

**Food and Agriculture Organization of the United Nations  
Trade and Markets Division (EST)  
Policy Assistance Support Services (TCSP)**

**Analysis of International Investments in the  
Agricultural Sector of Brazil.**

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Disclaimer: The conclusions and recommendations presented here are those of the author and do not represent the official policy of the Food and Agriculture Organization of the United Nations or the Government of Brazil.

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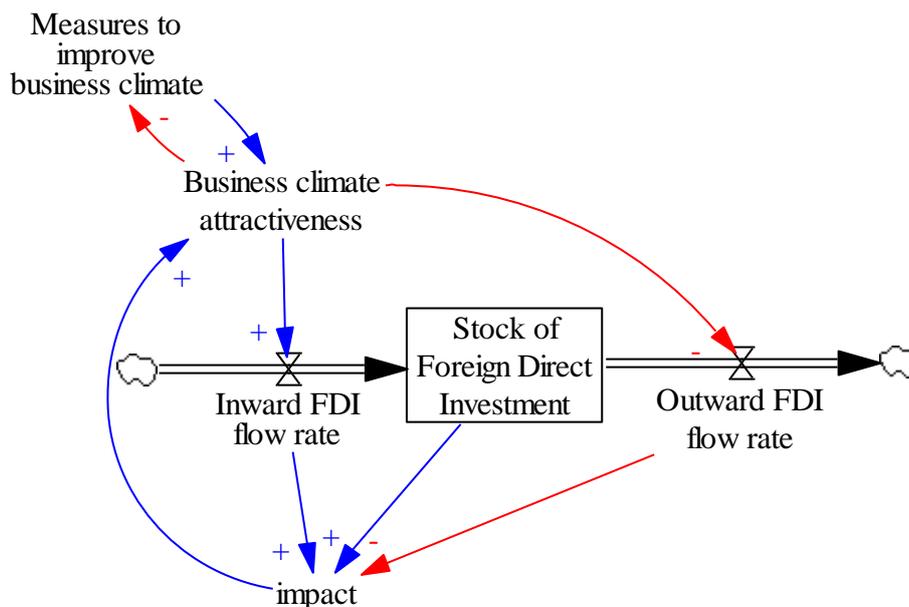
## Abbreviations and acronyms

<b>ABRAF</b>	Brazilian Association of Plantation Forest Producers
<b>ADM</b>	Archer Daniels Midland Company
<b>APEX</b>	Brazilian Agency for Export and Investment Promotion
<b>BCB</b>	Brazilian Central Bank
<b>BNDES</b>	Brazilian Development Bank
<b>CC</b>	Coordinating Committee to implement the PROMECIF
<b>CERFLOR</b>	Brazilian Forest Certification Scheme
<b>CIBRAZEM</b>	Brazilian Storage Company
<b>CPI</b>	Corruptions Perception Index
<b>EMBRAPA</b>	Brazilian Agricultural Research Corporation
<b>EU</b>	European Union
<b>EMBRATER</b>	Brazilian Enterprise of Technical Assistance and Rural Extension ()
<b>FAO</b>	United Nations Food and Agriculture Organization
<b>FDI</b>	Foreign Direct Investment
<b>FIAS</b>	Foreign Investment Advisory Service
<b>FINAME</b>	Special Agency for Industrial Financing, a branch of BNDES
<b>FVL</b>	Forest Vocation Land
<b>FSC</b>	Forest Stewardship Council
<b>GCF</b>	Gross Capital Formation
<b>GDP</b>	Gross Domestic Product
<b>GoB</b>	Government of Brazil
<b>HDI</b>	Human Development Index
<b>IBRD</b>	International Bank for Reconstruction and Development. Also WB
<b>IDB</b>	Inter-American Development Bank
<b>IFAD</b>	International Fund for Agriculture Development
<b>IFC</b>	International Finance Corporation
<b>IICA</b>	Inter-American Institute for Cooperation on Agriculture
<b>ILO</b>	International Labor Organization
<b>IMF</b>	International Monetary Fund
<b>ISO</b>	International Organization for Standardization
<b>LAC</b>	Latin America and the Caribbean
<b>LICUS</b>	Low Income Country Under Stress
<b>MIGA</b>	Multilateral Investment Guarantee Agency
<b>MMA</b>	Ministry of Environment of Brazil
<b>nFVL</b>	Non forest Vocation Land
<b>OECD</b>	Organization for Economic Co-operation and Development
<b>PND</b>	National Development Plan
<b>PROMECIF</b>	Forestry Investment Business Climate Improvement Process
<b>PRONAF</b>	National Program for Family Agriculture Strengthening
<b>R&amp;D</b>	Research and Development
<b>BFS</b>	Brazilian Forest Service
<b>SIF</b>	Forestry Research Society
<b>TNC</b>	Trans National Corporation
<b>UFV</b>	Federal University of Viçosa
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>UNDP</b>	United Nations Development Program
<b>USD</b>	Dollars of the United States of America
<b>WB</b>	The World Bank. Also IBRD.
<b>WEF</b>	World Economic Forum
<b>WIR</b>	World Investment Report

## I. INTRODUCTION

1. This paper seeks to carry out a case study on the extent, nature and impact of international investments into the agricultural sector of Brazil<sup>1</sup>. The case analyzes the policies, legislation, institutions and other factors affecting international investment in the country. It finally also makes recommendations on how policies, regulations and other factors can be updated to respond appropriately to the challenges facing the agricultural sector in Brazil.
2. Figure 1 shows a simplified system dynamics model<sup>2</sup> that underlines most of the analyses and discussions presented in the paper. It shows that the inward and outward flows of Foreign Direct Investment (FDI) that changes its stock and generate several types of impacts is influenced by the attractiveness of the business climate to foreign investors. In turn, the conditions that form the business climate can be affected by the intervention measures that governments can take to improve them.

