



**“Foreign Direct Investment versus
Domestic Investment: An Input-Output
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Foreign Direct Investment *versus* Domestic Investment: An Input-Output Approach for Brazil in the years 2000-2005.*

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Resumo

Nos últimos anos o Brasil tem recebido uma quantia considerável de investimentos estrangeiros diretos. Isso levanta uma importante questão: qual a estrutura de investimento é mais eficiente para a produção e emprego, o doméstico ou o externo? O principal objetivo deste trabalho é analisar a estrutura de Investimento Estrangeiro Direto e Investimento Doméstico e verificar o impacto de variações nos mesmos sobre produção e emprego. Para alcançar tal objetivo utiliza-se as matrizes de insumo-produto para a economia brasileira para os anos de 2000 e 2005 e os dados do censo de capital estrangeiro do Banco Central. Para captar o efeito sobre produção e emprego o componente investimento da demanda final será discriminado em Investimento Direto Estrangeiro e Doméstico. É importante ressaltar que a análise do Investimento Estrangeiro Direto será realizada por origem do capital, ou seja, para quatro regiões externas.

Palavras-chave: Investimento estrangeiro direto, Investimento Doméstico, Insumo-produto

Abstract

In recent years the Brazilian economy assumed a remarkable position as a host of Foreign Direct Investment. Because of this, an important question arises: which investment structure is more efficient for production and employment, domestic or foreign? The principal aim of this paper is to analyze the structures of Foreign Direct Investment and domestic investment and their impact upon production and employment. To accomplish that, we use the input-output matrices for the Brazilian economy of 2000 and 2005 and data from the foreign capital census of the Brazilian Central Bank. In order to capture the impact upon production and employment the final demand component of investment will be employed on domestic and foreign investments. The analysis of Foreign Direct Investment will be made according to one of four economic regions for origin of capital.

Key words: Foreign Direct Investment, Domestic Investment, Input-Output.

JEL CODE: F21, C67

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Foreign Direct Investment *versus* Domestic Investment: An Input-Output Approach for Brazil in the years 2000-2005.

1. Introduction

In recent years Brazil assumed a notable position as one of the principal countries receiving Foreign Direct Investment (FDI). In accordance with data from the Foreign Capital Census of the Central Bank of Brazil (2008), the volume of FDI entering increased considerably in Brazil, rising from US\$ 9.64 billions in 1995 to US\$ 21.52 billions in 2005, reaching its record level in 2000 of US\$33.33 billions. The participation of the FDI in the measure of Gross Fixed Capital Formation (GFCF) also increased substantially, passing from 3.0 % in 1995 to 10.7 % in 2005, having a high in the year 2000, in which the participation of the FDI regarding GFCF was at the record value of 28.4 %. The importance of the country is also emphasized as a receiver of the flow of world-wide investment, in which (2008) it advanced from the 97th position during 1993-1995 to the 65th position during 2002-2004, according to UNCTAD.

Domestic investment did not accompany such great growth. Between 1995 and 2005 the domestic investment grew annually at an average 9.84 % whereas the FDI grew on average 37.2 % in the same period.

Foreign Direct Investment, in a general form, is defined as resources of a determined country applied in the establishment of new enterprises or in the acquisition, total or partial, of enterprises, installations and stock existing in another country (Souza, 2001). For Alves and Velasco (2001) the recovery of growth in the flow of this investment, begun in the first years of the 1990's, owing principally to institutional changes promoted in the country, can be called a commercial opening. Fernandes and Fields (2008) emphasize that this growth also reflected the effects of financial globalization, of macroeconomic stabilization, of privatizations and of the size of the national market.

The effects of the FDI on the receiving economy have been discussed for some years. Several authors argue the importance of the entry of this type of investment for the growth of the country (see Borensztein, De Gregorio and Lee 1998; de Mello 1999). Franco (2005), for example, emphasizes that the FDI appears as a vehicle for transfer of technology and management capacity, in establishing bonds with the global economy and also, as a creator of productive capacity. Bresser-Pereira and Gala (2005) observe that given the shortage of savings and, consequently, the low capital formation of developing countries, the FDI would be an excellent way to promote economic growth in the receiver country. Dunning (1994) emphasizes that the effect on the economy of FDI depends in part on the origin of the capital. According to him, the FDI of more developed countries is more efficient since these countries have more technological properties. Xu and Wang (2007), however, warn that the effect on the economy of FDI entry depends, in fact, on the liquid effect on formation of gross fixed capital, that is if the FDI entering complements or substitutes domestic investment.

Naturally it is expected that, for Brazil as well as for various developing countries which present a history of low fixed capital formation, the FDI contributes substantially to economic growth together with domestic investment. So, an important question to be evaluated is what the true contribution of the FDI to the Brazilian economy is, and also, if such a contribution is more efficient than the contribution given by domestic investment.

Thus this article has the objective of analyzing the structure of Foreign Direct Investment, observing the origin of this capital, and that of domestic investment, and comparing their impact on production and jobs in Brazil for the years 2000 and 2005 in 38 sectors of economic activity. It is particularly focused on determining the differences between domestic investment and Foreign Direct Investment as concerns the impact on production and employment in Brazil for the years 2000 and 2005, aside from evaluating which of these investment structures is more efficient for the Brazilian economy.

The input-output structure will be used to do this. The Brazilian input-output matrices for 2000 and 2005, collected in 38x38 economic sectors will be used in addition to the data from the Foreign Capital Census of the BACEN. The analysis of the impacts will be done through the production and employment multipliers based on the final demand investment component of domestic and foreign investment. The foreign investment will be separated according to the origin of each investment, in accordance with four economic groups: European Union, NAFTA, MERCOSUR and the rest of the world.

It is appropriate to emphasize that the investigation of contributions to the economy of investment, foreign and domestic, has important political implications. To begin with, from the point of view of economic policy it is important to analyze the impacts of domestic and foreign investment on production and sector employment, since they give support for decisions such as adopting measures to attract or restrict investments directed to a determined sector.

The article was divided in the following way: besides this introduction, in the second section the article does an analysis of the relevant literature on the subject. The third section presents the methodology used. The fourth section describes the data base used, besides presenting and discussing the results considered. Finally, the fifth section brings the final conclusions.

2. Theoretical reference

The impact of the entry of FDI on the economy of receiver countries has been an object of economic investigation for some decades. This is due principally to the nature of FDI itself which is the transfer of tangible and intangible resources to the receiving economies, since from the characteristics of these countries they have low capital formation and therefore are those which have a greater deficiency in such investments. These works try to assess the consequences of the entry of FDI in the formation of capital, productivity, technological progress and economic growth of the economies in development.

As to the effects of FDI on economic growth and productivity; although the results are not conclusive, there is a wealth of studies defending a positive impact of this type of investment on the economy. Wu (2000) emphasizes that the FDI can affect economic growth through several channels, such as reinforcing the formation of capital, spillover of technology, spillover of administrative practices, and the demonstration and competition effects. Apergis, *et al* (2006) affirms that the entry of FDI produces a favorable number of economic effects in the receiver country, since in addition to the capital, the entry of FDI includes production technology, organizational and administrative skills, and marketing knowledge, etc., in such a way that this investment can stimulate economic growth through the generation of positive external conditions and spillover. Lougani and Razin (2001) show that the profits for the receiver economy from the entry of FDI can take several forms, from contribution to development of human capital through workers' training, up to profits produced by the contribution of income from corporative taxes, the FDI being, thus, an important contribution to economic growth.

