotes once lagged variables. **, * significant at 1 and 10 per cent levels. Adjusted t-values in parentheses. Number of observations: 216. - (b) Equation [1]: FS; Equation [2]: GU; Equation [3]: IPO. - (c) Critical value: 26.3.

Source: Own calculations.

coefficients of correct sign, but only two are significant at a 10 per cent level at least. The IPO index is insignificant (Equation [3] in Table 8). This is probably due to the fact that the expert knowledge which the index is based on is rather outdated for the sample under investigation. The other two measurements perform about equally well. Equation [1] in Table 8 containing the FS index suffers from heteroscedasticity and more from the problem of collinearity than the one containing the dummy variable reflecting the researcher's own judgement (GU; Equation [2] in Table 8). It is therefore suggested to preferably use this dummy variable (available for 30 countries) in the following analysis. Both the lag-endogenous variable (NEW(-1)) and the host country's market size (GNP) have significantly positive coefficients. This supports the view that German FDI in DCs is mainly market oriented and taking place in the form of a capital widening of existing companies. Additional explanatory variables, real growth rate and inflation rate (measured by the consumer price index), turned out to be insignificant. Again the coefficient of entrepreneurs' income (BUV) is of unexpected sign and significant. The results are stable with respect to sample variations (not shown).

4. Summary and Conclusions

The purpose of this chapter has been to discuss and summarize factors that contribute to the degree of openness with regard to FDI in developing countries. The evidence is then compressed into a single indicator that allows a ranking of the DCs. This indicator is used to test the influence of the degree of openness on German FDI outflows to DCs.

The results offer some support for the view that liberalization of investment regulations in DCs helps to increase new foreign investments. The empirical support is, however, somewhat mixed, depending on which index is used to capture the effect of FDI policy rules and whether stock or transaction data are explained. Therefore, the focus on liberalizing investment codes might have been too sharp, in relation to other policy instruments, which will be analysed in the subsequent sections, in the recent discussion. The more countries liberalize FDI regulations and, in addition to that, offer tax and tariff exemptions, the less effective these policy measures may become for single countries, since foreign investors will start taking them for granted everywhere.

V. Determinants of German FDI: Empirical Analysis

1. Introduction

The first three chapters of this study have laid the groundwork for a detailed empirical analysis of the determinants of German FDI in DCs. The hypotheses that are to be tested were outlined in Chapter II. In Chapter III the characteristics of German FDI and the quality of FDI data were discussed, while Chapter IV focused on the demand for FDI by reviewing the openness of host countries towards foreign equity finance. The difficulty in deriving a general, consistent theory to explain FDI and verify such a theory empirically lies in the nature of FDI itself. Under the heading of FDI a bunch of rather heterogeneous activities is summarized. Most theories explain an increase of real capital stock owned by a foreign company, often associated with a production facility in manufacturing. The data, on the other hand, are financial in nature. Compiled within the balance of payments it can be anything from financing exports of capital goods to an affiliated company to acquiring a share in a holding company in an offshore centre. Thus, in general, compiled data and the theoretical concept of the variable to be explained fall apart. Although this measurement problem is frequently encountered in applied econometrics, it is particularly severe in this case. The fact that this study deals only with FDI in DCs reduces the extent of it, as most of German FDI in DCs is in manufacturing (see Chapter III) and takeovers play a less important role in DCs.¹

Some of the problems related to the distortions of the regional pattern of FDI outflows taken from the balance of payments (for the treatment of secondary FDI in the different data sets, see Chapter III) can be omitted by analysing stock data. As mentioned before, however, one has to put up with capital gains and losses due to revaluation of the book values or exchange rate variations when using changes in stocks as an indicator for net outflows. In this chapter, most hypotheses will be

¹ Takeovers accounted for 35 per cent of total FDI in DCs in the second half of the 1980s, whereas this figure is about 86 per cent in ICs [FAST, 1990].

tested on the basis of both stock and transaction data. Both flow and stock data record items on the liability side of the balance sheet of the affiliated company. FDI theory, on the other hand, is related more to the asset side. As FDI as reported in the statistics is only one part of the total financing of FDI activity, the implicit assumption underlying the analysis is that the financial structure of the affiliated company remains constant over time. This assumption turns out to be not quite as unrealistic as it appears at first sight. The ratio of FDI stocks and total assets in DCs varied between 33 and 39 per cent in the 1980s [Scharrer, Krägenau, 1988].

The empirical analysis is not only complicated by measurement problems of the dependent variable, but also because of the existence of trade and investment restrictions in the DCs, which might in some cases disguise the economic fundamentals quite severely. Trade barriers (as well as exchange rate variability) are frequently discussed as determinants of FDI (Chapter II). Investment policies, however, although having a direct impact on FDI inflows are less often considered as an important determinant of FDI. This is probably due to the fact that most studies on FDI concentrated on ICs, most of which are fairly open. In Chapter IV, some evidence could be found that the degree of openness with respect to FDI has a significant effect on FDI inflows to DCs. The degree of openness as defined in the last chapter is constant over time and was used as a country-specific factor in a regression equation in which the other coefficients were assumed to be constant with respect to country variation. Alternatively, one can group the countries with respect to their degree of openness and run separate regression equations. The choice is, however, often constrained by the number of degrees of freedom.

In the following sections, a wide range of potential determinants of FDI are investigated for German FDI outflows and/or stocks to/in DCs. As the study is mainly concerned with specific features of German FDI in DCs, the investigation of German FDI data will be at the heart of this chapter. In some cases, however, a comparison with regression results based on total inflows of FDI to DCs leads to some interesting further

insight into German FDI behaviour.¹

Since the international debt crisis erupted in the early 1980s the climate for capital transfers to DCs has changed dramatically. This is most evidently so for credit flows where a net outflow of foreign capital out of many DCs took place in the recent past. But some parts of the Third World also suffered from the recent drying-up of FDI inflows and the radical shift of FDI towards ICs (for details, see Chapter III; see also Alworth, Turner [forthcoming]). This may indicate that former results on the determinants of FDI in DCs do not hold under the changed international capital market conditions. Hence the following empirical analysis is concentrated on the 1980s.

In some cases, however, the relatively short time horizon reduces the sample size below an acceptable level. This is particularly true when variables in real terms are chosen as explanatory variables, as many DCs lack far behind in reporting those numbers. In other cases, time series are available only for a very small number of countries, for example, when total hourly labour costs are considered. On the other hand, the time series dimension of a panel data set bears valuable information, especially when "traditional" hypotheses concerning FDI are tested. The choice of the time horizon therefore varies with respect to the problem tackled and is often determined by the rather pragmatic argument of the availability of the data. For these reasons the first two sections extend the time horizon as far back as possible (i.e. to 1977) while the subsequent sections, which mainly deal with risk and stability aspects, use a shorter time period.

It is also due to data constraints that the degree of sectoral breakdown in German FDI flows differs between the subsequent sections. Typically, FDI flows to DCs have been analysed in the literature on a very aggregated level [e.g. Edwards, forthcoming]. But the determinants of FDI are likely to depend on whether foreign investors are engaged in the primary commodity sector, in manufacturing or in the service sector

¹ It has to be kept in mind, however, that the empirical equations are not exactly the same for world and German FDI flows. Even if it is only the compilation of the data that varies among different sources, it can cause deviations among the results which are large enough to warrant caution when making a direct comparison of the two sets of equations.

of the host country (see Chapter II). Such a breakdown proved impossible in several instances, however. German FDI in the primary commodity sector could not be analysed separately because of an insufficient number of observations. The evaluation of FDI in the service sector, where actually possible, had to be restricted to FDI in trading activities in order to avoid distortions arising from the German engagement in a few financial offshore centres. Sometimes the analysis is confined to manufacturing on which German FDI in DCs is strongly concentrated (see Chapter III).

The aforementioned data problems render it impossible to subject the hypotheses on the determinants of German FDI in DCs to a single equation. We rather proceed by analysing major clusters of hypotheses one by one in the subsequent sections. Distortions in the estimated parameter values due to misspecification are kept to a minimum by including controlling variables in the regressions. Detailed definitions of all variables used in this chapter as well as data sources are given in Appendix 1.

2. Trade and FDI

The theory of optimal timing of FDI states that once a company has developed a certain market share by exporting into a foreign market, it is likely to become a foreign direct investor (Chapter II).¹ As Germany's share in world trade is significantly higher than its share in world FDI the potential for FDI is supposedly large.² The theory of optimal timing seems to explain quite well the development of German exports and FDI outflows to the United States (see Chapter III; see also Gubitz [1988]). In general, however, this issue cannot be verified by a simple inspection of the data. The period under investigation is quite short (1977-1987), and both trade and FDI flows are influenced by growth and price differentials. Furthermore, there are competing hypotheses about the relation-

¹ For reasons described in Chapter III, licensing is omitted from the following analysis.

² The share of German exports in world total has been above 10 per cent in the 1980s, while the share of its net FDI outflows amounted to around 7 per cent of world total [IMF, a].

ship between FDI and exports. While the above-mentioned approach implies a substitution of exports by output from the affiliated company, the establishment of a new company abroad might as well cause an increase in exports, as market positions can be strengthened and/or investment goods are imported by the foreign subsidiary.¹ Thus, FDI might cause growth as well as substitution effects on exports. For an understanding of the relationship between exports and FDI, it is therefore necessary to investigate both aggregates. The issue is complicated by the existence of trade barriers that disguise the underlying economic determinants and have to be included in the analysis.

a. The Effect of FDI on Trade

From the angle of the German economy the question of whether FDI induces or reduces exports is of major interest as exports are a big share of the domestic output. Therefore, this issue attracted considerable attention in the research and policy debate about the effects of FDI. In an earlier analysis on German FDI and exports to the United States, it was found that there is a significantly negative effect of an increase of gross FDI outflows on exports, although the effect was found not to be large [Gubitz, 1988]. A similar analysis on German exports to DCs will be conducted here, using a panel data set pooling country and time series data for 18 countries and 11 years.

As bilateral export data are not available in volume terms, export values (recorded in DM) are deflated by the export unit value for total German exports. This leads to an unbiased indicator for real exports if export prices are mainly determined by domestic costs. It is assumed that real bilateral exports (EXR) depend positively on real GNP of the host country (YR) and negatively on the real bilateral exchange rate (EXDMR); i.e. a real appreciation of the DM vis-à-vis the host country's currency causes a decline in real exports. The equation is specified in growth rates in order to avoid country-specific level effects such as

¹ A case study of a joint venture of two small companies, a German and a Southeast Asian one, serves as a highly illustrative example [Gubitz, 1990].

different levels of trade barriers, which will be discussed later.¹ Furthermore it is assumed that real exports depend on respective "real" FDI (FDIR) in the host country.² The sign of its coefficient is ambiguous. The equation has the following form (expected signs in parentheses below the respective variables):

$$[V.1] \quad dEXR = a_1 \cdot dEXR(-1) + a_2 \cdot dEXDMR + a_3 \cdot dYR + a_4 \cdot dFDIR.$$

$(-)$
 $(+)$
 $(+/-)$

FDI is measured in three different ways: 1) the stock of FDI in the host country (primary and secondary), which reflects present and past investment and disinvestment decisions as well as capital gains and losses, 2) accumulated net outflows reflecting acquisitions and liquidations at transaction values (without regional corrections), and 3) gross annual outflows. These data are only available in value terms. The values (in DM) were therefore deflated by the unit value of German gross domestic fixed investment (GDI). While deflating bilateral export values by the general export unit value is based on a reasonable assumption, the assumption that FDI deflated by the GDI deflator is an unbiased indicator for real FDI is quite heroic, as it is assumed that purchasing power parity measured on the basis of the unit values for GDI holds. Real bilateral exchange rates, however, fluctuated widely during the sample period. Thus, the data are more appropriately thought of as being deflated FDI than real FDI.

The empirical results are summarized in Table 9 below. The coefficients of real GNP growth and the rate of change of the real bilateral exchange rates are of expected sign and significant. Their size is more or less in line with estimates for total real exports of Germany. The equation shows little dynamic behaviour: the coefficient of the lag-endo-

¹ The specification is similar to the export equations as they appear in German econometric macro-models, for example the econometric model of the Deutsche Bundesbank [d].

² It was not feasible to calculate real exports at a disaggregated level. Consequently, the respective FDI variable refers to total German FDI. Moreover, sector-specific deflators for German FDI in nominal terms were not available so that FDIR could not be calculated at a sectoral level. Therefore, the subsequent analysis does not differentiate between FDI in manufacturing and trade.

Table 9 - Impact of German FDI on Exports to DCs, 1977-1987: Regression Results(a)

Dependent variable: dEXR(b)	dEXR(-1)	dEXDMR	dYR	dFDIR	\bar{R}^2	CHISQ(c)
[1]	-0.11* (-1.9)	-0.50** (-6.2)	1.64** (6.8)	0.006 (0.1)	0.32	13.12
[2]	-0.11* (-1.9)	-0.50** (-5.4)	1.62** (6.5)	0.013 (0.5)	0.32	13.05
[3]	-0.11 (-1.6)	-0.50** (-6.4)	1.63** (8.1)	0.010 (0.6)	0.32	20.08

(a) For the definition of variables and data sources, see the text and Appendix 1. All variables expressed in logarithmic terms. **, * significant at 1 and 10 per cent levels. t-statistic in parentheses; number of observations: 198. - (b) Equations [1], [2] and [3] refer to the different definitions of FDIR as given in the text. - (c) Critical value: 19.68.

Source: Own calculations.

genous variable is negative in all versions, but rather small in size and barely significant. The coefficient of FDIR is insignificant regardless of how FDI is specified, i.e. no significant influence of FDI on exports could be found. In contrast to earlier findings on exports to the United States, neither the hypothesis of a substitution nor of a growth effect could be supported by the results in the case of exports to DCs.

Exports to DCs might be affected by trade barriers. By investigating growth rates instead of levels it was assumed that trade barriers remain constant over time and can thus be neglected. But even if a measure for trade barriers changing over time is not readily available, the differences in the level of trade protection from country to country might bear some valuable information that was missed out in the above estimated specification. Two indicators were used to measure the degree of restrictiveness with respect to trade in DCs: the unweighted average of total import charges (i.e. tariffs and para-tariffs; TAR) and an indicator for the frequency of non-tariff measures (NTM) as compiled by UNCTAD [b]. Data refer to the situation as of the end of 1987. Basically the same kind of indicator is used as in Chapter IV to measure the de-

gree of openness with respect to investment restrictions. It is, however, narrower and more precise. As both indicators are relatively highly correlated, only one at a time is taken into account. The real export equation [V.1] is now extended into the form of an error correction equation for the log-levels of real exports, and the level of trade protection is introduced to the equation:

$$\begin{aligned}
 \text{[V.2] } d\text{EXR} = & a_1 \cdot \text{EXR}(-1) + a_2 \cdot \text{YR}(-1) + a_3 \cdot \text{EXDMR}(-1) + a_4 \cdot \text{FDIR}(-1) \\
 & \quad \quad \quad (+) \quad \quad \quad (-) \quad \quad \quad (+/-) \\
 & + a_5 \cdot d\text{YR} + a_6 \cdot d\text{EXDMR} + a_7 \cdot d\text{FDIR} + a_8 \cdot \text{TAR} \quad (\text{or NTM}). \\
 & \quad \quad \quad (+) \quad \quad \quad (-) \quad \quad \quad (+/-) \quad \quad \quad (+/-) \quad \quad \quad (+/-)
 \end{aligned}$$

For deflated FDI only one specification was used, namely deflated accumulated net outflows (as in Equation [2] of Table 9). The results of this equation are very similar to the ones of Table 9, as can be seen from the estimated coefficients shown in Table 10 for the case of TAR included in the equation. The relatively low coefficient of $\text{EXR}(-1)$ indicates a high autocorrelation of the dependent variable. The coefficient of real GNP is, though significant and of the correct sign, unreasonably low. The equation is probably not very well specified and might be not suitable to investigate the effect of trade protection on German exports to DCs. Both trade policy indicators were found to be insignificant as well as both the level and the change of the deflated FDI stock (the equation with NTM is not shown here).

Table 10 - Impact of FDI and Trade Restrictions on German Exports to DCs, 1977-1987: Regression Results(a)

EXR(-1)	YR(-1)	EXDMR(-1)	FDIR(-1)	dYR	dEXDMR	dFDIR	TAR	\bar{R}^2
-0.06*	0.01*	-0.002	-0.00	2.09**	-0.43**	0.01	-0.002	0.35
(-2.5)	(1.8)	(-0.6)	(-0.0)	(6.4)	(-5.5)	(0.7)	(-0.2)	
(a) Dependent variable: real bilateral exports (dEXR). For the definition of variables and data sources, see the text and Appendix 1. All variables expressed in logarithmic terms. **, * significant at 1 and 10 per cent levels. t-statistic in parentheses; number of observations: 198.								

Source: Own calculations.

b. The Effect of Trade on FDI

After not having found a significant influence of FDI and trade measures on German exports, the hypothesis about the relation between trade and FDI is now reversed: Is there a significant effect of the trade variables on FDI? There are two channels through which FDI might be influenced. First, the theory of optimal timing of a FDI predicts a positive impact of present and past exports on FDI. Second, FDI is often viewed as a way to overcome protectionist trade barriers of a DC (Chapter II). This property of FDI postulates a positive impact of trade protection on FDI. The two hypotheses are incompatible. If exports are a necessary predecessor for direct investment, trade protection should rather be an obstacle than an incentive for FDI. Furthermore, trade restrictions make imported inputs more expensive for the affiliated company abroad. Hence a positive coefficient for one or both of the trade policy variables is only consistent with an insignificant coefficient of present and past exports. Otherwise the coefficient of the trade policy variable should be insignificant or negative. The functional form of the equation for FDI is similar to the one in Chapter IV. The data set is the same as in the case of the export equation. FDI is measured by gross outflows deflated by the unit value of GDI in Germany. The real bilateral exchange rates are now based on GDI deflators as well.

The problem of investigating the impact of exports on FDI is that both variables are strongly influenced by the size of the foreign market. What we are really interested in here is whether exports give any additional incentive to FDI coming on top of market size. Therefore, instead of introducing exports itself into the equation, the ratio of exports to host country's GNP (both in real terms; EXRG) is added as an explanatory variable. As in the case of export equations, the trade policy indicators were introduced separately. The statistical equation to be estimated has the following form:

$$\begin{aligned}
 [V.3] \text{ FDIR} = & a_1 \cdot \text{FDIR}(-1) + a_2 \cdot \text{YR} + a_3 \cdot \text{EXRG} + a_4 \cdot \text{EXDMR} \\
 & \quad (+) \quad \quad \quad (+/-) \quad \quad (+/-) \\
 & + a_5 \cdot \text{TAR(or NTM)} + a_6 \cdot \text{GU.} \\
 & \quad (+/-) \quad \quad (+)
 \end{aligned}$$

Table 11 - Impact of Trade Variables on German FDI Flows to DCs, 1977-1987: Regression Results(a)

	FDIR(-1)	YR	EXRG	EXDMR	TAR(b) (NTM)	GU	\bar{R}^2
[1]	0.64** (10.5)	0.28** (4.2)	0.22* (2.5)	-0.05* (-2.3)	-0.12** (-2.7)	0.01 (0.1)	0.94
[2]	0.69** (11.8)	0.30** (3.9)	0.28** (3.0)	-0.05* (-2.4)	-0.11* (-1.8)	3.68 (0.5)	0.94

(a) Dependent variable: German gross FDI outflows, deflated (FDIR). For the definition of variables and data sources, see the text and Appendix 1. All variables, except GU, expressed in logarithmic terms. **, * significant at 1 and 10 per cent levels. t-statistic in parentheses; number of observations: 198. - (b) TAR in the case of Equation [1]; NTM in the case of Equation [2].

Source: Own calculations.

The equation was fairly well tested (Table 11). In none of the versions heteroscedasticity was found to be a problem; therefore the CHISQs are not given here.

As before (see Chapter IV), the highly significant and positive coefficients of the lag-endogenous variable and host country's market size (YR) point to a strong market orientation of German FDI, mainly taking place as extensions of existing companies in DCs (capital widening). The empirical results reveal a strong additional impact of German exports on German FDI outflows. The effect of an increase in exports exceeding the one of host countries' GNP is almost as big as the effect of an increase in GNP itself. The level of trade barriers is on average rather an obstacle than an incentive for German companies to invest in DCs.¹ The estimated coefficients are thus compatible. Furthermore, the indicator for trade barriers captures the country-specific intercepts much better than the degree of openness with respect to investment policies (GU). This might, of course, be due to the fact that

¹ This conflicts with an earlier finding of Kayser et al. [1981] who concluded that FDI was often undertaken by German firms to overcome trade restrictions in DCs. It rather confirms the view that import protection as an instrument for attracting FDI is likely to be inefficient (see Section II.2 for this discussion).

trade restrictions, especially those in the form of tariffs and other charges (TAR), can be measured much more precisely than the degree of openness with respect to investment measures, which heavily relies on judgements. Also note that the coefficient of the real exchange rate is negative; i.e. a real appreciation of the DM vis-à-vis the currency of the host country leads to a decrease in deflated gross FDI outflows. Valuation effects of exchange rate changes outweigh positive volume effects, and real FDI is not appropriately measured by deflating the values in DM by the domestic inflation for capital goods.

From the investigation of both exports and FDI it can be concluded that exports to a country stimulate FDI, but exports are not reduced by past and present FDI. However, exports are also not significantly stimulated by FDI. This supports the generally held view that German FDI in DCs on average rather serves to secure established market shares than to replace domestic production. There seems to be neither a strong substitution nor a strong complementary effect. This is all the more remarkable as the share of German FDI in manufacturing is particularly high in DCs.

3. Total Labour Costs and FDI

Notwithstanding mixed empirical evidence, a widely held view on FDI is that it is motivated by the choice of the least expensive production site, especially in terms of labour costs. It is argued that an increase in labour costs that goes beyond an increase in labour productivity is a disincentive for FDI. The reasoning that relatively low labour costs attract FDI can be derived from various theories. It is part of the product-cycle hypothesis as well as the locational theory approach, which is also part of the eclectic theory (see Chapter II). The argument principally refers to the acquisition (either bought or built) of new enterprises, and the hypothesis would have to be tested by using micro data. Moreover, the role of labour costs with regard to FDI decisions is likely to depend on the specific motivation of foreign investors to invest in a DC. If FDI is oriented towards serving the domestic market of the host country, for example, labour costs are unlikely to be of overriding importance. The same applies to FDI aimed at

securing access to raw materials, whereas a different picture might emerge in the case of export-oriented FDI in manufacturing.

According to a simple neoclassical argument, even a positive relation between labour costs and FDI is possible.¹ The neoclassical investment function explains investment as a partial adjustment to an optimal capital stock, which is derived from the assumption of profit maximization. If the production function is a simple Cobb-Douglas function, i.e. $Q = L^{(1-b)}K^b$, the optimal capital stock (K^*) can be expressed as a weighted ratio of the wage rate (w) and the user costs of capital (r) with the weights being the production elasticity of labour (L) and capital (K) respectively, multiplied by output (Q):

$$[V.4] \quad K^* = ((w/(1-b))/(r/b))^{1-b} \cdot Q.$$

Hence, an increase in labour costs increases the optimal capital stock, while an increase in the user costs of capital reduces the optimal capital stock.

In this study the analysis is based on aggregated data; i.e. FDI is considered to be part of the real capital formation in the host country. German FDI data contain both acquisitions of new enterprises and capital widening of existing companies. In contrast to US data, types of investment cannot be differentiated. As the subsequent sample of host countries of German foreign investors is biased towards Latin America, the bulk of FDI considered in the following is probably extensions of existing companies. Moreover, German FDI is mainly oriented towards the domestic markets of these host countries. An increase in (adjusted) labour costs is then likely to lead to an increase of the FDI stock in the host country, in order to adjust to a higher optimal capital stock.²

¹ This argument dates from the "old days" of investigating FDI [see, for example, Stevens, 1973].

² There are, of course, reasons why the neoclassical theory of investment is not suitable to explain FDI, as the foreign-owned capital stock in the host country is generally distinctively different from the locally owned capital stock as well as from the domestic capital stock in the source country. The foreign investor typically has a competitive advantage over local producers, at least at that point in time when an investment decision for a new production plant is made. On the other hand, theories that are based on the assumption of imperfect markets

To keep the argument simple it is again assumed that the production function is of Cobb-Douglas type in four input factors, domestic labour in the source country at wage rate w , foreign labour in the host country at wage rate w_A , domestic capital stock K and foreign capital stock K_A with user costs of capital r and r_A respectively. Then the optimal foreign capital stock has the following form:

$$\begin{aligned} \text{[V.5]} \quad \ln(K_A^*) = & a_{1A} \cdot (\ln(w/b_{1A}) - \ln(r_A/b_{2A})) + b_1 \cdot (\ln(w/b_1) \\ & + \ln(r/b_2)) + c \cdot \ln(p) + \ln(Q), \end{aligned}$$

with b_1 , b_2 , b_{1A} and b_{2A} being production elasticity of labour and capital at home and abroad respectively, p the price for the output Q , and $c = -(b_1 + b_2)$. The optimal foreign capital stock thus increases both with respect to an increase in domestic and foreign labour costs (adjusted for the respective production elasticities of labour). If the production elasticity of labour is higher in the domestic economy than in the foreign economy, the impact of domestic labour costs is higher than that of foreign labour costs. An increase in domestic user costs of capital leads to an increase in FDI outflows, while an increase in foreign user costs of capital leads to a decline of FDI outflows from the source country. Assuming that user costs of capital are the same for domestic and foreign capital ($r = r_A$),¹ an increase of the user costs of capital leads to an increase of the optimal capital stock abroad, if the production elasticity of labour is higher in the domestic economy than in the foreign economy ($b_1 > b_{1A}$).²

The following empirical analysis is not strictly based on the above described approach, but picks up the main features without imposing all the restrictions on the coefficients. In particular it is assumed that the

are microeconomic in nature and often consider aspects of the regional distribution of the capital stock owned by a single company.

¹ Such an assumption could be based on the argument that an increase in the capital stock involves domestic capital goods, which are financed at the lowest interest rate available, regardless of where the capital stock is located. It is also assumed that there are no differences in the development of the depreciation rate and the tax rates at home and abroad.

