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***Detecting the Pitfalls of Data on  
Foreign Direct Investment: A Guide  
to the Scope and Limits of FDI-Data  
as an Indicator of Business Activities of  
Transnational Corporations***

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## INTRODUCTION

International business activities of transnational corporations (TNCs) have attracted considerable attention during the past two decades. Business analysts, administrative authorities, private banks and central banks, international institutions, or academic researchers observe the global activities of TNCs. Although, all these different groups of analysts may be interested in different aspects of TNC activities, they all are concerned with the explanation of TNC behaviour as well as the related impact on home and foreign economies. Furthermore, they all have in common the demand for *data* that reflect or indicate reliably the international business activities of TNCs. Among all kinds of data, foreign direct investment data are being collected systematically for years, they are available for sectors and regions with multiple degrees of disaggregation and, by far, they are the most utilised data for analyses. Hence, FDI is the most important indicator of international business activities conducted by TNCs.

There is now a considerable amount of literature available that is devoted to various FDI-related issues. In recent years, this literature was reviewed by various authors. Some of the most important surveys are published by Graham [1995], Rayome and Baker [1995], Lizondo [1995], Grosse and Behrman [1992], and UNCTC [1992]. Graham [1995] surveys theories of the determinants of FDI and examines empirical studies of economic consequences of FDI for both, host and home countries. Rayome and Baker [1995], and Grosse and Behrman [1992] provide an extensive overview and discussion on theories explaining TNCs behaviour with theories of FDI. Their tutorial covers the principal literature of FDI theory. The conclusions reached in the literature on the determinants of FDI are critically reviewed by Lizondo [1995]. The United Nations Centre on Transnational Corporations (UNCTC) conducted a survey on empirical studies which analyse the determinants of FDI. The study provides a review of the most important empirical literature and divides the extant research into categories.<sup>1</sup>

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<sup>1</sup> The categories are (1) econometric studies of determinants which analyse rational motives for investment; (2) survey studies of the motivation of, and key influences on foreign direct investors; and (3) studies which deal with bargaining between governments and TNCs, incentives and political risk.

Despite the huge amount of studies and reviews there are no rigorous and comprehensive studies about the reliability of FDI data as an indicator of TNC activities. This is surprising, because sufficient quality of data is a prerequisite for meaningful empirical studies. Thus, in this paper, we present a guide to the analysis and reasonable interpretation of FDI statistics. We will discuss the question whether FDI data are a reliable indicator of international TNC activities by analysing in particular the *quality of the underlying data*. To do this, we address two issues: First, we review the services of the most important national and international *sources* of FDI data. They are often neither easily available nor widely known. Second, we analyse thoroughly and comprehensively the practical problems that come along with the collection of FDI data, and the methodological difficulties in deriving comparable cross-country FDI data. Thus, we disclose data deficiencies and give recommendations for careful use and interpretation of the data at hand.

## **THE NATURE AND USE OF FDI DATA**

We start our study with an inquiry into the nature and use of FDI to understand the importance of FDI (data) as an indicator of international TNC business activities. When working with FDI it is indispensable to clarify what the data at hand stands for, and how and to what extent it can be interpreted. A normative discussion of data sources is only feasible with a precise concept of FDI (data). According to Graham „the first thing that should be said about foreign direct investment is that the term is a misnomer.“ [Graham 1995, p. 1.] Graham refers to the investment nature of FDI as the crucial part of the term. However, a discussion of the investment nature of FDI can be addressed from two perspectives, an accounting and a real investment perspective. We briefly go through both perspectives and turn then on FDI as an indicator of real economic activity, but before we present guidelines for definitions of FDI and derive a typology of FDI-related activities.

### **Definitions of FDI and a Typology of FDI-related Activities**

Several guidelines for definition of FDI are provided by two international organisations

(IMF and OECD), which elucidate various embodiments of FDI. Guidelines for definition of FDI aim to supply concepts for a clear differentiation between *portfolio investment and direct investment*. Usually two categories of criteria are used for this distinction: (1) the *time horizon* of the investment and (2) the *motivation of the investors*. If an investment is classified as a direct investment, the investor is supposed to have a long-term interest and to exert a significant degree of influence on the management of the affiliate. On the contrary, if the time horizon is short and investors mainly have financial interests, investment are classified as portfolio investment.

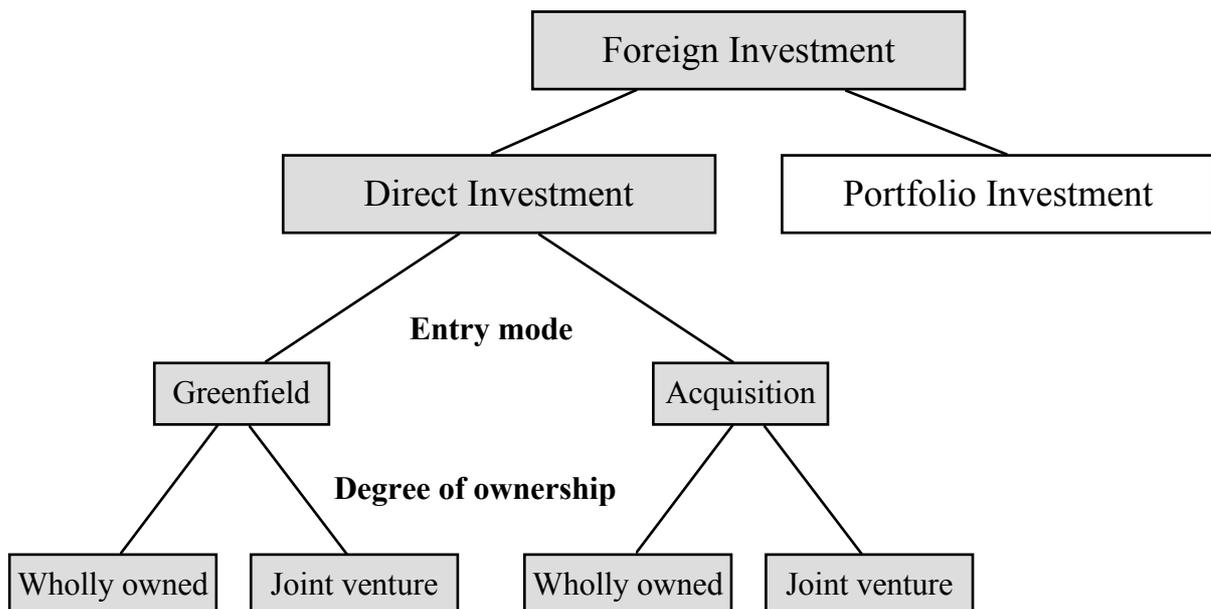
In this respect, two main concepts for definitions of FDI are provided by the International Monetary Fund (IMF) in its Balance of Payments Manual [IMF 1977, 1993] and by the Organisation for Economic Co-operation and Development (OECD) in the second edition of the Detailed Benchmark Definition of Foreign Direct Investment [OECD 1992].<sup>2</sup> According to the IMF, direct investment „... is the category of international investment that reflects the objective of obtaining a lasting interest by a resident entity in one economy in an enterprise resident in another economy.“ [IMF 1993, p. 86.] The lasting interest implies the existence of a long-term relationship between the foreign direct investor and the enterprise and a significant degree of influence by the foreign direct investor on the management of the enterprise. Although the IMF recommends a 10 per cent threshold of ownership for the distinction between direct and portfolio investment, it explicitly leaves the choice to national discretion [IMF 1993, p. 87]. The OECD Benchmark Definition of Foreign Direct Investment is based on the IMF definition in the Balance of Payments Manual. The OECD benchmark definition, considers a direct investment enterprise as an incorporated or unincorporated enterprise in which a single foreign investor owns 10 per cent or more of the ordinary shares or voting power of an enterprise, or less than 10 per cent, yet maintains an effective voice in management. The OECD defines FDI as an investment involving a long-term relationship and reflecting a lasting interest and control in an entity abroad [OECD 1992, p. 1].