Figure 1- Simplified model of FDI and business climate dynamics



<sup>1</sup> Brazil has become also an important direct investor into other countries (Group of Fifting 2010).

However, the study concentrates only in the FDI the country receives into its agriculture based sector.

<sup>2</sup> In several figures in this document, causal relationships between variables were represented in two forms:

1- Variable A  $\xrightarrow{+}$  Variable B – This relationship should be read: if A increases (decreases), then B increases (decreases) more than it would without the change in A. The variables generally move in the same direction.

2- Variable J  $\xrightarrow{-}$  Variable K – This relationship should be read: if J increases (decreases), then K decreases (increases) more than it would without the change in J. The variables generally move in opposite directions. The rounded shape at the beginning of the Inward flow and the end Outward flow means that the model does explain where these flows come from or go to.

3. This Chapter I (this Introduction) besides the overall organization of the paper) also presents a basic framework to understand the factors that influence investment in agriculture in general, and which also influence investments made by foreigners.
4. Chapter II of the case study describes FDI (Foreign Direct Investment) in Brazil in terms of its importance in relation to other countries and the Brazilian economy, its contribution to the financing of agriculture sector related investments, and the role of Trans National Corporations (TNCs) as major source of FDI for agriculture.
5. Chapter III tries to explain and illustrate with Brazilian examples the environmental, economic, and social impacts of FDI in agriculture.
6. Given the relative success of the country in attracting foreign and domestic investments into agriculture sector, especially in the Savannah regions of Central Brazil (known locally as *Cerrado*), Chapter IV of the study reviews some critical policy and actions that have contributed to Brazil's agriculture sector performance as well as the accumulated knowledge about the *Cerrado* development experience so as to identify major factors affecting the level of investment as well as to learn the lessons that could eventually be applied elsewhere. It surveys various economic, social, and business climate related indexes to have an overview of *Brazil's* performance; identify important issues to be considered in the development of proposals; and it defines a rural development business climate model that can identify critical factors affecting the success of agriculture and forest based investments.
7. To understand the factors that affect FDI decisions in the agriculture sector, Chapter V describes various indicators used to characterize several aspects of the business climate in Brazil, and proposes a specific model that combines the principal indicators and variables that can explain the attractiveness of investments in the agriculture sector.
8. Using the model described in Chapter V, Chapter VI tries to identify the principal factors which with potential or improvement so that Brazil could further attract FDI into the agriculture sector.
9. The last Chapter, VII, presents the principal conclusions and recommendations.

#### **A. What influences investments in agriculture**

10. Investments in agriculture depend on investors perception of how factors influencing the climate for agriculture businesses affect the profitability of their future investment or divestment decisions. Figure 2 Shows a causal model that summarizes the main variables, factors, and policy intervention issues that influence investments in agriculture. The greater the expected profitability of the agriculture based business project as compared with alternative investment opportunities, the greater the investment level in agriculture. This is the basic hypothesis used in this study to explain the agricultural development in Brazil in the last 60 years or so.
11. The rate of investments in agriculture is important because it increases the stock of capital used to produce food and fiber. As agriculture production increases more

food and fiber become available for consumption, at smaller prices, populations will have greater food security, and nutrition improve. Greater agriculture production will reduce food related expenditures releasing funds for other conception needs and wants, increase income and jobs and, thereby, decrease poverty, particularly in rural areas. A population with better nutrition and less poor will see its levels of welfare increased.

12. However, if the expected profitability of the agriculture based business project is smaller compared with alternative investment opportunities, then the investment level in agriculture will likely be smaller, and if such adverse conditions persists, one can expect divestment in agriculture and the consequent reduction in agriculture capital. As agriculture production decreases less food and fiber become available for consumption, at greater prices, populations will have less food security, and nutrition worsen. Less agriculture production will increase food related expenditures capturing funds for other conception needs and wants, decreasing income and jobs and, thereby, increasing poverty, particularly in rural areas. A population with less nutrition and more poor will see its levels of welfare decreased.
13. The financial profit an investor or a farmer may obtain from a project to produce food or fiber can be estimated by calculating its expected rate of return (ERR). This profit depends on the stream of costs and the revenues that agriculture project is expected to generate under the contingencies of the land area where the project will be undertaken and business climate the investor faces and expects to face during the agriculture investment project execution period and their impacts on costs and revenues.
14. The contingencies of the land area where the project will be undertaken can be distributed in two main groups: land features and land owner characteristics and that will influence the choice of project type and dimensions. In the short run, these conditions limit the alternative projects that investors or farmers can pursue in a given property. The land features are those attributes of the property area, such as its location, its tenure situation, the natural resources that it has and that can be used for production. The closer the land area is located to suppliers of the agriculture production inputs and to consumers of the outputs, the less transportation costs the investors will have and the greater profitability of the investment.
15. The natural resources endowment of the land include mainly soil quality and slope, the area and water available, and the climate regimen. These features of the land usually intrinsic to it and to change them will often require use of substantial capital. All these factors influence the selection of the food or fiber to produce and the technological package to be adopted, which in turn define the need for inputs and the expected productivity. The more appropriate these factors are for the investment intended, the more likely the investment will be profitable and more attractive the investment for landowners.
16. Land tenure and protection is also an important factor for the profitability of a food or fiber investment. The more secure is the land tenure under the control of the landowner or investor, the less uncertainty and risks of losing the revenues of the production or having additional costs to protect the property and other associated assets he/she will face. More secure land tenure also allows investors to explore

alternative projects with a longer maturity such as forest plantations since they are more certain of harvesting the trees.