² As "abroad" in this context is associated with DCs this assumption is quite reasonable.

foreign direct capital stock partially adjusts to its optimal level, which is determined by total hourly labour costs (TLC) in the domestic and in the foreign economy (both measured in DM), domestic and foreign labour productivity (value added per employee (VADP)), foreign GNP (measured in DM), and user costs of capital in the domestic economy (UCCGER).¹ No attempt was made to calculate user costs of capital for the German capital stock in the foreign economy. In order to capture valuation effects due to exchange rate changes, exchange rates are added to the equations appropriately (EXDM). As labour cost data are available for the manufacturing sector only [Riveros, 1989], FDI stocks and labour productivity refer to the manufacturing sector accordingly.

The analysis has to be based on a very limited number of countries, as data on total labour costs (in absolute levels) are available only for a small number of countries. Moreover, data on value added and/or output per employee (again in absolute levels) in manufacturing could not be calculated beyond 1985 for most countries. Even within the group of ten countries selected, the time series for value added per employee had to be approximated by the development of output per employee in some cases.² In order to allow for this difference in the measurement of labour productivity two variables enter the equation separately (VADPFOR1 and VADPFOR2). The equation was first estimated in its most unrestricted form, i.e., imposing no restrictions on the coefficients of TLC in the German (TLCGER) and in the foreign economy (TLCFOR) and on the coefficients of labour productivity in Germany (VADPGER) and in the foreign economy (VADPFOR1 and VADPFOR2) (for the results see Table 12, Equation [1]). Then two different restrictions were imposed on the coefficients:

- As wage rates increase with labour productivity, the two variables are positively correlated; therefore the coefficients of labour productivity were set to zero (see Equation [2], Table 12).

¹ Foreign GNP serves as a proxy for the output of the German companies in DCs. Output in manufacturing in Germany was included at an early stage of the specification of the equation as well, but it turned out to be insignificant in all cases.

² The ten countries were: Argentina, Brazil, Chile, Colombia, Mexico, Morocco, India, Pakistan, South Korea, and Singapore; time span: 1977-1985.

Table 12 - Impact of Total Labour Costs and Labour Productivity on the Change in German FDI Stocks in the Manufacturing Sector of DCs, 1977-1985: Regression Results(a)

	[1]	[2]	[3]
SIMAN(-1)	-0.074* (-2.0)	-0.024 (-1.0)	-0.054* (-2.0)
dEXDM	-0.185** (-2.9)	-0.197** (-3.4)	-0.183** (-2.9)
GNP	0.053* (2.3)	0.016 (1.3)	0.044** (2.9)
TLCGER	0.455 (1.1)	0.319 (1.4)	-
TLCFOR	0.146* (2.0)	0.110* (2.3)	-
TLCGER -TLCFOR	-	-	-0.119* (-1.7)
VADPGER	-0.118 (-1.2)	-	-
VADPFOR1	0.041 (0.6)	-	-
VADPFOR2	-0.105 (-1.2)	-	-
VADPGER1 -VADPFOR1	-	-	-0.032 (-0.5)
VADPGER2 -VADPFOR2	-	-	0.167* (1.8)
UCCGER	-0.247* (-1.9)	-0.205* (-2.0)	-0.062* (-1.8)
\bar{R}^2	0.46	0.43	0.43

(a) Dependent variable: change in German FDI stocks in manufacturing (dSIMAN). Equations [1], [2], [3] as explained in the text. All variables expressed in logarithmic terms. For the definition of variables and data sources, see the text and Appendix 1. **, * significant at 1 and 10 per cent levels. t-statistic in parentheses; number of observations: 90; CHISQ is omitted, as no heteroscedasticity was found.

- FDI does not depend on the level of total labour costs and labour productivity, but on the gap of the domestic with respect to the foreign variables. This hypothesis refers to the industrial organization approach to explain FDI. The labour cost gap is supposed to have a positive and the productivity gap a negative coefficient (see Equation [3], Table 12).

The significant coefficients in Equation [1] are all of the expected sign. Especially an increase in the total labour costs in the DCs leads to an increase in German-owned FDI stock. Although the elasticity is smaller for foreign than for domestic labour costs, the coefficient of TLCGER turned out to be insignificant. All the labour productivity variables are insignificant. A closer inspection of the data set on which the regressions were based showed that labour productivity did not change much over the relatively short period of time under consideration. The correlation between total labour costs and labour productivity is low in the case of Germany and high in the case of DCs. The correlation between labour costs in Germany and in DCs is positive but not particularly high (correlations not shown).

Re-estimating the equation according to Equation [2] leads to very similar results as in the "unrestricted" case. This casual inspection is supported by the F-test (not shown).¹ The collinearity problem of Equation [1] is reduced but not removed. This is due to the fact that the two factor cost variables of the German economy, TLCGER and UCCGER, are highly correlated. If one of the variables is omitted, here German total labour costs, the absolute magnitude of the coefficient of the user costs of capital declines, but remains significant (not shown). The results support the major conclusion drawn from neoclassical investment theory, namely that rising labour costs lead to an increase in the German-owned capital stock abroad regardless of where the labour cost increase originated.

¹ Another way of looking at the impact of labour costs on FDI is to assume that differences in labour costs reflect differences in labour productivity. If the difference of the two variables is introduced in the equation instead of the two variables separately, its coefficient should then be insignificant. This conclusion is supported on the basis of the respective estimation of the regression equation; the results are not shown because the equation suffers from misspecification errors.

In Equation [3] only labour cost and productivity gaps are considered to be determinants of German FDI in DCs (Column (3)). The results under this restriction on the coefficients are rather poor. Not only are the coefficients of the labour cost and the productivity gap of unexpected sign, but two of them are also significant at a ten per cent level. If the two indicators of the labour productivity gap are assumed to have equal sign, both labour cost and productivity differentials turn insignificant (not shown). Thus the argument that low labour costs attract FDI could not be verified in the present investigation.¹

As discussed in the last chapter, changes in the stock data do not only reflect transactions but also capital gains and losses due to valuation changes and exchange rate movements. Just introducing the exchange rate into the equation might be an inappropriate way of tackling this problem. Transaction data reflect activity more accurately. The above described investigation was therefore repeated for an equation explaining gross outflows.

Transaction data, however, are not available on a sectoral basis. Although the lion's share of German FDI stock in DCs is in manufacturing, this does not necessarily apply to outflows, as the structure of the stock values is strongly influenced by rather mature investments in manufacturing in Latin America. Thus, a close comparison to the results discussed above is not feasible. Furthermore, for one country (Pakistan) no FDI transaction data are available, i.e. the sample is different from the above analysis.

The empirical results presented in Table 13 show that none of the production-cost-related variables is significant. The only coefficient that turned out to be of expected sign and significant is the one of the labour productivity gap variable, which applies only to two countries. When it is assumed that its coefficient is the same as for the other labour productivity variable the coefficient becomes insignificant (not shown). Thus on the basis of FDI outflows no significant influence of the cost-related variables could be detected. This throws some doubts on the reliability of the results based on stock data. One reason for the different conclusions that have to be drawn from the investigation of the

¹ By contrast, Mann [1990], for example, found a negative impact of US labour costs on Japanese FDI inflows to the United States.

Table 13 - Impact of Total Labour Costs and Labour Productivity in the Manufacturing Sector on Total German Gross FDI Outflows to DCs, 1977-1985: Regression Results(a)

	[1]	[2]	[3]
NEW(-1)	0.596** (6.2)	0.702** (8.3)	0.627** (7.2)
EXDM	-0.056* (-1.9)	-0.035 (-1.4)	-0.046* (-1.8)
GNP	0.145* (2.5)	0.074 (1.6)	0.150** (2.7)
TLCGER	-0.078 (-0.2)	0.132 (0.3)	-
TLCFOR	0.456 (1.3)	0.121 (0.8)	
TLCGER -TLCFOR	-	-	-0.443 (-1.3)
VADPGER	-0.091 (-0.1)	-	-
VADPPFOR1	0.031 (0.2)	-	-
VADPPFOR2	-0.027 (-0.2)	-	-
VADPGER1 -VADPPFOR1	-	-	0.003 (0.1)
VADPGER2 -VADPPFOR2	-	-	-0.556* (-1.8)
UCCGER	-0.250 (-0.6)	-0.241 (-0.6)	-0.178 (-1.2)
\bar{R}^2	0.97	0.97	0.97

(a) Dependent variable: total German gross FDI outflows (NEW). Equations [1], [2], [3] as explained in the text. All variables expressed in logarithmic terms. For the definition of variables and data sources, see the text and Appendix 1. **, * significant at 1 and 10 per cent levels. t-statistic in parentheses; number of observations: 81; CHISQ is omitted, as no heteroscedasticity was found.

Source: Own calculations.

two data sets is, of course, that the transaction data are not sufficiently closely related to the data for the manufacturing sector; investments in the primary and the service sector are determined differently and distort the picture.

In order to analyse the latter argument somewhat further it is investigated whether total FDI inflows from all source countries to DCs are affected by total labour costs and labour productivity. So it is checked whether the insignificant result is specific for the German case. Based on the same number of years and countries an equation similar to the one estimated in Table 13 is estimated for total net FDI inflows (measured in US\$; for results see Table 14).¹ Source-country-specific variables, however, are not included, which reduces the comparability to the results in Table 13. The other explaining variables are expressed in US\$ accordingly. The results for total inflows reveal some interesting differences from the ones for German FDI outflows. In the less restricted form, the degree of openness (GU) and the real growth rate (dYR) of the host country turned out to be significant. Both equations in Table 14, however, suffer from heteroscedasticity, which might be due to systematic reporting differences of FDI inflows among the individual recipient countries, a problem that does not occur when source country data of just one country are used. Total hourly labour costs are highly significant when taken into account at absolute levels, but turn insignificant when corrected for labour productivity gains. Thus the results are more in line with the ones on German stock data in manufacturing than with those found for German gross outflows.

The general picture that emerges from the above described analysis is that foreign labour costs, if at all, have a positive impact on German FDI (as well as on total FDI). This result, although in contrast to the hypothesis of the industrial organization approach for FDI, is quite reasonable, if the production technology allows for substitution between labour and capital. It has to be kept in mind that FDI is considered at an aggregate level here, i.e., it contains capital widening of existing companies as well as the acquisition (either bought or built) of new enterprises. If one could differentiate between those two types of invest-

¹ Variables GU and dYR turned out to be insignificant for German FDI and were therefore dropped from the equations reported in Tables 12 and 13.

Table 14 - Impact of Total Labour Costs and Labour Productivity on Total Net FDI Inflows to DCs, 1977-1985: Regression Results(a)

	[1]	[2]
DIUSD(-1)	0.508** (6.7)	0.632** (6.5)
EXUS	-0.126** (-6.3)	-0.067** (-3.2)
GNP	0.115* (1.8)	0.188** (2.6)
dYR	3.675* (1.9)	3.045* (1.7)
TLCFOR	1.063** (4.8)	-
VADPFOR1	-0.202 (-0.9)	-
VADPFOR2	-0.478* (-2.0)	-
TLCFOR -(VADPFOR1 + VADPFOR2)	-	0.234 (1.0)
GU	49.58** (3.7)	19.42 (1.3)
\bar{R}^2	0.99	0.98
CHI SQ(b)	56.38 (44.77)	48.39 (33.92)

(a) Dependent variable: total FDI inflows from all source countries (DIUSD). Equations [1] and [2] as explained in the text. All variables, except GU, expressed in logarithmic terms. For the definition of variables and data sources, see the text and Appendix 1. **, * significant at 1 and 10 per cent levels. t-statistic in parentheses. Number of observations: 81. - (b) Critical value in parentheses.

Source: Own calculations.

ment, as it is possible, for example, in the case of US data, a different picture about the impact of labour costs on FDI might emerge. Furthermore, the results are based on a small number of countries and the choice of countries is biased towards Latin America. In this region, German FDI is mainly oriented towards serving the domestic markets of the host countries and the bulk of FDI is probably extensions of existing companies. Also, the time horizon is rather short, especially so with respect to changes in labour productivity.

4. Political and Economic Stability in Host Countries and FDI

a. A First Test: The Effect of Country Rating on FDI

Political and economic instabilities, especially if they are expected to continue in the future, tend to increase the problems of cost-benefit analysis by entrepreneurs and thus to discourage them from investments. In Chapter II, it was hypothesized that this applies no less to FDI. The economic determinants of FDI on which many former empirical studies focused (for an exception, see Edwards [forthcoming]) may even be overruled if host countries were characterized by serious political and economic instability. In practice, however, these uncertainties may often be of moderate magnitudes so that their effect on the decisions of foreign investors may not be as great. In this section, therefore, efforts are made to find out how far German FDI in DCs was affected by political and economic uncertainty, and whether the behaviour of German investors differed from that of other foreign investors.

In a first step, the impact on FDI of the host country's overall rating with respect to economic and political investment conditions is assessed. The purpose of investment climate indicators, such as the Business Environment Risk Index (BERI), is to provide foreign investors with some ready-made guidance for their investment decisions. Similarly, the country credit rating published regularly in the Institutional Investor magazine is one such guiding index for lending institutions. In the following, we refer to the latter index, since the intention of this study is to examine among other things if direct investors in DCs are guided by similar factors as lenders of loans to these countries. The

level of the country rating is considered as a "catch-all" variable for political and economic conditions in the countries concerned. Therefore, an attempt is made here first of all to estimate if an effective relation between FDI and this index exists or not, before evaluating the impact on FDI of specific variables that may reflect political and economic instability. The underlying regression equation is as follows, with a positive sign expected for IIMA:

$$[V.6] \quad FDI_{f1} = a_0 + a_1 IIMA + a_2 LSTOCK. \\ (+)$$

FDI_{f1} represents total FDI flows from all sources (MADIUS), total German FDI flows (MANEW, MAFITO),¹ and the change in German FDI stocks in manufacturing (MAFIMA) and trade (MAFICO), respectively.² IIMA represents the three-period moving average of the Institutional Investor's credit rating of host countries. Lagged FDI stocks (LSTOCK) are introduced as a controlling variable.

The results of the OLS regression estimates quoted in Table 15 demonstrate that the "average" investor cared for the overall credit rating of host DCs while taking investment decisions. As far as FDI from all sources (MADIUS) is concerned, the estimate shows the expected

¹ MANEW is based on transaction data, while MAFITO is calculated from the change in FDI stocks. For detailed definitions of variables and data sources, see Appendix 1.

² All dependent variables are expressed as three-period moving averages. Annual FDI flows and changes in stocks are typically marked by strong fluctuations not always justified by the political and economic variables considered in the following. The fluctuations can be partly attributed to valuation effects which may vary considerably from year to year. It is hardly feasible to take such valuation effects fully into account when specifying the estimation equation. To keep problems of misspecification to the minimum, it is attempted to smoothen short-term valuation effects by calculating moving averages. Moreover, short-term fluctuations of the dependent variables are due to the fact that annual FDI flows to individual host countries heavily depend on the decisions of one or a few large investors in many instances. Again, the noise which might be introduced into the estimates by such random effects can be reduced by the procedure applied here. Tests run for different specifications of some of the subsequent equations revealed fairly robust results. Therefore, it seems safe to assume that by using the standard approach of three-period moving averages in the following the coefficient values are not seriously biased.

Table 15 - Effect of Country Rating on FDI, 1980-1987: Regression Results(a)

Dependent variable	Const.	IIMA	LSTOCK(b)	\bar{R}^2	CHISQ(c)	Degrees of freedom
MADIUS	-243.3** (-4.41)	8.87** (4.71)	0.07** (6.82)	0.65	64.82 ⁺	171
MANEW	-0.22 (-0.01)	0.36 (1.24)	0.11** (12.89)	0.89	58.28 ⁺	96
MAFITO	-13.08 (-1.50)	0.53* (2.25)	0.05** (2.79)	0.38	77.37 ⁺	161
MAFIMA	-11.87 (-1.43)	0.28 (1.43)	0.04* (2.36)	0.33	75.91 ⁺	163
MAFICO	-4.04** (-2.89)	0.11* (2.32)	0.05 (1.03)	0.09	41.46 ⁺	150

(a) For the definition of variables, see the text and Appendix 1. **, * significant at 1 and 10 per cent levels. t-statistic in parentheses. - (b) Lagged thrice. - (c) If the chi-square statistic is significant at the 5 per cent level (denoted by "+"), corrected standard errors of the estimated coefficients are used to calculate the t-statistic given in parentheses.

Source: Own calculations.

positive sign of the coefficient of IIMA which means that FDI stocks reacted significantly to differences and changes of host countries' rating. Countries with a deteriorating rating in the 1980s experienced greater difficulties in attracting new FDI inflows. The pattern of German FDI is distinctly different. German investors hardly responded to an impaired rating in the 1980s by curtailing FDI. The most relevant coefficients of IIMA remain completely insignificant.¹

¹ An exception is observed for German FDI in trade (MAFICO). This is probably because the engagement in trade is of a more recent nature and took place only when former risk illusions had been destroyed. Furthermore, the mobility of capital may be higher in this sector than in mining or manufacturing where investments once undertaken cannot be easily moved out of a country. A significantly positive coefficient of IIMA is also reported for MAFITO. However, as argued in Chapters III and IV, MANEW is likely to provide a less distorted measurement of total German FDI flows.

b. The Impact of Political and Economic Instability

Having considered stability factors en bloc and found significant differences with regard to German and other investors, an attempt is made in this section to examine some relevant specific stability and instability variables in order to locate the sources of these differences. These variables are related to instability in the political regime, labour unrest, as well as economic instability with respect to inflation, exchange rates, capital formation and economic adjustment.

Instability of the political regime has been found as discouraging for FDI in many survey studies [US Department of Commerce, 1954; Basi, 1963; Reuber et al., 1973], but not always in econometric analyses based on cross section data [Green, 1972; Kobrin, 1976; Situmeang, 1978].¹ Schneider and Frey [1985] examined the impact of strikes and lockouts on FDI and defined this variable as an indicator of political instability. In the following, these two variables are considered separately, whereby the former is defined in terms of frequent changes of party or parties in power, riots or border conflicts.

As concerns economic instabilities, inflation is a sign of unsound management of the economy and may deter the inflow of FDI [Schneider, Frey, 1985]. If instability of exchange rates adds uncertainty to international trade, firms may try to avoid it by shifting to FDI [Harvey, 1989/90]. But they may also abstain from both trade and FDI depending on the importance of the market. Many studies have examined the impact of devaluation or revaluation on FDI (see Chapter II). This section does not consider the long-run trend in the value of a currency, but fluctuations of exchange rates as an indicator of instability of an economy.

Economic instability is also assumed to be characterized by low and volatile investment ratios. Capital formation is rather essential for the

¹ In a recent study covering total FDI flows in the 1971-1981 period, Edwards [forthcoming] concluded: "Although our results suggest quite clearly that political variables (political instability and political polarization) have played a significant role in determining FDI, they also show that these political variables have not been the most important ones for explaining these flows. In fact, the analysis of standardized estimates clearly shows that political considerations have been the least important of all the considered factors in determining FDI".

growth of an economy, which in turn raises its attractiveness for FDI (see Chapter II and also Goldberg [1972]). We examine, therefore, the relation between period averages of the ratio of domestic investment to GDP and FDI. This should give an idea of how far high investment ratios as a sign of economic stability have attracted FDI. Alternatively, the fluctuations of this ratio are considered as an indicator of instability of the host DCs and are entered into the regressions to find out their impact on FDI. The final independent variable is based on structural adjustment programmes of host countries. The success of these programmes is likely to raise the attractiveness of the host countries for foreign investors. However, direct information for all the selected countries is not available on this variable. Therefore, it is approximated by the sectoral and structural adjustment loans granted by the World Bank to these countries.

First of all, a cross-country analysis is carried out at the level of stock data for 1980 and 1986. The estimates for 1980 should enable us to discover the relation between the traditional engagement of foreign investors in the host countries, i.e. between "older" FDI that was undertaken before the debt crisis, and the said independent variables. The estimates for 1986 are expected to provide information if there were any changes in the behaviour of investors after repayment problems had become evident. This latter aspect of adjustment by foreign investors after the debt crisis is then examined further in detail on the basis of FDI flows to selected DCs in the 1980s. The set of independent variables has to be somewhat different in the two cases.

The regression equation underlying the cross-country analysis is as follows:¹

$$[V.7] \quad FDI_{st} = a_0 + a_1 PS + a_2 ER + a_3 INV + a_4 INF.$$

(-) (-) (+/-) (-)

FDI_{st} is measured in three different ways for purposes of this section. First, stock of total FDI from all sources in host DCs as a ratio of their GDP (SFDIG) is taken into account. The other two dependent

¹ The expected sign of INV depends on the specific definition of this variable; see the subsequent paragraphs.

variables are the ratios of the stock of total (SITOTG) and manufacturing (SIMANG) German FDI to GDP of host DCs.

PS, ER, INV, and INF denote instability of the political regime, exchange rate fluctuations, domestic investment and inflation, respectively (for detailed definitions and data sources, see Appendix 1):

- Instability of the political regime is characterized by frequent changes of party or parties in power, occurrence of riots or military coup d'états, or border conflicts. It is hypothesized to exercise a negative influence on FDI.
- ER is approximated in the estimates of Equation [V.7] not by the absolute value of the exchange rate but by its fluctuations because investors are likely to be more worried about them than about the exchange rate itself. Moreover, economic instability, which is to be examined in this section, can be better defined in terms of fluctuations of exchange rates. These are measured by the standard error of real effective exchange rates of host countries (FLRE).
- Inflation is calculated from annual changes of consumer price indices. INF is defined, first, in terms of period average price changes (AVIF) and, second, as the fluctuation of annual price changes (FLIF), i.e. the standard deviation of INF during the given period. In both cases, FDI is likely to be negatively affected with increasing values of these independent variables.
- Similar to INF, investment is measured, first, as the period average ratio of GDI to GDP. High investment ratios are indicative of high absorptive capacity of a country for FDI via growth of income, infrastructure, and supply of local inputs. Therefore, a positive relation between FDI and domestic investment (AVIV) is hypothesized here.

Second, high fluctuations of domestic investment ratios are assumed to reflect economic instability of a country and may have a negative impact on the supply of foreign direct capital. This variable (FLIV) is defined as the standard deviation from the average of annual investment ratios during the given period.

The OLS estimates of Equation [V.7] are presented in Table 16. The correlation matrix of the variables entering the regression is given in Table A1. The coefficients of the political instability variable PS are as expected negative in all the estimated equations, but significantly different from zero in only one case, i.e. total FDI from all sources

Table 16 - Impact of Political and Economic Instability on FDI Stocks, 1980 and 1986: Cross-Country Regressions(a)

Dependent variable	Const.	PS	FLRE	AVIV	FLIV	AVIP	PLIF	R ²	Degrees of freedom
SFDIG 1986	-15.78* (-1.77)	-6.116 (-1.45)	-0.008 (-0.09)	1.122** (3.80)		0.031 (0.79)		0.38	23
1986	14.77* (2.58)	-8.924 (-1.69)	-0.037 (-0.32)		0.326 (0.39)		0.007 (0.11)	0.00	23
1986	-15.99* (-2.08)	-6.014 (-1.67)		1.130** (4.34)		0.029 (0.83)		0.42	26
1980 (b)	2.98 (0.73)	-3.979* (-1.87)		0.207 (1.60)		-0.003 (-0.12)		0.12	30
SITOTG 1986	-0.530 (-1.45)	-0.082 (-0.46)	-0.005 (-1.26)	0.036** (2.95)		0.005* (2.67)		0.28	24
1986	0.53* (2.33)	-0.190 (-0.94)	-0.006 (-1.25)		-0.0006 (-0.02)		0.004 (1.62)	0.00	24
1986	-0.52 (-1.67)	-0.222 (-1.45)		0.035** (3.32)		0.004* (2.47)		0.27	30
1980(b)	-0.31 (-1.01)	-0.174 (-1.04)		0.024* (2.45)		0.003 (1.16)		0.11	32
SIMANG 1986	0.13 (0.56)	-0.114 (-1.17)	-0.005 (-1.12)	0.005 (0.76)		0.004** (4.30)		0.41	19
1986	0.33* (2.62)	-0.114 (-1.08)	-0.005 (-1.07)		-0.006 (-0.29)		0.004** (3.57)	0.30	19
1986	0.006 (0.03)	-0.139 (-1.56)		0.007 (1.02)		0.004* (4.23)		0.39	22
1980(b)	-0.07 (-0.32)	-0.129 (-1.24)		0.004 (0.50)		0.002* (1.73)		0.03	24

(a) For the definition of variables, see the text and Appendix 1. **, * significant at 1 and 10 per cent levels. t-statistic in parentheses. - (b) AVIV and AVIF calculated as averages for 1976-1980.

Source: Own calculations.

(SFDIG) in 1980. Whereas two of the remaining three coefficients of PS are nearly significant at the 10 per cent level in the case of SFDIG, they remain completely insignificant in the case of German FDI. German investors do not appear to be very impressed by political instability in their host countries. Even in 1980, when other investors did show a concentration on politically stable host countries, German FDI was not significantly related to the political instability variable PS. Moreover, no adjustment in this respect is to be observed from the estimates for 1986. Results of F-tests for comparable variables in Table 16 show no significant changes in the estimated coefficients between 1980 and 1986 for Germany (Table 17). This applies to both the entire equation (last column of Table 16) and the individual coefficients. There is only one

Table 17 - Results of F-Tests on 1986 and 1980 Coefficients of Political and Economic Stability Variables in Table 16(a)

Dependent variable	Restrictions imposed:				
	Constant 1986=1980	PS 1986=1980	AVIV 1986=1980	AVIF 1986=1980	Constant 1986=1980; PS 1986=1980; AVIV 1986=1980; AVIF 1986=1980
SFDIG	5.24**	0.25	27.30***	1.07	9.54***
SITOTG	0.41	0.02	3.12*	1.49	1.48
SIMANG	0.41	0.22	1.89	0.16	0.68
(a) Numbers in the table are F-ratios; ***, **, * significant at 1, 5 and 10 per cent levels; for the definition of variables, see the text and Appendix 1.					

Source: Own calculations.

exception, i.e. the average investment ratio (AVIV) in the case of the total stock of German FDI in relation to GDP of the host countries (SITOTG). Here the positive effect of this variable on FDI has strengthened during this period. In contrast to Germany, a structural break, i.e. a significantly different impact of political and economic instability between 1980 and 1986, is revealed by the F-ratio for the entire equation in the case of FDI from all sources (SFDIG).

The ambiguous result on PS is quite comparable with the results of other studies. As already said in Chapter II, empirical evidence produced by many other studies is mixed. Survey studies based on interview data usually believe that political instability discourages FDI. But other empirical analyses often fail to pick up this effect in regression estimates. This may be because investors have the opportunity to insure their direct investments against non-commercial risks. Guarantees against such risks are available now almost in every developed country. Since 1988 such risks can be covered also by the Multilateral Investment Guarantee Agency (MIGA). So it is possible that the influence of political factors on FDI flows has receded (this issue is analysed in Section V.6).