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<sup>2</sup> The Detailed Benchmark Definition of Foreign Direct Investment was worked out by the OECD-Committee on International Investment and Multinational Enterprises (CIME). In consultation with the IMF the Committee initiated work aimed at the improvement of statistics on FDI in OECD member countries. A major outcome of this exercise was the elaboration of a Detailed Benchmark Definition of FDI [Witherell 1984; OECD 1983].

The focus on direct investment and the application of the criteria „entry mode“ and „degree of ownership“ allows us to derive a typology of 4 different types of foreign direct investment (see figure 1). The choice of the *entry mode* decides if firms set up new facilities (greenfield investment), or buy existing facilities (acquisition). In the theoretical literature FDI is typically treated as greenfield investment, where new facilities serve as a substitute for exports of finished goods. However, this is empirically incorrect as far as mergers and acquisitions (M&A) are by far the preferred and prevailing entry mode [UNCTAD/ITE 1997a]. The *degree of ownership* indicates whether the foreign affiliate is completely owned by the investing firm, or if more than one firm jointly pool their assets in order to set up a new or acquire an existing affiliate (joint venture).<sup>3</sup>

**FIGURE 1**  
A typology of FDI engagement



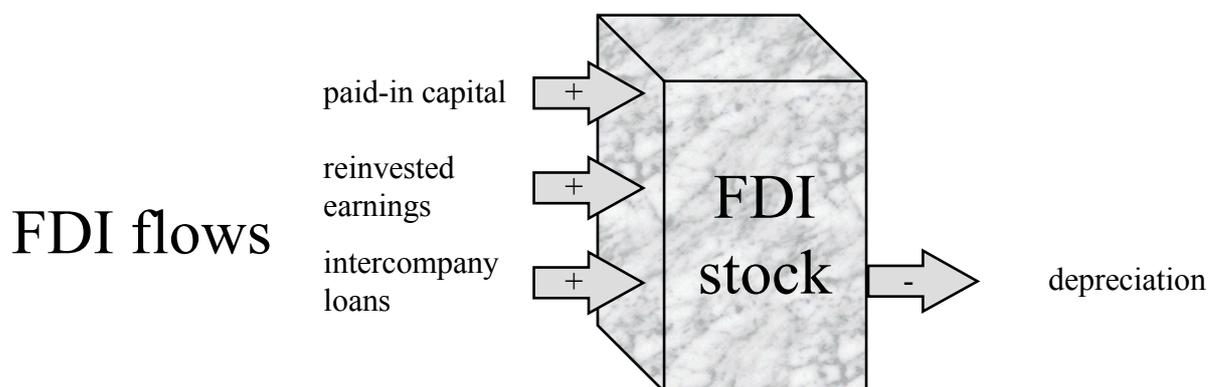
### Accounting and Real Investment Perspectives of FDI

For accounting purposes (either on the level of the balance sheet of a business firm or the BoP of a country) FDI occurs when the book value of the net worth of an investment controlled by investors in a country other than the country, in which the investment is legally domiciled, increases. The increase is reported as a FDI flow. On the balance sheet of the affiliate, the affiliate's net worth is simply the value of assets of the business less the liabilities owed to entities other than the business's owners; according to the fundamental accounting identity

$$\text{assets} = \text{liabilities} + \text{owner's equity}.$$

Thus, the net worth must be equal to the book value of the owner's equity, which in turn consists of accumulated net flows over time, i.e. accumulated paid-in capital and long-term intercompany loans of the owner plus retained earnings [IMF, 1993, pp. 86-87; Hasnat 1997, p. 102]. Figure 2 illustrates the concept and visualises the theoretical relationship of FDI flows and FDI stock. Of course, the components „paid-in capital“ and „retained profits“ may turn negative in case of paid-out capital and retained losses, respectively.<sup>4</sup>

**FIGURE 2**  
Net-FDI flow components according to IMF standards



<sup>3</sup> A note on terminology: Several studies distinguish between three alternative entry modes and classify joint ventures as a third alternative [see e.g. Kogut, Singh 1988]. However, we treat greenfield investment and acquisition as representing alternative entry modes, whereas joint ventures concerns the degree of ownership. Our approach implies that entry and ownership involve two separate decisions.

<sup>4</sup> Usually losses reduce capital reserves; in case of a transfer of losses to the parent, the FDI stock remains unchanged.

These transactions which affect the balance sheet of the affiliate are also recorded in the BoP capital and financial account of the two national economies concerned, as FDI inflows and outflows, respectively. To account retained earnings as *increases* in FDI might appear unintelligible at first sight, as no transaction actually takes place. However, as it increases the affiliate's net worth attributable to the foreign investor, it represents, at least in an accounting sense FDI. From the perspective of the affiliate, FDI is a *source of funds*. Furthermore, it is only *one* of the possible sources. Other sources include local borrowing or international borrowing from other lenders than the foreign owner and raising equity capital from local minority shareholders [Graham 1995, p. 3].

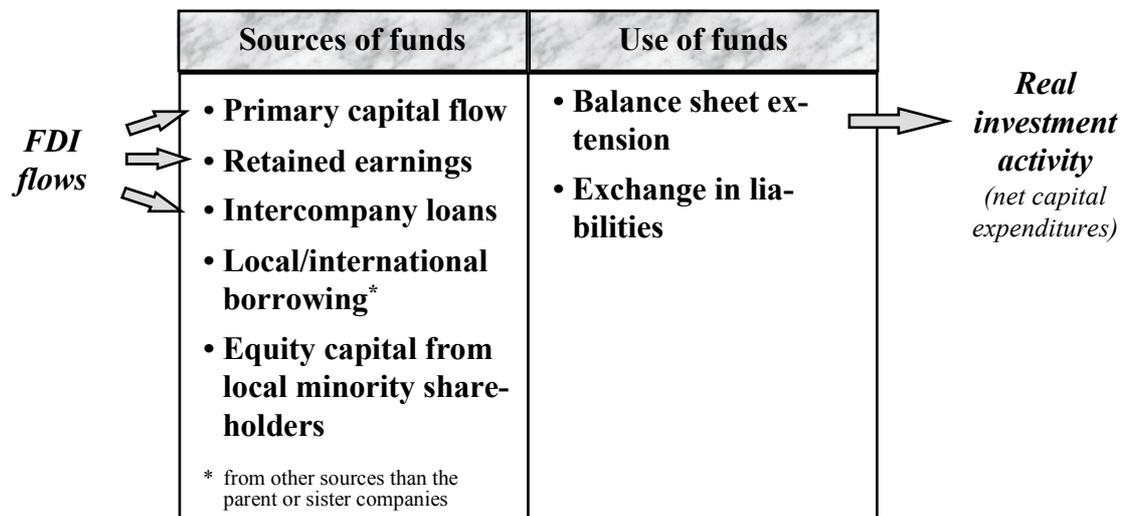
While FDI is viewed as the *foreign financing of investment* from an accounting perspective, FDI indicates the *use* of funds by an affiliate from the perspective of a real investment - funds that are spent for real investment. In this case, FDI flows do not necessarily reflect actual investment activities in the host country. This can be illustrated with the following example:

„[...] an MNC acquires an ongoing firm in a country other than the host country, paying the current owners of that firm cash. In the year that this transaction takes place, the acquired firm engages in no capital investment whatsoever. The transaction represents a direct investment, but no economic transaction takes place.“ [Graham 1995, p. 3.]

Hence, an increase of the proportion of the parent's equity shares in the affiliate will be recorded as FDI, even though it may only involve a redistribution of local and foreign interests (i.e. exchange in liabilities).