17. The second group of contingencies of the land area where the project will be undertaken is the landowner characteristics. Any investment or business venture depends on capabilities of its owner, self or hired, to undertake the production, managerial, and related activities required for efficient operation and profitability. The owner has know about agricultural production of potential crops, to be able to understand and manage the business activities (labor, legal, fiscal, financial, accounting, risk). The landowner also has her own educational and health conditions that allows it to undertake tasks, acquire and use skills, and adopt new technologies. Another feature of the landowner that determines the choice of investment is the amount of her financial savings which she can use to produce crops, invest in alternative projects or use for consumption.
18. For a given land are with its particular land features and landowner capabilities, the ERR which can be obtained from an agriculture project depends on other out-of-farm factors that affect directly the stream of cost and revenues of the project. On the cost side, the farmer or investor will consider different technological packages he knows and take into consideration the quantities of inputs that will be needed for a given input price level. Within certain limits of the flexibility of the technological production package selected, the farmer will tend to use more of given input as it becomes cheaper. The opposite tendency is true for when the input prices increase. Some of the principal inputs used for agriculture production and whose prices will be determinant of the choice of technology, and quantities to use, are: rural credit available, agrochemicals such as fertilizers, pesticides, etc., labor, machinery and equipment. The prices of such inputs at the farm gate like the interest rate of rural credit, agriculture labor wages, and the prices of agrochemicals, machinery and equipment will determine the quantities used and the cost stream that cover. Obviously, the greater the costs of production, the smaller is the ERR and the less attractive is the investment.
19. On the revenue side, the agriculture project ERR will be greater the larger the revenue the farmer can obtain from it at harvest times. The revenue will depend on the output prices at the farm gate and the quantities produced and delivered to wholesalers or consumers. Output prices depend on domestic market conditions, and on how international prices are transmitted into the domestic market. International prices influence on domestic prices depend on the foreign exchange rate, on how the domestic economy is open to international trade. International prices themselves are determined by worldwide demand and supply for the crop. It is beyond the scope of this paper to discuss how international food and fiber prices are affected by different factors.
20. Actual prices received by investors at farm gate may vary from location to location as farmers have to discount the transaction costs associated with sale of the production such as transportation, communication, port services, marketing, etc.
21. Output prices are critical not only at the time of harvest, but indeed it is one of the critical factors farmers must consider when deciding which crop to produce. For that, she has to form an expectation about the prices of alternative crops at future

harvest time. However well the farmer form this expectation, that will be often an element of risk about the true price he will sell, which can have a positive impact on the project' rate of return when prices turn out to be better than expected, but can also have a negative impact (not rarely, catastrophic one) on the rate of return when prices are worse than expected.

22. The revenue will also depend on the quantities produced. Naturally, the greater the quantities harvested and delivered, the greater the revenue. The crop output quantities depend on several factors, some are under the control of the farmer, like the choice of the technologies, the monitoring the protection of plants and produce; some others like the weather are not. The exact quantities of output produced may then vary which make this another source of risk for the farmer to manage to reduce its negative impacts and increase the chances of positive impacts.

### ***B. Impacts of public policies and actions on agriculture investment***

23. Public policies, investments, and other actions can impact agriculture project profitability and thereby influence the rate of investment in agriculture production. Public policies and investments are represented in Figure 2 as circles and the way they affect costs of revenues of agriculture projects can be seen in the causal relationship arrows.
24. The tax burden imposed on agriculture investments reduces the ERR and make these investments less attractive. The tax burden increases the cost of doing business not only directly by the tax rate imposed, but also because of the additional expenditure and time consumed to comply with tax code bureaucratic requirements. Depending on the tax system of a country, the complexity and diversity of taxes generate innumerable distortions and create incentives for evasion, and corruption. Because the tax burden in a economy can affect many points of the production chain, it is represented in Figure 2 as having an adverse impact directly on the ERR as it increases. On the other hand, the reduction of tax burden or a negative tax burden, also known as a tax incentive, will increase the ERR of agriculture investments making them more attractive to investors.
25. The expected in the ERR indicates that this estimation of the profitability of an agriculture investment project depends on the probability of the occurrence of events which considers different assumptions in their calculations. These events may be more or less predicable or uncertain. When these events occurrence are less known they introduce a measure of risk that make the ERR calculation results less reliable. Although risks may have impacts of events that turn out to be more favorable than expected, investors are particularly worried by the negative impacts that they may have on profitability. The riskier an investment, the less attractive they are and the more ERR are demanded by investors to compensate for the possibility of failure. When the nature of such risky events, the size of their impacts, and the probability of their occurrence allow and require, investors will try to manage them by taking actions to eliminate, mitigate, or share the risks and their impacts by ensuring their odds.
26. Figure 2 shows that production related risks associated with the land property features and land owner capabilities can be managed by the adoption of preventive

measures, and the selection of appropriate crops and technological packages so as to increase the chances that their productivity will be acceptable. There are other risks that investors have less control like the fluctuations of input and output prices. For output price, governments may adopt policies that try to assure a minimum compensation to investors by fixing a minimum price that it is willing to pay for the production. In some countries, agriculture investors can hedge their price risks by selling their future production at a pre established price either in contractual arrangements with industry or wholesalers, or in the capital markets. Policies and actions that promote timely and accurate market information availability can also help to reduce risks and uncertainty, as well as allow better price input buying and output selling by investors which help to maximize profits.