Evidence from the regression estimates of Table 16 on economic stability variables is poor, except on the domestic investment ratio. Do-

domestic investments raise income which in turn creates additional demand for foreign goods which may be supplied by exports and/or local production by foreign producers. This association between domestic investments and FDI is supported by the regression results. The average investment ratio (AVIV) is in most of the cases significantly associated with both total and German FDI. However, the evidence in favour of this hypothesis is weaker for German FDI in manufacturing than for total German FDI. This indicates that German FDI stocks in manufacturing are not focused on host countries characterized by high investment ratios and favourable future growth expectations. Further, investors were more concerned with the level of the average investment ratio than with its fluctuations. In none of the regression estimates, the coefficient of this latter variable (FLIV) was found to be significant. Investment ratios tend to be relatively stable and investors are likely to take this fact more into account than minor fluctuations which may take place from year to year.

Fluctuations of the real effective exchange rate of host countries as a determinant of FDI do not show any difference between the response of German and other investors. The estimated coefficients of this variable (FLRE) are not significant in any of the cases. Probably, opposing effects of high exchange rate fluctuations on FDI average out: While world-market-oriented FDI in host DCs may be discouraged because of uncertainty about international price competitiveness, export-substituting FDI devoted to the domestic markets of host countries may be positively affected to avoid exchange-rate induced uncertainty in bilateral trade relations.

As FDI data cannot be appropriately split up into a price and a quantity component this issue is difficult to investigate. Nevertheless, the result is not as unexpected as one might have thought in the first place. Similar investigations with export data, which can be decomposed into prices and volumes, also show no significant influence of real exchange rate variability [e.g. Gotur, 1985]. As FDI is driven by similar forces as exports, but with much longer adjustment lags, a significantly negative influence of exchange rate volatility is rather unlikely, es-

pecially so if the latter is measured by the variance of data at a relatively high frequency.¹

As far as inflation is concerned, the total stock of FDI from all sources was not significantly associated with the respective variables AVIF and FLIF. But German investments - total as well as manufacturing - were dependent on both the average rate of inflation (AVIF) and its fluctuation (FLIF) with an unexpected positive sign.² In addition to valuation effects, which might be due to inconsistent monetary and exchange rate policies inter alia, this result may reflect that German investments are trapped in debt-ridden Latin American countries where both the degree and fluctuation of inflation increased in the 1980s.

The above cross-country analysis was based on stocks of FDI in 1980 and 1986. It has revealed some differences between the reactions of German and other investors to political and economic stability variables. The following analysis is carried out on the basis of panel data on flows of FDI (at the sectoral level proxied by the change in FDI stocks) in order to elaborate on the behaviour of foreign investors in the 1980s, i.e., after the widespread payment problems of DCs had destroyed formerly prevailing risk illusions of foreign capital providers. The equation underlying the regression estimates is as follows:

$$\begin{aligned}
 \text{[V.8]} \quad FDI_{fl} = & a_0 + a_1 PS + a_2 MAPSL + a_3 SSL + a_4 MAINF + a_5 MASARWK \\
 & (-) \quad \quad (-) \quad \quad (+) \quad \quad (-) \quad \quad (-) \\
 & + a_6 MAINV + a_7 LSTOCK. \\
 & (+)
 \end{aligned}$$

As in Equation [V.7], PS denotes instability of the political regime. Additionally, MAPSL stands for the three-period moving average of political strikes and lockouts measured as the number of workdays lost per

¹ Perée and Steinherr [1989] investigated trade data with respect to its sensitivity to exchange rate volatility by taking medium-term uncertainty into account and found significant influences. A similar study on FDI is not available to the best of our knowledge.

² The difference in the behaviour of German and other investors with regard to their reaction to changes in the general price level disappears when the analysis is extended to flow data on FDI in the following paragraphs.

employed person. SSL represents structural and sectoral adjustment loans granted by the World Bank, lagged by two periods. MAINF is the three-period moving average of the rate of inflation. MASARWK is calculated as standard deviation of the monthly real exchange rates of host countries' currencies vis-à-vis the DM in a year. MAINV is the three-period moving average of the annual investment ratio, and LSTOCK is introduced as a controlling (lagged endogenous) variable. The expected signs of the coefficients are noted under the respective variables. The reasoning behind them has already been explained at the outset of this section.

The dependent variable FDI_{it} refers to FDI flows from all sources (MADIUS) to the selected DCs,¹ total German FDI outflows (in the alternative definitions of MANEW and MAFITO), and the change in German FDI stocks in manufacturing (MAFIMA) and trade (MAFICO).

The regression estimates of Equation [V.8] are based on pooled data for the period of 1980-1987. The results given in Table 18 largely confirm those of the cross-country analysis. This is especially so for PS that provides a direct measurement of instability in the field of political conditions in the host DCs. Again the coefficient of PS is, as expected, negative and proves to be highly significant for total FDI from all sources. The response pattern of German investors is distinctly different. In this case, the coefficients of PS are completely insignificant which underlines that, even in the 1980s, German investors were not very much concerned about instability of the political regime of host DCs.

The picture is less straightforward as concerns the second independent variable incorporating a measurement of political instability in the host countries (MAPSL). As indicated by its negative and statistically significant coefficients, the reactions of German and other investors to strikes and lockouts were quite similar at the level of total investments (MANEW and MADIUS, respectively). However, when these investments are considered at the sectoral level, the coefficient of this variable has an unexpected positive sign for German FDI in manufacturing

¹ In this case, the independent variable MASARWK had to be left out in the regression estimates because exchange rate fluctuations were defined on a bilateral basis against the DM.

Table 18 - Impact of Political and Economic Instability on FDI, 1980-1987:
Regression Results of Pooled Data(a)

Dependent variable	Constant	PS	NAPSL	SSL _{t-2}	MAINP	MASARWK	MAINV	LSTOCK		R ² CHISQ(b)	Degrees of freedom
MADIUS	-248.01* (-2.11)	-158.41** (-2.83)	-1.61** (-5.84)	-56.33 (-1.05)	0.25 (0.66)	-	16.39** (3.38)	0.05** (6.47)	0.52	53.43 ⁺	90
MANEW	-14.20 (-0.40)	5.15 (0.40)	-0.15* (-1.90)	1.13 (0.07)	0.15 (1.41)	-0.26 (-0.27)	0.22 (0.24)	0.25** (7.96)	0.71	40.57 ⁺	46
MAFITO	-48.15* (-2.23)	-13.24 (-1.27)	0.02 (0.23)	19.36 (1.46)	-0.04 (-0.28)	-1.79* (-1.77)	2.25** (3.29)	0.05* (1.94)	0.14	17.73	77
MAFINA	-23.20* (-1.72)	-3.14 (-0.52)	0.15** (2.98)	16.14* (2.12)	-0.05 (-0.51)	-0.11 (-0.17)	0.88* (2.05)	-0.03 (-0.13)	0.10	14.09	71
MAFICO	-9.82** (-2.71)	-0.05 (-0.04)	0.01 (0.31)	0.63 (0.31)	-0.002 (-0.10)	-0.29* (-1.83)	0.36** (3.43)	0.11* (2.18)	0.24	21.27	58

(a) For the definition of variables, see the text and Appendix 1. - (b) If the chi-square statistic is significant at 5 per cent level (denoted by "+"), corrected standard errors of the estimated coefficients are used to calculate the t-statistic given in parentheses. **, * significant at 1 and 10 per cent levels.

Source: Own calculations.

(MAFIMA).¹ To some extent, follow-up investments might have been required to maintain formerly established production facilities. They are comparable to defensive lending to debtor countries with a considerable debt overhang insofar as follow-up investments reduced the threat of sovereign measures against existing FDI (Krugman [1988]; see also Section V.5). Furthermore, an argument may be raised along the lines discussed in Section V.3: Strikes and lockouts give rise to an increase in labour costs, thereby inducing substitution effects which result in a higher optimal capital stock.

Among the economic stability variables, SSL was not included in the cross-country estimates of Equation [V.7] because structural and sectoral adjustment loans granted by the World Bank are of recent history (1980 onwards) and are not likely to have influenced the accumulated stock of FDI. But the impact of SSL on FDI flows in the 1980s has also remained fairly weak. There is one exception: the coefficient of SSL is in accordance with the hypothesis significantly positive in the case of

¹ As concerns FDI in the trade sector (MAFICO), the regression estimates may indicate that the German investments remained largely untouched from labour unrest.

German FDI in manufacturing. Thus, the hypothesis cannot be rejected that the attractiveness for German manufacturing investment improves after host countries have agreed to implement policy changes which are a precondition for adjustment loans granted by the World Bank. However, a similar relationship is neither observed in the case of total FDI from all sources (MADIUS) nor in the case of German FDI in all sectors (MANEW, MAFITO) and in trade (MAFICO).

Regarding the remaining economic stability variables, strong similarities prevail between the estimates presented in Tables 16 and 18. Foreign firms are generally encouraged to invest in DCs which have a high investment ratio (MAINV). The inflation variable does not prove significant in any of the estimates presented in Table 18. The results for the exchange rate variable (MASARWK) are highly ambiguous. The estimated coefficients have the expected negative sign and are significant in the case of MAFITO and MAFICO, whereas they remain completely insignificant in the case of total German FDI flows (MANEW) and German FDI in manufacturing (MAFIMA). The ambiguous results for MASARWK are consistent with a regression analysis of US FDI by Harvey [1989/90]. He found the effect of exchange rate fluctuations on international transactions (both capital flows and trade) intriguing: most notably, his results on FDI differed from industry to industry. Industries which require relatively longer time to complete the orders and thus have more problems in finding suitable hedging facilities are likely to be more sensitive to exchange rate risks than industries which can complete their orders quickly.

The results of the estimates of Equation [V.8] for the sample countries divided according to their attitudes towards FDI (restrictive, less restrictive, favourable) did not yield clearcut results in the sense that the independent variables have consistently positive or negative signs (Table A2; the classification is based on the evidence presented in Chapter IV). Nonetheless, some of the group-wise regressions tend to support the conclusions based on earlier regression estimates, but the differences between the country groups remain small. To some extent, the grant of structural and sectoral adjustment loans to DCs with restrictive attitudes towards FDI improves the attractiveness of these countries for FDI; the coefficients of SSL are completely insignificant for other host countries. Similarly, economic instability as reflected by ex-

change rate fluctuations has some negative effect on German FDI in countries with relatively restrictive attitudes, while the evidence on MASARWK is again highly ambiguous for countries with favourable attitudes towards FDI. In contrast to this, if anything, a negative impact of political instability on German FDI is revealed for the less restrictive group (PS and MAPSL) and the group with favourable attitudes (PS). This indicates that a relatively open-door policy for foreign direct capital is useful only if investors can be sure that it will not be disrupted by a radical change in government or in government policy.

c. Summary

The main aim of this section has been to analyse the effect of political and economic instabilities of host DCs on their attractiveness for FDI, especially during the 1980s which have been marked by the international debt crisis. This is done at two different levels. In the first instance, an overall index of political and economic conditions in host countries has been used, i.e. the country credit rating by the Institutional Investor magazine. The results indicate that investors of direct capital as a whole have concentrated their investments on countries offering favourable economic and political conditions. They have reacted fairly strongly by limiting their engagement in countries with a deteriorating country rating. In sharp contrast, German direct capital has not been concentrated in host countries with a favourable rating, and German investors have been reluctant to respond to the changes in economic and political conditions in the past decade.

Similar differences between German and other investors have been observed at the second stage of our analysis. Here, individual indicators of political and economic instability of host countries have been examined in a cross-country analysis based on stock data and in relation to panel data on FDI flows. While investors of direct capital as a community were scared by frequent changes of governments, riots or border conflicts in host DCs, the German investors in general have not been impressed significantly by such political factors in their investment decisions. In this regard, their behaviour has remained unchanged after the debt crisis.

Only when political instability was defined in terms of strikes and lock-outs, German FDI as a whole as well as in the manufacturing sector proved to be sensitive.

Among the economic stability factors, the differences between German and other investors were somewhat less pronounced. In both cases, high investment ratios of host countries proved to be the best guide for FDI. One could probably conclude from it that what is right for domestic investors is generally found useful also by foreign investors.

5. Debt Overhang, Sovereign Risk and FDI

a. Major Hypotheses

After risk illusions had been destroyed with the eruption of the debt crisis in 1982, the sovereign risk of capital transfers to DCs has become evident. Default on sovereign obligations is not only a matter of the capital recipients' ability to service external liabilities, but also of their willingness to pay [Eaton et al., 1986]. A substantial range of discretion accrues to the capital recipients after the contract is concluded and the capital is transferred. The honouring of contractual obligations becomes a matter of cost-benefit calculus. Rational capital providers will consider the recipients' incentives to default wilfully when deciding on whether or not further capital transfers are granted.

Sovereign risk has been discussed intensively in the literature on international debt [e.g. Eaton, Gersovitz, 1981; Sachs, 1984; Nunnenkamp, 1989a; Stüven, 1988]. But it has been largely neglected in studies on the determinants of FDI (for an exception, see Juhl [1982]). The same applies to the well-known debt overhang argument [Krugman, 1988; Sachs, 1989]. The presence of an inherited debt sufficiently large that creditors do not expect with confidence to be fully repaid is said to create strong disincentives for foreign creditors to continue new lending and for the borrowing countries to implement growth-oriented adjustment programmes. Domestic investment would be discouraged if foreign creditors enjoyed all or most of the benefits from increased future output [Sachs, Huizinga, 1987]. New voluntary lending is discouraged because the market valuation of additional transfers would become identical to the

value of existing claims [Dooley, 1986]: the higher the current discount on inherited debt, the higher the immediate capital losses of new creditors. Interestingly enough, it is hardly discussed in the literature that FDI may be subject to similar disincentive problems.

Because of the neglect of sovereign risk and debt overhang arguments with respect to FDI, recent proposals to replace debt by FDI - and thereby reduce foreign debt problems of DCs - are based on rather naïve (implicit) assumptions on the substitutability of different types of capital transfers to sovereign capital recipients. Arguably, many heavily indebted countries are not only constrained in terms of new lending. The prevalence of sovereign risk and the existence of a debt overhang may also result in constraints in terms of FDI inflows. It has to be analysed whether the decisions of foreign investors are affected in a similar way as the decisions of foreign creditors, in order to assess the chances to alter the external capital structure of Third World economies towards increasing the proportion of FDI.

Against this background, the set of variables that may determine FDI is extended in two respects in the subsequent paragraphs. First, it is analysed whether the existence of a debt overhang discouraged FDI in the 1980s. This is likely to be the case if the profitability of new foreign investment was impaired along the lines hypothesized by the debt overhang argument. Foreign as well as domestic investors may expect that investment-induced incremental income will be subject to 100 per cent taxation in order to service the inherited debt [Sachs, 1989].¹ Under such conditions, investors will refrain from productive investment, and the degree of a debt overhang should be strongly and negatively related to FDI.

This reasoning has been challenged recently, however [Krueger, 1989]: The Sachs model is built on the unrealistic assumption that a country is a single entity and countries service debt to the extent that

¹ As argued by Dooley [1990], a debt overhang generates private incentives to replace productive investment by non-productive activities. If the collective contractual claims on future output exceed what is available, the government will have to impose a distribution. Hence, Dooley expects investors and other factors of production to position themselves in order to extract future income from one another. Resources will be wasted as long as the expected return on rent seeking exceeds that on productive investment.

they can. In the real world, the earnings that stem from productive investment of a private investor cannot automatically be appropriated to service debt. Insofar as a debt overhang constitutes a tax on new investment, it does so through the imposition of higher marginal tax rates, not through 100 per cent taxation of incremental income. Arguably there are also positive effects of a debt overhang on FDI flows. This may be especially so in host countries offering subsidies for FDI, e.g. tax and tariff exemptions, in particular in the context of debt-equity swaps (see also Section VI.2). Foreign investors take advantage of high discounts on debt by buying loans in the secondary market and receiving the face value of these loans (or somewhat less) in the host country's domestic currency. The effect of debt-equity swaps on overall FDI flows of course depends on the degree to which this instrument is used, and on whether FDI undertaken in the context of swaps is additional or would have happened anyway.¹

Second, it is evaluated whether the risk of wilful default on external debt has its counterpart in the risk of expropriation and wilful restrictions on profit and capital remittances in the case of FDI. Sovereign risk arguments suggest that foreign investment is negatively related to the potential benefits host countries may reap from sovereign measures against FDI, and positively related to the potential costs of such a behaviour. Sovereign risk is expected to be the higher, and therefore the flow of FDI to be the lower, the more resources the host country may save by nationalizing foreign property or by not transferring dividend payments. Potential costs of sovereign measures may represent a safeguard for foreign investors, thereby encouraging FDI. Such costs are related to the sanctions which may be imposed by foreign investors and their governments. By contrast, the counterhypothesis suggests a loose, if any, relationship between the potential benefits and costs of sovereign measures and FDI: (i) Host countries may succeed to attract FDI by committing themselves against imposing restrictions on FDI; and

¹ Bergsman and Edisis [1988, p. VI] are fairly optimistic as concerns additionality; they conclude: "In our sample, about one-third of the investments made by MNCs using swaps would not have been made unless a swap program was available, and another ten per cent of those investments were made sooner or for larger projects than they would have been without the program".

(ii) sanctions may be difficult to enforce so that they are not credible [Bulow, Rogoff, 1989].

Similar to Section V.4, the hypotheses on the impact of a debt overhang and sovereign risk variables on FDI are tested by contrasting the decisions of German investors with those of the "average" foreign investor, i.e. evidence for total FDI from all sources. It is also assessed whether the reaction of German investors differed with respect to major sectors in which FDI took place. The host country sample is as in the previous section. If not otherwise stated, pooled cross-country OLS regressions are run for the 1980s. Data sources and detailed definitions of variables are given in Appendix 1.

b. The Impact of a Debt Overhang

Data problems render it difficult to empirically assess the impact of a debt overhang on FDI. Secondary market notations for DC debt (SMN) may provide the best indicator of the existence and degree of a debt overhang, notwithstanding that the amount of loans traded in secondary markets is still fairly low for many debtor countries. But such information is only available for 16 countries out of the overall sample. Moreover, comparable data on SMN are collected only since 1986. Hence, the number of observations is dramatically reduced to less than 30 (Table 19). This is likely to result in a serious selection bias. Therefore, we decided to construct another proxy indicating a debt overhang by referring to the Institutional Investor magazine's country credit rating. The use of this index is distinctly different from Section V.4, where the level of the country rating of all sample countries was considered as a "catch-all" variable for political and economic instability. Subsequently, only those sample countries are included in the estimates for which the rating was fairly favourable in 1980 ($II80 > 40$). Thereby, all those countries are excluded for which the engagement of private creditors has traditionally been negligible. Moreover, as explaining variable the change in the country rating since 1980 (DII) is considered. It is assumed that a strong decline in this rating reflects a considerable debt overhang.

According to the above reasoning, a considerable debt overhang is indicated by low figures of SMN and strongly negative values of DII .

Table 19 - Debt Overhang and FDI, 1981-1987: Pearson Correlation Coefficients(a)

		GRDI	GRINEW	GRITOT	GRIMAN	GRICOM
All countries	DII(b)	0.34** (154)	0.04 (111)	0.06 (163)	0.06 (153)	0.19** (153)
	SMN	0.08 (25)	-0.08 (12)	-0.21 (28)	-0.11 (26)	-0.10 (28)
Countries with strong FDI constraints(c)	DII(b)	0.18* (77)	0.03 (50)	0.13 (71)	0.13 (67)	0.28** (69)
	SMN	0.32 (10)	0.67 (4)	-0.20 (11)	-0.14 (10)	-0.35 (12)
Countries with weak FDI constraints(d)	DII(b)	0.46** (84)	0.01 (66)	0.14* (92)	0.06 (86)	0.23* (80)
	SMN	-0.13 (13)	-0.67* (9)	-0.12 (16)	0.04 (14)	-0.16 (14)

(a) For the definition of variables, see the text and Appendix 1. 1981-1987 for DII; 1986-1987 for SMN; **, * significant at 1 and 10 per cent levels; number of observations in parentheses. - (b) For countries with $II80 \geq 40$. - (c) $IF0 < 38$. - (d) $IF0 > 37$.

Source: Own calculations.

Consequently, the sign of both variables should be significantly positive if a debt overhang discouraged FDI in the 1980s. Table 19 provides a first indication that this was indeed the case for total FDI flows from all sources. The Pearson correlation exercise reveals that a decline in the country rating went along with lower values of GRDI, i.e. total investment flows over total FDI stocks. By contrast, the decisions of German investors were hardly affected by a debt overhang. The Pearson correlation coefficients are fairly low and most of them remain completely insignificant for GRINEW and GRITOT, i.e. total German FDI flows over total German FDI stocks.¹ This is all the more so for German investment in manufacturing industries of host DCs (GRIMAN). A clearly positive correlation between German FDI and the change in country rating is only to be observed for investment in trading activities (GRICOM).

¹ In the case of GRITOT, FDI flows are proxied by changes in stocks, while GRINEW is based on (gross) new investment flows (for details, see Appendix 1; for the relative merits and flaws of both measures, see Chapter IV).

A similar picture is revealed by the simple regression analysis of Table 20. FDI from all sources (DIUSD) and West Germany (all industries: NEW, FITOT; manufacturing: FIMAN; and trade: FICOM)¹ represent the dependent variable. GDP of host countries is introduced as a controlling variable to account for the size and income status of sample countries. The coefficient of GDP has the expected positive sign. DII is defined as in Table 19.

Traditionally, the investments of both the "average" foreign investor and German investors had been strongly concentrated in the host countries that ran into considerable debt problems in the 1980s (see Chapter III). In this respect, foreign creditors and investors behaved quite similarly. Apparently, both creditors and investors were subject to risk illusions so that they became highly exposed in capital-recipient countries that subsequently experienced severe repayment difficulties. The attitudes of foreign creditors and the "average" investor are also similar with respect to their reaction to a decline in country rating. The reluctance of creditors to provide fresh money to borrowers with repayment difficulties is well documented in the literature (e.g. Nunnenkamp, 1989a). Similarly, foreign investors were aware of impaired profitability of FDI due to stagnating markets or higher expected taxes in countries with a considerable debt overhang. Total FDI flows from all sources (DIUSD) in the 1980s were comparatively low when the host countries' rating deteriorated. In sharp contrast, German investors did not adjust to the emergence of a debt overhang by limiting their engagement. None of the coefficients of DII is significantly positive, irrespective of the sector in which German FDI took place.

It can be concluded that, on average, foreign creditors and investors responded in a similar way to debt problems in DCs. A debt overhang not only discouraged further lending, but also new FDI. Parallel behaviour of foreign capital providers renders it extremely difficult for recipient countries to change their external financing structure in favour of FDI. However, the evidence for German FDI in DCs in the 1980s points to remarkable differences between investors of different source countries in their reaction to debt repayment difficulties of host

¹ FDI flows proxied by changes in stocks in the case of FITOT, FIMAN and FICOM.

Table 20 - Debt Overhang and FDI, 1981-1987: Regression Results(a)

Dependent variable(b)	Const.	DII	GDP(c)	\tilde{R}^2	CHISQ(d)	Degrees of freedom
DIUSD	209.5** (3.23)	9.65** (2.84)	5.75** (5.61)	0.42	46.26 ⁺	143
NEW	-61.2* (-2.08)	-1.80 (-1.27)	0.84** (3.62)	0.36	56.07 ⁺	103
FITOT	-4.9 (-0.19)	0.43 (0.29)	0.33 (1.26)	0.04	40.03 ⁺	146
FIMAN	-12.4 (-0.47)	0.55 (0.41)	0.27 (0.99)	0.02	38.41 ⁺	132
FICOM	2.9 (0.82)	0.15 (0.78)	0.00 (0.17)	-0.01	14.89 ⁺	122

(a) For the definition of variables, see the text and Appendix 1. Dependent variable not equal "0"; regressions run for countries with $II80 \geq 40$; **, * significant at 1 and 10 per cent levels; t-statistic in parentheses. - (b) In US\$ mill. (DIUSD) and DM mill. (remaining variables) respectively. - (c) In US\$ bill. (in the case of DIUSD) and DM bill. (remaining regressions) respectively. - (d) If the chi-square statistic is significant at the 5 per cent level (denoted by "+"), corrected standard errors of the estimated coefficients are used to calculate the t-statistic given in parentheses.

Source: Own calculations.

countries. Most notably, German investors did not respond to the emergence of a debt overhang. In the subsequent section, it is analysed whether the responsiveness of German FDI was more pronounced with regard to sovereign risk variables.

c. The Impact of Sovereign Risk

Similarities between different types of private capital flows may also prevail with regard to the effect of sovereign risk on capital transfers. A recent study on the determinants of bank lending provided some support to the standard argument advanced by Eaton and Gersovitz [1981] that lending is negatively related to the benefits that sovereign debtors may realize by defaulting on external debt [Nunnenkamp, 1989b]. Ambiguous results were achieved as concerns the effectiveness of sanctions, i.e. the potential costs of sovereign measures against foreign creditors

[Nunnenkamp, 1989b; Eaton, Gersovitz, 1981; Bulow, Rogoff, 1989]: apparently, banks relied to some extent on the effectiveness of sanctions. However, a logit analysis on the determinants of default indicated that the threat of sanctions did not considerably influence the default decisions of DCs [Nunnenkamp, Picht, 1989].

The relevance of sovereign risk arguments with respect to FDI is evaluated in the subsequent paragraphs. Three issues figure prominently:

- It is analysed whether FDI was negatively related to the potential benefits host countries may reap from sovereign measures against foreign investors.
- The competing hypotheses on the effectiveness of sanctions which may be imposed by foreign investors and their governments are tested empirically.
- It is assessed whether industry-specific characteristics provided a safeguard against sovereign measures.

With regard to the benefits of sovereign measures against FDI two cases can be distinguished, i.e. unspecific and selective expropriation [Agarwal, 1976; Picht, Stüven, 1988]. The risk of **unspecific** expropriation (including wilful restrictions on profit and capital remittances) is related to general economic and political pressures in the host country. According to political-economy arguments, the host government benefits from a widely diffused expropriation policy that does not show a strong sectoral concentration if it thereby obtains support from groups lobbying in favour of such a behaviour or is able to collect considerable financial gains from expropriation [see also Schneider, Frey, 1985]. By contrast, the risk of **selective** expropriation is related to the technological diversity of FDI that renders industry-specific factors important for the expropriation decision. The risk of selective expropriation is strongly concentrated on particular industries. Selective expropriation is the more attractive, the easier it is for the host country to run foreign-controlled enterprises on its own, i.e., the less relevant FDI-specific advantages are perceived to be. The effect of both types of sovereign risk on FDI is analysed in turn in the following.