Most of the empirical studies are carried out, principally, through econometric estimates based on time series, cross-section and panel data. In terms of empirical evidence for the impact on economic growth and productivity, one of the first studies was by Caves (1974) which analyses the benefits of the entry of FDI into Australia and Canada and another by Blomström and Persson (1983) that analyses the impact of the entry of FDI into Mexico. Both studies found that the spillover effect is significant, in aggregate terms, in the presence of FDI. Besides this, Nadiri (1991) analyses the entry of FDI originating from the United States into France, Germany, Japan and the United Kingdom in the industrial sector and found that increases in the stock of American capital stimulate domestic investment and that there is a positive impact of the entry of American FDI on economic growth and total productivity in the sector

Borenztein, *et al* (1996) tested the effects of the FDI on economic growth in a framework of cross-country regressions using data from FDI flows for 69 developing countries. The authors also investigated the channel through which FDI benefits economic growth, and tested the efficiency of FDI on investment, analyzing principally whether it substitutes or complements domestic investment. His results showed that the FDI is an important vehicle of technology transfer, and that this type of investment contributes more

to growth than domestic investment. Meantime, the authors suggest that the high productivity of FDI only maintains itself when the receiver country has a minimum limit of human capital, in other words, when the country has sufficient capacity to absorb technology.

Following the same line, De Melo (1999) estimated the impact of the FDI on accumulation of capital, output growth and total productivity factor of the receiver economy, using a sample from 32 countries, pertaining or not to the OCDE, for the period of 1970-1990, through the analysis of time series and data panel. The evidence found by the author shows that there is a positive impact of FDI on the growth of production. The results suggest also that the complementary effect dominates in the relationship between FDI and domestic investment, the impact of the FDI on the accumulation of capital being positive.

In a more recent empirical study for China, Xu and Wang (2007) tested the effects of the entry of FDI on the formation of domestic capital, on imports and exports and on economic growth in the period from 1980 to 1999, through the estimation of four econometric equations in which the FDI enters as independent variable. The results showed that the entry of FDI has significant and positive impact on domestic investment in China, i.e. FDI complements the domestic investment and thus contributes to the economic growth of China. The presence of FDI also appears as reinforcement to investment efficiency in the Chinese economy.

Liu and Ping (2004) and Kippenberg (2005), on the other hand, analyzed the effects of FDI on the economy through the *linkages* with domestic firms. The results of these studies showed robust and positive evidence for the influence of linkages on the structure of the economy of receiver countries, and consequently, on the growth of the economy.

For Brazil, Bonelli (1998), through descriptive analysis, affirms that, initially, there seems to be a base for arguing that the FDI contributed to raising productivity and competitiveness in Brazil in the 1990 years.

Laplane and Sarti (1999) characterize the flow of FDI and analyze the impact on economic growth. The conclusions of this study are that, in spite of the expressive increment in the flow, the characteristics of FDI limit its contribution to growth. The FDI does not significantly alter the export list and does not remove one of the principal restrictions to growth, the external restriction on the balance of trade.

Bertella and Lima (2005) prepared a macro-dynamic model in the post-Keynesian tradition to analyze the impact of the flow of FDI and of the stock of productive foreign capital on the accumulation of capital, economic growth and the functional distribution of income. The relative participation of each one of the groups giving rise to capital, foreign and domestic, depends on the degree of internationalization of the capital stock of the economy, measured by its proprietary composition. The results suggest that in the short term, increases in the internationalization of the economy can raise or lower the level of productive activity, depending on the relation between the sensibility of domestic and foreign capital injections regarding the profits appropriated by both classes. The same results surfaced in the analysis of the impact of this change on the rate of economic growth.

Fernandes (2006) estimates the effects of FDI on growth, exports and employment for Brazil. Firstly, the author examines the causality between FDI and economic growth through the methodology of Toda and Yamamoto (1995). The results show the absence of effects of FDI on economic growth for the period 1970-2003. For the author, one of the possible reasons for which the FDI did not contribute to the growth of Brazil is related to the type of FDI entering in the 90s, which was predominantly destined for privatizations. Subsequently, the author examines the impact of the FDI on employment. The analysis is done from variables such as people occupied and remuneration, considering specifically sectors which received the most FDI, through the comparison between data of the census of foreign capitals and the data available from the database for 1995 and 2000. The results showed that there is no standard defined about the impact of FDI on the labor market.

Jorge and Dantas (2008) evaluate if there was spillover of productivity or transfer of technological knowledge with the entry of FDI into the Brazilian manufacturing industry in the period from 1998 to 2003, through panel analysis with micro-data of industrial enterprises. The analysis suggests that the effects of the greater presence of foreign capital on the productive Brazilian chain were heterogeneous. The evidence indicated the existence of competitive advantages, in terms of productivity; nevertheless, this advantage did not show itself to be a source for transfer of technological knowledge that was reflected in profits for domestic enterprises.

Having in mind these facts presented, the contributions of this study are in two principal aspects: The first one refers to the identification and differentiation of the impacts of FDI and of Domestic Investment on the Brazilian economy. The second refers to the method used in the investigation of this impact through the input-output model that made it possible to identify the impact in each one of the sectors of the Brazilian economy, and to differentiate and to identify which type of investment, domestic or foreign, is more efficient in terms of impact in the Brazilian economy.

3. Methodology

3.1 Data

The Brazilian input-output matrices for 2000 and 2005, used in this study originate from the IBGE – Brazilian Institute of Geography and Statistics, and they are available for 55 sectors of economic activity. These matrices were grouped in 38 sectors, in order to make them compatible with the economic activity sectors referred to for the entry of FDI into Brazil¹.

The data referring to the FDI in Brazil are available in the report of world-wide investment carried out by UNCTAD – the United Nations organization for commerce and development. Table 1 presents the percentage relation of the FDI entering into the country in relation to the gross fixed capital formation in 2000 and 2005. From these data and the input-output matrices, it was possible to find the amount of foreign direct investment present in the gross fixed capital formation, and, as remainder, the domestic investment.

[Table 1]

The information referring to the sectors in which Foreign Direct Investment were applied were extracted from the Census of Foreign Capital done by the Central Bank of Brazil (BACEN). The data used by the BACEN in the realization of the census are obtained from the registers dispatched by the Department of Foreign Capital - FIRCE to the database, straight comparisons with the balance of payments flows not being appropriate. The effective entries of capital in foreign currency and goods, the conversions of loans and other credits in investments, and reinvestments are computed as FDI. It is important to emphasize that the methodology adopted by the BACEN takes only shareholder capital into account, with the exception of the so-called portfolio branch of activity.