27. However, there are risks that investors have less ways to manage such as political risks or the uncertainties linked with the sudden and adverse change of the rule of law or their weakness in protecting investors in their transactions or in assuring their rights to the fruits of their properties. Although there insurance instruments for these risks they usually are out of reach for the average investor. Indeed they depend intrinsically on governments' actions, so investments in agriculture could be increased when political risks are reduced and favorable rule of law is clearer and fully enforced.
28. A critical source of uncertainty in many countries is related to the rights of land owners to capture the benefits of the land they are producing on and pay for the consequences of its poor management. Land tenure clarity, property protection, and the existence of well functioning land markets are critical for investors to have access to land resources and make their agriculture production investment decisions considering socially desirable incentives that lead to long term planning and resource conservation. These conditions are needed to assure that land resources are sustainably managed. Government policies that address these issues lead to greater profitability and investments in agriculture production and a more sustainable land use.
29. The stability of the economy also contribute to better investment decision making. Higher inflation rate will generate uncertainties about future expected prices, lead investors to anticipate input purchases, and reduce income of consumers. Credit become nominally more expensive and riskier for investors since they tend to increase output prices to compensate for higher production costs. Inflation controlling policies help investors to better plan their agriculture businesses, preserve their and consumer's purchasing power, and reduce risks.
30. As the economy grows in real terms, agriculture investors can expect consumer to have their income grow, and with this greater demand for agriculture products and better prices. The growth in income can indeed have substantial impact on some products prices and consumption since it may lead to a change of preference of consumers to previously unaffordable goods. This short run increase in prices, provide incentives for greater agriculture investment and production when it is feasible either through increase in land area and/or adoption of more productive technological packages. Policies that favor GDP growth, therefore, will tend to favor greater agriculture investments. Conversely, an economy that grows less tends to have more unemployed citizens, less income available for food and fiber

consumption and may lead to deflation of agriculture prices, reducing agriculture investors revenues.

31. When food or fiber prices at a country's border are high, policies and actions that let these prices to be similarly high in the domestic market will increase revenues of agriculture businesses, making them more attractive, and lead to higher investments in agriculture production. On the other hand, if these border prices are smaller than domestic ones, countries would benefit consumers by importing such products and, in case producers can not compete with such lower prices, by letting investors to redirect their resources to producing other products which they can produce competitively. As food and fiber international prices are currently high and are expected to continue to stay high or increase over the near future, countries which can increase their production, will do so when they adopt policies and actions that allow domestic prices to fluctuate with border prices. These prices will be closer to each other, when there is a freer trade regimen with minimum or no tariffs, quantity controls, or other restrictions. A policy of maintaining a not overvalued domestic currency will also allow food and fiber exporters to obtain compensating revenues from exports without increasing substantially their costs to import needed foreign inputs.
32. Social and economic infrastructure have substantial impacts on the ERR since they influence both the final prices of inputs investors have to pay and the prices they get for their production. Economic infrastructure such as transportation from the farm to the final products consumer or inputs producers (Batista 2008) are major portions of the final prices and are critical for the competitiveness of specific production sites and the geographic distribution of production. Energy and communications services may also be important contributors for final prices, specially for some products. Irrigation services may also critical in areas where rainfed agriculture is not feasible or can be made more competitive. Therefore, the availability of transportation (roads, railroads, fluvial ways and ports, airports, and ocean ports), communication, energy, and irrigation at competitive prices may determine the financial feasibility and size of agriculture investments in a country and at specific sites. Government policies and actions that result in such competitive prices will make investments in agriculture more attractive.
33. Social infrastructure and services also affect the ERR of agriculture investment projects. Services such health care, potable water, and sewage have major impact on the health and productivity of labor. Educational services can also substantially the productivity of labor. It is well know the short supply of such services in quality and quantity in rural areas in most Less Development Countries. Government effective policies and actions that seek the provision of such social services at competitive prices can contribute to the feasibility of the agriculture investments. (Dethier and Effenberger 2011) (The World Bank 2005) (Josling 2011)