FDI-specific advantages that provide potential safeguards against sovereign measures by the host country may lie in technical, managerial or marketing fields, inter alia (see Section II.1.b.; see also Jodice

[1980]; Caves [1982]; Casson [1987b]). Ideally, the host government draws up a cost-benefit calculus for each foreign investment under consideration for expropriation, so that sovereign risk is firm-specific. For the purpose of our empirical investigation we have to assume, however, that one calculation is valid for all foreign investments of a certain type. Most realistically, this may apply to investments in a particular industry. Hence we refer to industry-specific rather than firm-specific characteristics. Moreover, the data situation only allows to construct fairly crude proxies indicating the technological and managerial standards applied in particular industries, relative to the host country's capabilities in overall manufacturing. Firm size (FSIZ), human-capital intensity of production (HC), and the share of gross fixed capital formation in output (TA) are considered as proxies in the subsequent regression analysis. FSIZ, HC and TA are calculated as three-period moving averages relative to the manufacturing average of the host country (for details and data sources, see Appendix 1).

The basic equation estimated for the period 1982-1987 is as follows:

$$[V.9] \quad \text{MAFI} = a_0 + a_1 \text{FSIZ} + a_2 \text{TA} + a_3 \text{HC} + a_4 \text{LSI},$$

(+) (+) (+)

where MAFI denotes three-period moving averages of the change in German FDI stocks in five manufacturing industries (chemicals, iron and steel, machinery, road transport equipment, electrical equipment), and LSI represents the lagged endogenous variable.¹ The coefficients of FSIZ, TA and HC should be positive if relatively high technological and managerial standards were perceived to be a safeguard against sovereign measures, and thereby encouraged further FDI. Regressions are run for the overall sample and subgroups of countries with different attitudes towards FDI by pooling time-series data for the five above-mentioned industries of the countries included. The sample is considerably reduced due to the fact that industrial statistics are highly deficient for many DCs.

¹ For the justification of using three-period moving averages, see Section V.4.

The empirical results presented in Tables 21 and A3 point to a limited and ambiguous effect of the risk of selective expropriation on industry-specific German FDI in DCs in the 1980s. This may be due to two major shortcomings of the analysis. As argued before, we have to refer to industry-specific rather than firm-specific characteristics. Moreover, industry-specific data on German FDI are only available for the five sectors listed above, in which Germany has traditionally held a strong competitive position in world markets (see also Section III.5). This may give rise to a selection bias: industries that are characterized by considerably smaller average firm size and lower human-capital intensity do not enter the analysis.

The expected positive relationship is only observed for human-capital intensity.¹ The estimates for all sample countries in Table 21 indicate that human-capital intensity was a relevant factor for German investors in deciding on their engagement in particular industries of host countries. This result also holds for all three subgroups of host countries with different attitudes towards FDI (Table A3). By contrast, firm size (FSIZ) and gross fixed capital formation (TA) have unexpected negative signs. The coefficient of TA becomes insignificant once other industry-specific characteristics enter the regression, while the coefficient of FSIZ remains significantly negative (Equation [4] in Table 21). The latter result may be due to investors' concerns about investments with high visibility being the first candidates for selective expropriation.

Unspecific expropriation is considered as a reaction to general economic and political pressures. The risk of unspecific expropriation is supposed to be the higher (and thus the flow of FDI to be the lower),

¹ It may be argued that the positive coefficient of HC is subject to simultaneity problems. Foreign-controlled enterprises in DCs frequently apply more human-capital-intensive technologies than domestic producers. Consequently, a considerable engagement of foreign investors in a particular industry may cause a higher human-capital intensity in this industry, rather than the other way round. Three arguments may be raised against this reasoning: 1) MAFI denotes changes in FDI stocks in the 1980s that are not necessarily particularly high where the inherited engagement of foreign investors is strongest; 2) in the case of severe simultaneity problems, FSIZ should also have a significantly positive sign since foreign-controlled firms are typically much larger than domestic firms; and 3) the relationship between HC and MAFI is not unambiguously positive, but remains insignificant in several cases.

Table 21 - Industry-Specific Characteristics and FDI, 1982-1987: Regression Results for All Countries(a)

	Const.	FSIZ	TA	HC	LSI	\bar{R}^2 CHISQ(b)	Degrees of freedom
[1]	2.70* (2.34)	-1.10* (-1.87)			0.22** (4.76)	0.47 43.96 ⁺	136
[2]	1.68* (2.34)		-0.79* (-1.80)		0.23** (3.93)	0.50 47.45 ⁺	104
[3]	-7.46** (-3.42)			6.42** (3.63)	0.19** (4.11)	0.41 71.19 ⁺	191
[4]	-2.61 (-1.20)	-3.12* (-2.40)	-0.40 (-0.70)	6.63** (2.94)	0.25** (5.70)	0.59 58.05 ⁺	94

(a) Dependent variable: three-period moving averages of German FDI in selected manufacturing industries of host countries (MAFI). For the definition of variables, see the text and Appendix 1. **, * significant at 1 and 10 per cent levels; t-statistic in parentheses. - (b) If the chi-square statistic is significant at the 5 per cent level (denoted by "+"), corrected standard errors of the estimated coefficients are used to calculate the t-statistic given in parentheses.

Source: Own calculations.

the more resources host countries may save by imposing sovereign measures on FDI and the lower the potential costs of unspecific expropriation. The potential benefits from unspecific sovereign measures are proxied by the resource outflow that is due to servicing existing FDI (PROUTG or PROUT),¹ or alternatively by the ratio of FDI stocks from all sources over host countries' GDP (BENST). The incentives to expropriate FDI in an unspecific manner may also increase when balance-of-payments pressure (PRESCU1 or PRESCU) or the foreign debt situation (UMS) are becoming unmanageable. PRESCU is calculated as the current-account balance over the host countries' GDP (resource outflows due to servicing FDI subtracted in the case of PRESCU1), and carries negative values in the case of deficits. The foreign-debt situation is captured by

¹ PROUTG and PROUT have negative values in the case of resource outflows; for details of calculation and data sources, see Appendix 1.

setting $UMS = 1(2; 3)$ if reschedulings with official (private; official and private) creditors took place, and $UMS = 0$ otherwise.

Potential costs of sovereign measures represent a safeguard for foreign investors and may thus encourage FDI. Two possible types of sanctions are considered in the following:

- TRDEP denotes the host countries' dependency on foreign trade relations (exports plus imports over GDP). The higher TRDEP, the higher the vulnerability of host countries if foreign capital providers and their governments threaten credibly to impose trade sanctions on countries taking sovereign measures against FDI.
- High values of TREND denote high variability of domestic absorption in the host countries. This may provide a safeguard for foreign investors against sovereign measures if FDI is considered by the host country as an income-smoothing and risk-sharing device and the threat of being cut off from future capital inflows in the case of sovereign measures is credible. On the other hand, however, foreign investors may perceive high variation in domestic absorption as indicative of economic instability of the host country.

The basic equations estimated on a pooled cross-country basis for the period 1980-1987 can then be written as follows (the signs of the sovereign risk variables expected from the above reasoning are given in parentheses)¹:

$$[V.10] \quad FDI = a_0 + a_1 BENST + a_2 PRESCU1 + a_3 UMS + a_4 LSTOCK$$

(-) (+) (-)

$$[V.11] \quad FDI = a_0 + a_1 PROUTG + a_2 UMS + a_3 TRDEP + a_4 LSTOCK$$

(+) (-) (+)

$$[V.12] \quad FDI = a_0 + a_1 PROUTG + a_2 PRESCU1 + a_3 TREND + a_4 LSTOCK.$$

(+) (+) (+/-)

The dependent variable FDI represents three-period moving averages of FDI flows from all sources (MADIUS), and German FDI flows to all sectors of host countries (MAFITO, MANEW), manufacturing (MAFIMA), and

¹ LSTOCK is introduced as a controlling (lagged endogenous) variable.

trade (MAFICO).¹ PROUTG, PRESCU1 and TRDEP are also calculated as three-period moving averages, while BENST and UMS represent lagged annual observations. For two reasons it proved impossible to introduce all explaining variables into one equation: First, BENST and PROUTG are considered as alternative proxies for the economic benefits that may be reaped from sovereign measures. Second, TRDEP is shown in Table A4 to be highly correlated with BENST and, though to a lesser extent, with PRESCU1 and UMS, as is TREND with BENST, UMS and TRDEP; in order to reduce multicollinearity problems, these variables enter the regressions alternatively.

The regression results for the overall sample of host countries point to an extremely weak influence, if any, of sovereign risk variables on FDI. Moreover, many of the few significant coefficients have an unexpected sign (Table 22). The coefficients of TRDEP and TREND add to the widespread scepticism about the effectiveness of sanctions that may be imposed against sovereign capital recipients refusing to service their external obligations. The potential benefits from sovereign measures against FDI (proxied by BENST and PROUTG) did not discourage FDI in the fairly heterogeneous set of host countries, irrespective of the home country of investors and the sector to which German FDI was devoted.

It is interesting to note that high current-account deficits (PRESCU1) went along with higher, rather than lower, FDI inflows from all source countries (MADIUS). Apparently, foreign investors did not expect high current-account deficits to induce sovereign measures against FDI. They rather considered high deficits as an indication of the host country's attractiveness for foreign capital. It may be surprising that this view was still prevailing in the 1980s when the balance-of-payments situation of many overindebted DCs proved to be unsustainable. However, exactly the critical balance-of-payments situation of these countries may have contributed to the negative sign of PRESCU1: Many highly indebted countries reduced current-account deficits by cutting imports dramatically and, less so, by promoting exports. At the same time, they suffered from a seriously impaired access to foreign capital. By contrast, DCs without considerable debt problems could still finance

¹ As before, MAFITO, MAFIMA and MAFICO denote annual changes in FDI stocks, while MANEW is based on (gross) new investment flows.

Table 22 - Sovereign Risk and FDI, 1982-1987: Pooled Regression Results for All Countries(a)

Dependent variable	Const.	BENST	PROUTG	PRESCU1	UMS	TRDEP	TREND	LSTOCK	R ² CHISQ(b)	Degrees of freedom
MADIUS [1]	-5.54 (-0.12)	353.4 (1.00)		-14.19** (-2.61)	-114.85** (-2.99)			0.086** (6.10)	0.54 ⁺ 72.19	184
[2]	280.81** (2.63)		-3.79 (-0.12)		-80.24* (-1.89)	-3.05** (-2.75)		0.079** (4.63)	0.63 ⁺ 42.31	91
[3]	-3.83 (-0.06)		-44.99 (-1.61)	-10.16* (-1.68)			-4.41 (-0.26)	0.083** (5.48)	0.58 ⁺ 53.59	97
MANEW [1]	20.88* (1.78)	-33.3 (-0.47)		-0.43 (-0.45)	1.42 (0.10)			0.117** (12.21)	0.89 ⁺ 116.32	104
[2]	59.28* (2.28)		6.52 (0.64)		-16.48 (-1.16)	-0.57* (-1.81)		0.116** (10.45)	0.94 ⁺ 58.67	40
[3]	2.51 (0.22)		50.30** (4.08)	0.09 (0.07)			13.99** (3.81)	0.115** (11.88)	0.93 ⁺ 65.05	47
MAFITO [1]	24.21* (2.30)	-126.6 (-1.63)		-1.38 (-1.55)	-13.89 (-0.92)			0.054** (2.76)	0.34 ⁺ 77.20	171
[2]	35.82 (1.27)		2.64 (0.44)		-22.59 (-1.26)	-0.31 (-1.01)		0.051* (2.51)	0.36 ⁺ 41.98	102
[3]	11.41 (0.86)		6.72 (1.11)	-1.85 (-1.16)			-0.28 (-0.07)	0.052** (2.67)	0.33 ⁺ 46.97	109
MAFIMA [1]	0.43 (0.05)	-30.5 (-0.56)		-3.77* (-2.42)	-14.61 (-0.84)			0.049* (2.47)	0.31 ⁺ 70.14	146
[2]	56.30 (1.55)		5.62 (0.69)		-29.32 (-1.31)	-0.70 (-1.47)		0.044* (2.19)	0.29 ⁺ 29.29	75
[3]	-32.34 (-0.94)		0.15 (0.02)	-8.07* (-1.68)			3.74 (0.75)	0.048* (2.41)	0.27 ⁺ 34.34	82
MAFICO [1]	2.95* (2.28)	-3.2 (-0.37)		-0.06 (-0.52)	2.23 (0.92)			-0.079** (-2.62)	0.07 ⁺ 28.38	132
[2]	11.73** (2.77)		0.09 (0.08)		4.17 (1.43)	-0.16* (-2.45)		-0.108* (-2.29)	0.13 ⁺ 47.22	83
[3]	9.12* (2.14)		0.16 (0.07)	0.27 (0.95)			-0.68 (-1.08)	-0.089* (-2.15)	0.02 19.12	89

(a) For the definition of variables, see the text and Appendix 1. **, * significant at 1 and 10 per cent levels; t-statistic in parentheses. Dependent variable = 0 included. - (b) If the chi-square statistic is significant at the 5 per cent level (denoted by "+"), corrected standard errors of the estimated coefficients are used to calculate the t-statistic given in parentheses.

Source: Own calculations.

relatively high current-account deficits and maintained or even improved their attractiveness for FDI.

This interpretation is consistent with the observation that FDI from all sources in the 1980s was negatively influenced by a considerable debt overhang (see the relationship between DII and DIUSG in Table 20) and lower current-account deficits, while the coefficients of both DII and PRESCU1 remain mostly insignificant in the case of German FDI. The above reasoning is also supported by the significantly negative sign of UMS (i.e. the proxy for the foreign debt situation of host countries) if MADIUS is to be explained. Again, the foreign debt situation is of less

importance in explaining total German FDI flows and German FDI in manufacturing and trade.

From the poor results for the overall sample of host countries it cannot be concluded that sovereign risk variables were of no relevance in explaining FDI in DCs. Though the regression results for subgroups of host countries with different attitudes towards FDI (Table 23) have to be interpreted with great caution, because the number of observations is considerably reduced, they suggest that differences in the impact of sovereign risk variables on FDI are averaged out in Table 22.¹ The differences are most pronounced with respect to BENST and PROUT, i.e. the two indicators of the potential benefits host countries may reap from sovereign measures against FDI (Table 23). PROUT shows the expected (positive) sign as far as total FDI flows from all sources (MADIUS) and total German FDI flows (MANEW) to host countries with restrictive attitudes towards FDI are concerned.² The evidence is mixed for host countries with less restrictive attitudes: German FDI flows continue to be negatively affected by increasing sovereign risk, while FDI from all sources is no longer discouraged by higher resource outflows due to servicing existing FDI. In sharp contrast to restrictive countries, a negative correlation between PROUT and FDI flows from West Germany and all source countries is reported for host countries with favourable attitudes towards FDI. This indicates that foreign investors were mainly concerned about sovereign risk in the restrictive country group. By contrast, a liberal treatment of FDI was considered as a credible commitment by the host country to refrain from sovereign measures in the future. A similar picture exists with regard to BENST. As expected, the coefficients of BENST are significantly negative for relatively restrictive

¹ The classification of sample countries into subgroups with different attitudes towards FDI is again based on information presented in Chapter IV. In Table 23, PROUTG is replaced by PROUT. Information on reinvested earnings is only available for a limited number of host countries. So reinvested earnings are excluded in the calculation of PROUT in order to maintain a larger number of observations. The correlation between PROUTG and PROUT is extremely high. For similar reasons, PRESCU1 is replaced by PRESCU in the group-specific estimations.

² Similar results are reported in Tables 23 and A5 as far as the impact of potential benefits from sovereign measures on MANEW and MAFITO is concerned.

Table 23 - Sovereign Risk and FDI Flows, 1982-1987: Regression Results for Country Groups with Different Attitudes towards FDI(a)

Dependent variable/ Criterion for classification	Const.	BNST	PROUT	PRESCU	UNS	TRDEP	TREND	LSTOCK	R ² CHISQ(b)	Degrees of freedom
RESTRICTIVE ATTITUDES TOWARDS FDI										
NAHEV										
FS ≤ 3 [1]	35.1 (1.37)	-619.6* (-1.80)		-14.32* (-1.74)	24.96 (1.07)			0.115** (13.90)	0.92* 32.84	27
FS ≤ 3 [3]	-50.9 (-0.57)		82.39* (2.66)	-7.66 (-1.17)			20.75 (1.57)	0.114** (10.39)	0.91 32.28	23
MADTUS										
FS ≤ 3 [1]	-48.5 (-0.32)	-4135.7* (-2.14)		-122.48** (-2.97)	-75.62 (-0.85)			0.097** (6.89)	0.65* 24.62	37
IPO ≤ 37 [2]	-49.1 (-0.28)		88.27 (0.74)		-130.02* (-1.91)	-1.27 (-0.47)		0.260** (4.65)	0.38 15.17	28
FS ≤ 3 [3]	-486.4 (-0.96)		393.52* (1.91)	-133.21** (-3.01)			69.90 (0.89)	0.081** (6.12)	0.60 29.17	31
LESS RESTRICTIVE ATTITUDES TOWARDS FDI										
NAHEV										
GU = 2 [1]	132.9** (4.70)	-398.5** (-3.81)		5.61* (1.87)	1.45 (0.07)			0.109** (10.41)	0.91* 38.61	33
3 < FS < 3.9 [2]	-30.3** (-3.19)		17.82** (3.96)		-16.68** (-3.09)	0.71** (3.76)		0.242** (4.54)	0.64* 31.09	41
GU = 2 [3]	-8.1 (-0.18)		22.82** (5.66)	-0.25 (-0.09)			22.36** (2.76)	0.107** (11.27)	0.92* 35.10	33
MADTUS										
GU = 2 [1]	143.4 (0.56)	250.7 (0.20)		-38.14 (-1.28)	-316.96* (-2.13)			0.086** (5.68)	0.44 18.48	35
GU = 2 [2]	1059.2* (2.27)		-280.43 (-1.69)		-335.66* (-1.91)	-14.11 (-1.57)		0.053* (2.44)	0.45 19.37	33
3 < FS < 3.9 [2]	264.7* (2.64)		-134.77* (-2.41)		-73.68 (-1.48)	-2.77* (-1.76)		0.083* (1.75)	0.47* 24.19	42
FAVOURABLE ATTITUDES TOWARDS FDI										
NAHEV										
GU = 3 [1]	-8.4 (-1.64)	111.0 (1.25)		-1.87* (-2.54)	-11.55** (-3.73)			0.090* (1.79)	0.72* 44.21	55
IPO ≥ 40 [1]	-25.9 (-1.57)	73.2* (1.80)		-4.42* (-2.54)	-14.07 (-0.37)			0.123** (10.40)	0.94* 36.12	33
GU = 3 [2]	3.8 (0.81)		2.00 (1.22)		-4.48 (-1.34)	0.16** (2.96)		0.015 (0.65)	0.19 12.15	41
FS ≥ 3.9 [3]	32.3** (4.99)		-3.81* (-2.03)	1.01 (1.47)			-5.30** (-3.08)	-0.057 (-1.34)	0.29 15.01	18
MADTUS										
GU = 3 [1]	14.0 (0.29)	1781.4* (2.29)		-3.30 (-0.59)	-88.74 (-1.21)			0.048 (0.94)	0.60* 54.75	63
FS ≥ 3.9 [1]	-32.1 (-0.46)	3282.7** (4.29)		-7.99 (-0.69)	-1.67 (-0.03)			-0.061 (-1.18)	0.73 31.60	37
GU = 3 [2]	120.6* (2.35)		-103.95** (-3.70)		-45.02 (-1.45)	-2.52** (-4.37)		0.143** (6.03)	0.63* 36.24	50
GU = 3 [3]	-43.1 (-0.89)		-80.02* (-2.61)	-2.07 (-0.40)			-12.05 (-1.34)	0.175** (6.40)	0.54 22.12	50

(a) For the definition of variables, see the text and Appendix 1. **, * significant at 1 and 10 per cent levels; t-statistic in parentheses. Only those regressions are reported that provide additional information to Table 22; equation numbers [1], [2] and [3] stand for the Equations [V.10], [V.11] and [V.12] as specified in the text, and are in accordance with Table 22. - (b) If the chi-square statistic is significant at the 5 per cent level (denoted by "4"), corrected standard errors of the estimated coefficients are used to calculate the t-statistic given in parentheses.

Source: Own calculations.

countries. But high FDI stocks over GDP induced even more FDI flows to host countries with favourable attitudes towards FDI. High values of BENST indicated the latter countries' attractiveness for foreign capital, rather than pointing to increasing sovereign risk.¹

The differences between country groups are less pervasive for PRESCU, UMS, TRDEP, and TREND. The results largely confirm those of Table 22:

- An unsustainable foreign debt situation discouraged FDI flows from all sources (MADIUS) to restrictive and less restrictive host countries. The picture is less clear for German investors. At an aggregate level (MANEW), the coefficients of UMS are mostly insignificant.²
- The significantly negative coefficients of TRDEP in the case of FDI flows from all sources to countries with less restrictive and favourable attitudes towards FDI may be due to import substitution strategies of host countries which provided a stimulus for export-substituting FDI. Not surprisingly, the existence of a negative relationship between TRDEP and FDI depends on whether or not the DCs that restricted imports allowed for export-substituting FDI. However, a similar relationship is not observed for MANEW, which is consistent with results presented in Section V.2.³ To some extent, German investors may have considered high trade dependency as a safeguard against sovereign measures.
- The group-specific results on TREND are ambiguous. The evidence suggests that FDI is not primarily considered as an income-smoothing

¹ The differences between country groups with different attitudes towards FDI with respect to the impact of potential benefits from sovereign measures on German FDI are less pronounced when assessed at the sectoral level (Table A5). The coefficients of BENST and PROUT remain largely insignificant as far as German FDI in manufacturing (MAFIMA) and trade (MAFICO) in countries with relatively restrictive attitudes towards FDI is concerned.

² The results on UMS reported in Table A5 point to highly ambiguous effects of an unsustainable debt situation on German FDI in particular sectors.

³ The same applies to MAFITO, i.e. the alternative proxy for total German FDI flows (Table A5). TRDEP remains completely insignificant for German FDI in manufacturing (MAFIMA). By contrast, the results on German FDI in trade (MAFICO) are similar to those reported for total FDI from all sources.

device so that high fluctuations in domestic absorption did not provide a safeguard against sovereign measures by host countries.¹

d. Summary

Debt overhang and sovereign risk arguments were shown to be relevant in explaining FDI in DCs in the 1980s. But the impact was not as strong as was to be expected. This holds especially true for German investors. They hardly responded to a debt overhang by limiting FDI, while this relationship was highly significant for overall FDI flows from all sources. Industry-specific characteristics did not play a major role in encouraging German FDI in selected manufacturing industries of host countries. This indicates that safeguards against selective sovereign measures against FDI, if any, are firm-specific rather than industry-specific.

The results on the effect on FDI of sovereign risk variables reflecting the potential benefits and costs of unspecific measures against foreign investors are ambiguous. The evidence on possible cost factors adds to the scepticism about the effectiveness of sanctions that may be imposed by foreign investors and their governments on host countries refusing to service their external obligations. The impact of the potential benefits that host countries may reap from unspecific sovereign measures is largely blurred when assessed for a large sample of countries with different attitudes towards FDI. Foreign investors were mainly concerned about sovereign risk in host countries with restrictive attitudes towards FDI. By contrast, a traditionally liberal treatment of FDI was considered a credible commitment to refrain from sovereign measures in the future. Host countries are thus well advised to liberalize restrictions on FDI that discourage foreign investors to maintain, not to speak of increasing, their engagement.

¹ From the results on German FDI in trade reported in Table A5, it can rather be concluded that high values of TREND are indicative of economic and political instability, thereby adding to the risk faced by foreign investors. As other variables reflecting sovereign risk, high fluctuations in domestic absorption discouraged FDI in trade mainly in host countries with restrictive attitudes towards FDI.

6. German Investment Guarantees and FDI

The analysis in the last two sections of this chapter revealed a relatively underdeveloped risk aversion of German investors in DCs, an outcome that might have taken some readers by surprise. This result can partly be ascribed to the regional pattern of German FDI. This explanation is, however, not fully satisfactory, as it does not explain the pattern of FDI flows in recent years. As mentioned in Section V.4, a greater portion of the risk an investor has to face in a DC is "non-commercial", a term that includes political as well as certain macroeconomic risks. These risks can be cheaply insured in Germany through the federal guarantee scheme, which drives a wedge between the overall country risk and the risk a German investor has to face. As the federal guarantee scheme is used relatively extensively by German investors in DCs, it seems obvious to investigate its impact on FDI flows in more detail. Before doing so, its structure and size is briefly described.

a. The Federal Guarantee Scheme

The principal idea of a public guarantee scheme is to offer coverage for certain non-commercial risks at a rate less than the true risk premium in order to alter the risk pattern of different FDI projects in favour of DCs. This is supposed to encourage investors to invest in a DC where they might otherwise not have gone, or invest a higher amount than they would without public coverage. Generally, the objective and justification for a public guarantee (as well as other forms of public support) is "additionality".

The German government has a rather pragmatic stance however. Additionality is not an explicit criterion, and the specific motivation of investors is not decisive for approval.¹ Federal guarantees are - as other policy instruments - generally available for all projects in all DCs as long as they fulfill certain standards: they must have a development impact and be environmentally acceptable. In addition to investment

¹ Applications for guarantees can only be approved if the project has been approved by the authorities of the host government.

guarantees, there is a whole set of promotional instruments containing bilateral investment treaties, financial support (partly in form of subsidized loans extended by the federal government and partly in form of market-oriented equity and loan commitments of a publicly-owned finance institution) and a whole battery of consultancy services.¹ The federal guarantee scheme is not only by far the most important promotion measure in volume terms, but also an important prerequisite to obtain public support from other sources, although it is neither a necessary nor a sufficient condition. On the other hand, federal guarantees are obtainable only for projects in DCs which provide a certain legal backing for the FDI. This is automatically assumed to be fulfilled if there exists a bilateral investment treaty between Germany and the host country. There are, however, countries which consider bilateral investment treaties as inconsistent with their sovereignty, especially in Latin America; nevertheless, there are publicly guaranteed projects in these countries.