The census of foreign capital supplies information for the flows of FDI to Brazil originating from approximately 120 countries for 55 sectors of economic activity. It is thus possible to find the percentage distribution of FDI for the sectors of the Brazilian economy. These data were adjusted to make them compatible with the input-output matrices, resulting in 38 sectors. Table 2 shows the percentage distribution for the sectors of economic activity of the FDI entering into the country for the years 2000 and 2005. This percentage distribution allowed the amount of sectoral FDI to be found, and the remainder is the amount of domestic sectoral investment.

In accordance with Table 2, can see that in 2000, the sector referring to the Transport, storage, mail and Telecommunications received the biggest flow of FDI, followed by the sectors of financial intermediation and insurance and electricity, gas, water, sewage and urban sanitation. These three sectors correspond to 68.47 % of all the FDI applied in Brazil in 2000. The high concentration of FDI in these

¹ The sector compatibilization chart is presented in the table 15 and 16.

sectors is justified, principally, by the privatizations that were still going on 2000, and for the deficiency of these sectors, which were still backward and with financial difficulties, after privatizations which had taken place in previous years.

In 2005, however, the distribution of FDI between the sectors was less concentrated. Three sectors that received higher volume of FDI were responsible for 36.76 % of the volume of the FDI applied in Brazil. Besides, notice that public administration is the only sector which did not obtain any application of FDI. In spite of the FDI being less concentrated into few sectors in 2005, both years show concentration on the services sectors. In 2000 and 2005 the sector of services corresponded to, respectively, 80.49 % and 60.59 % of the FDI applied in Brazil.

[Table 2]

With the objective of analyzing the impact of a determined origin of capital on Brazilian production and employment, 120 countries made available by the census of foreign capital were grouped into four economic regions: MERCOSUR, NAFTA, Europe, and the Rest of the World. The Table 3 presents the percentage participation of FDI applied in Brazil of the economic groups. It is possible to observe that the largest flows of FDI to Brazil, in 2000 and 2005, were sent by the countries of the European Union, even with the reduction of the participation of these countries from 2000 to 2005. One observes, also, that the participation of the countries of the MERCOSUR is still incipient, and that NAFTA presented growth in its participation in sending FDI to Brazil from 2000 for 2005. It is worth emphasizing that the United States is the country with highest participation in the FDI applied in Brazil, corresponding to 23 % in 2000 and 21 % in 2005.

[Table 3]

In 2000 a great part of FDI originating from the European Union (67.16 %), NAFTA (50.61 %) and the Rest of the World (46.27 %) were concentrated in the sectors transport, storage, mail and telecommunications and financial intermediation and insurance². On the other hand, the FDI originating from the MERCOSUR was concentrated in the sectors of commerce, financial intermediation and insurance and services to enterprises, which obtained 51 % of the FDI coming from the MERCOSUR. In 2005, however, the FDI originating from four economic groups was more scattered among the sectors. Approximately 57 % of the FDI originating from the European Union was directed to the sectors of foods and drinks, commerce, transport, storage, mail and telecommunications and financial intermediation and insurance. Approximately 59 % of the arrived FDI of NAFTA went to the sectors of Commerce, Transport and Telecommunications and services to enterprises. Around 60 % of the FDI originating from the MERCOSUR was directed to the sectors of farming, services to enterprises, articles of rubber and plastics and commerce.

These results show that from 2000 to 2005 the FDI, besides being less concentrated into few sectors, also presented important modifications referring to the structure of the sectoral distribution of FDI. In 2000, for example, the sectors that were receiving greater parts of the FDI coming from the European Union, NAFTA and Rest of the World were concentrated in sectors where there were privatizations, such as the telecommunications sector, or sectors with serious financial problems, such as the banks. Besides, the behavior of the MERCOSUR should be noted, which already in 2000 had a less concentrated distribution in these sectors. In 2005, on the other hand, one already sees industrial sectors concentrating great portions of investment in activity of secondary sectors. The only exception refers to NAFTA that had little diversification in the largest part of its investment from 2000 to 2005.

3.2 Input-Output Model

² The table 17 and 18 presents distribution for the sectors of economic activity of the FDI according to origin of capital for 2000 and 2005.

The basic input-output model describes the monetary flows of goods and services through the sectors of the economy. These flows can be described by a system of simultaneous equations that can be represented in the following matrix form:

$$X = AX + D \quad (1)$$

where: X = vector of dimension $n \times 1$ with the total output of each sector, D = vector of dimension $n \times 1$ with the sectoral final demand and A = of dimension $n \times n$ with the technical production coefficients

In this model, the final sectoral demand vector is treated as exogenous to the system, in such a way that it becomes possible to determine the total sectoral product vector, i.e.

$$X = (I - A)^{-1} D \quad (2)$$

where there is an identity matrix I of dimension $n \times n$ and $(I - A)^{-1}$ it is the inverse Leontief matrix of dimension $n \times n$.

So, from this model it is possible to measure the impact of changes occurring in the final demand or in its components on the total production and employment, according to equation (3). In agreement with Miller and Blair (1985), one of the most frequent uses of the input-output model is just the evaluation of the effects on the economy of changes in elements that are exogenous to a model.

$$\Delta X = (I - A)^{-1} * \Delta D \quad (3)$$

In this way, in order to find the impact of domestic and foreign investment on production and employment it is necessary to decompose the final demand component of domestic and foreign investment. In order to find the impact according to the origin of foreign capital it is necessary to decompose the FDI according to origin of foreign capital: MERCOSUR, NAFTA, European Union and Rest of the World.

It is fitting to emphasize, again, that the decomposition of the domestic and foreign Investment component was done taking as a base the percentage of the stock of FDI regarding the gross fixed capital formation, through the data of the UNCTAD presented in section 3.1, which made it possible to find the volume of FDI, and its residue the volume of domestic investment. Since the census of foreign capital supplies the sectoral distribution of the stock of FDI, it was possible, also, to find the sectoral FDI and, as residue, the sectoral domestic investment. The decomposition of the FDI according to the origin of the foreign capital was done on the basis of the census of foreign capital which supplies the sectoral distribution by country of the FDI applied in Brazil.

So, the measurement of the impact on production of the foreign direct investment (FDI) and domestic (DI) for 2000 and 2005, respectively, will be done in the following way:

$$\Delta X = (I - A)^{-1} * \Delta FDI \quad (4)$$

$$\Delta X = (I - A)^{-1} * \Delta DI \quad (5)$$

The impact of FDI and of DI on employment for 2000 and 2005 will be measured from the following proceeding:

a. The vector for Coefficient of Employment (CE), which is given by the ratio between people occupied (PO) in each one of the sectors and the sectoral Gross Value of Production (GVP) is built:

$$CE_i = \frac{PO_i}{GVP_i} \quad (6)$$

b. For the coefficient of employment, the elements of the inverse Leontief matrix are considered:

$$B = CE * (I - A)^{-1} \quad (7)$$

Where B represents the inverse Leontief pre multiplied by employment.

c. The sectoral indicator for the Potential to Generate Employment (PGE) is built from the domestic and foreign investment; this measure supplies the impact on sectoral employment of each investment, domestic and foreign. To do this it is first necessary to construct the Standard Unit of Investment (SUI), domestic and foreign, which is given as the ratio between the investment according to the origin of the capital and the Total Investment of Brazil, according to following equation:

$$SUI_{ij} = \frac{I_{ij}}{\sum_{i=1}^n \sum_{j=1}^k I_{ij}} \quad (8)$$

where i represents the sector and j represents the DI, FDI, and the foreign investment originating from four economic regions: NAFTA, MERCOSUL, European Union and Rest of the World.