Two important conclusions can be drawn from this discussion: (1) FDI flows are just one (but a major) source of funds which finance real investment activities of the affiliate; and, moreover, (2) not all FDI flows are used for real investment activities; alternatively FDI can be used for an accounting exchange in total equity and liabilities. Thus, FDI flows do not necessarily correspond to real capital formation generated by affiliates of TNCs. Or, as Cantwell puts it: „FDI is simply one means by which the production of MNCs outside their home countries is financed.“ [Cantwell 1990, p. 1] Figure 3 illustrates the relationship between FDI flows as the source of funds and real investment as the use of funds.

**FIGURE 3**  
**The relation between FDI flows and real investment**



However, the issue here is, whether FDI relates simply to the foreign financing of international production or whether it relates to the total value of assets engaged in international production held by foreign companies. For our purposes, the distinction between FDI stocks and FDI flows is important. FDI flows reflect the sum invested in affiliates by foreign companies during a limited period (usually one year), which affiliates may spend to accumulate fixed assets, to repay past borrowings, or for some other objectives. However, the FDI stock represents the total value of assets (engaged in international production) attributable to the foreign investor. Thus, the FDI stock is an indicator for the value of assets engaged in international production.

### **The Indicator Function of FDI**

Now, we can turn to the indicator function of FDI. The crucial point is, whether FDI constitutes a qualified indicator for the assessment of business activities conducted by TNCs. An indicator of TNC activities should possess the potential to evaluate the „...value of their international production, or the value added by their foreign affiliates“ [Cantwell 1990, p. 1]. The most detailed direct data available on production activities of TNCs is a record of the sales value associated with international production. However, to estimate the value added by foreign affiliates, information on the value of the

*intermediate inputs* purchased by the affiliates would be necessary as well. Due to the fact that data on intermediate inputs are virtually not available, the FDI stock, that is, the *production potential* (i.e. the investment position) under the control of foreign investors is considered to be a sufficient approximation of productive TNC activities.

However, the indicator function of FDI stocks and flows suffers from several weaknesses: (1) As FDI (flow) data do not necessarily reflect actual investment activities by TNCs in host countries, capital expenditures of foreign affiliates (use of funds), rather than FDI flows, provide a much better insight into investment activities of TNCs actually committed in host countries.<sup>5</sup> (2) Data on the investment position (FDI stock) as an indicator of the production potential do not contain any information about the *quality* of the employed capital. A similar problem is raised by the question whether the character of the investment is of a knowledge creating or of a knowledge exploiting nature. To answer these issues, a more appropriate measure would be the use of data about the technologies that are transferred by TNCs as well as the technologies that are created or adapted by foreign owned research facilities. Thus, data on R&D-expenditures of the foreign owned affiliates would be necessary [Kravis, Lipsey 1988a, p. 23]. (3) FDI figures itself do not give any evidence about the *employment effects* and labour intensity of the TNCs foreign operations. The number of employees is normally used as the measure of labour input. An alternative measure to the quantitative indicator of labour input would be the average compensation per worker as an indicator of the quality of the employed human capital (skill intensity).<sup>6</sup> (4) FDI data neither provides insights into the degree of integration of the foreign affiliate within the corporate network nor the dependence of the affiliate to the parent firm. Therefore, data on intra-firm trade and payments of royalties and fees would be of importance.

Although there is a variety of possible measures of international production, such measures are rarely directly available. Furthermore, to obtain a more holistic view of TNC activities would demand a variety of different data, which have to be made

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<sup>5</sup> For a comprehensive survey of capital expenditures of foreign subsidiaries as an indicator of productive activities of TNCs, see Hasnat 1997; Fahim, Nader 1994; and Scaperland, Balough 1983.

<sup>6</sup> Kravis and Lipsey provide a detailed discussion of appropriate indicators for the measurement of labour input and skill intensity of the human capital employed in foreign affiliates [Kravis, Lipsey 1988b, p. 23].

available. In this respect, data on FDI are merely a second-best or proxy measure. But FDI data derive its popularity from the fact that they are more accessible than other measures of international production activities, such as TNC-related sales and TNC-related trade profits, employment, or capital expenditures of foreign affiliates [Hasnat 1997, p. 102; Hipple 1990; Kinniburgh, Ribeiro 1986, p. 19]. Therefore, international production is normally measured at a national level by outward and inward FDI stocks [Cantwell, Bellak 1995, p. 1; Kravis, Lipsey 1988a, p. 9].

## **NATIONAL DATA SOURCES**

On a national level, FDI data are primarily collected to record BoP transactions, to secure information for computing, analysing and monitoring the BoP impact of FDI, and to fulfil exchange controls. Two different methods are currently in use by most countries for collecting FDI data: (1) *traditional BoP transaction recordings* which are reports of related cash-flows through the banking system, and (2) *surveys of the investing companies* [Vukmanic, Czinkota, Ricks 1985, p. 165]. In the following, we discuss the strengths and weaknesses of both methods in detail and present selected national data sources.

### **Balance of Payments Statistics as a Primary Source of FDI Data**

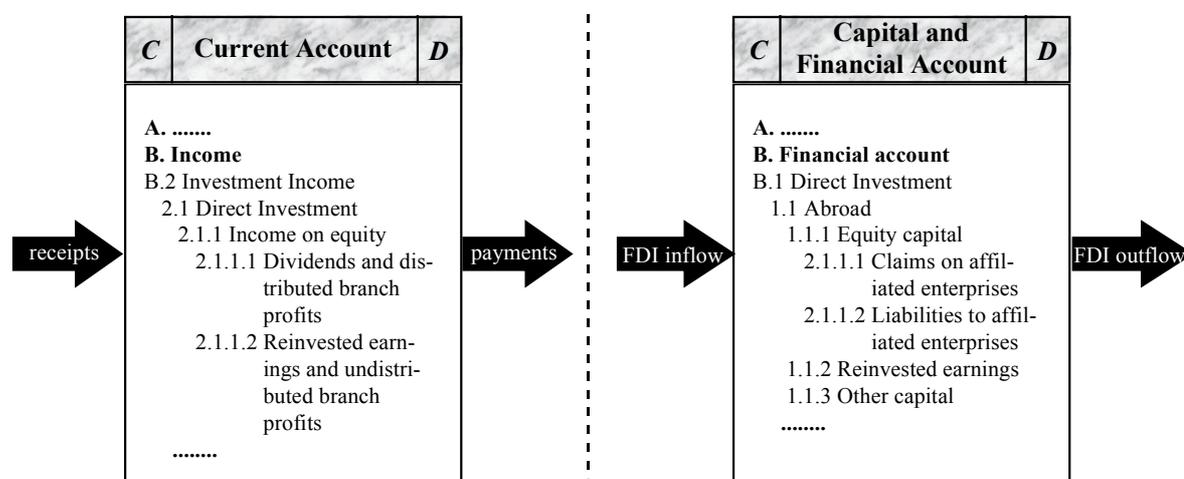
Most national data systems that deal with FDI activities are BoP oriented. Countries collect data on foreign direct investment for their BoP to ensure that a record of an important group of international transactions is being kept [Kinniburgh, Ribeiro 1986, p. 16; Cantwell 1990, p. 1]. The data is used for macroeconomic studies, which are concerned with the causes of payment imbalances and the implementation of appropriate adjustment measures. However, if we wish to analyse the international TNC activities we must ask how affiliates of TNCs are established, and what and when do flows and funds occur between affiliates and their parents in the course of their relationship. A prerequisite for an appropriate analysis is that the data are up to date and do not contain large gaps in the time series. Hence, data collection must be carried out regularly and frequently.