The federal guarantee covers non-commercial risks only. These are: expropriation or nationalization without compensation; default of a project due to a failure of the host country to commit itself to contractual duties related to the project; destruction through war, revolution and other conflicts; official moratoria; and certain convertibility risks. The term of a guarantee is 15 years, which can be extended every 5 years successively. The project value is covered to 95 per cent, and the remaining 5 per cent is not allowed to be covered elsewhere.

Earnings can be covered up to 50 per cent of the project value. The fees are very low and cover part of the administrative costs only. Also, the fees are not differentiated with respect to different sectors, countries, types of risks or capital versus earnings. Applications are approved by a board of representatives from the responsible ministries. In the case of a default, the compensation for the German investor is financed out of the federal budget and the claim on the host country is transmitted to the German government. Cases of default are, however, very rare. In 1988, they amounted to 1 per cent of the total value of guaranteed projects. The host governments often pay at least part of the amount due after negotiating with the German authorities. If they ulti-

¹ The various instruments are reviewed in more detail in Gubitz [1990].

mately default, projects in their countries are excluded from further guarantees.

Until the end of 1988, about 2500 applications with a total value of DM 9.3 bill. for projects in 91 countries were approved [Treuarbeit, 1989]. Very few applications are finally rejected. The scheme has proven not to be quantitatively restricted in the past, as no application has been turned down because of budget limitations. The amount of new approved projects, which peaked in 1988 at DM 0.6 bill., is strongly influenced by a few big projects. According to the Ministry of Economic Affairs, roughly 20 per cent of German FDI in DCs is covered by a guarantee [von Würzen, 1989].¹

The regional pattern of guarantees shows a much heavier weight of African and Asian countries than does the general regional pattern of German FDI (Table 24). This is related to three factors: First, most bilateral investment treaties are established with countries of these areas. Second, guarantees mostly cover equity capital; some countries, however, rather attract FDI-related loans due to their repatriation practices (e.g. Brazil; see Chapter IV). Third, the regional pattern is af-

Table 24 - Regional Pattern of Federal Guarantees, 1988

Region	Approved projects		Total FDI stocks(a)
	number	value	
	percentage shares		
Africa	0.2	29.6	9.9
Latin America	3.7	32.0	47.3
Asia	2.8	27.9	12.7
Europe(b)	3.3	10.5	30.1
Memo item:	number	DM bill.	
Total	2557	9.3	29.2
(a) End of 1987. - (b) Spain included.			

Source: Treuarbeit [1989]; Deutsche Bundesbank [b].

¹ It is not quite clear how this number was calculated. Most likely it relates guarantee approvals to accumulated net FDI outflows.

fects by the age structure of German FDI; in Asia, where projects are much younger on average than for example in Latin America, the average size of a guaranteed project is considerably larger than in other regions.

The evidence indicates that the guarantee scheme is relatively widely used for projects in DCs. It will probably expand as a high demand for coverage in Eastern Europe emerged recently. This might also have a significant impact on the regional pattern of guarantees extended by the German government.

b. The Effect of Guarantees on FDI Outflows

The assumption underlying public support for FDI in DCs that - without guarantees - the risk perception of foreign investors is unreasonably high and private insurance markets do not work efficiently, may, of course, be debated. This is all the more so as the German guarantee scheme is at least potentially subsidized, although the actual subsidy might be low. Hence, the mere size of a guarantee scheme cannot be taken as an indicator for its success.

Once it is decided that public guarantees should be used to direct more FDI to DCs, their effectiveness depends on whether or not the amount of federal guarantees has a significantly positive effect on German FDI outflows to these countries. An answer to this question is unfortunately extremely difficult to obtain. One way often pursued is to ask the companies directly whether the coverage by a public guarantee played a significant role in their investment decision. The answer is almost invariably "no", as is revealed in many surveys covering this issue [see, e.g., Wallace, 1989; König et al., 1987]. This result is often used as an argument against public guarantee schemes. However, whatever one's opinion about public guarantees might be, the results from questionnaires filled in by the companies are not a suitable argument against them. This outcome rather indicates that the guarantees generally do not significantly alter market signals or incentives and that the risk pattern among different investment options is not fundamentally distorted. If the guarantees support FDI which is principally market-oriented, for example, they have, of course, only a limited incremental role and will not be rated "crucial" by the private companies.

In order to investigate in some more detail whether there would be less FDI in DCs if no public guarantees were available, a regression equation relating gross FDI outflows to DCs (NEW) with exchange rates (EXDM), host countries' nominal GNP, country credit rating (II), new approved guarantees relative to GNP (GARNEW), and the host countries' attitudes towards FDI (GU) was estimated.¹ As the amount of new approved guarantees increases with country risk, GARNEW is corrected for this effect by weighting it with the host country's credit rating; i.e., the higher the creditworthiness the higher the weight of the actual amount of new approved guarantees.² For the country credit rating the annual average of the index of the Institutional Investor was used, i.e., a higher country risk is associated with a lower credit rating. Data on approved guarantees were available for 17 countries, and the panel covers the years 1980-1988.³

$$\begin{aligned}
 \text{[V.13]} \quad \text{NEW} = & 0.61 \cdot \text{NEW}(-1) + 0.02 \cdot \text{EXDM} + 0.07 \cdot \text{GNP} - 0.16 \cdot \text{II} \\
 & (7.2) \qquad \qquad (0.4) \qquad \qquad (1.6) \qquad \qquad (0.6) \\
 & + 3.65 \cdot \text{GU} + 0.06 \cdot \text{GARNEW} \\
 & (0.2) \qquad \qquad (1.8)
 \end{aligned}$$

$$R^2 = 0.88; \text{NOB} = 153; \text{CHISQ} = 47.8 \text{ (critical value: 33.9)}$$

The regression result confirms earlier findings that an increase in the country risk measured by its credit rating does not lower gross FDI flows in the German case (Section V.4). The degree of openness of the host countries (GU) turned out to be insignificant. An increase in approved guarantees (relative to GNP and corrected for the risk effect),

¹ All variables, except GU, are expressed in logarithmic terms.

² As in most empirical investigations the results are subject to various objections. A major one is that an approved guarantee is by definition associated with an increase of FDI. In practice, however, approved guarantees and FDI outflows are not highly correlated, as the induced outflows are stretched over several periods and the approvals cover items that are not covered by FDI data.

³ These countries are: Argentina, Brazil, Chile, Colombia, Egypt, India, Indonesia, the Ivory Coast, South Korea, Malaysia, Mexico, Morocco, Nigeria, Peru, Singapore, Thailand, and Tunisia. The II index was not available before 1980.

on the other hand, significantly increases new German FDI in DCs.¹ This indicates that ICs can encourage their companies to invest more in DCs by offering public guarantees. In the case of the German guarantee scheme, the actual costs involved are relatively low, as defaults are rare. Thus, once it is decided that public support should be used to direct more FDI to DCs, source countries' policies might be more effective than host countries' policies especially if the subsidization of FDI in the latter involves high foregone tax revenues. Probably public guarantees are relatively cheap also in comparison to other policy instruments available in the source countries, especially if one keeps in mind that the additionality effects of equity and loan commitments of publicly owned finance institutions (such as the German DEG) are at least as little known as those of public guarantees.

7. Overall Assessment

Traditionally, German FDI in DCs has been strongly market-oriented. In a 1983 survey, German manufacturing companies, which were at that time also producing in a DC, selected "securing their foreign markets" most frequently as an argument for investing in the Third World [Braun et al., 1983]. Sales of their products within the host country and to third countries, mostly in addition to exports from the German parent company, played a much more important role than supplying the domestic market of the parent company. The survey backs an empirically well-established result, namely that market size, measured for example by GNP, is a major driving force for FDI outflows. This finding is also strongly supported by our regression analysis for the German case.

In addition, expected market growth is often considered to increase FDI in a country. The empirical evidence on German FDI is mixed. The actual growth rate of the host countries' real GNP as an indication for expected market growth did not have a significant effect on German

¹ An analogous relationship was also tested for liquidations. It turned out that a relatively high amount of publicly guaranteed FDI stock did not significantly reduce the amount of liquidations. The overall performance of that equation was, however, so poor that conclusions could not really be drawn from it.

gross FDI outflows and FDI stocks. The hypothesis is supported, however, when the ratio of GDI to GNP in the host countries is considered as a proxy for growth expectations.

Market size is not only a major driving force for German FDI but also for German exports. Actually, German FDI and exports show roughly the same regional pattern (see Chapter III). By analysing the interrelations between FDI and exports, no significant influence of FDI on exports could be found. In contrast to earlier findings on German exports to the United States, neither the hypothesis of a substitution nor of a growth effect could be supported by the results in the case of German exports to DCs. On the other hand, the empirical results reveal a strong additional impact of German exports on German FDI in DCs. The positive effect of an increase of the ratio of exports to the host country's GNP was almost as big as the effect of an increase of GNP itself. The level of trade barriers in the host DCs was an obstacle rather than an incentive for German FDI. This supports the view that import protection is an inadequate means to stimulate FDI in the longer run.

Another important motive to invest in a DC classified in surveys as very important by many German companies is low production costs. Nevertheless, this argument is hard to be verified empirically. Our attempts to investigate this issue are based on the assumption that it is mainly labour costs and labour productivity that determine production costs. For the relatively small country sample and the relatively short time period for which the data were available, the hypothesis that low labour costs attract German FDI was rejected in the present investigation. If at all, foreign labour costs had a positive impact on German FDI. This result can be attributed to the fact that the sample is biased towards host countries where market-oriented FDI took place mainly in the form of capital widening of existing companies, rather than by establishing new enterprises. As far as capital-widening is concerned, the result is quite plausible if the production technology allows for substitution between labour and capital.

As Germany itself is a country with 40 years of economic stability as well as little social and political unrest, one would expect German foreign investors to be particularly risk averse. But this was apparently not the case. In some contrast to foreign investors from other source countries, German investors have not focused their engagement on host

DCs characterized by relatively little economic and political instability. They have hardly responded to a deterioration in economic and political conditions in the 1980s by curtailing their engagement. This result is again in conflict with earlier survey reports which found political instability as discouraging for foreign investors (see the literature given in Section II.2.). The discrepancy can be attributed to two factors: First, German investors got stuck in economically and politically unstable host countries because, once undertaken, their strong engagement in the manufacturing sector of Latin American countries had long gestation periods and became immobile in the short run. Second, the influence of political risk on FDI flows has probably abated due to investment guarantee schemes in developed countries. Measures applied by the German authorities to reduce the risk for foreign investors were shown to have induced more FDI outflows to DCs.

Federal guarantees for German FDI in the Third World may also have weakened the impact of a debt overhang and sovereign risk arguments that provide another proxy for the relative risk of a host DC. In sharp contrast to foreign investors from other source countries, German investors hardly responded to a debt overhang by reducing their FDI. The relevance of sovereign risk variables depended on the host countries' attitudes towards FDI. Foreign investors were mainly concerned about sovereign risk in host countries with relatively restrictive FDI regulations. The results provided a first indication that credit-constrained DCs were typically also constrained in terms of FDI, although this applies to German investors to a lesser extent only. Under such conditions, the chances to restructure the external financing of problem debtors in favour of FDI would be rather bleak. This issue will be discussed in Chapter VI in some more detail.

VI. The Role of German FDI In External Financing of Developing Countries: Current Issues and Prospects

1. German FDI and Financial Restructuring

The results on the impact of sovereign risks and a debt overhang on FDI flows from all source countries to developing economies (Section V.5) strongly suggest that the overall chances to restructure the external financing of the latter countries in favour of FDI and at the expense of debt are rather bleak. An unsustainable foreign-debt situation rendered it difficult to attract further FDI. Credit-constrained DCs typically appear to be also constrained in terms of total FDI inflows. However, the reaction of German investors to debt problems was not as pronounced as the response of investors from other capital-exporting countries. According to the results presented in Section V.6, this was probably at least partly due to guarantees granted to foreign investors by the German government.

Differences are also to be observed between the behaviour of German foreign investors and that of international commercial lenders. In a recent study on the determinants of bank lending to DCs in the 1980s [Nunnenkamp, 1989b], it was shown that the lending behaviour of private creditors has changed markedly in recent years. While bank lending was largely unaffected by the domestic policies of debtor countries until the early 1980s, net transfers out of credit relations were clearly positively related to adjustment efforts of debtors subsequently.¹ For poorly performing debtors, including those which benefited from "involuntary lending" by concerted credit extension, it was hardly possible to maintain, not to speak of increasing, positive net transfers. Moreover, the behaviour of commercial banks was influenced by sovereign risk considerations. Increasing default risks added to private creditors' reluctance to provide additional transfers:

¹ As policy and performance variables, the investment ratio, the share in world export markets, the real effective exchange rate, and the government budget deficit were considered in the first place.

- Net transfers declined significantly with increasing potential benefits to be reaped by debtors from wilful default.¹
- Although the evidence on potential costs of default is not as clearcut, creditors relied to some extent on the threat to impose trade sanctions and a credit stop on defaulting debtors.²

Although there are also similarities in the behaviour of international lenders and foreign investors from Germany and other source countries,³ the above-mentioned peculiarities in the risk attitudes of German foreign investors might be considered as indicating some potential for financial restructuring of debt-ridden DCs. The role of German FDI in the external financing of DCs and its prospects will be discussed in the following sections. First, it will be shown that German FDI is currently fairly small in comparison to commercial debt of most DCs, so that the immediate chances of financial restructuring by referring to German FDI are limited. Second, the contribution of debt-equity swaps in enhancing the chances for financial restructuring will be discussed (Section VI.2). Finally, the prospects for German FDI in DCs will be evaluated in Section VI.3 by referring to some major factors which might have an impact on the worldwide competition for these funds in the future.

Germany is one of the relatively important sources of FDI in DCs [OECD, b]. Nonetheless, German FDI does still not constitute a major vehicle which debt-ridden DCs might use to restructure their external financing presently. German FDI stocks accounted for less than 4 per cent of outstanding long-term bank debt in a sample of 16 major capital recipients in the Third World in 1988 (Table 25). The share was considerably higher than this average figure in countries where the need for financial restructuring due to acute debt problems was less pressing (Egypt and Tunisia). Among the major problem debtors, the stock fig-

¹ Potential benefits from default were proxied by total external debt outstanding as per cent of the debtor's GNP and debt service obligations as per cent of GNP.

² In some instances, net transfers were positively related to the debtors' dependence on short-term trade financing and the need for foreign credits for absorption-smoothing purposes.

³ Most notably, all three types of capital transfers to DCs (i.e. bank loans, German FDI flows and FDI from all sources) were positively related to higher investment ratios in the capital-recipient countries.

Table 25 - German FDI in DCs Relative to Their Foreign Indebtedness, 1980-1988

	German FDI stocks	Outstanding long-term bank debt	1/2	German gross FDI outflows	Long-term credit disbursements from commercial banks	4/5
	1988			1980-1988		
	DM mill.		per cent	DM mill.		per cent
	1	2	3	4	5	6
Argentina	1877	53462	3.5	1445	56417	2.6
Brazil	8997	118985	7.6	7309	112745	6.5
Chile(a,b)	129	23917	0.5	117	34239	0.3
Colombia(a)	205	10341	2.0	82	17783	0.5
Ivory Coast(a,c)	46	12130	0.4	116	20667	0.6
Egypt	472	2452	19.3	1476	5088	29.0
India(b)	368	29072	1.3	187	20064	0.9
Indonesia(a)	151	20401	0.7	749	37765	2.0
South Korea(a,c)	179	19906	0.9	153	63220	0.2
Malaysia(a,c)	255	14369	1.8	143	34312	0.4
Mexico(c)	2451	111556	2.2	1601	121807	1.3
Morocco(a,d)	75	5188	1.4	43	4110	1.0
Peru(a,d)	59	9621	0.6	47	11697	0.4
Thailand(a,c)	88	12613	0.7	81	27579	0.3
Tunisia(a)	143	1217	11.8	101	2538	4.0
Venezuela	260	49951	0.5	n.a.	34644	n.a.
(a) 1987 for Columns 1-3. - (b) Without 1986 for Columns 4-6. - (c) Without 1988 for Columns 4-6. - (d) Without 1987 for Columns 4-6.						

Source: World Bank [b]; Deutsche Bundesbank [unpubl. data base]; own calculations.

ures reveal a relatively high ratio of German FDI to bank debt only for Brazil.

The stock figures referred to so far even overstate the current role of German FDI in the external financing of DCs. Notwithstanding the decline in bank lending during the 1980s, the average ratio of German gross FDI outflows to disbursements of commercial credits in the period 1980-1988 was even lower than the ratio based on 1988 stock data. Most notably, this applies to all major problem debtors. Excluding the excep-

tionally high figure for Egypt, German FDI flows on average accounted for only 1.5 per cent of long-term credit disbursements from commercial banks.¹

Not only does German FDI currently play only a marginal role in the external financing of most DCs, there are also signs that the above-mentioned peculiarities in risk behaviour are rather due to a relatively longer time lag in the reactions of German investors than to persistently different risk attitudes. This would indicate a fairly small potential for financial restructuring of major debtor countries by referring to German FDI in the immediate future. Some evidence on the time lag in the reactions of German investors as compared to investors from other source countries is presented in Table 26.

The relatively slow response of German investors in redirecting FDI flows is most evident for countries such as South Korea and Thailand (Table 26). These countries are hardly credit-constrained and improved their attractiveness for foreign capital further by liberalizing FDI restrictions. FDI inflows from source countries other than Germany responded fairly quickly to this development. Already in the period 1983-1985, a significant increase of FDI flows from all sources (both relative to these host countries' GDP and as a share of total FDI flows to DCs) is to be observed. By contrast, German FDI flows reacted with a longer time lag. A somewhat strengthened engagement in South Korea and Thailand only took place in the late 1980s.

Though to a lesser degree, similar differences are revealed in Table 26 for the two most important problem debtors, i.e. Brazil and Mexico.²

¹ For the same country sample, this figure amounts to 30 per cent if FDI flows from all sources are related to long-term credit disbursements from commercial banks [IMF, a; World Bank, b]. This indicates that financial restructuring has taken place already to a significant degree at an aggregate level, but that German FDI played a marginal role in this respect only. However, also for FDI from all sources the ratio of FDI inflows to credit disbursements is particularly high for capital recipients without pressing debt problems (above 50 per cent for Colombia, Malaysia and Tunisia), while it is considerably lower for problem debtors (most notably so for the Ivory Coast, Peru and Venezuela where the ratio is below 5 per cent).

² Argentina is a clear exception to the typical pattern of a relatively stable investment behaviour in DCs of German foreign investors as compared to investors from other source countries. In Chile, the differences in the reactions of German and other investors were less pronounced.

Table 26 - Time Profile of German and Total FDI to Selected DCs, 1980-1988

Host country	Degree of credit constraints(a)	FDI inflows in per cent of GDP from		Host country's percentage share in total FDI outflows(b) of	
		Germany(c)	all sources	Germany(c)	all source countries
		1	2	3	4
South Korea	1				
1980-82		0.010	-0.002	0.6	-0.0
1983-85		0.009	0.078	0.6	1.0
1986-88(d)		0.011	0.353	1.1	5.3
Thailand	1				
1980-82		0.014	0.668	0.4	2.6
1983-85		0.008	0.774	0.3	4.1
1986-88(d)		0.015	0.987	0.5	5.6
Brazil	4				
1980-82		0.131	0.741	30.7	21.3
1983-85		0.180	0.880	29.9	23.8
1986-88		0.126	0.323	32.4	10.7
Mexico	6				
1980-82		0.042	1.108	7.9	25.8
1983-85		0.055	0.282	7.2	6.0
1986-88(d)		0.066	1.668	7.2	26.5
Chile	7				
1980-82		0.035	1.266	0.9	3.9
1983-85		0.034	0.547	0.5	1.2
1986-88(e)		0.015	0.498	0.2	1.0
Argentina	8				
1980-82		0.170	1.104	8.8	7.1
1983-85		0.053	0.729	2.7	6.1
1986-88		0.128	0.644	8.4	6.2

(a) The index on credit constraints ranges from "0" (lowest probability that a country is credit constrained) to "9" (highest probability). The classification is based on several indicators, e.g. the level and change in international reserves (in months of imports), the level and change of undisbursed credit commitments as a share of disbursements, and the amount of rescheduled debt in total debt. For details of calculation and the economic rationale, see Nunnenkamp [1989b]. - (b) Total FDI flows and total gross German FDI proxied by flows to about 25 major host countries. - (c) Gross FDI flows. - (d) Without 1988 in Columns 1 and 3. - (e) Without 1986 in Columns 1 and 3.

Source: IMF [a; d]; Bundesbank [unpubl. data base]; own calculations.

The relatively stable investment behaviour of German foreign investors is most pronounced in the case of Brazil; the share of German FDI in 25 major host DCs devoted to Brazil was constantly about 30 per cent when calculated for the three subperiods considered in Table 26. Similarly, the respective share of Mexico declined only slightly during the 1980s. In sharp contrast, foreign investors from all other source countries reduced their additional engagement in Mexico considerably immediately after the debt crisis erupted in 1982. This short-term reaction was later completely reversed; the increase of overall FDI inflows in the late 1980s may at least be partly due to immediate responses of foreign investors from source countries other than Germany to the economic policy reforms initiated by Mexico recently.

To summarize, the evidence presented in this section points to a fairly limited role of German FDI in the external financing of most DCs. Furthermore, the investment behaviour of German investors was relatively more stable than that of other foreign investors, i.e., the time lags in reacting to changes in investment conditions were somewhat longer. This indicates that the potential for short-term financial restructuring of DCs with pressing debt problems is only limited as far as German FDI as an alternative source of foreign finance is concerned. In the following section, it will be assessed whether this situation may be improved by formalized debt-equity swap programmes.

2. The Role of Debt-Equity Swaps

The debt crisis and the resulting reverse flow of financial resources from DCs in the 1980s have once again led many people in the creditor as well as debtor countries to pin their hopes on additional flows of FDI to solve the impasse between debt and development of a major part of the Third World. Debt-equity swaps are conceived as an important device of transforming this hope into reality in many heavily indebted countries. They are expected to reduce the foreign debt and to increase FDI inflows simultaneously. Though swaps were earlier used by Brazil (in the 1960s) and Turkey [Blackwell, Nocera, 1989; Kume, Ito, 1989], they emerged on the current international debt scene after some of the Latin

American countries, especially Chile, introduced formal programmes for such swaps in the early 1980s. In this section the recent developments and problems of debt-equity swaps are shortly summarized. Subsequently, it is assessed whether the introduction of swap programmes had a positive impact on German FDI. This exercise is subject to severe data constraints. Finally, the propriety of implicit subsidies granted to the foreign investors through these swap transactions is discussed.

a. Recent Developments and Problems

In 1988, there were nearly 20 countries participating or intending to participate in formal debt-equity swaps [Kume, Ito, 1989]. Eight countries for which the data are available in greater detail [DiLeo, Remolona, 1989], authorized debt-equity swaps amounting to the face value of nearly US\$ 13.5 bill. during 1985-1988. This was ten times more than the amount of debt-equity swaps transacted during 1981-1984 (Table 27). Most of this phenomenal growth was registered during 1988. As compared to their total outstanding debt to private foreign creditors as the suppliers of obligations on the secondary market, the value of debt-equity swaps was not dramatically high (about 10 per cent for the entire period 1981-1988 as a whole). But if the debt-equity swaps are put in relation to the net inflow of FDI, the former seem to have constituted a major channel for foreign investments in the debtor countries.¹ This poses the question if foreign investors were not willing to commit additional FDI funds outside debt-equity swap programmes once they were allowed to buy local currency at subsidized rates through these swap arrangements.

Recently, some debtor countries (e.g. Argentina, Bolivia and the Philippines) eliminated debt-equity swaps from their formal debt reduction programmes. As a result, the total amount of debt-equity swaps was expected to fall substantially from its peak level of 1988 [World

¹ According to OECD [d], FDI amounted to US\$ 6.6 bill. during the same period in the given debtor countries. This figure on FDI transactions is, however, not strictly comparable with the face value of swap authorizations. Inter alia, the difference is due to the discounts on the secondary market.

Table 27 - Face Value of Debt-Equity Swap (DES) Authorizations, 1981-1988(a)

	Swaps	Outstanding private debt(b)	DES/debt
	US\$ mill.		per cent
1981-84	1354	97101	1.4
1985	1380	117499	1.2
1986	1541	126703	1.2
1987	3517	148735	2.4
1988(c)	7010	157636	4.4
(a) In eight countries: Argentina, Bolivia, Brazil, Chile, Costa Rica, Ecuador, the Philippines, and Venezuela. - (b) Debt owed to private creditors excluding suppliers' credit at the beginning of the period; 1983 for 1981-1984; - (c) For some countries data do not cover full year.			

Source: DiLeo, Remolona [1989].

Bank, b). This decision was mainly due to concerns about adverse effects of the swaps on monetary expansion. The recent change in the attitudes of some DCs indicates that the reduction in foreign liabilities via swaps¹ might involve considerable costs. The net advantages of any particular exchange of debt into equity may prove to be positive or negative depending on several conditions:

- The inflationary effects of debt-equity swaps depend on whether local currency for the swaps is provided by the central bank by creating new money [see, e.g., Kume, Ito, 1989]. Chile, for example, avoided an expansionary monetary impact by financing swaps by issuing local bonds resold on the local capital market.
- Given the thin domestic bond market in the heavily indebted DCs as it is until now, financing of debt-equity swaps through capital markets raises domestic interest rates. This has two adverse effects on the economy of the countries concerned. First, private domestic investors are crowded out of the local capital market. Second, the burden of

¹ DiLeo and Remolona [1989] have estimated that foreign liabilities were reduced by 29 per cent of the face value of the swapped debts in 1988.

interest payments on the fiscal budget rises depending also on the previous amount of domestic debt of the government.¹

- The balance-of-payments effect of debt-equity swaps is not necessarily positive. Banks participating in swaps are typically interested in reducing or completely abandoning their engagement in the countries concerned. This may prove quite burdensome for the balance of payments of the debtor country in the short run as compared to the corresponding effect of some other forms of debt renegotiations and settlements.²

Whether the above problems or some misuses of debt-equity swaps (e.g. roundtripping) are so serious as to drop them entirely depends to a large degree on whether or not the swaps induce additional FDI. The extremely high ratios of authorized debt-equity swaps to FDI inflows point to substantial substitution effects, i.e., FDI undertaken in the context of swaps would have been undertaken anyway.³ The extent to which debt-equity swaps substitute the normal inflow of FDI is likely to depend on the type of investors. Bergsman and Edisis [1988] found that banks as direct investors in DCs bring additional FDI when they convert their debt into equity capital. But in the case of other multinational corporations this is more doubtful. Of all the debt-equity swaps examined by them, 33 per cent of those by the multinational non-banking corporations constituted additional FDI flows [ibid., p. 58].