So, the measure of impact of the FDI and DI on employment is given as:

$$PGE = B * SUI \quad (9)$$

For the two years analyzed the sectors that contributed more to production and employment were classified in growing order, in terms of domestic and foreign investment,

4. Results and Discussions

Table 1 introduces some indicators of the performance of investment in Brazil and its impact on the Brazilian economy for the years 2000-2005. From it, it is possible to observe the FDI decline considerably as a percentage of the gross fixed capital formation from 2000 to 2005, passing from 28.4 % to 10.7 %. It is necessary to emphasize, however, that the year 2000 is treated as an outlier year in terms of flow of FDI entering the country. Besides, this year is within a period (1996-2001) marked by a great number of privatizations. In agreement with Franco (2005) in 2000, 24 % of the flow of FDI applied in Brazil was directed to the privatizations. With the exhaustion of the privatizations and of the entries in the bank sector from 2001, the entries of FDI fell noticeably. Meantime, from 2003 the entries of FDI in Brazil grew again.

[Table 4]

The impact of investment on production also declined, passing from 14.68 % in 2000 to 13.67 % in 2005. This impact accompanied the reduction of the impact on the production of the foreign direct investment, which passed from 4.04 % of the value of production to 1.45 %. The direct investment, on the other hand, presented an increase in impact on production as a percentage of the value of production passing from 10.64 % to 12.22 % in the period analyzed.

Regarding the impact on employment, the value increased from 9.15 % to 13.25 % between 2000 and 2005 in terms of the total employment. The domestic investment also presented added impact on employment, increasing from 7.74 % of total employment in 2000, to 12.02 % of total employment in 2005. However, the impact of the FDI presented a reduction, passing from 1.41 % in 2000 of total employment to 1.23 % in 2005.

4.1 Sectoral Impact of Foreign Direct Investment and Domestic Investment

4.1.1 Impact on production

The effects on production of Foreign Direct Investment and of domestic Investment are presented in Table 5. It is possible to see that the effect of domestic investment on production is bigger than the effect of the FDI in 2000 and in 2005. An increase in monetary unit in domestic investment increases production by 1.83 and 1.82 in 2000 and 2005, respectively, while the same increase in the FDI increases the production by 1.75 and 1.80 in 2000 and 2005, respectively, showing that the domestic investment is more efficient in terms of increasing production than the FDI, in 2000 and 2005. However, it is possible to see, also, that in spite of the domestic investment appearing more efficient in terms of production increase from 2000 to 2005 the effect on the economy declined, whereas the effect of the foreign investment increased. In this form, it is possible to say that the FDI became more efficient, in terms of increased production, from 2000 to 2005. That is in a certain form, a result of the change in the type of FDI entering, that was in great part due to the privatizations in 2000, and the greater diversification, in 2005, among the sectors to which FDI was applied in Brazil.

[Table 5]

The sectors in which the FDI had the biggest impacts on production for 2000 and for 2005 are introduced in Table 6. For the year 2000 it is possible to notice that the sectors transport, storage, mail and telecommunications (28.14 %) obtained a greater positive impact due to entry of foreign direct investment followed by the sectors of financial intermediation (16.64 %) and electricity, gas, water, sewage and urban sanitation (9.34 %). One detaches, still, that these sectors of greatest impact are also those which had the largest participation in terms of FDI applied in Brazil, with a participation of 68.47 % of the whole FDI applied in Brazil responsible for 54.12 % of the impact on production.

Besides, a concentration happened in terms of impacts on production in the year 2000, with five sectors having the largest impact on production pertaining to the services sector, concentrating approximately 66 % of the variation in production. One notes, also, that 10 sectors of great impact on production of the FDI, concentrate almost 83 % of the variation of production.

The evolution of these sectors from 2000 to 2005 shows that the percentage of the impact on production declined for three sectors of the greatest impact in 2000, transport and mail, financial intermediation and insurance and electricity and gas, water, sewage and urban sanitation, and it increased for the services offered to enterprises and commerce, which went from 4th and 5th position, respectively in 2000 to 2nd and 3rd position in 2005.

[Table 6]

However, there were no significant changes, in the analyzed period, in terms of sectors with larger impacts on production in 2005 due to the variations in the FDI. Five sectors of largest impacts were still the same (with alterations in positions) and the sector of transport and mail remained with the largest impact on production through FDI, in spite of presenting a reduction in the participation in FDI applied in Brazil. In 2005, five sectors responsible for the largest impact on production concentrated almost half of the variation in production, showing in this way, a little less concentration of impact in these service sectors.

The impacts on production of the domestic Investment for the years of 2000 and 2005 are presented in Table 7. For the year 2000 it can be observed that the impact of domestic investment on production was larger in the construction sector (46 %), followed by the sectors of commerce and machines and equipments with a variation in production of 9 % and 6 %, respectively. The construction sector remained in 2005 with the largest impact of domestic investment on production (31.00 %), even with the reduction of 15 percentage points in this impact, followed also by the commerce and machines and equipments sectors with a variation in production of approximately 9 % and 7 %, respectively.

However, as for the FDI, there are no significant changes between the largest variations in production of 2000 for 2005. It is still possible to observe that five sectors with bigger impacts of the domestic investment are responsible for variations in production of approximately 72 % in 2000 and 57 %

in 2005, while the biggest 10 concentrate 89 % in 2000 and 77 % in 2005, demonstrating in this way, an improvement in the distribution of impact on production among the sectors.

[Table 7]

It is appropriate to emphasize that an important result of the sectoral impacts is that while the FDI had its biggest impacts on production, predominantly, in service sectors, the biggest impacts of the domestic investment on production is in the industrial sectors, both in 2000 and in 2005. The sectors with greatest impact of the FDI in the services sector concentrate a variation of somewhat more than 70 % in production in 2000 and that 50 % in 2005, corresponding to 6 sectors among the 10 with largest impacts. On the other hand, the sectors related to the industrial sector are mostly among those with greatest impact on production, corresponding to 7 sectors among the 10 with greatest impacts on production. Meantime, the impacts of domestic Investment in the industrial sector concentrate only a variation of 31 % in production in 2000 and 33 % in 2005. These results show that the largest impacts of the FDI are much more concentrated in the services sector (even with a reduction in this concentration in 2005), which not take places with the impact of domestic Investment on production among the largest impacts.

4.1.2 Impact on employment

The effect of domestic investment and of FDI on the generation of jobs is introduced in Table 8. It is possible to see that the biggest effect on employment in 2000 refers to domestic investment, showing that it is more efficient in terms of generation of jobs than the foreign direct investment. Besides this, it is also possible to observe that from 2000 to 2005 there was a decrease in the effect on employment, both in domestic investment and in FDI, with the effect of domestic investment on employment in 2005 remaining greater than the effects of FDI on employment, being, thus, more efficient also in the year 2005.