According to IMF standards, FDI is recorded in the „Current Account“ of the BoP as „direct investment income“ and in the „Capital and Financial Account“ as „direct investment“ [IMF 1993]. On the *Current Account* side, national systems of data collection concentrate on the accurate measurement of FDI receipts and payments (see figure 4). The categories „income on equity“ and „income on debt“ cover income from the ownership of direct investment capital in a firm located in another country. Income on FDI is presented on a net basis for both FDI abroad and in the reporting country. Income on equity is divided into distributed income (dividends and distributed branch profits, respectively) and retained earnings (earnings that foreign affiliates do not remit to the parent) [IMF 1993, p. 71]. Retained earnings are treated as entrepreneurial income. On the *Capital and Financial Account* side national data systems concentrate on direct investment capital transactions. These transactions are recorded separately for FDI inflows (FDI that occurs in the reporting economy) and FDI outflows (FDI abroad) and reflect changes in the ownership positions of affiliates that are controlled by direct investors. FDI capital transactions contain equity capital (owner’s equity), intercompany loans and retained earnings as principal components [IMF 1993, p. 87]. Retained earnings are recorded in the Current Account of the BoP as being paid to the direct investor as income on equity and in the Capital and Financial Account as being reinvested in the enterprise. Thus, retained earnings increase the value of the stock of foreign assets in the country of the direct investor [IMF 1993, p. 79].<sup>7</sup>

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<sup>7</sup> According to IMF accounting standards for the BoP, usually all earnings that are reported by the affiliate should be considered as being transferred to the parent’s or investor’s home country. The portion of the earnings retained in the affiliate is then classified as a long-term capital flow back to the host country [Graham 1995, p. 2].

**FIGURE 4**  
**BoP items and FDI**



The discussion on the investment nature of FDI pointed out that FDI not only comprises the initial capital transaction establishing the relationship between the foreign direct investor and the enterprise but also all subsequent transactions. The components of FDI capital transactions are equity capital flows, retained earnings and intercompany loans [IMF 1993, pp. 86-87]. By accumulating all components of FDI transactions, the resulting net worth of accumulated flow components should be equal to the book value of the owner's equity (FDI stock). Conceptually, it should be possible to derive data on FDI stock by cumulating FDI flows [Kinniburgh, Ribeiro 1986, p. 18]. However, the accumulation of FDI flows as recorded in BoP statistics does not equate the changes in stocks, although flows are also obtained net of depreciation [Cantwell 1990, p. 8]. Several inadequacies of the data collection process explain this deviation: (1) *Retained earnings* (no remittance to parent) may not be completely incorporated in the data on flows. Many national reporting systems do not register retained earnings directly in the BoP-accounts [Kinniburgh, Ribeiro 1986, p. 18]. In the flow data, retained earnings must then be *calculated* which leads to major discrepancies between actual and calculated values. The omission to identify retained earnings by host countries probably results in an under-reporting of FDI inflows [Kinniburgh, Ribeiro 1986, p. 18]. The amount of retained earnings depends heavily on the vintage of the capital stock [UNCTAD/DTCI 1997c, p. xliv]. (2) FDI flows might occur due to *asset revaluation considerations*. In particular, holdings of foreign currency by affiliates and certain other

assets (unscheduled depreciation and appreciation) may be revalued when estimating the total value of FDI assets, while such changes do not enter into registered annual FDI flows [Cantwell 1990, p. 9]. (3) *Initial portfolio investments* may affect the overall total of recorded FDI. This occurs, e. g. when an investor starts to acquire a portfolio stake in a foreign firm. If the investor acquires a further stake in the following period, and if the sum of this and the prior stake exceed the minimum amount necessary to be classified as a direct investment, then only the stake of the second period will be reported as a FDI flow [Cantwell 1990, p. 18)]. This deficiency can only be overcome by surveys that report the change in total stocks correctly.<sup>8</sup>

In addition to the differences between registered, accumulated flows and FDI stocks, there exist several other deficiencies of exclusively BoP based FDI statistics. Among the most important are the (1) historical cost-based approach to FDI and (2) deficiencies due to the use of the banking system for the data collection. Deficiencies with the historical cost-based approach refer to the fact that FDI flows which are accumulated to stocks represent the *book value of assets*, and book values state the historical costs. In principle, all asset stocks that comprise a country's international investment position should be measured at market prices. But a revaluation of FDI stocks is impossible without any balance sheet information.<sup>9</sup> The deficiencies due to the use of the banking system to collect the data originate from the fact that these statistics do not contain any additional data on international production activities of TNCs and their foreign affiliates apart from FDI.

In sum, statistics based on BoP transactions do not provide a complete picture of all FDI flows. Moreover, from a perspective of business users most questions related to the international production activities of TNCs can not be tackled with data derived from BoP statistics. Most of the data deficiencies inherent to BoP statistics are resolved by conducting company surveys. In the following subsection we discuss in detail the FDI data collection method based on company surveys.

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<sup>8</sup> A side effect of these deficiencies in accumulating flows is that the recorded world-wide inward and outward FDI flows do not balance [see also UNCTAD 1993c, p. 14].

### Scope and Limits of FDI Surveys

A small but increasing number of countries conduct regular surveys which provide the best source of evidence on FDI data. They include an estimate of the total value of assets attributable to foreign ownership at a given point in time that can be headed as the *foreign capital stock*. These are net capital stock figures, which means that rate of depreciation and deinvestment is already subtracted [Cantwell 1990, p. 7]. FDI statistics based on company surveys usually provide additional information on activities of TNCs and their foreign affiliates, for instance, information on the capital expenditures of affiliates, sales, profits, employment, or R&D expenditures. With the help of survey data on FDI, questions of characteristics of the parent companies and how the affiliates operate in the host country in comparison to the locally-owned firms can be raised. In this respect, however, surveys are the more useful the higher their degree of differentiation, i.e., the more detailed data they contain about sectoral and geographical characteristics.

Although surveys provide very often accurate information of a country's investment position and on TNC activities, surveys usually suffer from 5 practical as well as methodological problems. (1) Firms frequently report on a *voluntary* and not a *statutory basis*. This can cause problems in terms of coverage and consistency if firms are not required to report their foreign ties to official agencies or regulatory bodies. Furthermore, many companies report only sporadically which makes the time series inconsistent as the group of underlying reporting firms can vary [Gilman 1981, pp. 100-104]. (2) Although most countries conduct surveys on a statutory basis, and foreign investors are legally obliged to report, the *accuracy of responses* depends nevertheless primarily on voluntary compliance with the law [Stekler, Stevens 1991, p. 9]. It would go beyond the capacities of the national authorities to hold detailed audits of the books of different investors. (3) A third problem is that *small affiliates* in terms of minimum

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<sup>9</sup> Book values of affiliates' balance sheets are often used to determine the value of the FDI-stock. This practice reflects the fact, that balance sheet values represent the only source of valuation of assets and liabilities readily available in most countries. Thus, the market price measurement cannot always be implemented because of the absence of regular revaluations [IMF 1993, p. 29].

assets or sales are usually ignored, mainly because of the relatively high costs and of the protracted procedure of the accurate evaluation of reported data. (4) The fourth problem concerns the *periodicity of the survey and the lack of topicality*. Generally, surveys are conducted less frequently than traditional BoP statistics, i.e., they are conducted on a biannual or a triennial basis. More detailed surveys like the U. S. Benchmark Survey are conducted with even less frequency. Thus, flow data which is based on traditional BoP statistics is still necessary because data of available surveys are obsolescent. Evaluation of the reported data by the authorities in questions cause publishing delays of up to two years. In addition, late reporting investors cause very often extensive data revisions, which, in turn, produces further delays of data publication. (5) Finally, statistical authorities do not have *comparable historical survey data*. In most countries, systematic data collection began in the 1970s. Thus, it is hardly possible to conduct accurate time series analysis that is based on consistent survey data.

Table 1 includes a complete overview of all countries conducting surveys on inward FDI (I) and outward FDI (O). The date in a bracket indicates the year of the latest survey.