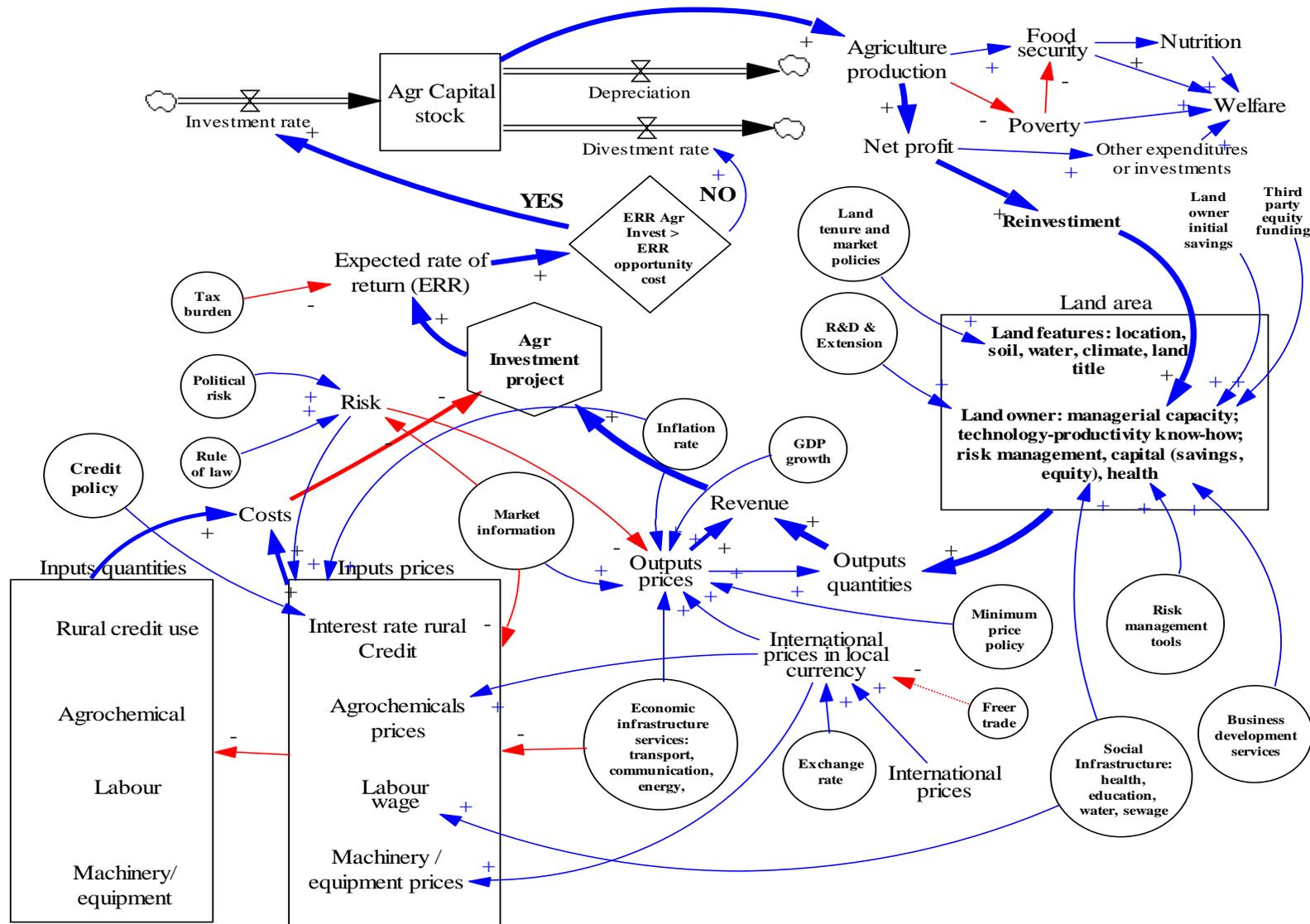


Figure 2 - Factors affecting investment in agriculture

## II. FDI in Brazil

34. Chapter II of the case study describes and quantifies FDI in Brazil in terms of its importance in relation to other countries and the Brazilian economy, its contribution to the financing of agriculture sector related investments, and the role of transnational corporations as major source of FDI in agriculture. The principal sources of information for this section are UNCTAD and the Brazilian Central Bank.

### A. Comparative importance of FDI in Brazil

35. Brazil is a relatively large recipient of foreign direct investments. Up to 2008, the country had accumulated a stock of over USD288 billion in FDI in all sectors of the economy, which represented 45% of all FDI in South American countries, and nearly a quarter of the total invested in Latin America and the Caribbean (LAC) region (Table 1 and Annex 6). In terms of number of greenfield FDI projects, Brazil received in 2008 forty percent of the number of projects in South America and 22% of these projects in all of LAC (UNCTAD 2009).

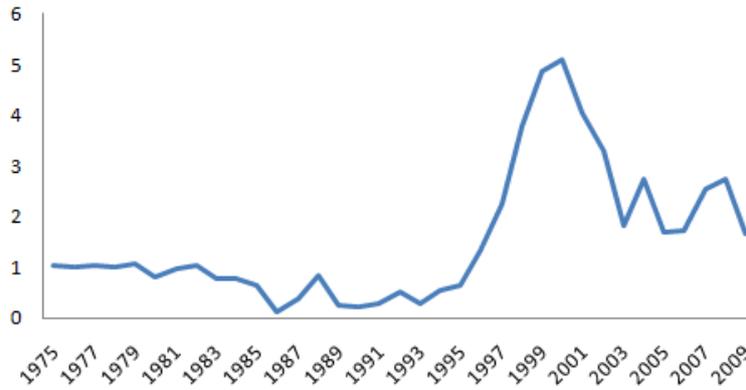
Table 1 - FDI stock, by regions and economies in Latin America and the Caribbean, 1990, 2000, 2008

USD millions

Region/economy	FDI inward stock		
	1990	2000	2008
Latin America and the Caribbean	110 547	502 487	1 181 615
South and Central America	101 977	424 180	978 056
South America	73 481	309 057	633 517
Argentina	7 751*	67 601	76 091
Bolivia	1 026	5 188	5 998
Brazil	37 143	122 250	287 697
Chile	16 107*	45 753	100 989
Colombia	3 500	11 157	67 229
Ecuador	1 626	6 337	11 300
Falkland Islands (Malvinas)	-*	58*	-
Guyana	45*	756*	1 422*
Paraguay	418*	1 327	2 398
Peru	1 330	11 062	30 232
Uruguay	671*	2 088	8 788
Venezuela, Bolivarian Republic of	3 865	35 480	41 375

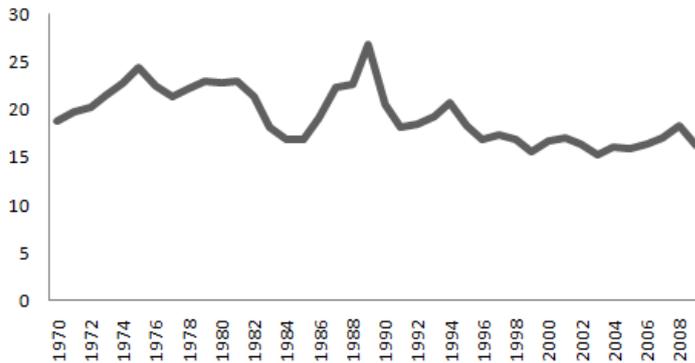
Source: Adapted from (UNCTAD, 2009)

36. Foreign Direct Investments, however, represents only a relatively small portion of the country's total Gross Domestic Product. Figure 3 shows that net FDI inflow varied from 0.2% up to 5 % of the total GDP from 1975 to 2009.