[Table 8]

Ten sectors in which the FDI presents the largest potential for generation of jobs for 2000 and 2005 are presented in Table 9. The data show that the sector transport, storage and mail (28.55 %) had the largest potential for generation of jobs in 2000 followed by the sector of other services and commerce. Meantime the impact of this sector falls significantly, passing to 5th position in 2005, when the sector commerce assumes the leadership in terms of potential for generation of jobs, followed by the other services sector which stayed in the second position and by farming, with an impact of FDI of 31.75 % on employment. These results show the great capacity of absorption of impact of these sectors, with around 30 % of the impact on employment of FDI relapsing onto the sector of transport and mail in 2000 and on the sector of commerce in 2005.

[Table 9]

In spite of the change of positions between the sectors, the impact of FDI on the generation of employment did not show significant changes regarding the largest impacts of FDI on employment. It can be observed that only the sectors of financial intermediation and insurance, electricity and gas, water and sewage and newspapers, magazines and discs did not remain on the list of greatest impacts from 2000 to 2005.

It happens that the global impact of FDI on employment is concentrated in these sectors, with five principal sectors adding up to 81 % of the impact on generation of employment in 2000 and 89 % of the impact in 2005, and ten principal sectors adding up to 91.55 % of the impact on the generation of employment in 2000 and 93.39 % of the impact of domestic investment on the potential to generate employment in 2005.

Ten sectors in which domestic investment present the greatest potential to generate employment for 2000 and 2005 are presented in the Table 10. The table shows that the construction sector had the greatest impact on potential to generate employment both in 2000 and in 2005. In 2000, the commerce sector presents a notable impact, being responsible for 53.04 % of the whole impact of domestic investment. Besides, there are no significant changes between the ten sectors of greatest impacts on

employment, with only the sectors of machines and equipment and other extractive industry not remaining in the ranking from 2000 to 2005.

As with the FDI, the ten sectors with great potential to generate employment also concentrate a great part of the impact on employment. In the year 2000 five principal sectors had 90 % of the impact of the domestic investment on the generation of employment and in the year 2005, five principal sectors correspond to 89 % of the impact. When the ten principal sectors are analyzed, it is seen that among these the high concentration is 98 % in 2000 and 92 % in 2005 of the whole impact on the generation of employment of domestic investment, thus showing the impact on employment in the ten principal sectors.

[Table 10]

In terms of sectoral potential to generate employment, an important result that appears is the importance of the tertiary sector among the principal sectors in terms of impact of the FDI on employment (7 sectors among 10 bigger impacts), and of the secondary sector among the sectors with bigger impacts of the domestic investment on employment (6 sectors among the 10 greatest impacts). As concerns domestic investment, however, in spite of presenting more stated industrial sectors, its impact on the potential to generate employment is only 12.30 % in 2000 and 6.46 % in 2006, showing that the impact of domestic investment on the generation of jobs is more distributed than that of Foreign Direct Investment.

4.2 Sectoral Impact of Foreign Direct Investment according origin of capital

As shown previously, Dunning (1994) emphasizes that the effect on the economy of FDI can depend in part on the origin of the capital. So, this section has as objective to analyze the impact on production and employment of FDI according to the origin of capital, in accordance with four economic regions: European Union, NAFTA, MERCOSUR, and the Rest of the World.

Regarding the effects on production of FDI according to the origin of capital, it can be observed in the Table 11 that in 2000 the biggest effect on production refers to the foreign investment originating from NAFTA, since an increase of one monetary unit in the investment of this group of countries increases production at 1.78. In 2005, however, the biggest effect on production refers to the foreign investment originating from the European Union.

One can also see that the investments originating from the European Union, MERCOSUR and the Rest of the World became more efficient, in terms of impact on production, from 2000 for 2005. These results, in part, can be explained by the greater diversification among the sectors of the economy of the investments originating from these groups of countries, as was seen in section 3.1. On the other hand, one sees that only NAFTA obtained a decrease regarding the impact on production in 2000.

[Table 11]

Tables 12 and 13 present ten sectors of greatest impact of FDI on production, according to the origin by group of countries for 2000 and 2005, respectively. In the year 2000, the Table 12 shows that the biggest impact on production is in the sector transport, storage and mail for the foreign investment arriving from the European Union (30.32 %), from NAFTA (28.71 %) and from the Rest of the World (23.23 %). Besides, one observes that there were no very significant differences in terms of sectors with bigger impacts on production, 8 sectors being present among the largest 10 in terms of impacts on production in all groups.

Few differences can be observed between the impact of European Union and NAFTA on production, with few differences even in the position of each sector. The origin of capital which presents larger differences in terms of position of large impacts is that referring to MERCOSUR. This shows a different distribution from the impact on production of the investment coming from the one group of countries that contains only developing countries. Besides, the biggest impacts are in great part related to the volume of FDI itself in these sectors. The three highest positions of all the economic groups, for example, also received the biggest part of investment from their respective group.

[Table12]

It should be emphasized again that in all the groups, the impacts on production are concentrated in the 10 sectors having most influence on production. Approximately 80 % of the variation of total production in each sector is concentrated in 10 sectors with greatest impact on production. In addition most of these ten sectors of bigger impacts are tied to the tertiary sector, for all the groups analyzed.

Table 13, shows that in 2005 the distribution of impact on sectoral production is quite different if the positions are compared among the groups. It is possible to see, for example, that the largest impact on production of the European Union corresponds to the sector of food and drink, for NAFTA it is the sector of services to enterprises, for MERCOSUR it is the farming sector and for the rest of the world, the sector of electricity, water and sewage. In 2000, also, the biggest impacts made are in great part a list of the volume of FDI itself in these sectors. That shows that the differences among the economic groups in the distribution of impact on sectoral production are due more to the volume of investment in these sectors than to the group of countries from which the investment was given. So, if the impact on production is quite different between NAFTA and the MERCOSUR, for example, it is due to the change of the part of FDI of these groups directed to the sectors.

[Table 13]

Meantime, in spite of the differences of position, the impact of investment on production for all the trade blocks is concentrated in these ten sectors of greatest impacts. Approximately 75 % of the variation in total production in each sector is concentrated in 10 sectors with largest impacts on production, in all blocks.

The effect of FDI, according to the origin of the capital, on the generation of jobs is introduced in Table 14. It is noticed that both for the year 2000 and for 2005, the biggest impact on employment is related to the increase in the foreign investment coming from MERCOSUR, followed by the investment originating from NAFTA and the European Union. That shows that FDI originating from the MERCOSUR is the most efficient in terms of generation of employment. It can be observed, also, that the impact on the generation of employment fell from 2000 to 2005, showing that the sectoral distribution in 2000 was more efficient in terms of generation of employment than in 2005.