**TABLE 1**  
**Surveys on inward and outward FDI conducted by Countries**

<b><i>Countries conducting surveys on inward and outward FDI</i></b>			
<b><i>Developed countries:</i></b>	<b><i>Other developed countries:</i></b>	<b><i>Latin America and the Caribbean (continued):</i></b>	<b><i>South and South East Asia:</i></b>
<b>European Union:</b>	Australia (1994 I/O)	Costa Rica (1990 I)	Bangladesh (1988 I)
Austria (1994 I/O)	Japan (1993 I/1994 O)	Dominican Republic (1990 I)	China (1989 I/O)
Belgium (1989 I/O)	New Zealand (1995 I/O)	El Salvador (1990 I)	Hong Kong (1989 I)
Denmark (1990 I/O)	South Africa (1988 O)	Panama (1989 I)	India (1988 I)
Finland (1993 I/O)	<b><i>Developing countries:</i></b>	Trinidad & Tobago (1990 I)	Indonesia (1990 I)
France (1993 I/O)	<b>Africa:</b>	<b>Asia:</b>	Malaysia (1995 I/1988 O)
Germany (1993 I/O)	Côte d'Ivoire (1989 I)	<b>West Asia:</b>	Maldives (1995 I)
Greece (1989 I)	Ghana (1990 I)	Bahrain (1988 I)	Mongolia (1995 I)
Ireland (1986 I)	Kenya (1990 I)	Cyprus (1988 I)	Myanmar (1995 I)
Italy (1994 I/O)	Lesotho (1990 I)	Islamic Republic of Iran (1988 I)	Nepal (1988 I)
Luxembourg (1989 I/O)	Nigeria (1992 O)	Iraq (1989 I)	Pakistan (1988 I/O)
Netherlands (1992 I/O)	Tanzania (1990 I)	Jordan (1989 I)	Philippines (1989 I/1988 O)
Portugal (1993 I)	Zimbabwe (1989 I)	Kuwait (1989 I)	Singapore (1989 I)
Spain (1991 I/O)	<b>Latin America and the Caribbean:</b>	Lebanon (1990 I)	South Korea (1993 I/ 1994 O)
Sweden (1993 I/O)	Argentina (1989 I)	Oman (1990 I)	Sri Lanka (1988 I)
United Kingdom (1994 I/O)	Bolivia (1990 I)	Qatar (1990 I)	Taiwan (1988 I/O)
<b>Other Western Europe:</b>	Brazil (1990 I/O)	Saudi Arabia (1989 I)	Thailand (1989 I/O)
Iceland (1986 O)	Chile (1990 I/1992 O)	Turkey (1989 I)	<b>The Pacific:</b>
Norway (1993 I/O)	Colombia (1990 I/O)	United Arab Emirates (1988 I)	Fiji(1989 I)
Switzerland (1993 I/O)	Ecuador (1990 I)	Yemen (1987 I)	Papua New Guinea (1989 I/O).
<b>North America:</b>	Peru (1990 I/O)		
Canada (1994 I/O)	Venezuela (1990 I/1993 O)		
United States (1994 I/O)			

Source: UNCTAD/DTCI [1996b], compiled by the authors

### Discussion of Selected National Sources of FDI

In this subsection we give a brief review of the FDI data sources and definitions of the five most relevant investor countries in terms of 1995 outward FDI stock. They are the United States, Germany, United Kingdom, Japan, and France. As noted earlier, two methods are currently used by most countries for collecting data: reports of related cash-flows through the banking system (Germany, France, Japan) and surveys of investing companies (United States, and UK). Germany and recently France, supplement their cash-flow reporting system with company surveys. We begin with the United States which possesses the most comprehensive data collection system on FDI.

*United States.* In the United States data on FDI and on operations of affiliates are collected by the Bureau of Economic Analysis (BEA) of the U. S. Department of Commerce. The U. S. is virtually the only country that collects and publishes extensive data on the operations of affiliates. Thus, the U. S. system of FDI statistics provides a wide range of data, and also attempts to collect the information that are necessary to

address the questions concerning the activities of TNCs [Stekler, Stevens 1991, p. 2]. Data is collected via company surveys. The BEA provides quarterly and annually data on inward and outward FDI. The data additionally include annual estimates of the FDI stock. The data are published by BEA in the „Survey of Current Business“ and in supplementary publications [BEA 1997]. Annual data on FDI in the U. S. have been published since 1977 [Lipseý 1990, p. 339]. Besides FDI flow and stock data, BEA periodically collects financial and operating data of the overall activities of the U.S. (foreign) affiliates and U.S. parents. These detailed data are provided by Benchmark surveys, which are usually conducted every five years.<sup>10</sup> These periodic Benchmark surveys on outward and inward FDI cover detailed balance sheet and income statement data, such as sales, plant and equipment expenditures, as well as data on employment, wages, import and export flows, detailed data on R&D expenditures and research workers, information on performance requirements, and extensive information on parent-firm operations (United States parents only). All BEA surveys generate a significant amount of data at a high level of disaggregation - all data are collected by country and by 3-digit industry classification. The surveys are conducted on a statutory basis.<sup>11</sup>

In the United States foreign investment amounting to more than 20 per cent of the shares or voting rights of an enterprise is considered as FDI. FDI flows and stocks include retained earnings and intercompany loans. FDI stock estimates are valued on three alternative bases; the first two, current-cost and market-value, reflect prices of the current period; the third, historical-cost, reflects prices at the time of the investment. Estimates of the position at current cost and market value were made available for the first time in the issues of the Survey of Current Business of May and June 1991. The historical-cost position estimates come directly from the book-value data reported in

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<sup>10</sup> The last benchmark survey for FDI in the U. S. covered 1992 [BEA 1995]. For U. S. FDI abroad most recent data is available for 1989 [BEA 1992] and 1994 [BEA 1996].

<sup>11</sup> The BEA was directed by the President, in accordance with the International Investment Survey Act of 1976, to secure information on FDI flows and other information related to international production [Vukmanic, Czinkota, Ricks 1985, p. 167]. Data are now collected under the International Investment and Trade in Services Survey Act by means of mandatory surveys of the U.S. affiliates of foreign companies and of U.S. companies investing abroad.

BEA's direct investment surveys.<sup>12</sup>

*Germany.* In Germany data on FDI are collected by the Bundesbank. The Bundesbank uses both methods for gathering FDI data: traditional BoP transaction recordings and a company survey. Flow data on inward and outward FDI are published monthly in the BoP-statistics [Deutsche Bundesbank 1997a]. In addition, annual figures on inward as well as outward FDI flows and stocks based on a survey with regional and sectoral disaggregations are published as a statistical supplement to the BoP-statistics in May each year [Deutsche Bundesbank 1997b].

The Bundesbank classifies investment amounting to more than 20 per cent of the shares and voting rights, respectively, as FDI. Prior to 1990 the limit was 25 per cent. FDI amounting to less than DM 1 Million of total assets is not subject to registration. A unique distinction is made between primary and secondary FDI. Primary FDI covers direct ownership and direct claims from loans to affiliates. Secondary FDI covers indirectly held assets by the investor via majority owned foreign affiliates.<sup>13</sup> FDI figures after 1990 cover unified Germany. The Bundesbank includes retained earnings in the flow data. Statistics on FDI stocks are based on an annual survey which has been carried out since 1976. It is based on the balance sheets of the direct investment enterprises. Foreign investors in Germany and German investors abroad have to report annually on their FDI stocks. The inquiries are conducted on a statutory basis and figures are published with a time lag of 15 months.