**Figure 3 - Net FDI inflow as a percentage of GDP**

Source: Prepared by the author based on data from World Development Indicators of the World Bank (28/sept/2010).

37. FDI inflows, nevertheless, make a significant contribution to capital formation. According to UNCTAD, 2009, in 2008 this type of investment in Brazil represented 15.1% of the gross fixed capital formation. Gross fixed capital formation represents from around 15% to 27% of GDP, as shown in Figure 4.

**Figure 4 - Gross Fixed Capital Formation as a percentage of GDP. Brazil, 1970-2009**

Source: Prepared by the author based on data from World Development Indicators of the World Bank (28/sept/2010).

38. FDI has not always been so favorable for Brazil over the years. Figure 5 shows that at least from 1980 to the early 1990s, outward FDI stocks were actually larger than inward ones. Starting around 1995, inward FDI flows became increasingly larger, except in 2006 (Figure 6). Box 1 provides a brief explanation for the apparent random movements of FDI from year to year. Indeed these movements, sometimes with time lags, can be partially explained by a combination of international context and national policies.

### Box 1 - Brief history of FDI in Brazil

One of the basic characteristics of the Brazilian economy is a high level of internationalization, with foreign corporations playing a leading role in many sectors. This is not a new phenomenon. FDI inflows and the TNCs' leading role in the most dynamic sectors have been key features of the Brazilian industrialization process from its beginnings. Especially from the early postwar years to the end of the 1970s, TNC affiliates, connected to public and private domestic companies by state planning, were fundamental to developing a diversified industrial structure, convergent with that of high-income countries at least in terms of the sectoral composition of output.

In the 1980s, however, the external debt crisis ended the Brazilian economy's long growth cycle. Brazil started to experience highly volatile GDP growth rates, as well as chronic inflation. FDI inflows stagnated at low levels, with TNC affiliates refraining from large-scale expansion projects.

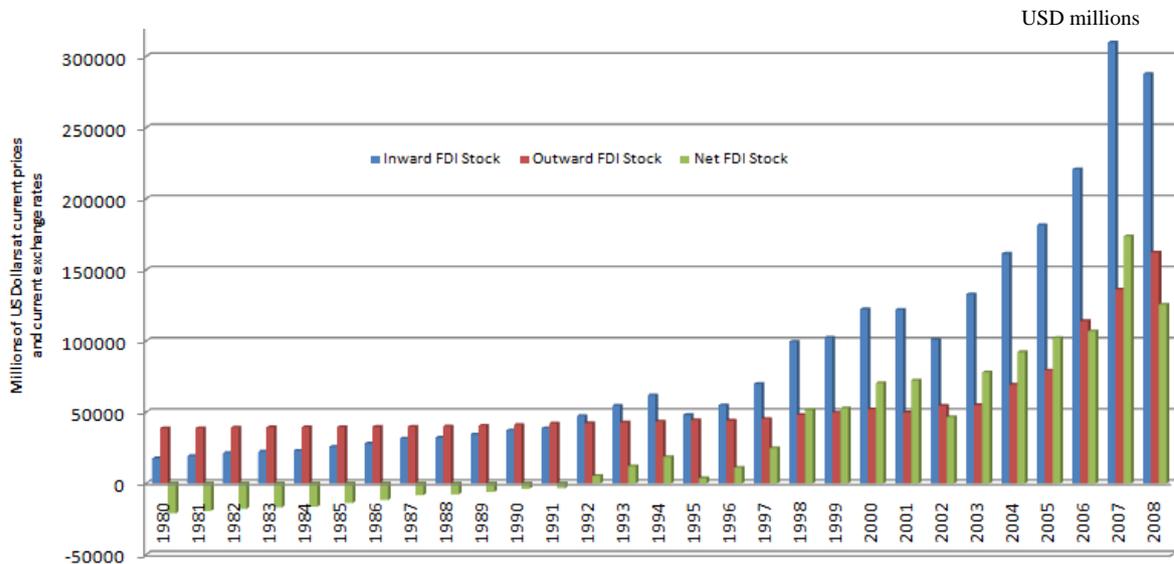
The resumption of investment during the 1990s meant the return to more aggressive expansion strategies by TNC affiliates. Motivated by changes in economic policy and conditions – liberalization, privatization, and macroeconomic stability, followed by an increase in demand for consumer durables – TNCs began to expand their presence in the Brazilian economy again.

From approximately US\$ 1.5 billion annually in the 1980s and early 1990s, FDI inflows increased to an average level of US\$ 24 billion annually (sic) between 1995 and 2000. It's interesting to mention that the inflows continued to grow through the year 2000, despite the Asian crisis of 1997, the Russian crisis of 1998, and even the Brazilian crisis of 1999. Starting in 2001, with a world economic slowdown considerably reducing trade and investment flows, FDI inflows to Brazil declined, reaching a low of US\$10.1 billion in 2003. In 2004, the volume of FDI went up again, dipping slightly again in 2005....