¹ Again, Chile has been able to avoid this problem by tying the swap programme to the privatization of public enterprises.

² Debtor countries have tried to reduce the short-run balance-of-payments problems by forbidding the investors the transfer of dividends and capital in early years of investments.

³ Though the figures on authorized swaps [Schneeberger, 1989] and FDI transactions [OECD, d] are not strictly comparable, they may provide a rough indication. The ratio amounted to 0.96 in the case of Argentina, for example. It even exceeded unity in the case of Brazil, Chile and Mexico. Ffrench-Davis [1990] found a large displacement effect in the case of Chile.

b. Debt-Equity Swaps and German FDI

Severe data constraints render it difficult to evaluate whether debt-equity swap programmes had a positive impact on German FDI in DCs. Information on the participation of German foreign investors in debt-equity swaps of DCs is hardly available. Scattered evidence on Brazil and Mexico indicates that German investors played only a minor role:

- In Brazil, for which the relevant data for 1988 are available, debt-equity swaps undertaken by German participants amounted to only US\$ 28 mill., i.e. 2 per cent of all the formally swapped debts in that year [Banco Central do Brasil, 1989]. The United States (30 per cent) and Japan (15 per cent) accounted for the largest shares [Schneeberger, 1989].
- In Mexico the share of German firms was higher (8 per cent) than in Brazil [ibid.].

A rough indication of the effect of swaps on German FDI may be provided by testing Equations [VI.1] and [VI.2]:

$$[VI.1] \quad NEW = a_0 + a_1 NEW(-1) + a_2 GNP + a_3 CONV$$

$$[VI.2] \quad NEW = b_0 + b_1 NEW(-1) + b_2 GNP + b_3 DUM.$$

In Equation [VI.1], the impact of the total amount of debt conversions (CONV) on German gross FDI outflows is assessed. Lagged FDI outflows (NEW(-1)) and host countries' GNP are introduced as controlling variables. In Equation [VI.2], CONV is replaced by a dummy variable; DUM takes the value "1" for countries and years with a swap programme in operation, and "0" otherwise. The results presented in Table 28 are based on six Latin American countries and the period 1980-1988 for which the data on CONV were available [Institute of International Finance, 1990].

The overall statistical fit of the estimations is fairly good. All coefficients of NEW(-1), the lagged endogenous variable, and GNP have the expected positive sign, and most of them are significant. Also the coefficients of CONV and DUM are significantly positive, indicating that debt-equity swaps had a favourable impact on overall inflows of German FDI. This result may be somewhat surprising in view of the above-men-

Table 28 - Impact of Debt-Equity Conversions on German FDI in DCs, 1980-1988: Regression Results(a)

	Const.	NEW(-1)	GNP	CONV	DUM	\bar{R}^2 F	Degree of freedom
6 countries(b)	-5.98* (-1.99)	0.48** (4.15)	0.67* (2.36)	0.097* (2.38)		0.81 70.0	45
	-6.07* (-2.08)	0.47** (4.12)	0.66* (2.40)		0.85* (2.68)	0.82 72.6	45
5 countries(c)	-5.31 (-1.37)	0.51** (3.96)	0.60 (1.66)	0.104* (1.90)		0.81 58.2	37
	-4.87 (-1.29)	0.50** (4.02)	0.55 (1.54)		0.97* (2.27)	0.82 60.9	37
4 countries(d)	-6.32* (-2.35)	0.21 (1.67)	0.83** (3.16)	0.055 (1.53)		0.72 27.8	29
	-6.25* (-2.40)	0.21 (1.70)	0.81** (3.19)		0.53* (1.91)	0.73 29.3	29
(a) Dependent variable: German gross FDI outflows (NEW). For the definition of variables and data sources, see the text and Appendix 1. All variables except DUM expressed in logarithmic terms. **, * significant at 1 and 10 per cent levels. t-statistic in parentheses. - (b) Argentina, Brazil, Chile, Colombia, Mexico, and Peru. - (c) Without Mexico. - (d) Without Colombia and Peru.							

Source: Own calculations.

tioned scattered evidence on the participation of German foreign investors in swap operations in Brazil and Mexico. It may be argued that CONV and DUM capture the overall effect of recent economic reforms and adjustment efforts in Latin American debtor countries, rather than the effect of swap programmes which were implemented along the reforms. However, several arguments can be raised against this reasoning:

- The impact of debt-equity swaps is considerably smaller (DUM) or even insignificant (CONV) once those countries for which debt conversions were negligible or non-existent (Colombia, Peru) are excluded from the sample.
- The economic reforms implemented by Latin American problem debtors in the late 1980s can hardly be considered as sufficiently comprehensive and consistent to induce substantial inflows of additional German FDI. This is supported by the fact that the extension of structural

and sectoral adjustment loans did not have a significant effect on total German FDI flows in the 1980s (see the results on the variable SSL in Table 18).

- Mexico may represent an exception in the above-mentioned respect. However, the results are hardly affected if Mexico is excluded from the sample (Table 28), while the impact of CONV and DUM on German FDI should be considerably weaker if it were to be attributed to broader economic reforms rather than swap programmes.

On the whole, the simple regression analysis points to some additionality induced by debt-equity swaps as far as German FDI in Latin America is concerned. This does not mean, however, that debt-equity swaps are necessarily the best way to encourage FDI inflows. The above exercise cannot show the extent to which additional FDI inflows can be induced by reducing sovereign risk and implementing sound and stable economic policies, as compared to the effects of subsidizing foreign investors via swap programmes.

c. FDI Subsidization through Debt-Equity Swaps

Allowing the investors to avail a part or whole of the margin between face and secondary market values of debt has been interpreted as subsidization of FDI. Whether debt-equity swaps lead to subsidization of foreign capital depends on the extent to which the value of equity acquired through a swap transaction is higher than the price of the swapped debt plus the other charges paid by the investor. It would be unrealistic to equate subsidies with the discounts on debt existing on the secondary market. While the cost side of the transaction is easily determinable, the value of the equity cannot always be realistically assessed.¹

¹ Book values of the acquired assets may not always be relevant for defining the subsidy element because they usually do not depict the market valuations correctly. In many cases the acquired equities are not tradable internationally. Even if they were tradable domestically, the domestic prices are not quite relevant for ascertaining the subsidy element of the swap transaction. This is because in the case of the actual sale of the equities, receipts cannot be legally transferred out of the debtor countries, and at the black market rate the foreign exchange value of the sales proceeds of the equities are likely to be much smaller than at the official exchange rate.

Thus it is very difficult to quantify the proportion of subsidies involved in debt-equity swaps.¹ Nonetheless, it is reasonable to assume that the investors do realize some savings or subsidies in debt-equity swaps. Otherwise they would prefer to undertake their investments more directly and avoid some of the unpleasant bureaucratic formalities typically associated with swaps.

The subsidization of FDI inherent in debt-equity swaps may be regarded as a compensation for the increased risks in debt-affected DCs, which stem from low or even negative GNP growth, failed attempts to reduce high inflation, foreign exchange shortage, and other policy-induced uncertainties for investors. It takes time to correct policy mistakes and to restore the confidence of - foreign and domestic - investors, once the credibility of governments has been substantially eroded. During this transitional period, subsidization of FDI through swaps may be justified unless this is regarded as a substitute for economic policy reforms.² In order to avoid a waste of public resources, the subsidization of FDI through swaps should be limited to the degree which is necessary to compensate for increased risks in a transitional period. This may be achieved by introducing auction mechanisms into swap operations. Moreover, similar incentives should be granted to domestic investors. In this way, distortions due to unfair competition between foreign and domestic investors can be avoided. The adverse effects of debt-equity swaps on the government budget may be contained if DCs were prepared to sell public enterprises to private investors.

¹ Wulfken [1989, pp. 32 ff.] is of the opinion that subsidization of the investors arises only if the debtor countries are in position to buy back their debts on the secondary market as in the case of Bolivia.

² Subsidies available through debt-equity swaps are different from other investment subsidies in as much as they are realized by the investor already at the time of investment. In the case of other incentives, investors have usually to wait until their investments begin to yield income in order to benefit from the subsidies. Insofar, the effectiveness of subsidies granted in the context of swaps may be higher than that of other FDI subsidies (for a detailed discussion of the effectiveness of the latter subsidies in increasing FDI inflows, see OECD [a]).

3. Prospects of German FDI in DCs

The share of DCs in German FDI declined considerably in the 1980s (Table 29). This was also the general trend of their FDI from all sources [Tolentino, 1990]. On the other hand, DCs increasingly liberalized their policies towards FDI during this period, which should exercise a favourable effect on their FDI inflows, albeit with a time lag needed for investors' decisions. This effect might, however, be reduced or even reversed by an improved attractiveness for FDI of other countries, especially in Southern and Eastern Europe.

In this section, an attempt is made to assess the prospects of German FDI in the Third World in the coming years. This has been a subject of great concern and speculation in the developing and developed countries alike in view of the two recent internationally very important developments in Europe in which Germany occupies a central role. First, the plan of the EC to remove all barriers to the movements of production factors and products within the Community and create a single internal market by the end of 1992. It is feared, especially in the Third World, that this could divert some of the future investment funds to the competing member countries of the Community, viz. Greece, Portugal and Spain. Second, the countries of Eastern (and Central) Europe have shifted or are shifting from centrally planned to market economies. They are liberalizing their policies towards FDI in order to broaden and modernize their industrial base and raise their productivity and product quality. Here again it is suspected that the German investors would be under market pressure as well as under moral pressure¹ to devote considerable resources to these countries and that future German FDI in Eastern Europe including the Eastern part of Germany would go at the cost of the share of the rest of the world including DCs.

Although these apprehensions cannot be dismissed outright, it seems that the positive aspects of EC 1992 and of the downfall of communist regimes in Eastern Europe have been largely ignored from the point of view of FDI flows to the Third World [Hiemenz, 1991]. In the following paragraphs, both the pros and cons of these developments will

¹ Meetings of the German bankers with the German Bundeskanzler and exhortations of the German politicians to the business community point in this direction.

Table 29 - Regional Structure of German FDI, 1980-1988

	1980		1984		1988		Growth rate 1980-88
	mill. DM	per cent	mill. DM	per cent	mill. DM	per cent	
Total FDI(a) of which:	83261	100.0	141990	100.0	182360(b)	100.0	10.3
ICs	65182	78.3	114457	80.6	154123	84.5	11.4
United States	18260	21.9	43785	30.8	49686	27.2	13.3
EC(c)	28620	34.4	41868	29.5	72372	39.7	12.3
Remaining European							
ICs	12672	15.2	17888	12.6	18371	10.1	4.7
Canada	2316	2.8	4893	3.4	4855	2.7	9.7
South Africa	1460	1.8	2035	1.4	2158	1.2	5.0
Japan	999	1.2	1955	1.4	4065	2.2	19.2
Australia	831	1.0	1956	1.4	2527	1.4	14.9
New Zealand	24	0.03	77	0.05	89	0.05	17.8
DCs(a,d)	11565	13.9	17240	12.1	18988(b)	10.4	6.4
Far East(e)	1276	1.5	2257	1.6	2993	1.6	11.2
Latin America(a)	8955	10.8	12448	8.8	13999	7.7	5.7
Africa(f)	999	1.2	1644	1.2	903	0.5	-1.2
OPEC countries	2155	2.6	4179	2.9	1899	1.0	-1.5
East European countries	86(g)	0.1	46(g)	0.03	101	0.06	.
China	195	.	.

(a) Excluding FDI in offshore centres (Bahamas, Bermuda, Cayman Islands, Liberia, Netherlands Antilles, and Panama). - (b) Data for Bahamas have not been disclosed by the Bundesbank. - (c) Greece is included from 1981, Portugal and Spain from 1986. - (d) Excluding European DCs, OPEC members and China. - (e) Hongkong, Malaysia, the Philippines, Singapore, South Korea, Taiwan, Thailand. - (f) 1980-1983 including Canary Islands. - (g) Includes China.

Source: Deutsche Bundesbank [b, March 1988; April 1990].

be discussed in order to derive some conclusions on the chances of DCs in the competition for equity capital originating from Germany. First, we consider the EC 1992 programme and its likely consequences for FDI flows to DCs.

a. EC 1992

Any analysis of the effect of EC 1992 on DCs at this stage is bound to be conjectural because the final shape of the Community resulting from the completion of the internal market is not clear. Both of the bigger EC reports on internal market integration [Cecchini et al., 1988; EC Commission, 1988] do not even deal with the question of the EC's relations with the outside world. Trade and foreign investment as explained in Chapter V are related with each other. It is not yet known how the Community is going to harmonize the differing protection levels of its member countries by the end of 1992. Investment flows are going to depend partly on the fact whether the EC would look like a "fortress" for the third countries or be a very liberal trading partner [Grimm et al., 1989]. Notwithstanding the uncertainties about the future shape of the Community, the following points appear to be in order for dealing with the question posed here, viz. implications of EC 1992 for German FDI in DCs.

Due to the EC 1992 programme, the Community has become an attractive location for FDI from ICs, both members and non-members of the EC. Most notably, deregulation of the service sector is opening industries such as banking, insurance and telecommunications to FDI in the Community. This will reinforce the trend towards FDI in the service sector which has already become evident in the 1980s. It may be argued that the increased attractiveness of the Community for FDI will have an indirect negative effect on FDI in DCs in the future. However, FDI in DCs is still focused on the manufacturing sector (Chapter III). The significant differences in the sectoral distribution of FDI limit the adverse effects of higher FDI in the Community on FDI flows to the Third World. Moreover, most of the larger multinational corporations within and outside the Community have already taken into account the EC 1992 as a unified single market in their strategic plans. This impression is based

on surveys and data on mergers and acquisitions [Gittelman, 1990]. This means that a greater part of the effect of EC 1992 on FDI flows - as far as the static impact is concerned - may have already occurred. Whereas in 1982 about 30 per cent of the stock of the German FDI was located in the EC, it had increased to 40 per cent by 1988 (Table 29).¹ This was at the cost of DCs and many ICs including the United States, which has proved to be very attractive for FDI in the 1980s. The German example indicates that the peak of the negative effect of EC 1992 on FDI flows to DCs seems to lie in the past. The impact of the smaller and medium-sized firms which are still in the process of adjusting their structures to the internal market [Gittelman, 1990] may not be as great.

Insofar as the Mediterranean member countries (Greece, Portugal, Spain) compete in terms of their factor endowments and locational advantages with DCs, some of the FDI from Germany and other members of the EC may be diverted to the former at the cost of the Third World. This tendency is likely to be reinforced by the subsidies granted from the regional structural fund of the EC. However, some of the locational advantages (e.g. relatively low wages) of the Mediterranean member countries may disappear in the not too far future due to the "Social Charter" of the Community which will tend to equalize the wage differentials among the member countries. Moreover, the expected monetary union might lead to a revaluation of their currencies with its negative impact on the inflow of FDI.

The 1992 programme to create an internal market and to remove all restrictions on the movement of goods, services, capital, and persons is expected to add significantly to the GDP growth of the Community; optimistic observers forecast an increase of the annual growth rate of about one percentage point [Hiemenz, 1991]. In the medium term, the Community's GDP might increase by nearly 20 per cent. This would not only increase the EC's demand for imports from DCs, but also the financial resources of the member countries - *ceteris paribus* - available for FDI in the Third World. This positive aspect of the EC 1992 is often ignored

¹ The flow data for 1989 show a further increase to 63 per cent [BDI, 1990]. The share of the DCs in the net outflow of German FDI in 1989 declined to nearly 3 per cent. The figures quoted here are not strictly comparable with each other, because (i) the membership of the EC has increased and (ii) the sources are different.

in the current discussion. In view of the relation between trade and FDI, primarily the DCs that are integrated into the international division of labour and on which the EC's import demand is concentrated might benefit from larger FDI inflows.

Much of the effect of EC 1992 on German FDI flows to DCs will depend on the final trade policy of the EC, especially on local-content requirements and rules of origin. If the borders around the single market are kept open to imports from non-EC countries, international competition will force the German firms to look for low-cost locations from which DCs might benefit. But if the Community implements policies in favour of internal sourcing, the German investors shall be encouraged to divert their existing or future export-oriented FDI from the Third World to the member countries. Both local-content requirements and rules of origin are instruments used to influence the sourcing activities of multinational companies. If they are tightened, firms would be under pressure to favour locations within the Community for their foreign investments.

b. Economic Liberalization in Eastern Europe

There have been dramatic developments in Eastern Europe in the recent past. Not only has the Berlin Wall fallen but German unification has been realized within a period of less than one year since then. Especially Czechoslovakia, Hungary and Poland are implementing democratic and market-based political and economic systems in place of centrally planned communist economies. The Soviet Union and countries like Bulgaria and Romania are lagging somewhat behind in this respect but may proceed in the same direction. Although many of the basic data needed for a sound economic assessment are not available, the following points are expected to highlight some of the important aspects of emerging competition from Eastern Europe to the DCs for German FDI.

As shown before (Chapter V), German FDI has traditionally been market-oriented in the first place. This motivation may encourage a relatively strong engagement of German investors in East European countries. German investors regard these countries as their "home" market as Japanese do the countries in East Asia. Both geographically and culturally, East European countries are too near to Germany to be left over

to competitors from countries like Japan or the United States. If these markets cannot be served by exports due to a persistent lack of foreign exchange or any other reasons, German investors would have to move in with their direct investments. Even before the liberalization movement in these countries, Germany, of all the Western countries, occupied the leading position in terms of the number of joint ventures established there [FAZ, 1988].¹

A strengthened engagement in Eastern Europe may negatively affect German FDI in DCs if the overall resources at the disposal of German investors were limited. Limitations may arise especially in the field of trained managerial personnel which can be sent from the headquarters or subsidiaries of the investing firms to assume responsibilities in the new host countries at least in the initial stages. As far as financing of FDI is concerned, constraints on the supply of capital from internal as well as external sources may arise. Some of the German multinationals have reported lower profits in the second quarter of 1990. The real interest rate on the DM capital market has reached a very high level. Some crowding out of private firms by the public authorities due to their need for financing the German unification may occur. The public requirement for capital funds is likely to continue in the medium term. This is keeping the interest level high, which inherently tends to discourage the investors to seek external finance on the capital market. Also from a balance-of-payments point of view, the relative supply of capital in the united Germany will decrease because its export surplus is likely to go down. The industrial sector in the Western part of Germany experiences a very high rate of capacity utilization, and additional absorption of goods in the Eastern part will lead to increased German imports and/or reduced world market sales.

¹ The German Development Agency (DEG) is of the opinion that the German firms are already concentrating their attention on Central and Eastern Europe [Handelsblatt, 1990]. The share of East European countries in total German FDI increased in 1988 as compared to 1984 but did not reach the level of 1980 (Table 29). The period after 1985 is marked by an increase of the number of joint ventures established in this region by German firms. It increased from 1 in 1985 to 9 in 1987 and 19 in 1989. These figures are for Hungary and the Soviet Union. For others, the corresponding data from the same source are not available [FAST, 1990].

Also, export-oriented FDI in Eastern Europe may gain in importance if East European countries are granted further trade preferences by the EC. In this way, the trade preference margins of DCs in the EC will be eroded in relative terms, and the intensified competition on EC markets may negatively affect the export sales of Third World suppliers. East European countries will then become - *ceteris paribus* - more attractive locations for German FDI than DCs. This tendency may be strengthened by the increased flow of official financial assistance from German and international agencies, e.g. the European Bank for Reconstruction and Development.

Notwithstanding the ensuing competition from Eastern Europe, many DCs will be able to maintain their comparative locational advantages for German FDI (as well as for FDI from other sources) at least in the near future. The tremendous adjustment problems in Eastern Europe reduce the DCs' risk of impaired access to FDI in the short run:

- The high foreign indebtedness of some East European countries renders it difficult for them to raise private funds on the international capital market. According to the argument given in Section V.5, the debt overhang may also discourage the flow of FDI to these countries. As is the case for severely indebted DCs, the bulk of investments in Eastern Europe has probably to be financed out of domestic savings.
- Moreover, the potential of foreign capital absorption is still limited in many Eastern European economies. In several cases, the reform process is still in its initial stage, and foreign investors may be scared due to lack of credibility. German firms are said to be waiting for some crucial institutional reforms and definite decisions with regard to property rights to start their larger-scale investment activities. The reform of the legal framework in Eastern Europe may take time before it becomes attractive for foreign investors. Furthermore, the infrastructure in this region is quite underdeveloped for any massive wave of FDI.
- German (and other) investors will not like to ignore the growing markets and cost advantages offered by some DCs. In this respect, however, the spectrum of DCs is very wide and this should be taken into consideration while evaluating the prospects of German FDI in the Third World.

c. Reorientation of German FDI among DCs?

In the longer run, the political and economic reforms in Eastern Europe do offer promising prospects for foreign investors who aim at penetrating growing markets and exploiting cost advantages. But this is unlikely to be at the expense of all DCs. The prospects of German FDI in DCs are likely to differ considerably between major regions.

Economic growth in the Far Eastern DCs has accelerated in the past decade. This has drawn the recent attention of German investors, although their reaction was somewhat delayed compared to investors from other source countries (Section VI.1). The rate of growth of German FDI in these countries during the 1980s was higher than in any other Third World region, viz. Africa or Latin America (Table 29). This trend is expected to continue in spite of the foreseeable developments related with EC 1992 or reforms in Eastern Europe. The Far Eastern countries have implemented fairly liberal investment policies, and they are expected in the future also to achieve relatively high growth of their GDP and trade. The DCs in the Far East are relatively open towards world markets and successful suppliers of manufactured exports. This will enable them to take advantage of additional world market demand which might arise from further trade liberalization after the completion of the Uruguay Round of the GATT, the EC 1992 project and economic reforms in Eastern Europe. Moreover, these countries offer good infrastructure for FDI including favourable facilities for worldwide communication. This renders it easier for multinationals to achieve cost reductions through worldwide sourcing and networking. As a result, the prospects for FDI in this region are expected to remain good in the 1990s. This holds so all the more for German (and other European) investors who are still underrepresented in this growing region compared with their US and Japanese competitors [Agarwal, 1988].

In contrast to this, the prospects for the flow of German FDI to Latin American countries can at best be judged as uncertain, notwithstanding that they have been the major targets of German FDI in the past. Most of them are highly indebted, have very high rates of inflation and economic growth leaves much to be desired. The inflow of FDI in the coming years there will depend very much on the solution of these problems and favourable internal economic policies. The fiercer competition

among different locations for foreign equity capital in the 1990s will rather increase the negative effects of domestic policy failures on FDI inflows.

The prospects of Africa as a recipient of FDI remain rather bleak. African countries have always stood behind in the locational competition for FDI from Germany, except those at the Mediterranean coast. This situation will not change very much until the economic conditions and the institutional framework in these countries improve considerably to make them attractive for foreign investors. This leads us to conclude that a regionally differentiated approach is appropriate in judging the prospects of German FDI in DCs.

VII. Summary and Policy Conclusions

With declining debt inflows, FDI has again become one of the major pillars of private financial flows to the developing countries. This has created some expectation to "replace" private bank lending by FDI. Not only would this alternative to external debt financing ease contractual payments for the DCs, but the latter would also gain in terms of technological and managerial skills. The DCs are by now well aware of the advantages of FDI, and hostility vis-à-vis FDI, still widespread in the 1970s, disappeared considerably in the 1980s. Many countries warmly welcome FDI, some of them with quite generous incentives.

One of the major source countries of FDI is Germany. On average over the last few years, Germany ranked fourth after the United States, the United Kingdom, and Japan. In terms of total FDI outflows, German FDI activities have been influenced by special factors in the last few years, most notably favourable investment opportunities in the United States and the upcoming of a Single Market in Europe after 1992. With respect to DCs, Germany's contribution declined markedly while Japan became a major contributor. Why has it nevertheless been worthwhile to investigate German FDI flows to DCs in such great detail?

- First of all, Germany is much more active as an exporter than as a foreign investor. The higher the penetration rate of German products in a host country, the more attractive it becomes to eventually move production to the host country.
- Second, German companies are rather young foreign direct investors in many regions, for example in Southeast Asia.
- Third, Germany has a well-established and in quantitative terms rather important policy instrument to support FDI in DCs, namely its federal guarantee scheme.

The potential for more German FDI in DCs is therefore higher than the actual amount. But the attractiveness for German FDI is likely to differ considerably between different Third World regions. In particular the weight of Latin America, although still especially high, will probably continue to decline unless the economic problems of this region are overcome. This may also affect the sectoral structure of German FDI in DCs. The high share of FDI in manufacturing is strongly influenced by the sectoral distribution in a few major host countries (especially Brazil and

Mexico). Although Germany is a country short of natural resources, the share of FDI in mining is only 8.7 percent (including oil extraction in the OPEC countries).

The regional and sectoral distribution of FDI in DCs shows that German investors are mainly market-oriented. This is supported by our regression analysis as well. Large domestic markets provided a strong incentive for investment, even if the economic performance of a country was not that good. This indicates that FDI is not an area where policy-makers in the host countries get fast success from promotion programmes. To a large extent, market size is given to a country, even though the recent upswing of FDI in the EC has demonstrated that up to a point market size can be created by political will. The EC is at the same time an example how time-consuming, difficult and costly the process of market integration is in a culturally and economically heterogeneous region. In the Third World, economic integration in the traditional sense (customs unions, common markets, joint investment planning) has proven not to be viable. It seems to be more promising to agree to regional co-operation in specific areas of common interest among partner countries, e.g. joint production of public goods. An intraregional approach towards human resource development, expansion of R&D, energy management, environment problems, international marketing and improved flows of information and communication should help attract FDI inflows into the partner countries.

Regional integration and cooperation among DCs cannot be a substitute for appropriate domestic economic policies in order to attract further FDI. This can also be concluded from the observation that even very large DCs cannot afford unfavourable investment policies in the longer run, notwithstanding that German FDI is characterized by relatively high stability as compared to FDI from other sources. On the other hand, smaller economies which were determined to improve their investment climate did so successfully not only to the advantage of foreign investors but also of the whole economy.