*United Kingdom.* In the UK data on FDI are collected by the Office for National Statistics (ONS).<sup>14</sup> The ONS conducts surveys on FDI in the UK, and UK FDI overseas which provide quarterly and annual data. The detailed annual data are the results of the ONS's annual inquiry which is published with a lag of 12 months [ONS 1997]. Quarterly summary estimates are the results of the ONS's quarterly inquiry and are

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<sup>12</sup> Several authors provide detailed analysis and evaluation of the extensive U. S. data collection system: an extensive analysis of the accuracy and adequacy of the U. S. BEA-FDI data can be found in Stekler and Stevens [1991]. In his review of the federal statistical system, Lipsey provides an evaluation of the efficiency of the U. S. FDI data collection system [Lipsey 1990, p. 340]. BEA itself offers a „User's Guide to BEA information“ as a help for the work with the immense body of data on FDI and related TNC activities [BEA 1993].

<sup>13</sup> In most cases of such linkages, the subsidiary abroad is a holding company.

<sup>14</sup> Prior to 1996 FDI data collection was carried out by the Central Statistical Office (CSO).

published in the editions of Economic Trends published by the ONS in March, June, September, and December. Since 1990 the annual surveys also include data on FDI stocks. Prior to 1990, surveys on FDI stock were carried out only on a triennial basis. All ONS's inquiries are conducted on a statutory basis.

The definition of FDI used by the ONS follows the guidelines of the IMF and OECD. According to these guidelines the ONS classifies investment amounting to more than 20 per cent of the shares or voting rights of an enterprise as FDI. Retained earnings as well as intercompany loans are included in outward and inward flow figures. FDI stocks represent the book values of assets of foreign affiliates. The industry classification of outward FDI relates to the activities of the overseas concerns, and that of the inward FDI to the business of the UK affiliates [ONS 1997].

*Japan.* Various primary sources of FDI data exist in Japan. The two most relevant sets of data are collected by the Bank of Japan and the Ministry of Finance.<sup>15</sup>

However, both sources have significant deficiencies. The Bank of Japan concentrates primarily on flow data from the balance of payments accounts; the flows are aggregated to provide an estimate of stocks. The Ministry of Finance collects data on inward and outward FDI (flows) on the basis of notifications, not actual FDI. Data of the latter are published monthly in the Finance Review of the Ministry of Finance. In Japan there is no minimum threshold to be qualified as direct investor. FDI flow data exclude retained earnings, short term loans and trade credits. Generally, flows are registered at fiscal year ending in March. The position at the end of the fiscal year is derived from cumulative value of FDI flows.

*France.* In France data on FDI are collected by the Banque de France. Flow data on inward as well as outward FDI are provided on a monthly and annual basis and are the result of the Banque de France records of the BoP. They are published monthly in the Bulletin Mensuel de la Banque de France and Les Notes Bleues du Ministère de l'Économie et des Finances, and in the annual report Balance des Paiements de la France [Ministère de l'Économie et des Finances 1997; Banque de France 1997, 1996].

Statistics on the outward FDI stocks were published for the first time in 1989, for the year 1987 with a two year lag. The inward FDI stock was officially published for the first time in 1992. Now data on inward and outward FDI stocks are collected annually on the basis of a survey and published with a lag of 18 months in the Bulletin Trimestriel de la Banque de France [OECD 1996].

The definition of direct investment used by the Banque de France complies with the guidelines of the IMF and the OECD, but flows exclude retained earnings. Stock data based on surveys include retained earnings and intercompany loans. The Banque de France classifies investment amounting to more than 25 per cent of the shares or voting rights respectively as direct investment. Prior to 1993 the limit was 20 per cent.

The discussion of practical and methodological problems of national FDI data from the perspective of business users reveals a general obstacle in the analysis and reasonable interpretation of national data sources: Few practical and methodological deficiencies can be overcome by one country alone. It is in the nature of FDI that related problems can hardly be tackled from data, which were collected by a single country [Lipsey 1985, p. 185].<sup>16</sup> For this reason, we extend our discussion by analysing problems involved in cross-country comparisons of FDI data.

## **INTERNATIONAL DATA SOURCES: THE INTEGRATION OF NATIONAL SOURCES**

By now, it is clear that there are substantial problems involved in cross-country comparisons of FDI data. In many countries there is no systematic data collection at all, and, at the same time, countries that possess data collection systems are faced with significant methodological problems. All deficiencies related to BoP statistics and national surveys are transmitted into the international data sources. The combination of insufficiency, incorrectness, differences, and failure makes it extremely difficult to develop reliable estimates of global FDI stocks and flows and to analyse cross-country

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<sup>15</sup> Information on Japanese FDI data are available in English at the International Capital Division, International Finance Bureau of the Japanese Ministry of Finance.

<sup>16</sup> Except to the extent that one can learn something by comparing FDI abroad by a country with FDI by foreigners in that country [Lipsey 1985, p. 185].

FDI-data.

### **Comparability of National FDI Statistics**

We now proceed a step further and examine in detail the problems related to the comparison of national FDI statistics by applying 6 factors that are critical for the comparability of national FDI statistics. The factors can be extracted from our former analysis and cover (A) the degree of nonconformity of FDI definitions, (B) the degree of distortions caused by valuation at historical costs, (C) the extent of coverage and the type of collected data, (D) the periodicity of data collection, (E) the levels of disaggregation, and (F) the differences in accounting practices.

(A) *Degree of nonconformity of FDI definitions.* Although the OECD and the IMF propose benchmark definitions of FDI, countries do not consistently comply with these recommendations in compiling their FDI statistics [Vukmanic et al. 1985, p. 162]. The degree of nonconformity is influenced by three major sources of discrepancies. There are deviations in (1) the required minimum equity ownership share [Cantwell 1990, p. 15], and (2) the coverage in terms of minimum assets. As a starting point to define „control“, most countries employ percentage levels of ownership [Vukmanic et al. 1985, S. 163], but rely on arbitrary percentage of equity ownership by a single investor for their reporting requirements.<sup>17</sup> Today, ownership thresholds vary between 10 and 50 per cent of the total equity of the affiliate.<sup>18</sup> Thus, country A may classify an investment as direct investment while country B would treat the investment as a portfolio investment. Apart from these differences, a percentage-related cut-off criterion fails to include investment that are controlled by contract, rather than by equity ownership. Countries often define cut-off points for reporting that are based on a minimum amount of assets. National authorities fix cut-off point more or less arbitrarily as we can see, for

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<sup>17</sup> The OECD includes a 10 per cent rule of ownership interests or voting rights in its Benchmark Definition of Foreign Direct Investment [OECD 1992]. Of course, the equity ownership share is not a valid indicator for effective control over the affiliate.

example, in the case of the percentage level of required minimum equity ownership. For this reason, cut-off points differ significantly between countries.

(B) *Degree of distortions caused by valuation at historical costs.* Existing reporting practices of FDI stocks are based historical costs, i.e. the book values that reflect the firm's assets at historical values as reported in the balance sheet. This procedure leads to distortions in the valuation of the actual FDI stock that make accurate cross-country comparisons of FDI stocks very difficult [Bellak 1994]. When assets are valued at the prices and exchange rates that prevail at the time of their acquisition [Cantwell 1990, p. 10], then, both inflation and currency devaluation in the host country lead to an underestimation of the FDI stock. In addition, inflation and currency devaluation influence the permitted amount of depreciation at historic costs. It follows that net FDI flows are over-evaluated, since they are net of depreciation at historic costs, which is less than the value of depreciation on assets at *replacement costs*. Thus, the valuation of the FDI stock depends on the historic transfer of capital, or to put it in another way, the entry time of TNCs in a foreign country. The older the capital stock, the more severely under-evaluated it is, and thus the larger is the degree of distortion. [Cantwell 1990, p. 11].<sup>19</sup>

Distorted valuations not only create difficulties for time series analyses of particular countries but also for cross-country comparisons [Cantwell 1990, p. 11]. A possible solution to this issue is the calculation of FDI series that are valued at current costs at constant prices and constant exchange rates. Then, the adjustment due to a devaluation of the local currency would offset the adjustment required due to the rise in prices. Mostly, replacement values are used as a measure of current costs.<sup>20</sup> The current cost estimates of FDI stocks revalue the portion of positions that represent claims on plant,

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<sup>18</sup> Percentage levels still vary significantly, although in the last decade there has been a continuous tendency for countries to adopt lower thresholds of ownership as a basis for collecting FDI data. It has been generally recognised that small, organised groups of stockholders may well control an enterprise, particularly, if ownership is widely distributed [Vukmanic et al. 1985, p. 162]. Examples of differences are the United States and Canada where a 10 per cent of equity capital is sufficient; the United Kingdom, France, and Germany - where 20 per cent share is necessary; Australia the threshold is 25 per cent; or Sweden with a range of 20-25 per cent [UNCTAD/DTCI 1996b, p. 219].