... Important changes occurred in the sectoral composition of FDI inflows as well. Until 1995, the manufacturing sector accounted for almost 67% of all FDI stock in Brazil, whereas in the second half of the decade, the prevalence of the service sector was remarkable, with electricity, gas, water, postal services and telecommunications, financial services, and wholesale and retail trade attracting significant FDI flows. A large part of the investment in these sectors was associated with the privatization process. By 2000, the service sector's share in the FDI stock had increased to 64% and that of the manufacturing sector had dropped to 33.7%, though manufacturing industries such as food and beverages, automotive, chemicals, metallurgy, and telecommunications equipment continued to receive significant volumes of investment.

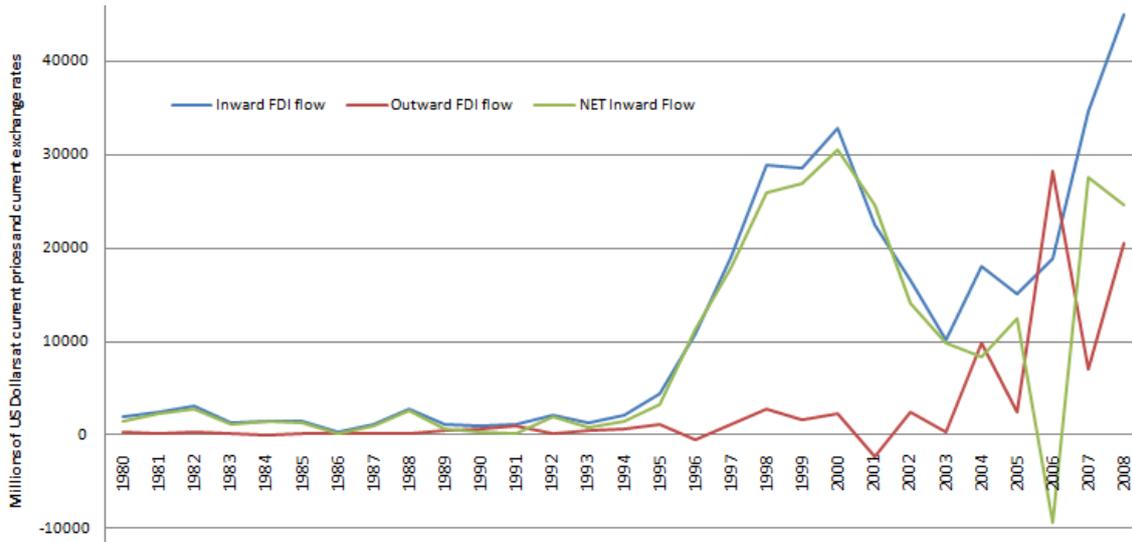
... Between 2001 and 2006, the service sector continued to account for more than half of total inflows although its share dropped compared to the previous period. The manufacturing sector, in turn, accounted for 38.5% of the total inflows during this period. Agriculture and mining also grew in importance, accounting for 7.1% of total FDI. (Hiratuka 2008)

Figure 5 - Inward, outward, and net FDI stocks for Brazil



Source: Prepared by the author based on data from (UNCTAD, 2009)

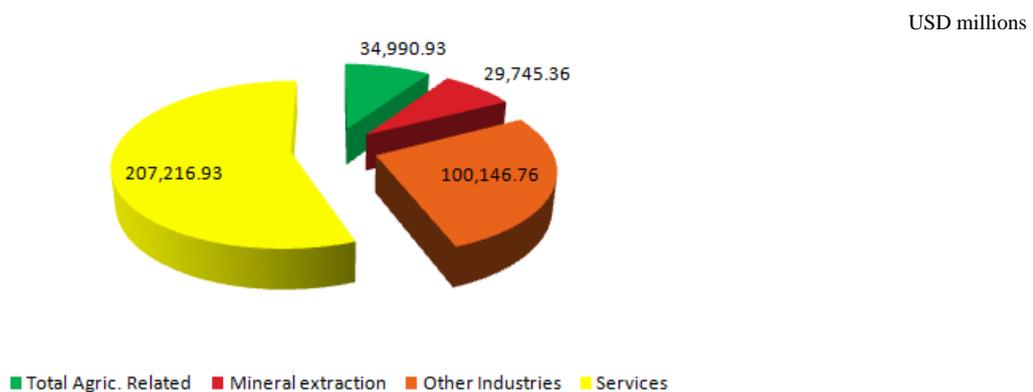
Figure 6 - Inward, outward, and net FDI flows for Brazil



Source: Prepared by the author based on data from (UNCTAD, 2009)

39. Until 2009, Brazil had a total of USD372 billion in inward FDI stock. The distribution of these resources has favored mainly the services sector, followed by investments in non-agriculture related industries, the agriculture related sector, and the mineral extraction sector (Figure 7). For FDI statistical purposes, the agriculture related sector includes agriculture, livestock, and related services; silviculture, forest exploitation and related services, and related services; fishery, aquiculture and related services; tobacco products, textile products, food and beverage products, leather, related products and shoes, wood products and pulp, paper, and paper products. Agriculture related sector inward FDI stock until 2009 totaled nearly USD 35 billion.