The issue of the host countries' openness towards FDI covers restrictions laid down in the investment legislation, regulations of FDI related activities as well as special incentives for FDI. Host countries often combine constraining and generous rules at the same time; for example, they impose ownership restrictions, but offer tax and tariff exemptions

to certain types of FDI (e.g. joint ventures). In this study, factors that contribute to the degree of openness towards FDI were compressed into an overall indicator that allows a ranking of the host developing countries. This procedure is, of course, highly judgmental. Nevertheless, the regression results offer some support for the view that liberalization of investment regulations in DCs helps increase new foreign investments. But the empirical evidence remained insignificant in several cases. Therefore, the focus on liberalizing investment codes might have been too sharp in relation to other policy instruments in the recent discussion.

In particular, the effectiveness of tax and tariff exemptions as well as related privileges for FDI, some of which are very costly for the host countries, is uncertain at best. They may even result in a vicious circle if privileges granted to foreign investors give rise to hostile feelings against FDI in the recipient countries. The consequences may be a new wave of regulations, intensified efforts to circumvent the restrictions, and finally the retreat of foreign investors. It appears more promising to adhere to the rule: "what is good policy for domestic investors is also good for foreign investors", by creating a stable and favourable general framework for investment. Ad hoc interventions should be kept to the minimum. It is not only the rules and regulations that matter, but also how they are applied in practice. The approval procedure should be fast and transparent as it is a crucial element in the investment decision of foreign companies.

Another important factor of the policy framework for FDI concerns the trade regime of the host countries. Sometimes it is argued that import barriers serve as an incentive for FDI as the latter is a medium to jump over protectionist fences. In the empirical analysis, however, export activity turned out to be a predecessor of German FDI in DCs. Market penetration (measured by German exports in relation to host countries' GNP) had a significantly positive impact on FDI, while the degree of import barriers in the host countries affected German FDI negatively. On the other hand, German FDI did not have a significant influence on exports to the host countries, i.e. neither a growth nor a substitution effect could be detected.

Hence, contrary to a popular belief, openness of the host economy with regard to foreign trade is in general an incentive rather than an

obstacle to FDI. Especially small economies aiming at increased FDI inflows should therefore continue to abandon import substitution strategies and strengthen their world market orientation. Even for fairly large countries, import protection as an instrument to attract FDI is bound to fail in the longer run. The goods produced in sheltered economies typically involve high costs and are not competitive in international markets. By revising protectionist trade regimes, DCs should aim to improve their position in world market competition. This would be a major precondition to take advantage of additional world market demand which might arise from the completion of the Uruguay Round, the EC 1992 project and economic reforms in Eastern Europe. This, in turn, will enable DCs to attract more FDI by companies aiming at worldwide sourcing and networking, even though a fast reaction of German investors after easing trade barriers cannot be expected due to their rather stable investment behaviour.

Cost reductions through worldwide sourcing can also be achieved in host countries with relatively low labour costs. However, this argument is hard to be verified empirically. For a fairly small country sample, the hypothesis that low labour costs encourage German FDI was rejected in the present investigation. This can be attributed to the fact that the analysis was mainly based on host countries where market-oriented FDI took place in the form of capital widening of existing companies; for this type of FDI, an increase in labour costs induces a substitution of capital for labour. While this result does qualify the widely held view that labour cost advantages in general create large FDI inflows, it does not contradict with findings of a negative impact of high and rising labour costs on FDI based on micro data. It would be strongly misleading for DCs to conclude that labour costs are irrelevant for the decisions of foreign investors. The creation of new plants is highly likely to be influenced by labour costs. Especially DCs which are not yet major recipients of FDI or try to stimulate FDI in sectors where foreign participation has still to be established are well advised to maintain or strengthen their locational advantages in terms of production costs. This requires limiting nominal wage increases and/or improving labour productivity relative to existing or new competitors, e.g. in Eastern and Southern Europe.

With new competition arising from reform-minded Eastern European countries, political and economic stability in DCs is likely to become rather more important in the future than it was in the past. Stability and risk considerations play a crucial role for FDI, as investment decisions are longer term in nature. Moreover, the persistent debt problems of many DCs have increased the risk of sovereign measures against FDI as well. In several instances, the repatriation of earnings and capital was restricted due to limited access to foreign exchange. The inherited debt overhang which plagues many debtor countries has made investors sceptical about a sustainable future growth path and a stable social environment.

In view of the economic, political and social stability that characterized Germany during the past decades, one would expect German foreign investors to be particularly risk averse. This was apparently not the case. In contrast to overall FDI flows from all sources to DCs, German FDI hardly reacted to differences in the overall country risk rating and more specific measures of political instability.

Similar peculiarities of German FDI behaviour were observed as concerns the impact of a growing debt overhang on FDI. Also the investigation of the threat of selective and unspecific sovereign measures against FDI and their effect on German versus overall FDI in DCs revealed a relatively underdeveloped risk aversion of German investors. But the results vary between different subsamples with respect to the degree of openness of host countries towards FDI. Foreign investors were mainly concerned about sovereign risk in host countries with relatively restrictive attitudes towards FDI. These countries should, therefore, liberalize restrictions that discourage foreign investors to maintain, not to speak of increasing, their engagement. Countries with a traditionally liberal treatment of FDI are well advised to remain open, as their attitude is considered by foreign investors as a credible commitment to refrain from sovereign measures.

To some extent, the peculiarities of German FDI behaviour can be attributed to the federal guarantee scheme which covers non-commercial risks of German FDI in DCs. As public guarantees are granted at a fee lower than the true risk premium, they drive a wedge between German investors' risk perception and a market-oriented evaluation of country risk. The assumption underlying public support for FDI in DCs, that -

without guarantees - the risk perception of foreign investors is unreasonably high and private insurance markets do not work efficiently, is debatable. However, the actual amount of subsidies might be low in the German scheme as cases of ultimate default were very rare.

Another reason for the above-mentioned peculiarities is that German investors got stuck in economically and politically unstable host countries with considerable debt problems. Their strong engagement especially in the manufacturing sector of Latin American countries, once undertaken, had long gestation periods and became immobile in the short run. Part of the recent FDI in those countries was involuntary, due to repatriation restrictions. But it is also occasionally argued that German investors have a relatively long planning horizon and are more prepared to arrange themselves with the prevailing situation in a country than investors from other source countries, most notably the United States.

Its rather stable behaviour, compared to the overall movements of FDI, renders it more difficult to attract German FDI for well-performing DCs where German investors traditionally did not go before. At the same time, this behaviour represents the attraction of German FDI from the point of view of host countries experiencing economic problems. Nevertheless, economic reforms are indispensable in the latter countries in order to maintain or restore their attractiveness for foreign equity finance. First of all, the contribution of German FDI to the external financing of most DCs is much too small to be relied on exclusively. Moreover, German FDI is more likely to stay for some time when the investment climate deteriorates; but recent evidence strongly suggests that the peculiarities in risk behaviour are rather due to a somewhat longer time lag in the reactions of German investors than to persistently different risk attitudes. Credit-constrained DCs are typically also constrained in terms of total FDI inflows. In the longer run, this picture is also likely to prevail as far as German FDI is concerned.

Also, debt-equity swaps should not be regarded as a substitute for economic policy reforms. Although German FDI was positively related to the implementation of debt conversion schemes in some DCs, the extent to which additional FDI can be induced in this way remains open to question. It is rather doubtful whether these or other costly promotion schemes will lead to a sustained improvement of FDI inflows. The subsidization of FDI through debt-equity swaps must be limited to the de-

gree which may be necessary to compensate for increased risk and uncertainty of investors in a transitional period. Similar incentives should be granted to domestic investors to avoid distortions due to unfair competition.

It takes time to correct policy mistakes and restore the confidence of - foreign and domestic - investors once the credibility of governments has been substantially eroded. But this should not be considered as an excuse for postponing economic policy adjustment. Quite the contrary, the fiercer competition for foreign equity capital emerging from the recent changes in the international environment, most notably the EC 1992 programme and economic reforms in Eastern Europe, requires immediate action by DCs with impaired attractiveness for FDI. The negative effects of domestic policy failures on FDI inflows will probably increase in the 1990s.

There is little need for the host developing countries to focus on narrowly defined promotion measures to attract FDI. They should rather improve the general policy framework for more competition and real capital formation. Openness towards world markets appears to be crucially important in this context, as is the revitalization of domestic investment. Developing countries succeeding in this respect will remain or become attractive locations for FDI from Germany and other sources. Otherwise, however, the prospects for the inflow of FDI in the 1990s are rather bleak.

Appendices

1. List of Variables

AVIF:	period average of INF (1976-1987)
AVIV:	period average of INV (1976-1987)
BENST:	proxy for the potential benefits sample countries may reap from sovereign measures against FDI; calculated as the stock of total FDI over GDP, twice lagged (SFDI/GDP)
BUV:	entrepreneurs' income in Germany [OECD, e]
CONV:	amount of debt conversions in 1980-1985 [Institute of International Finance, 1990]
DII:	Institutional Investor's credit rating; change vis-à-vis 1980 in percentage points; calculated for countries with IIS0 ≥ 40 [Institutional Investor, various issues]
DIUSD:	total FDI flows from all sources to sample countries; in mill. US\$ [IMF, a]
DUM:	dummy variable; set to "1" for countries and years with a debt conversion programme in operation, and "0" otherwise [Institute of International Finance, 1990]
ER:	exchange rate fluctuation of host developing country's currency (enters the regression analysis in the alternative definitions of FLRE and FLDM)
EXDM:	local currency per DM (end-of-period for stock equations; period average for flow equations) [IMF, d]
EXDMR:	$= \frac{P_I}{P_A} \cdot \text{EXDM}; P_I, P_A: \text{GNP-deflator in the export equation, GDI-deflator in the FDI equation [World Bank, c]}$
EXR:	German exports of goods to sample countries, deflated by the overall German export unit value (1980=100) [IMF, b; d]
EXRG:	$= (\text{EXR}/\text{YR}) \cdot 100$
EXUS:	local currency per US\$, period averages [IMF, d]

$$\text{FDIR:} \quad = \text{SITOT}_{1976} + \sum_{n=1977}^t \frac{d\text{SITOT}_n}{\text{GDI-deflator}_n} \quad \text{or}$$

$$= \sum_{n=0}^t \frac{\text{net FDI outflows}_n}{\text{GDI-deflator}_n} \quad \text{or}$$

$$= \frac{\text{NEW}}{\text{GDI-deflator}}; \text{ GDI-deflator: } 1980=100$$

$$\text{FICOM:} \quad = \text{SICOM}_t - \text{SICOM}_{t-1}$$

$$\text{FIMAN} \quad = \text{SIMAN}_t - \text{SIMAN}_{t-1}$$

$$\text{FITOT} \quad = \text{SITOT}_t - \text{SITOT}_{t-1}$$

FLDM: fluctuation in nominal exchange rates of sample countries vis-à-vis DM; calculated from standard errors of trend estimates for 1976-1987 [IMF, d]

FLIF: standard deviation of INF (1976-1987)

FLIV: standard deviation of INV (1976-1987)

FLRE: fluctuation in real effective exchange rates of sample countries; calculated from standard errors of trend estimates for 1976-1987 [Institut für Weltwirtschaft, unpubl. data base]

FS: measure of the degree of openness towards FDI in sample countries; a higher average score indicates a more favourable policy regime [Frost & Sullivan, 1988]

FSIZ: average firm size in selected manufacturing industries of sample countries, relative to total manufacturing; calculated as three-period moving averages of the ratio of the number of employees in industry *i* and the number of establishments in industry *i*, relative to the respective ratio for total manufacturing [UN, various issues]

GARNEW: new approved guarantees for foreign investors granted by the German government, relative to host countries' GNP and corrected for risk effects [Treuarbeit, 1989]

GDI: gross domestic investment, nominal and real (in prices of 1980) [World Bank, unpubl. national accounts data base]

GDP: gross domestic (national) product of sample countries, in
(GNP) US\$ (DM) mill. if not otherwise stated [IMF, d]

$$\text{GRDI:} \quad = (\text{DIUSD/SFDI}) \cdot 100$$

$$\text{GRICOM:} \quad = (\text{FICOM/SICOM}) \cdot 100$$

$$\text{GRIMAN:} \quad = (\text{FIMAN/SIMAN}) \cdot 100$$

GRINew:	$\text{= (NEW/SITOT)} \cdot 100$
GRITOT:	$\text{= (FITOT/SITOT)} \cdot 100$
GU:	classification of sample countries with regard to their attitudes towards FDI; 0 = restrictive; 1 = quite restrictive; 2 = semi-open; 3 = open (own judgement; for details, see Chapter IV)
HC:	proxy for human-capital intensity in selected manufacturing industries of sample countries, relative to total manufacturing; this variable is calculated as the ratio of wages and salaries of employees in industry <i>i</i> and the number of employees in industry <i>i</i> , relative to the respective ratio for total manufacturing; three-period moving averages [UN, various issues]
IFO:	index of impediments towards FDI in sample countries; higher index figures indicate less restrictive impediments [Osterkamp, 1983]
II: (IIMA)	Institutional Investor's credit rating, annual ratings and three-period moving averages respectively [Institutional Investor, various issues]
II80:	Institutional Investor's credit rating in 1980 [Institutional Investor, various issues]
INF:	annual rate of inflation, based on consumer price indices (1979-1980=100) [UNCTAD, a, Table 2.9]
INV:	gross domestic investment as a percentage of GDP [UNCTAD, a, Table 6.4]
LSFDI:	SFDI thrice lagged
LSI:	stocks of German FDI in selected manufacturing industries of sample countries (chemicals, iron and steel, machinery, road transport equipment, electrical equipment) in DM mill., thrice lagged [Deutsche Bundesbank, unpubl. data base]
LSICOM:	SICOM thrice lagged
LSIMAN:	SIMAN thrice lagged
LSITOT:	SITOT thrice lagged
LSTOCK:	stock of FDI, thrice lagged: equals LSFDI, LSITOT, LSIMAN, LSICOM, depending on the regression run
MADIUS:	three-period moving averages of DIUSD
MAFI:	three-period moving averages of the annual change in the stocks of German FDI in selected manufacturing industries of sample countries (chemicals, iron and steel, machinery,

road transport equipment, electrical equipment) in DM mill. [Deutsche Bundesbank, unpubl. data base]. The following calculation procedure is applied: 1) FDI stocks are converted into the local currency of the host country by applying end-of-period exchange rates; 2) the change in FDI stocks in local currency is then converted back into DM by applying period average exchange rates

- MAFICO: three-period moving averages of FICOM
- MAFIMA: three-period moving averages of FIMAN
- MAFITO: three-period moving averages of FITOT
- MAINF: three-period moving averages of INF
- MAINV: three-period moving averages of INV
- MANEW: three-period moving averages of NEW
- MAPSL: three-period moving averages of PSL
- MASARWK: standard deviation of monthly changes in real exchange rates of host countries' currencies vis-à-vis DM; three-period moving averages [IMF, d; Wharton Econometric Forecasting Ass., various issues]
- NEW: gross German investment outflows to sample countries in DM mill. [Deutsche Bundesbank, unpubl. data base]
- NTM: indicator for the frequency of non-tariff trade measures of the sample countries [UNCTAD, b]
- PRESCU:
PRESCU1) proxy for the balance-of-payments situation of sample countries; three-period moving averages of the current-account deficit (surplus) in per cent of GDP; negative values of PRESCU in the case of deficits [IMF, a]; in the case of PRESCU1 without resource outflows due to servicing FDI
- PROUT: see PROUTG; reinvested earnings excluded
- PROUTG: proxy for the potential benefits sample countries may reap from sovereign measures against FDI; calculated as the sum of resource outflows due to servicing FDI and reinvested earnings over GDP; three-period moving averages; higher FDI service payments result in more negative values of PROUTG [IMF, a]
- PS: proxy for political instability; 1 = unstable government characterized by more frequent changes of party or parties in power and/or occurrence of riots or military coup d'états or border conflicts; 0 = stable government characterized by no or less frequent changes of power by democratic means and absence of riots, political unrest, military coup d'états or border conflicts [Banks, 1989]

PSL:	political strikes and lockouts measured as the number of workdays lost per employed person [ILO, various issues]
REER:	real effective exchange rates of sample countries [Institut für Weltwirtschaft, unpubl. data base]
SFDI: (SFDIG)	stock of total FDI in sample countries; in US\$ mill. and per cent of sample countries' GDP respectively; calculated by adding FDI flows since 1979 to the 1978 stocks [UNCTC, a; IMF, a]
SICOM: (SICOMG)	stock of German FDI in the trade sector of sample countries; in DM mill. and percent of sample countries' GDP respectively [Deutsche Bundesbank, unpubl. data base]
SIMAN: (SIMANG)	stock of German FDI in manufacturing industries of sample countries; in DM mill. and percent of sample countries' GDP respectively [Deutsche Bundesbank, unpubl. data base]
SITOT: (SITOTG)	stock of total German FDI in sample countries; in DM mill. and percent of sample countries' GDP respectively [Deutsche Bundesbank, unpubl. data base]
SMN:	secondary market notations of LDC debt in per cent of face value [World Bank, unpubl. data base]
SSL:	structural and sectoral adjustment loans received by the host developing countries; "1" is assigned to a country for the year in which SSL is received by it, and "0" for the remaining years and countries without adjustment loans [Nicholas, 1988]
TA:	investment activity in selected manufacturing industries of sample countries, relative to total manufacturing; calculated as the ratio of gross fixed capital formation in industry i and output in producers' prices of industry i, relative to the respective ratio for total manufacturing; three-period moving averages [UN, various issues]
TAR:	unweighted average of total import charges (tariffs and para-tariffs) [UNCTAD, b]
TLCFOR:	total hourly labour costs in manufacturing of sample countries in DM [Riveros, 1989; IMF, d]
TLCGER:	total hourly labour costs in manufacturing in Germany in DM [Riveros, 1989; IMF, d]
TRDEP:	proxy for the dependency of sample countries on external trade relations; calculated as the sum of exports and imports over GDP (in per cent); three-period moving averages [IMF, d]

- TREND: proxy for the degree of instability in economic activity of sample countries; standard error of logarithmic trend estimates of GDP for 1976-1987
- UCCGER: user costs of capital in Germany; calculated as: $PGDI(i-DLPGDI)$, where $PGDI = (GDI/GDI_{1980}) \cdot 100$; i = government bond yield [IMF, d]
- UMS: proxy for foreign debt problems of sample countries, twice lagged; 0 = no reschedulings; 1 = reschedulings with official creditors; 2 = reschedulings with private creditors; 3 = reschedulings with both official and private creditors [World Bank, b; Hardy, 1982]
- VADPFOR1: real value added in manufacturing (in prices of 1980) per employee in sample countries (for which value added per employee in manufacturing is available) in DM (at exchange rates of 1980) [World Bank, c; UNIDO, various issues]
- VADPFOR2: VADPFOR1 in 1980 multiplied with the index for real output per employee (1980=100) (for countries which do not report sufficient data on value added and employment in manufacturing) [World Bank, c; UNIDO, various issues]
- VADPGER: real value added in manufacturing (in prices of 1980) per employee in Germany in DM [World Bank, c; UNIDO, various issues]; for the calculation of productivity differentials, all country columns corresponding to host countries for which VADPFOR2 had to be used were set to zero
- VADPGER2: VADPGER1 in 1980 multiplied with the index for real output per employee (1980=100); corresponds to VADPFOR2 [World Bank, c; UNIDO, various issues]
- YR: real GNP of sample countries, in prices and exchange rates (either DM or US\$ per local currency) of 1980 [World Bank, c]

2. FDI Regulations in Selected DCs

Part I

Host country	Entry and ownership restrictions	Access to foreign exchange	Repatriation of	
			profits	capital
OPEC				
Algeria	all investments require approval, joint ventures are preferred and get special incentives	restricted	up to 15 per cent of capital originally invested	granted
Indonesia	all investments require approval and need to be joint ventures, exceptions, liberalizations in 1988, 1989	free		granted
Iran	.	restricted		approval needed
Libya	some areas closed, usually share less than 49 per cent	restricted		after approval, usually granted
Nigeria	40 enterprises closed, 100 per cent ownership only in new FDI, joint ventures in oil sector	restricted		approval needed
Venezuela	gas, iron and petroleum sectors closed, usually share less than 49 per cent, branches of foreign companies not considered a foreign investment	four-tier exchange market, one free		granted, but special rules under debt-equity conversion scheme

Part I continued

Host country	Entry and ownership restrictions	Access to foreign exchange	Repatriation of	
			profits	capital
United Arab Emirates	not more than 49 per cent share allowed, except in branches	free		granted
Africa				
Ivory Coast	"positive" list, special status for "priority" enterprises	restricted		granted
Egypt	inland investments need approval, in free zones no restrictions	restricted	can be restricted	after 5 years, exceptions
Kenya	approval required, Africanization requirements	restricted	restricted to current year	only original value and reinvested earnings in original currency
Morocco	approval required, except equity investment in new companies and subscription to capital increase in existing companies	restricted	after approval, exceptions, e.g. in the tourist industry	
Tunisia	no general limits	restricted	granted, subject to authorization including capital gains (fairly new legislation)	

Part I continued

Host country	Entry and ownership restrictions	Access to foreign exchange	Repatriation of	
			profits	capital
America				
Argentina	no general exclusion, but different degrees of approval required, special regulation in the petroleum sector, important easing of restrictions in 1989, no approval for reinvestment of profits	dual market, one free	since 1983 via US\$ denominated government bonds, profits above 12 per cent (after tax) of registered capital are subject to a special tax, earnings from FDI under debt-equity scheme cannot be remitted for 4 years	profits can be restricted under emergency regulations, after 10 years for FDI under debt-equity conversion programme
Brazil	100 per cent ownership possible, joint venture preferred, restrictive Informatics Law	restricted	12 per cent p.a. over 3-year average of registered capital, above that supplementary tax	granted, but long delays occur
Chile	.	restricted	no general limit, specified in investment contract	after 3 years, unless otherwise specified
Colombia	100 per cent ownership possible, to get special benefits, less	approved exchange licence required	not more than 25 per cent of registered capital	under specific conditions

Part I continued

Host country	Entry and ownership restrictions	Access to foreign exchange	Repatriation of	
			profits	capital
Guatemala	approval required, special legislation in the petroleum sector	restricted	prior approval required	
Mexico	ownership usually restricted to 49 per cent, exceptions, no authorization for investment in in-bond industries, 1989: 100 per cent ownerships allowed in many sectors	two markets, one free	granted, on the free market, long delays occur	
Peru	at least 15 per cent national participation, exceptions, special Mining Law, gradual increase of national participation, exceptions	multi-tier market, one free	limited to 20 per cent, exceptions	
Asia				
India	Reserve Bank permission required, in general only minority shares, "dilution" formulas, exceptions in core and export-oriented sectors	restricted	after approval incl. capital gains, in suitable installments	
Israel	free, for preferential treatment approval required	restricted	granted	
South Korea	"negative list", in manufacturing 98 per cent open	restricted	granted	

Part I continued

Host country	Entry and ownership restrictions	Access to foreign exchange	Repatriation of	
			profits	capital
Malaysia	after approval, in export-oriented sector 100 per cent share possible, also in other sectors, if local partner cannot be found	free	granted	
Pakistan	after approval, liberal policy	restricted	granted	
Philippines	in general minority share, except in priority sectors, (new Investment Code in 1987)	restricted	permitted, if not financed on domestic market	depends on the source of financing, special rules for debt-equity conversion
Sri Lanka	after permission in specifically approved sectors	restricted	free for profits (excl. capital gains) of same year	granted for approved projects
Syria	.	restricted	granted	not allowed, exceptions
Thailand	after approval, no general ownership restrictions	restricted	granted for approved projects	approved
Turkey	after approval, required capital must be imported, exceptions under special laws or when funds from blocked accounts are used	restricted	granted	after approval

Source: IMF [c]; UNCTC [c]; US Department of Commerce [1985]; Frost & Sullivan [1988]; Becsky et al. [1989]; Pfeffermann [1988]; Scharrer, Krägenau [1988].

Part II

Host country	Bilateral investment treaty	Taxation(a)/double taxation agreement	Special incentives	Performance requirements	Approval process
OPEC					
Algeria	no	3/no	for joint ventures staff by locals	replacement of foreign staff by locals	.
Indonesia	yes	4/yes	tax incentives	import substitution, employment restrictions	one-stop, fairly bureaucratic
Iran	yes	n.a./yes	.	.	.
Libya	no	1/no	under Petroleum Law	-	.
Nigeria	no	3/no	tax reliefs, debt conversion program, privatization	.	long and complicated, but improved in 1988
Venezuela	no	1/no	debt-equity conversion promoted, special tax advantages	local content requirements	.
United Arab Emirates	no	n.a./no	-	-	-
Africa					
Ivory Coast	yes	3/yes	in priority sectors and priority regions: exemptions from customs duties and tariffs, tax exemptions for specified periods	-	-

Part II continued

Host country	Bilateral investment treaty	Taxation(a)/double taxation agreement	Special incentives	Performance requirements	Approval process
Egypt	yes	3/yes	tax reliefs and exemptions, free zones, special treatment for joint ventures	-	bureaucratic
Kenya	yes	3/yes	tax reliefs, industry protection	Kenyanization programme	very bureaucratic, but attempt to improve
Morocco	yes	3/yes	several sectoral Investment Codes with tax, duty and other incentives	-	.
Tunisia	yes	3/yes	tax exemptions depending on sector, recent new legislation	-	supportive
America Argentina	no	4/yes	Oct. 1989: equal treatment of foreign and domestic investments	special rules for profit and capital repatriation for FDI made under debt-equity conversion programme	unsteady

Part II continued

Host country	Bilateral investment treaty	Taxation(a)/double taxation agreement	Special incentives	Performance requirements	Approval process
Brazil	no	4/yes	high degree of industry protection	non-secured capital not considered FDI, restrictions on borrowing abroad	.
Chile	no	3/no	equal treatment of foreign and domestic investments		.
Colombia	no	4/no	for benefiting from the Cartagena Agreement a company has to become 51 per cent domestically owned after thirty years		.
Guatemala	no	3/no	-	-	.
Mexico	no	3/no	tax incentives only for companies with minority foreign share, special incentives for in-bond production	National Committee on Foreign Investment can impose restrictions on a discretionary basis, Mexicanization efforts	very bureaucratic, attempt to improve
Peru	no	4/no	for benefiting from the Cartagena Agreement a company has to become mixed or national after a maximum of 15 years tax incentives may be granted to mining concessions		

Part II continued

Host country	Bilateral investment treaty	Taxation(a)/double taxation agreement	Special incentives	Performance requirements	Approval process
Asia					
India	yes	1/yes	no special incentives or disincentives	.	.
Israel	yes	4/yes	limited withholding tax of 25 per cent	-	.
South Korea	yes	4/yes	available tax privileges reduced in 1987	-	fast approvals, sometimes automatic
Malaysia	yes	3/yes	special treatment for companies having pioneer status	"ethnic" regulations	.
Pakistan	yes	2/yes	-	-	liberal policy
Philippines	no	4/yes	special treatment for enterprises having pioneer status	.	.
Sri Lanka	yes	2/yes	-	-	.
Syria	yes	1/no	tax exemptions in tourism, agriculture and agro-industries, also other incentives	.	.