The effect of FDI, according to origin of capital, on generation of employment is introduced in Table 14. It can be observed that both for the year 2000 and for 2005, the biggest impact on employment is due to the increase in foreign investment coming from MERCOSUR followed by the investment originating from NAFTA and from the European Union. That shows that the FDI originating from MERCOSUR is the most efficient in terms of employment generation. It can be observed, also, that the impact on the generation of jobs fell from 2005 to 2000, showing that the sectoral distribution of 2000 was more efficient in terms of generation of jobs than in 2005.

[Table 14]

5. Final considerations

This article had the objective of analyzing the structure of foreign direct investment and domestic investment and to compare the impact on production and employment in Brazil for the 2000 years and 2005 in 38 sectors of economic activity. It is particularly interested in determining the difference between domestic investment and the foreign direct investment as concerns the impact on production and employment in Brazil for the 2000 years and 2005, besides evaluating which of these structures of investments is more efficient for the Brazilian economy.

For this, the input-output model was used. The analysis of the impacts was done through multipliers of production and of employment based on the final demand component of domestic investment and foreign investment. The foreign investment was studied according to the origin of each investment, in accordance with four economic groups: European union, NAFTA, MERCOSUR and Rest of the World.

The methodology used allowed the identification of the most significant sectors and terms of impact on production and employment of domestic investment and of foreign direct investment. That made possible the identification of the most relevant sectors in the generation of employment and in the variation of production when given a change in investment.

Among the principal results found, it is possible to point out regarding production that: a) domestic investment is more efficient in terms of increase of production than the FDI in 2000 and 2005; b) The FDI became more efficient in terms of increase of production, from 2000 to 2005, showing that the sectoral distribution of FDI in 2005 is more appropriate than the sectoral distribution of FDI in 2000; c) The sectors of greatest impact on production of the FDI are concentrated in the service sectors, in 2000 and 2005, corresponding to 6 sectors among the 10 of greatest impacts. However, this concentration is less in 2005; d) The domestic investment, on the other hand, obtained greater impacts on the production distributed among the sectors of service and the sectors connected with industry, though most of the sectors are tied to the industrial sector, with 7 sectors among the 10 sectors with greatest impact on production; e) The impact of FDI and of domestic investment on production is concentrated by them into 10 sectors of greatest impact in 2000 and 2005, with less concentration in 2005; f) the sectors of bigger impact on production of the FDI are in great part were explained by the volume of foreign investment itself when directed to these sectors.

Regarding employment, it is possible to highlight among the principal results that: a) the domestic investment was more efficient in terms of generation of employment than the FDI in 2000 and 2005; b) the potential to generate employment of FDI and of domestic investment was reduced from 2000 to 2005; c) In 2005, however, the difference between FDI and of domestic investment in the effect on the generation of jobs was reduced; d) The sectors of greatest impact of FDI on the generation of employment, also are in great part the greatest receivers in volume of FDI, the exceptions are the services sectors of lodging, newspapers, magazines and discs and farming; d) The sectors of greatest potential for generation of jobs by FDI are in majority sectors directed to services (7 in 10); e) On the other hand, the sectors of greatest potential for generation of jobs by domestic investment are in the sectors connected with the secondary sector (6 in 10); f) the potential to generate employment of the FDI and of the domestic investment are concentrated by them into 10 sectors of great potential to generate employment, in 2000 and 2005.

Regarding the FDI, individually: a) The FDI originating from NAFTA in 2000 is the most efficient in terms of increase of production in 2000, and the FDI coming from the European Union, the most efficient in 2005; b) The FDI coming from the European Union, MERCOSUR and from the Rest of the world were more efficient in terms of production increase from 2000 to 2005; c) the distribution of FDI originating from the European Union is most indicated in terms of production increase in 2005; c) the sectors of greatest impact on production of the FDI when coming from any one of the economic groups were explained in great part by the volume of foreign investment directed to these sectors; d) And, finally, one finds that the FDI coming from the MERCOSUR has the biggest impact on the generation of employment, being thus the most efficient in terms of generation of employment compared to other groups, and most indicated in terms of sectoral distribution.

So, one of the principal conclusions that it is possible to take away from the results found is that from 2000 to 2005, the FDI applied in Brazil improved its efficiency, in terms of increase of production and of employment, when compared to domestic investment. Meanwhile, very much can be done in the sense of increasing its impact on production and employment. In this way, the information contained in this study might be important to subsidize the management of incentives for entry of foreign direct investment in Brazil directed to sectors that present better performance on production and employment, and to countries that could best enable the effect of FDI on national development.

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Appendix:

Table 1: Percentage of FDI in the Gross Fixed Capital Formation (%).

	2000	2005
FDI/GFCF	28.4	10.7

Source: UNCTAD.

Table 2: Percentage distribution of the FDI in Brazil (%)

Economic activity	2000	2005
Farming	0.000	1.611
Oil and natural gas	1.610	4.167
Iron ore	0.445	4.626
Other extractive industry	0.117	0.236
Foods and Drinks	3.263	9.420
Tobacco Products	0.000	0.093
Textiles	0.120	0.591
Articles of clothing and accessories	0.050	0.055
Leather goods and shoes	0.000	0.042
Wooden products	0.107	0.576
Cellulose and paper products	0.033	0.737
Newspapers, magazines, discs	0.054	0.197
Products Refined from oil, coke and alcohol	0.000	0.037
Chemical product	3.742	3.461
Articles of rubber and plastic	0.194	1.777
Cement and non-metal Minerals	0.224	0.066
Metallurgy	0.823	1.477
Metal products	0.087	0.345
Machines and equipments	1.938	0.850
Machines for office and computer science equipment	0.077	0.023
Machines, appliances and electric materials	0.221	0.652
Electronic material and communications equipment	2.192	2.102
Hospital and medical Aparel./instrum., measure and optician	0.067	0.391
Automotive vehicles	3.511	5.571
Other transport equipment	0.623	0.076
Furniture and products of different industries	0.000	0.223
Electricity, gas, water, sewage and urban sanitation	10.309	7.335
Construction	0.040	1.788
Commerce	5.175	13.198
Transport, storage, mail and Telecommunications	36.749	9.953
Financial intermediation and insurances	21.415	10.011

Property services and rent	0.070	1.379
Lodging and food Services	0.000	0.594
Services to enterprises	2.728	13.555
Education	0.000	0.235
Health	0.000	0.012
Other Services	4.013	2.532
Public administration and social security	0.000	0.000

Source: Census of Foreign Capital in Brazil.

Table 3: Percentage of FDI according to Origin

Economic groups	2000	2005
European union	53.72	42.87
NAFTA	23.52	35.97
MERCOSUL	1.49	1.31
Rest of the World	21.27	19.85

Source: Census of Foreign Capital in Brazil.

Table 4: Performance and impact of investment on Brazilian production and employment, 2000-2005.

Indicators	2000	2005
Investment (%GFCF)		
Domestic investment	71.6	89.3
Foreign Direct Investment*	28.4	10.7
Impact on Production / Vr of Production - (%)	14.68	13.67
Domestic investment	10.64	12.22
Foreign Direct Investment	4.04	1.45
Impact on employment / Total Job - (%)	9.15	13.25
Domestic investment	7.74	12.02
Foreign Direct Investment	1.41	1.23

Source: UNCTAD.