<sup>19</sup> This may also apply to comparisons between the outward and inward FDI stocks of countries, especially if the age of inward and outward stock differs.

equipment, and other tangible assets from historical-cost to current prices. The conversion to a common exchange rate constitutes a similar difficulty as the conversion to constant prices. Usually, in tables of comparative data on national FDI, stocks and flows are converted into U. S. dollars (or Special Drawing Rights), whereas more preferable converters would be purchasing power parities for capital goods [Kravis, Lipsey 1988a, p. 21]. Hence, the result of cross-country comparisons depends critically upon the development of the exchange rate during a given period of time [Cantwell 1990, p. 12].<sup>21</sup>

(C) *Coverage and type of collected data.* Deviations in the design of reporting systems can result in significant differences in the composition of FDI data. As shown above, the company survey technique permits a more complete estimation of FDI than does traditional BoP cash-flow reporting. However, countries can differ with regard to three important aspects. (1) Not all countries collect data on *inward* as well as *outward FDI*. More countries collect inward FDI data, rather than outward FDI [Lipsey 1985, p. 187]. (2) IMF standards treat FDI flows as the sum of paid in capital and retained earnings. There are substantial *differences in accounting standards* of FDI from country to country, and, moreover, not all countries follow the IMF guidelines. Also, some countries do not count retained earnings as FDI flows (e.g. Japan). Some countries fail to include intercompany loans in FDI statistics at all, while others only take into account long-term intercompany loans. (3) Countries distinguish between several types of companies in their data collection systems, and hence, differ in *the coverage of companies*. Some countries include FDI by private companies but exclude publicly held companies. Most countries exclude bank affiliates from FDI statistics [Kinniburgh,

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<sup>20</sup> An alternative measure of the current value is the market value of assets. A direct assessment of the market value can be made by using stock market prices of shares. However, with wholly-owned affiliates or unincorporated affiliates, attempts to measure the current market value of the assets must rely on indirect estimations [Stekler, Stevens 1991, p. 14].

Ribeiro 1986, p. 17]. The reason for the exclusion of bank affiliates is that they are thought to serve solely as a financial intermediary capacity. If bank affiliates are included, they are limited to those direct investment transactions that are associated with permanent debt and equity as well as fixed assets.<sup>22</sup>

(D) *Periodicity of data collection.* Traditional BoP transaction recordings (i.e. reports of related cash-flows) are usually collected in quarterly or monthly intervals and published without significant delays. As stated above, surveys of investing companies are conducted annually and published with considerable time lags. The lags tend to increase with the level of disaggregation. Deviations in periodicity of data collection complicate the comparison of current cross-country data considerably. The same problem applies to extensive time series comparisons of data from different sources.

(E) *Levels of disaggregation.* One of the most severe problems related to cross-country comparisons is that FDI statistics across countries apply for different levels of disaggregation in their geographical and sectoral breakdown. Some notes should be made on the sectoral disaggregation. Most countries follow the Standard Industry Classification (SIC) code and classify FDI according to the recommended sectoral categories.<sup>23</sup> Companies are usually assigned to an industry code on the basis of the distribution of their sales.<sup>24</sup> However, statistical authorities use different SIC levels. Higher aggregation levels account for more heterogeneous groupings. Hence, the chosen break down differs significantly between countries. An „industry“ will appear to have a large amount of intra-industry trade and investment - even in the case where

21 A recent discussion on the re-evaluation of FDI has emerged in the United States after its net international investment position became negative in 1985 [Cantwell, Bellak 1995, p. 2]. Several studies were conducted to re-evaluate the net-FDI position of countries at replacement costs. Among them, the majority deals with the FDI position of the United States [Landefeld, Lawson 1991; Stekler, Stevens 1991; and Cantwell, Bellak 1995]. Cantwell, Bellak [1995] re-estimate the historical FDI stocks of Japan, Germany, the United States, and the United Kingdom at replacement values. The extent of the adjustment is substantial (up to 40 per cent above the historic book values). The study supports the hypothesis, that mature investor countries' (UK, United States) FDI stock is significantly more under-evaluated compared to the stock of relatively new investor countries (Germany, Japan). Howenstine and Lawson [1991] examine the influence of stock valuation on the rate of return to FDI.

22 Deposits and other claims, and liabilities are classified as portfolio investment.

23 Very often, TNCs are engaged in a broad range of activities. However, the need to classify each investment according to the primary activity of the firm does not necessarily mean that a broader division is helpful.

24 It is debatable whether a code based on sales is as desirable as a code based on value added.

there are no such transactions at all - if it is constructed in an extremely heterogeneous way [Rugman 1985].

The publication of FDI data at highly disaggregated industry levels also raises the question if confidentiality can be maintained. At disaggregated industry levels, FDI activities are often dominated by three or even less companies [Stekler, Stevens 1991, p. 12], hence, insiders can match data to companies. The classification can be done according to the principal activity of the affiliate or the parent company. In Germany outward FDI is classified according to the activity of the parent company, while inward FDI is classified according to the principal activity of the affiliate. The United States provide both, data classified according to the activity of the parent company and data classified according to the primary activity of the affiliate [Cantwell 1990, p. 17].

(F) *Differences in accounting practices.* Three classes of differences in accounting practices have to be considered: (1) *Methods of depreciation of assets* may vary among countries. Apart from differences in depreciation allowances, i.e. depreciation allowed for at historic versus replacement costs, difficulties of cross country comparisons result from differences in the period of depreciation, and the valuation of the effective life of assets. (2) *Definitions of retained earnings* may differ among countries. FDI earnings are net of provisions for depreciation and taxes. Differences arise when they also allow for capital gains and losses, exchange rate gains and losses in the holding of foreign currencies, the depletion of intangibles (including goodwill), or the depletion of R&D. (3) *Accounting treatment methods of transactions* vary substantially across countries. Many countries differ in their classification of intercompany loans as equity participation.

In sum, this careful and thorough analysis demonstrates that it is extremely difficult to combine various national sources on FDI. Each empirical analysis of FDI data conducted by business users, who employ several national data sources for international comparison, faces significant problems and has to be carried out with care. The quality of each database which is compiled of national statistics will be very poor and inappropriate for any analysis if no adaptations and refinements are carried out. For this reason, we conclude this section by presenting three international organisations that concentrate on the refinement of national FDI statistics.

### **International Organisations as Editors of FDI Statistics**

Several international organisations endeavour to provide useful comparative national data series on FDI and concentrate on the refinement of the data. International FDI statistics are compiled by the IMF, the OECD, and United Nations Conference on Trade and Development (UNCTAD).

*International Monetary Fund (IMF).* The most reliable and comprehensive data on *FDI flows* that are readily available from international sources are reported by the IMF. In the IMF Balance of Payments Statistics Yearbook, national FDI data (inward- and outward-flows) are actually a collection of data which were compiled for balance of payments purposes [IMF 1996]. For the purpose to provide BoP statistics for its member countries, the organisation collects and publishes annually data on FDI inflows and outflows in the Balance of Payments Statistics Yearbook [Kinniburgh, Ribeiro 1986, p. 17]. However, some countries do not report to the IMF (like Taiwan and North Korea), or their reporting does not cover former periods (most African countries do not). Another major deficiency of the IMF statistic is that it does not provide a sectoral and geographical breakdown of the data.