Part II continued

Host country	Bilateral investment treaty	Taxation(a)/double taxation agreement	Special incentives	Performance requirements	Approval process
Thailand	yes	4/yes	incentives as well as performance requirements are geared to the project	.	.
Turkey	yes	2/yes	no special regulation for foreign investors	.	.
			tax reliefs and customs exemptions can be granted	limitation on the employment of foreigners	.
(a) Scores ranging from 1 (worst) to 5 (best) [Frost & Sullivan, 1988].					

Source: IMF [c]; UNCTC [c]; US Department of Commerce [1985]; Frost & Sullivan [1988]; Becsky et al. [1989]; Pfeffermann [1988]; Scharrer, Krägenau [1988].

3. Appendix Tables

Table A1 - Variables on Political and Economic Instability: Correlation Matrix(a)

	SFDI	MADIUS	SITOT	MAFITO	MANEW	II	PS	REER	EXDM	MAINF	MAINV	PSL	SSL
SFDI	1	0.86* (321)	0.87* (302)	0.56* (240)	0.33* (310)	0.27* (207)	-0.21* (285)	-0.04 (269)	-0.16* (331)	0.15* (322)	-0.12* (292)	-0.09 (171)	0.14* (323)
MADIUS		1	0.71* (303)	0.62* (236)	0.36* (310)	0.44* (211)	-0.23* (284)	0.03 (268)	-0.15* (323)	0.04 (319)	-0.10* (284)	-0.20* (169)	0.13* (318)
SITOT			1	0.71* (266)	0.26* (329)	0.08 (238)	-0.11* (374)	-0.02 (346)	-0.07 (405)	0.25* (334)	-0.06 (288)	-0.01 (195)	0.07 (344)
MAFITO				1	0.27* (260)	0.19* (204)	-0.10 (246)	0.06 (236)	-0.07 (270)	0.18 (260)	-0.07 (232)	0.03 (132)	0.06 (270)
MANEW					1	0.41* (241)	0.03 (317)	0.06 (284)	0.23* (354)	0.29* (340)	0.18* (307)	0.14* (170)	-0.19* (351)
II						1	-0.19* (257)	0.06 (226)	0.02 (255)	-0.18* (249)	0.78* (205)	-0.00 (113)	-0.17* (257)
PS							1	0.06 (360)	-0.01 (405)	0.23* (325)	-0.17* (280)	-0.02 (179)	0.07 (339)
REER								1	0.15* (358)	0.04 (288)	0.10 (248)	0.05 (172)	-0.19* (300)
EXDM									1	0.47* (363)	0.35* (323)	-0.01 (206)	-0.35* (375)
MAINF										1	0.38* (313)	0.21* (176)	-0.05 (363)
MAINV											1	0.47* (160)	-0.10* (316)
PSL												1	0.16* (181)
SSL													1

(a) Pearson correlation coefficients. For the definition of variables, see the text and Appendix 1. Number of observations in parentheses; * significant at 5 percent level.

Source: Own calculations.

Table A2 - Impact of Political and Economic Instability on FDI, 1980-1987:
Pooled Regression Results for Country Groups with Different
Attitudes towards FDI(a)

Dependent variable	Const.	PS	MASPL(b)	SSL _{t-2}	MAINP	MASARW	MAINV	LSTOCK	R ²	Degrees of freedom
RESTRICTIVE ATTITUDES TOWARDS FDI										
NADIUS										
GU = 0/1	6.73 (0.10)	119.30** (3.06)	-0.62** (-4.97)	-28.35 (-0.64)	0.25 (0.57)	-	1.08 (0.40)	0.33* (2.62)	0.58 (15.91)	16
IFO ≤ 37	-260.68 (-1.33)	-278.67* (-1.86)	-2.13** (-4.75)	-18.48 (-0.17)	-1.01 (0.61)	-	15.89* (1.87)	0.99* (2.67)	0.45 (19.59)	30
FS ≤ 3	100.14 (0.61)	123.37 (1.41)	-0.69* (-2.28)	-131.55 (-1.72)	1.69* (2.17)	-	-5.43 (-0.82)	0.64** (7.10)	0.81 (22.34)	19
NANEN										
GU = 0/1	-67.13 (-0.37)	40.29 (0.68)	-	-52.24 (-0.92)	0.13 (1.13)	79.62 (0.34)	1.84 (0.32)	0.04 (0.71)	0.30 (11.36)	16
IFO ≤ 37	-217.69** (-3.95)	-0.51 (-0.01)	-0.18* (-2.52)	3.22 (0.17)	0.27 (0.87)	-2.92 (-1.43)	6.63** (4.14)	0.40** (5.09)	0.77 (20.14)	16
FS ≤ 3	99.35 (1.18)	-100.43** (-3.38)	-	50.99 (0.81)	0.001 (0.01)	0.71 (0.69)	-2.55 (-0.91)	0.11** (10.09)	0.91 (36.93)	33
NAPITO										
GU = 0/1	-5.05 (-0.18)	-13.35 (-0.68)	0.18** (5.30)	5.58 (0.46)	-0.15 (-1.04)	-1.89 (-0.04)	0.69 (1.00)	-0.07 (-1.49)	0.66 (17.74)	15
IFO ≤ 37	-148.52** (3.76)	-38.67 (-0.68)	-0.14 (-1.55)	13.82 (0.66)	-0.27 (-0.79)	-2.20 (-0.72)	6.13** (3.64)	0.17* (2.19)	0.40 (18.60)	28
FS ≤ 3	-74.18 (-1.35)	38.51 (1.29)	0.10 (0.95)	93.68** (3.64)	0.53 (1.57)	-20.00** (-3.65)	0.89 (0.39)	0.24** (3.37)	0.49 (16.39)	18
NAPINA										
GU = 0/1	-23.99 (-0.60)	7.75 (0.38)	-	10.19 (0.49)	0.15* (1.79)	-25.06 (-0.33)	1.08 (0.88)	0.02 (0.71)	0.26 (16.80)	40
IFO ≤ 37	-5.84 (-0.56)	-5.35 (-0.42)	0.18** (6.89)	2.29 (0.50)	-0.16* (-2.20)	0.47 (0.69)	0.63 (1.43)	-0.07** (-3.07)	0.68 (25.49)	26
FS ≤ 3	-56.00 (-1.26)	31.92 (1.36)	0.09 (1.05)	81.59** (4.03)	0.52* (2.05)	-19.55** (-4.52)	0.38 (0.20)	0.28** (4.13)	0.62 (18.23)	17
NAPICO										
GU = 0/1	-8.99 (-0.94)	3.04 (0.53)	-	2.28 (0.45)	-0.01 (-1.14)	-20.14 (-1.11)	0.57* (1.91)	-0.05 (-1.27)	0.11 (10.24)	38
IFO ≤ 37	-13.38* (-1.91)	-6.24 (-0.93)	-	-0.62 (-0.11)	0.02 (0.26)	0.25 (0.53)	0.54* (2.36)	0.03 (0.49)	0.05 (7.87)	35
FS ≤ 3	2.44 (0.20)	-7.71 (-1.40)	-	7.49 (1.03)	0.01 (0.42)	-1.07* (-1.73)	-0.06 (-0.14)	0.07 (1.30)	0.01 (6.49)	51
LESS RESTRICTIVE ATTITUDES TOWARDS FDI										
NADIUS										
GU = 2	1295.87** (3.51)	-855.88** (-5.97)	-	-48.19 (-0.43)	-10.04** (-2.93)	-	-10.43 (-1.08)	0.32** (6.60)	0.67 (31.88)	39
37 < IFO < 40	-478.23 (-1.63)	-238.79* (-2.31)	50.97* (2.54)	-36.46 (-0.33)	-19.03* (-2.84)	-	30.95** (3.85)	1.72** (4.05)	0.77 (21.48)	19
3 < FS < 3.9	-729.26** (-3.01)	-697.89** (-5.24)	-0.47 (-0.02)	-21.79 (-0.18)	4.16 (0.56)	-	38.62** (5.32)	0.92* (1.82)	0.79 (21.93)	19
NANEN										
GU = 2	405.82** (4.16)	-204.53** (-4.34)	-	69.68 (1.38)	-1.19 (-1.29)	-2.76 (-1.69)	-9.44** (-3.44)	0.11** (6.68)	0.94 (35.24)	30
37 < IFO < 40	406.51** (2.96)	-107.58* (-2.44)	-	-22.96 (-0.66)	-0.33* (-2.01)	-2.18 (-0.42)	-9.92** (-2.82)	0.08* (2.14)	0.72 (19.73)	18
3 < FS < 3.9	-48.27* (-1.98)	12.48 (1.05)	-	6.67 (0.42)	0.75 (1.13)	-0.92 (-0.84)	0.91 (1.36)	0.28** (11.83)	0.79 (36.07)	37
NAPITO										
GU = 2	460.90** (3.05)	-147.75* (-2.31)	-	24.10 (0.36)	-7.17** (-4.63)	-1.73 (-0.58)	-9.14* (-2.24)	0.17** (6.04)	0.66 (29.88)	35
37 < IFO < 40	6.60 (0.21)	14.86 (1.37)	-8.65** (-4.27)	17.46 (1.39)	3.91** (3.83)	-45.46** (-6.85)	-1.88* (-2.13)	0.38** (6.06)	0.79 (20.54)	16
3 < FS < 3.9	-16.40 (-0.31)	127.62* (2.06)	1.88 (0.48)	6.66 (0.27)	0.99 (0.65)	-7.07* (-2.04)	-0.94 (-0.61)	0.43** (4.08)	0.42 (14.73)	17

Table A2 continued

Dependent variable	Const.	PS	NAPSL(b)	SSL _{t-2}	MAINT	MASARV	RAINV	LSTOCK	R ² CHISQ(c)	Degrees of freedom
MAPIHA										
GU = 2	335.37* (1.97)	-81.04 (-1.11)	-	39.01 (0.51)	-7.61** (-3.95)	6.58 (0.76)	-6.62 (-1.41)	0.19** (4.86)	0.59 24.26	30
37 < IPO < 40	-0.08 (-0.002)	-9.88 (0.97)	-6.17** (-3.22)	13.04 (1.20)	3.45** (4.28)	-39.68** (-7.58)	-1.21 (-1.36)	0.34** (5.74)	0.76 20.80	17
3 < PS < 3.9	0.96 (0.18)	4.06 (0.26)	0.49 (0.53)	-0.42 (-0.07)	-0.19 (-0.45)	-0.14 (-0.16)	0.41 (1.22)	-0.03 (-0.77)	-0.07 6.21	15
MAFICO										
GU = 2	-30.90 (-1.57)	9.62 (1.21)	-	2.62 (0.36)	0.26** (2.93)	-0.97 (-1.42)	0.75 (1.48)	0.05 (0.52)	0.34 15.97	28
37 < IPO < 40	8.03* (1.99)	-1.63 (-1.39)	-0.004 (-0.02)	0.75 (0.56)	-0.27** (-2.16)	0.40 (0.70)	0.12 (1.18)	-0.24** (-3.79)	0.77 21.76	18
3 < PS < 3.9	-6.56* (-2.04)	2.09 (1.61)	-	-0.85 (-0.49)	0.17* (2.15)	-0.01 (-0.08)	0.15* (1.98)	0.13* (2.55)	0.17 11.38	29
PAVOURABLE ATTITUDES TOWARDS FDI										
MADIUS										
GU = 3	169.92* (1.74)	56.51 (1.01)	-2.26* (-2.13)	-13.73 (-0.33)	0.49 (1.38)	-	-7.70* (-1.90)	2.47** (9.14)	0.77 26.79	26
IPO > 40	-500.82** (-3.12)	227.66* (2.37)	-	-5.40 (-0.05)	-10.49** (-2.77)	-	26.44** (5.86)	0.47** (7.84)	0.84 37.71	38
PS ≥ 3.9	-651.05* (-2.31)	6.13 (0.09)	-	141.86 (1.36)	0.79* (2.19)	-	24.19** (2.77)	0.86** (3.26)	0.84 32.89	32
MAHEV										
GU = 3	-50.31** (-3.33)	-21.83** (-2.85)	0.26* (1.94)	4.64 (0.76)	0.40 (0.77)	-1.33** (-3.51)	2.78** (6.58)	0.06* (1.93)	0.77 24.78	22
IPO > 40	-8.95 (-0.16)	-13.67 (-0.37)	-	53.19 (1.41)	-0.79 (-0.83)	-3.37 (-0.50)	1.05 (0.77)	0.13** (6.91)	0.95 37.43	32
PS ≥ 3.9	-88.74** (-2.87)	-3.69 (-0.18)	-	3.64 (0.22)	0.18 (1.42)	17.23 (0.42)	3.29** (3.70)	0.07** (2.89)	0.81 28.60	27
MAFITO										
GU = 3	-71.31** (-5.41)	-25.85** (-3.50)	-0.05 (-0.14)	4.89 (0.74)	0.12 (1.13)	-1.34* (-2.77)	3.56** (6.81)	0.03 (1.20)	0.75 22.79	20
IPO > 40	167.40 (1.38)	-4.86 (-0.07)	-	-94.70 (-1.50)	-3.15* (-2.69)	-2.37 (-0.34)	-3.00 (-1.03)	0.12** (5.02)	0.66 34.62	42
PS ≥ 3.9	-138.02** (-2.82)	-61.88* (-2.63)	-	16.20 (0.83)	0.61* (2.51)	191.99* (2.26)	4.81** (3.76)	-0.03 (-1.12)	0.57 20.96	25
MAPIHA										
GU = 3	-4.74 (-0.49)	-6.96* (-1.93)	0.12 (0.84)	0.75 (0.20)	-0.01 (-0.10)	0.86* (2.37)	0.35 (1.11)	-0.03 (-0.75)	0.22 13.22	27
IPO > 40	75.12 (0.62)	50.38 (0.75)	-	-87.39 (-1.21)	-3.82** (-2.97)	15.60 (0.68)	-1.11 (-0.37)	0.14** (4.61)	0.61 27.95	35
PS ≥ 3.9	7.01 (0.23)	0.65 (0.07)	0.03 (0.17)	0.86 (0.17)	-0.05 (-0.24)	-10.89 (-0.35)	0.13 (0.20)	-0.25 (-1.38)	-0.05 6.33	18
MAFICO										
GU = 3	-18.28* (-2.25)	-2.36 (-0.71)	0.11 (0.78)	1.60 (0.47)	0.01 (0.15)	0.20 (0.77)	0.44* (1.84)	0.34** (3.30)	0.54 15.72	15
IPO > 40	-18.03 (-1.24)	2.67 (0.32)	-	7.95 (0.90)	0.21** (2.77)	-0.67 (-0.40)	0.66* (1.80)	0.02 (0.21)	0.25 13.24	27
PS ≥ 3.9	2.86 (0.21)	4.55 (0.65)	-0.07 (-0.48)	1.73 (0.59)	-0.01 (-0.16)	-32.30* (-1.90)	0.04 (0.11)	0.28* (2.69)	0.65 17.48	15

(a) For the definition of variables, see the text and Appendix 1. **, * significant at 1 and 10 percent levels; t-statistics in parentheses. - (b) This variable was dropped in those cases, where degrees of freedom were less than 15 in the first regression estimates with all independent variables in the equation. - (c) If the chi-square statistic is significant at 5 percent level (denoted by *), corrected standard errors of the estimated coefficients are used to calculate the t-statistic given in parentheses.

Source: Own calculations.

Table A3 - Industry-Specific Characteristics and FDI, 1982-1987: Regression Results for Country Groups with Different Attitudes towards FDI(a)

Country group/ Criterion for classification(b)	Const.	FSIZ	TA	HC	LSI	R ² CHISQ ^c	Degrees of freedom
Countries with restrictive attitudes towards FDI							
IPO ≤ 37 [4]	9.46 (1.12)	0.10 (0.08)	-3.12* (-2.55)	-3.41 (-0.48)	0.33** (19.15)	0.93 ⁺ 25.94 ⁺	22
FS ≤ 3 [3]	-8.85 (-1.60)			9.36* (2.03)	0.08 (1.47)	0.28 4.03	32
GU < 2 [3]	-8.85 (-1.60)			9.36* (2.03)	0.08 (1.47)	0.28 4.03	32
Countries with less restrictive attitudes towards FDI							
37 < IPO < 40 [3]	-8.85** (-2.95)			7.50** (3.21)	-0.07* (-1.90)	0.46 ⁺ 17.46 ⁺	18
3 < FS < 3.9 [1]	3.43* (2.68)	-1.36* (-2.46)			0.36** (15.96)	0.87 ⁺ 11.25 ⁺	47
[2]	4.29* (2.20)		-2.57* (-1.71)		0.36** (15.43)	0.87 6.93	36
[3]	-26.17* (-2.20)			20.19* (2.30)	0.27** (5.33)	0.62 ⁺ 33.85 ⁺	57
[4]	1.58 (0.25)	-3.05* (-1.81)	-2.76* (-1.83)	5.84 (1.10)	0.33** (12.39)	0.88 13.19	34
GU = 2 [3]	-8.85** (-2.95)			7.50** (3.21)	-0.07* (-1.90)	0.46 ⁺ 17.46 ⁺	18
Countries with favourable attitudes towards FDI							
GU = 3 [1]	3.99* (2.33)	-1.53* (-1.97)			0.23** (3.94)	0.50 ⁺ 36.79 ⁺	65
[2]	3.93* (2.37)		-2.39* (-2.28)		0.22** (3.48)	0.46 ⁺ 25.33 ⁺	56
[3]	-9.89* (-1.88)			7.82* (2.01)	0.25** (4.47)	0.53 ⁺ 47.01 ⁺	83
[4]	-3.83 (-0.59)	-4.36* (-2.53)	-1.10 (-0.85)	9.71* (1.95)	0.26** (6.45)	0.59 ⁺ 35.97 ⁺	52
(a) Dependent variable: three-period moving averages of the change in German FDI stocks in selected manufacturing industries of host countries (MAFI). For the definition of variables, see the text and Appendix 1; **, * significant at 1 and 10 percent levels; t-statistic in parentheses. - (b) Only those regressions are reported for which at least one of the variables reflecting industry-specific characteristics (FSIZ, TA, HC) is significant; equation numbers refer to the equation specification as in Table 21. - (c) If the chi-square statistic is significant at the 5 percent level (denoted by "+"), corrected standard errors of the estimated coefficients are used to calculate the t-statistic given in parentheses.							

Source: Own calculations.

Table A4 - Sovereign Risk Variables, 1980-1987: Correlation Matrix(a)

	BENST	PROUTG	PRESCU1	UMS	TRDEP	TREND	DIUSD	NEW
BENST	1	-0.153* (127)	-0.001 (216)	0.078 (242)	0.781* (236)	0.133* (242)	0.299* (242)	0.031 (138)
PROUTG		1	0.039 (126)	0.142 (127)	0.081 (121)	-0.081 (127)	0.013 (127)	0.136 (56)
PRESCU1			1	0.093 (223)	-0.165* (216)	-0.018 (223)	0.037 (216)	0.089 (118)
UMS				1	-0.101* (273)	0.202* (296)	0.030 (259)	0.189* (158)
TRDEP					1	-0.103* (273)	0.181* (243)	-0.112 (139)
TREND						1	0.044 (259)	0.083 (150)
DIUSD							1	0.517* (143)
NEW								1

(a) Pearson correlation coefficients. For the definition of variables, see the text and Appendix 1; current annual observations for BENST, PROUTG, PRESCU1, UMS, and TRDEP (while lagged observations of BENST and UMS, and three-period moving averages of PROUTG, PRESCU1 and TRDEP enter the regression analysis). Number of observations in parentheses; * significant at 5 per cent level.

Source: Own calculations.

Table A5 - Sovereign Risk and German FDI in Different Sectors, 1982-1987: Regression Results for Country Groups with Different Attitudes towards FDI(a)

Dependent variable/ Criterion for classification	Const.	DEWST	PROUT	PRESCU	UNS	TRDEP	TREND	LSTOCK	R ² CHISQ(b)	Degrees of freedom
RESTRICTIVE ATTITUDES TOWARDS FDI										
NAFITO										
IFO ≤ 37 [1]	-23.7* (-1.71)	207.8 (1.30)		-2.60* (-2.26)	-24.66* (-1.78)			0.290** (2.99)	0.37 27.89*	35
IFO ≤ 37 [2]	-35.0* (-2.02)		29.05** (2.94)		3.40 (0.35)	0.70* (2.59)		0.391** (6.09)	0.59 23.41	31
IFO ≤ 37 [3]	-34.3 (-1.69)		22.86** (3.16)	-4.17* (-1.91)			5.11 (1.29)	0.396** (5.83)	0.54 21.89	32
NAFINA										
FS ≤ 3 [1]	7.6 (0.13)	-699.1 (-0.92)		-26.20* (-2.14)	2.87 (0.08)			0.045** (3.88)	0.27 21.56	39
FS ≤ 3 [3]	32.6 (0.17)		88.54 (0.97)	-26.94* (-1.84)			-6.11 (-0.21)	0.040** (2.76)	0.22 11.79	33
NAFICO										
FS ≤ 3 [2]	30.4** (2.81)		-13.43 (-1.60)		6.87* (2.34)	-0.82* (-2.67)		-0.202* (-2.48)	0.28 18.12	30
IFO ≤ 37 [2]	10.0** (3.87)		-0.97 (-0.94)		-1.29* (-1.76)	-0.11** (-2.91)		-0.201* (-2.63)	0.18 8.51	21
FS ≤ 3 [3]	33.6* (2.20)		4.45 (0.66)	1.16 (1.15)			-3.66* (-1.71)	-0.153* (-2.13)	0.06 17.96	37
LESS RESTRICTIVE ATTITUDES TOWARDS FDI										
NAFITO										
37 < IFO < 40 [1]	32.6* (1.77)	-144.8* (-1.77)		0.07 (0.07)	10.77 (1.03)			0.006 (0.15)	-0.04 24.22*	55
GU = 2 [2]	86.4 (0.71)		6.18 (0.15)		-105.51* (-1.79)	-0.55 (-0.22)		0.053** (3.82)	0.28 14.39	36
3 < FS < 3.9 [2]	-22.8 (-1.29)		18.48** (3.50)		-26.76 (-1.65)	0.49* (1.69)		0.332** (5.34)	0.41 21.41	41
NAFINA										
GU = 2 [2]	179.1 (1.42)		-43.51 (-0.91)		-106.42* (-1.92)	-3.34 (-1.19)		0.038* (1.93)	0.29 14.86	36
NAFICO										
GU = 2 [1]	-2.9 (-0.43)	26.9 (0.86)		-0.77 (-1.04)	10.05** (2.39)			-0.081 (-1.19)	0.17 20.37	35
3 < FS < 3.9 [2]	7.2** (3.02)		-1.07* (-1.75)		-0.41 (-0.27)	-0.06* (-1.89)		-0.099 (-1.69)	0.02 4.60	32
3 < FS < 3.9 [3]	6.8** (3.65)		-0.55 (-2.42)	-0.21* (-1.84)			-0.98** (-3.04)	-0.106* (-2.05)	0.17 9.13	32
FAVOURABLE ATTITUDES TOWARDS FDI										
NAFITO										
GU = 3 [1]	1.0 (0.13)	357.6** (2.88)		-1.51 (-1.41)	-17.52* (-2.01)			-0.155* (-2.09)	0.29 19.42	50
FS ≥ 3.9 [1]	-36.5** (-3.28)	676.7** (3.97)		-5.90** (-3.55)	10.21 (0.33)			-0.321** (-3.25)	0.60 19.65	25
GU = 3 [2]	25.4** (3.20)		-4.79 (-1.27)		-15.63* (-2.31)	-0.15 (-1.49)		-0.068 (-1.55)	0.14 9.23	35
FS ≥ 3.9 [2]	21.4** (3.31)		-6.40* (-2.39)		-5.88 (-0.78)	-0.06 (-0.87)		-0.276** (-4.20)	0.46 12.39	17
FS ≥ 3.9 [3]	17.8** (4.38)		-4.62* (-2.06)	-0.95 (-1.62)			-0.58 (-0.93)	-0.308** (-4.45)	0.52 21.70	17

Table A5 continued

Dependent variable/ Criterion for classification		Const.	BENST	PROUT	PRESCU	UHS	TRDEP	TREND	LSTOCK	R ² CHISQ(b)	Degrees of freedom
MAFIMA											
GU = 3	[1]	-0.8 (-0.27)	13.0 (0.95)		-1.01* (-2.42)	-6.61* (-2.30)			0.037 (1.14)	0.15 6.27	61
FS ≥ 3.9	[1]	-7.8* (-2.69)	142.8** (4.28)		-1.47** (-3.56)	6.55* (2.59)			-0.282** (-3.06)	0.60* 25.73	35
FS ≥ 3.9	[2]	1.0 (0.13)		-8.06** (-2.91)		0.35 (0.04)	-0.01 (-0.15)		-0.093 (-0.81)	0.23 10.68	27
FS ≥ 3.9	[3]	-9.1* (-1.86)		-6.80** (-3.36)	-1.38* (-2.21)			0.54 (0.83)	-0.067 (-0.72)	0.35 15.09	27
MAFICO											
GU = 3	[1]	0.8 (0.47)	83.0** (5.21)		-0.02 (-0.08)	-4.10* (-2.29)			-0.222** (-3.67)	0.44 22.84	42
GU = 3	[2]	13.7** (5.76)		-1.07 (-0.99)		-1.37 (-1.11)	-0.13** (-5.27)		-0.254** (-5.09)	0.49 17.85	27

(a) For the definition of variables, see the text and Appendix 1. **, * significant at 1 and 10 percent levels; t-statistic in parentheses. Only those regressions are reported that provide additional information to Tables 22 and 23, equation numbers [1], [2] and [3] stand for the Equation [V.10], [V.11] and [V.12], as specified in the text, and are in accordance with Tables 22 and 23. - (b) If the chi-square statistic is significant at the 5 percent level (denoted by "+"), corrected standard errors of the estimated coefficients are used to calculate the t-statistic given in parentheses.

Source: Own calculations.

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