Table 5: Impact on Production – 2000 and 2005.

Origin of the Investment	2000	2005
Domestic investment	1.831664	1.829406
Foreign Direct Investment	1.753446	1.808341
Total investment	1.809450	1.827152

Source: From the research data.

Table 6: Variation in the FDI – Impact on the sectoral production - 2000 and 2005

Sector	2000		2005	
	Position	Impact	Position	Impact
Transport, storage, Mail and Telecommunications	1	28.14	1	12.69
Financial intermediation and Insurances	2	16.64	4	8.20
Electricity and gas, water, drain and urbane cleaning	3	9.34	5	7.55
Services to enterprises	4	6.52	2	10.64
Commerce	5	5.75	3	10.31
Manufacture of chemical products	6	4.00	7	4.93
Other services	7	3.88	15	2.14
Automotive vehicles	8	3.03	8	4.71
Petroleum Refining and Preparation	9	2.92	12	2.85
Foods and Drinks	10	2.70	6	7.11

Source: From the research data.

Table 7: Variation in Domestic Investment and its impact on sectoral production - 2000 and 2005.

Sector	2000		2005	
	Position	Impact	Position	Impact
Construction	1	46.44	1	31.00
Commerce	2	8.63	2	8.71
Machines and Equipment	3	6.03	3	6.50
Non-metal minerals	4	5.28	8	6.23
Automotive vehicles	5	5.26	4	4.83
Basic metallurgy	6	3.99	5	4.57
Metal products	7	3.88	7	4.44
Electronic material	8	3.64	9	3.73
Farming	9	3.23	11	3.59
Manufacture of chemical products	10	2.97	10	3.33

Source: From the research data.

Table 8: Potential for generation of employment – 2000 and 2005.

Origin of the Investment	2000	2005
Domestic investment	0.076	0.043
Foreign Direct Investment	0.048	0.037
Total investment	0.068	0.043

Source: From the research data.

Table 9: Potential of FDI to generate employment - 2000 and 2005

Sector	2000		2005	
	Position	Impact	Position	Impact
Transport, storage and Mail	1	28.55	5	5.57
Other services	2	17.41	2	19.84
Commerce	3	17.04	1	31.75
Services been suitable to the enterprises	4	9.92	4	12.88
Farming	5	8.94	3	19.64
Financial intermediation and insurances	6	4.63	13	0.43
Electricity and gas, water, drain and urbane cleaning	7	1.76	19	0.23
Foods and Drinks	8	1.32	8	1.03
Services of accommodation and food	9	1.09	7	1.54
Newspapers, magazines, discs	10	0.88	12	0.48

Source: From the research data.

Table 10: Potential to generate employment of Domestic Investment – 2000 and 2005.

Sector	2000		2005	
	Position	Impact	Position	Impact
Construction	1	53.04	1	39.94
Commerce	2	16.77	3	17.71
Farming	3	14.34	2	27.48
Non-metal minerals	4	3.34	5	2.30
Metal products	5	2.51	8	1.13
Furniture and products of the different industries	6	2.08	7	1.23
Machines and Equipment	7	1.95	11	0.46
Wood products	8	1.65	10	0.98
Services to enterprises	9	1.55	9	1.07
Other extractive Industries	10	0.76	14	0.36

Source: From the research data.

Table 11: Impact on Production – 2000 and 2005.

Origin of the Investment	2000	2005
European union	1.7392	1.8765
NAFTA	1.7830	1.7072
MERCOSUR	1.6996	1.7681
Rest of the World	1.7604	1.8470

Source: From the research data.

Table 12: Impact on sectoral production according to the origin of capital – 2000.

Sector	European union	NAFTA	MERCOSUR	Rest of the World
Transport, storage and mail	30.32 (1)	28.71 (1)	15.74 (5)	23.23 (1)
Financial intermediation and insurance	20.50 (2)	10.62 (2)	13.88 (2)	15.55 (3)
Electricity, water and urban sanitation	7.64 (3)	7.98 (3)	11.28 (9)	13.93 (2)
Services to enterprises	5.98 (4)	6.35 (4)	10.95 (3)	7.74 (4)
Commerce	5.78 (5)	5.58 (6)	10.73 (1)	5.38 (5)
Chemical products	3.87 (6)	5.41 (7)	5.99 (8)	3.93 (7)
Other Services	3.36 (7)	4.84 (5)	5.7 (7)	3.35 (8)
Oil Refining, Preparation	2.94 (8)	4.70 (11)	4.31 (11)	3.13 (9)
Automotive vehicles	2.93 (9)	3.76 (8)	2.72 (14)	2.71 (14)
Foods and Drinks	1.91 (10)	3.14 (10)	2.4 (6)	2.27 (6)

Source: From the research data.

Note: The value in parentheses represents the position of the sector.

Table 13: Impact on sectoral production according to origin of capital – 2005.

Sector	European union	NAFTA	MERCOSUR	Rest of the World
Food and Drink	13.18 (1)	1.56 (18)	4.68 (9)	3.19 (10)
Transport, storage and mail	12.37 (2)	16.2 (2)	6.72 (6)	7.85 (4)
Commerce	10.79 (3)	12.94 (3)	10.07 (3)	4.84 (7)
Financial intermediation and insurance	9.73 (4)	5.81 (4)	4.92 (8)	9.02 (3)
Electricity and water and urban sanitation	7.47 (5)	2.84 (9)	2.56 (12)	15.91 (1)
Farming	6.09 (6)	1.84 (13)	14.6 (1)	2.76 (12)
Manufacture of chemical products	5.2 (7)	3.04 (8)	9.44 (4)	7.19 (5)
Oil and natural gas	4.84 (8)	2.74 (11)	1.15 (16)	3.3 (9)
Services to enterprises	4.81 (9)	20.32 (1)	11.38 (2)	7.13 (6)
Automotive vehicles	4.61 (10)	5.62 (5)	0.86 (21)	3.63 (8)

Source: From the research data.

Note: The value in parentheses represents the position of the sector.

Table 14: Impact on employment– 2000 and 2005.

Origin of the Investment	2000	2005
European union	0.0458	0.0378
NAFTA	0.0520	0.0406
MERCOSUR	0.0624	0.0590
Rest of the World	0.0464	0.0267

Source: From the research data.