*Organisation of Economic Co-operation and Development (OECD).* In its International Direct Investment Statistics Yearbook the OECD provides extensive data on FDI inflows and outflows as well as on FDI inward and outward stocks of its member. FDI data on single countries are disaggregated by host and home regions, and by 3-digit industry code. However, since the data covers primarily OECD member countries, direct information on non-member FDI data, particularly developing economies, is scarce. The only data on developing countries reported directly by the OECD are FDI outflows into developing countries from the member of the Development Assistance Committee (DAC) of the OECD. The DAC is an OECD development aid committee of 15 countries. The member countries of the committee account for approximately 81 per cent of world outflows of FDI [OECD 1996]. Due to the unavailability of data on inward FDI flows and stocks in many developing and some developed countries, inflows of FDI into these countries reported by OECD are underestimated.

*United Nations Conference on Trade and Development (UNCTAD).* The UNCTAD's

Division on Investment, Technology and Enterprise Development compiles data from national official sources, both published and unpublished, and international sources (IMF and OECD), where national data are not available. The UNCTAD provides two principal publications: (1) the *World Investment Directory* (WID)<sup>25</sup>, and (2) The *World Investment Report* (WIR). The purpose of the WID series is to put together comprehensive data and information on FDI, basic financial data of the largest TNCs by sector, as well as the legal framework within which such investment takes place. The WIDs present time series data on both inward and outward flows and stocks of FDI per country and region. The volumes provide extensive coverage of both FDI flows and stocks by their geographical and sectoral distributions. Moreover, they assess the significance of TNCs to single economies, and offer listings of the major TNCs in each economy along with selected financial data.<sup>26</sup> The World Investment Report (WIR) is an annual publication and consists of two principle parts. The first part of the WIR contains analyses of current global and regional trends in FDI, and time-series data and figures on FDI inward and outward flows and stocks by host region and economy. Furthermore, it distinguishes between greenfield investment and M&A, comprises rankings of the 100 largest TNCs from developed countries and of the 50 largest TNCs based in developing countries which provide financial and employment information about TNCs.<sup>27</sup>

## CONCLUSIONS

In this paper, we asked how reliable are data on FDI as an indicator of international TNC activities. We decomposed the question in two essential parts. In the first part, we reviewed the services of major data sources, and in the second part, we analysed in detail practical and methodological problems that emerge in the course of data collection procedures.

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<sup>25</sup> The World Investment report consists of six regional volumes (vol. I: Asia and the Pacific [UNCTAD/DTCI 1992], vol. II: Central and Eastern Europe [UNCTAD/DTCI 1993a], vol. III: Developed Countries [UNCTAD/DTCI 1993b], vol. IV: Latin America and the Caribbean [UNCTAD/DTCI 1994], vol. V: Africa [UNCTAD/DTCI 1996a], and vol. VI: West Asia [UNCTAD/ITE 1997b].

<sup>26</sup> The industrial breakdown covers the 3-digit SIC-code.

<sup>27</sup> Part two of the WIR addresses alternating topics dealing with FDI and Transnational Corporations. The 1997 WIR discusses in detail the mutual influence of TNCs and market structure as well as implications for competition policy [UNCTAD/ITE 1997a].

We started our inquiry by discussing the concept of FDI and its quality as an indicator of international TNC activities. At this point we saw that FDI is just one (though a major) source of funds that finance real investment activities of the affiliate and that not all FDI flows are used for real investment activities. Thus, FDI flows may not completely reflect the international business activities of TNCs. Furthermore, we revealed that the indicator function of FDI stocks and flows suffers from several weaknesses. One of the most important deficiencies is that data on the investment position (FDI stocks) of foreign TNC affiliates do not contain any information about the quality of the employed capital. Hence, a more appropriate measure would be to use data about the quality of the technologies that are transferred by TNCs as well as the technologies that are created or adapted by foreign owned research facilities. However, FDI data derive its popularity from the fact that they are more accessible than other measures of international production activities, but other measures like, for instance, information on the capital expenditures of affiliates, sales, employment, profits, or R&D expenditures of international production are in most cases not directly available. In sum, a more complete picture of TNC activities would demand a variety of different (and available) data. Hence, among all measures, FDI is only a second-best indicator of the international business activities of TNCs, but FDI data are first-best in its availability.

In our investigation of data sources and related data collection procedures, we distinguished between surveys and balance of payments statistics. We saw that both data collection methods possess strengths and weaknesses. Statistics based on BoP transactions - collected by the national banking systems - do not provide a complete picture of all FDI flows, and the collected data are insufficient for most questions related to the international business activities of TNCs. FDI statistics based on company surveys can provide these information, but also suffer from practical as well as methodological problems. Severe problems refer to the difficulties of the data collection (firms do not respond, or do so in a slappy and incomplete way), the periodicity of the surveys (they are conducted less frequently than BoP statistics) and the lack of historical survey data to run time series analyses.

We finally showed that international sources of FDI data (IMF, OECD, UNCTAD) are concerned with the combination and refinement of national data and, in principle,

provide data for cross-country comparisons. But, as long as these international institutions do not have the (political) power to introduce and enforce standardised data collection methods in all national economies, the combination of various national sources of FDI data will continue to be an extremely difficult venture. The same holds for cross-country analyses based on these data sources.

However, in this paper, we tried to conduct a careful and thorough review of available FDI data sources. FDI as an indicator of international TNC activities contains severe deficiencies, and so do the data sources either. But as no other sources are available, and will not be available in the future, we do not recommend to skip the concept, but, on the contrary, recommend to increase the efforts to refine the concept and to standardise the national data collection systems. This effort would result in a sharp reduction of methodological deficiencies and, hence, lead to better data. But in the meantime, we advise all analysts of the international business activities of TNCs to be extremely careful in the use of FDI data, and, as a reminder of the obstacles, to read this paper (again).

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1.1 Growing international linkages through foreign direct investment (FDI) are an important feature of financial globalization and raise important challenges for policymakers and statisticians in industrial and developing countries alike. With the integration of international capital markets, world FDI flows grew strongly in the 1990s at rates well above those of global economic growth or trade. Box 2.1 highlights some of the types of data produced on the activities of foreign affiliates. The discussion of FDI in this report focuses on the traditional balance of payments and IIP statistics. \* The data are extrapolations based on the shares of a very limited number of countries covered in the worldwide outward FDI stocks.

#### 4. 3. Recent Trends in FDI

A foreign direct investment (FDI) is an investment in the form of a controlling ownership in a business in one country by an entity based in another country. It is thus distinguished from a foreign portfolio investment by a notion of direct control. The origin of the investment does not impact the definition, as an FDI: the investment may be made either "inorganically" by buying a company in the target country or "organically" by expanding the operations of an existing business in that country. International capital flows in the form of foreign direct investment (FDI) have increased considerably throughout the last decades. As can be seen from figure 1, FDI surged to about the tenfold of its 1980 level in the last thirty years, while merchandise and services trade increased by a factor of 3.2 and 3.8, respectively, still outperforming GDP which roughly doubled throughout the period (factor 2.3).<sup>1</sup> This highlights that FDI plays an important role in the recent process. Statistics are limited to business & economics journals. Growth p.a. is the "real" growth rate (deflated by the "price" series) p.a. over the 30 years 1976-80 to 2006-10.

#### 2. Measuring Activities of Multinational Corporations

##### 2.1. FDI Data

FDI data is an ad hoc candidate and widely used to quantify the relevance of multina