Table 16: Matrix Compatibilization in 38x38 sectors

Sector	Sector of input-output matrix	Sectors of Census of Foreign Capital
1	Agriculture Livestock and fishing	Agriculture, livestock and related activities Forestry, logging and related activities Fisheries aquaculture and related services

2	Oil and natural gas	Extraction of oil and related services
3	Iron ore	Mining of iron ores
4	Other extractive industry	Mining of non-ferrous metal ores
5	Foods and Drinks	Food products and beverages
6	Tobacco Products	Tobacco Products
7	Textiles	Textiles
8	Articles of clothing and accessories	Articles of clothing and accessories
9	Leather goods and shoes	Leather goods and shoes
10	Wooden products	Wooden products
11	Cellulose and paper products	Cellulose and paper products
12	Newspapers, magazines, discs	Publishing and printing
13	Products Refined from oil and coke Alcohol	Coke, petroleum products and nuclear fuel
14	Chemical product Manufacture of resin and elastomers Pharmaceuticals products Agricultural chemicals Perfume Paints, varnishes, enamels and lacquers Other Chemical products	Manufacture of chemical products
15	Articles of rubber and plastic	Articles of rubber and plastic
16	Cement Other product of non-metal Minerals	Non-metallic mineral products
17	Manufacture of steel and derivatives Metallurgy of non-ferrous metals	Metalurgia Básica
18	Metal products	Manufacture of Metal products
19	Machines and equipments	Machines and equipments
20	Machines for office and computer science equipment Machines, appliances and electric materials Eletrodomésticos	Machines for office and computer science equipment
21	Máquinas, aparelhos e materiais elétricos Appliances	Máquinas, aparelhos e materiais elétricos
22	Electronic material and communications equipment	Electronic material and communications equipment
23	Hospital and medical Aparel./instrum., measure and optician	Hospital and medical Aparel./instrum., measure and optician
24	Cars, vans and utilities Parts and accessories. for motor vehicles Trucks and buses	Motor vehicles, trailers and semi-trailers Manufacture of parts and accessories for motor vehicles
25	Other transport equipment	Other transport equipment
26	Furniture and products of different industries	Furniture and products of different industries
27	Electricity, gas, water, sewage and urban sanitation	Electricity, gas and water Sewage and waste disposal, sanitation activities Collection, purification and distribution of water
28	Construction	Construction
29	Commerce	Wholesale trade Distributive trade
30	Transport, storage, mail Information Services	Land transport Water transport Air transport Supporting and auxiliary transport activities Post and communications
31	Financial intermediation and insurances	Financial intermediation Insurance and Pension Funding Activities Auxiliary to Financial Intermediation

32	Property services and rent	Property services and rent
33	Lodging and food Services	Hotels and restaurants
34	Services to enterprises	Automotive Rental Research and development Services to enterprises
35	Education market Education public	Education
36	Health market Health public	Health and social services
37	Maintenance and repair Other Services	Recycling Membership Organizations N.E.C. Recreational, cultural and sporting activities Computer and related activities Personal Service
38	Public administration and social security	

Table 17: Percentage distribution of the FDI according to origin of capital, 2000.

Sector	EU	NAFTA	MERCOSUR	RM
Farming	0	0	0	0
Oil and natural gas	1.3	0.79	17.27	2.19
Iron ore	0.31	0.6	0.22	0.63
Other extractive industry	0.1	0.03	0	0.27
Foods and Drinks	2.13	3.9	7.76	5.12
Tobacco Products	0	0	0	0
Textiles	0.07	0.09	0.11	0.28
Articles of clothing and accessories	0.02	0.02	0.07	0.16
Leather goods and shoes	0	0	0	0
Wooden products	0.03	0	0.05	0.43
Cellulose and paper products	0.01	0.07	0.03	0.06
Newspapers, magazines, discs	0.05	0.07	0.05	0.05
Products Refined from oil, coke and alcohol	0	0	0	0
Chemical product	3.71	4.84	3.71	2.61
Articles of rubber and plastic	0.14	0.26	0.6	0.24
Cement and non-metal Minerals	0.32	0.04	0.11	0.19
Metallurgy	0.69	0.53	1.39	1.43
Metal products	0.07	0.14	0.03	0.09
Machines and equipments	1.69	1.84	0.57	2.77
Machines for office and computer science equipment	0.03	0.08	0.02	0.21
Machines, appliances and electric materials	0.19	0.29	0.27	0.22
Electronic material and communications equipment	0.69	5.96	0.48	1.94
Hospital and medical Aparent./instrum., measure and optician	0.02	0.05	0.02	0.21
Automotive vehicles	3.32	6.1	1.11	1.3
Other transport equipment	0.33	0.83	0.22	1.16
Furniture and products of different industries	0	0	0	0
Electricity, gas, water, sewage and urban sanitation	8.06	8.48	0.8	18.69
Construction	0.02	0.02	0.22	0.09
Commerce	5.32	4.12	22.36	4.77
Transport, storage, mail and Telecommunications	40.11	38.24	5.66	28.79
Financial intermediation and insurances	27.05	12.37	16.98	17.49
Property services and rent	0.02	0.03	0.66	0.21
Lodging and food Services	0	0	0	0
Services to enterprises	1.27	3.03	11.66	5.45
Education	0	0	0	0
Health	0	0	0	0

Other Services	2.94	7.18	7.56	2.97
Public administration and social security	0	0	0	0

Source: Census of Foreign Capital in Brazil.

Table 18: Percentage distribution of the FDI according to origin of capital, 2005.

Setores	EU	NAFTA	MERCOSUR	RM
Farming	1.37	1.27	19.84	1.55
Oil and natural gas	6.32	2.55	0	2.74
Iron ore	0.27	1.07	0.01	20.79
Other extractive industry	0.14	0.44	0.01	0.09
Foods and Drinks	19.1	1.4	3.8	3.43
Tobacco Products	0	0	0	0.47
Textiles	0.17	1.34	1.52	0.07
Articles of clothing and accessories	0.01	0.04	0.09	0.17
Leather goods and shoes	0.04	0.05	0.05	0.04
Wooden products	0.26	0.14	0.07	2.09
Cellulose and paper products	0.82	0.9	0.82	0.26
Newspapers, magazines, discs	0.27	0.11	0.22	0.19
Products Refined from oil, coke and alcohol	0.04	0.01	0	0.07
Chemical product	3.85	0.65	4.13	7.67
Articles of rubber and plastic	0.72	3.18	14.28	0.69
Cement and non-metal Minerals	0.09	0.06	0.25	0.01
Metallurgy	3.21	0.13	2.54	0.11
Metal products	0.28	0.41	0.33	0.36
Machines and equipments	1.21	0.27	0.91	1.13
Machines for office and computer science equipment	0	0	0	0.12
Machines, appliances and electric materials	0.87	0.49	0.11	0.51
Electronic material and communications equipment	0.43	2.98	0.28	4.25
Hospital and medical Aparel./instrum., measure and optician	0.82	0.09	0.03	0.04
Automotive vehicles	5.7	6.24	0.3	4.43
Other transport equipment	0.04	0.16	0	0
Furniture and products of different industries	0.19	0.3	0.07	0.16
Electricity, gas, water, sewage and urban sanitation	7.4	0.8	0.02	19.51
Construction	1.66	2.52	0.66	0.81
Commerce	14.36	17.06	12.16	3.75
Transport, storage, mail and Telecommunications	10.97	13.74	1.43	1.45
Financial intermediation and insurances	13.15	5.86	4.87	11.09
Property services and rent	1.05	1.96	4.19	0.85
Lodging and food Services	0.57	0.22	1.65	1.27
Services to enterprises	3.25	29.1	15.87	7.49
Education	0.54	0.01	0.02	0
Health	0.02	0.01	0.04	0
Other Services	0.82	4.44	9.43	2.32
Public administration and social security	0	0	0	0

Source: Census of Foreign Capital in Brazil.