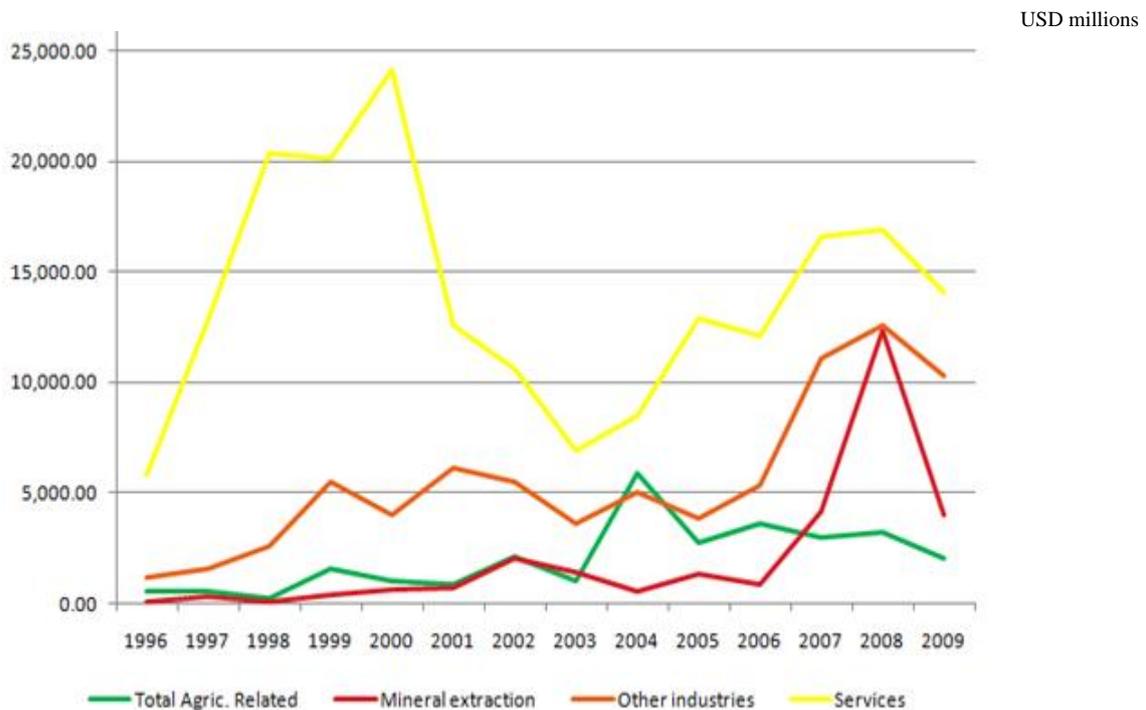
Figure 7 - FDI stock until 2009, Brazil



Source: Prepared by the author based on data from (Brazilian Central Bank, 2010)

40. An analysis of the yearly inward flows of FDI in the country shows that the agriculture related sector disputed with the mineral extraction sector as the third most important recipient (Figure 8). Only in 2004, did the agriculture related sector received more FDI flows than non agriculture industries.

Figure 8 - Cumulative graphic of FDI inward flows by principal economic activities, 1996-2009, Brazil



Source: Prepared by the author based on data from Brazilian Central Bank, 2010.

41. In sum, FDI inward flows and stocks into Brazil are substantial amounts which have grown especially since the early 1990s. The country is the largest recipient of these investments in South America and one of the principal ones in LAC. Although relatively small in absolute values, FDI inward resources are important in terms of capital formation as well as in relation to the total GDP of the country. The agriculture related sector is the third most important recipient of such investments.

### **B. FDI in Agriculture Sector**

42. Brazil is an important recipient of FDI flows in the agriculture sector, especially in recent years. According to UNCTAD (2009), for the period 2005-7, Brazil received USD 421 million which corresponds to the third largest amount of inward FDI flow in agriculture sector, losing only to China and Malaysia (Table 2). The same source indicates that the country ranks only as 17<sup>th</sup> among the countries that have the largest inward FDI stocks, amounting to USD 383.6 million. That number is surprising since the Brazilian Central Bank reports an inward FDI stock of USD 35 billion up to 2009, as shown in Figure 7 above.

**Table 2 - Inward FDI flows and stocks in agriculture, selected countries, various years**

USD millions

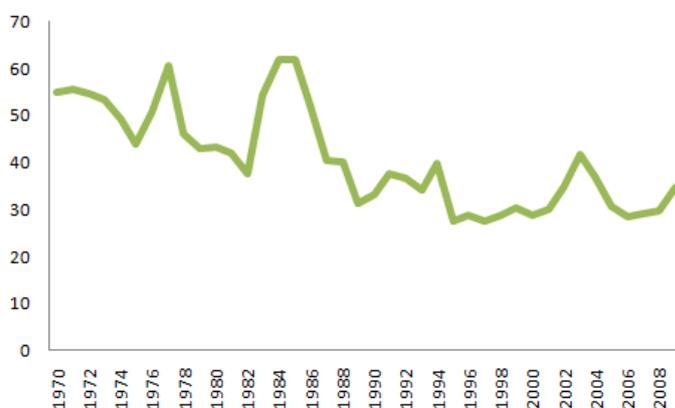
Host economy	Flows, average 2005-2007	Host economy	Stock, 2007 or latest year available
China	747.0	China	6 156.2*
Malaysia	671.2	United States	2 561.0
Brazil	420.9	Viet Nam	1 753.1
Russian Federation	187.7	Canada	1 497.8
Indonesia	119.6	Indonesia	1 001.4*
Cambodia	87.0	Russian Federation	953.0
United Kingdom	84.7	Chile	949.7
Poland	73.9	Italy	624.3
Papua New Guinea	71.1	Australia	624.2
Romania	67.7	France	616.4
France	61.5	Ukraine	557.6
Ukraine	57.3	Hungary	493.9
Viet Nam	51.4	United Kingdom	490.8
Peru	51.0	Poland	446.3
Chile	49.5	Romania	412.8
United Republic of Tanzania	40.5	Korea, Republic of	400.5
Honduras	36.2	Brazil	383.6
Bulgaria	34.6	Cambodia	318.7
Ecuador	31.8	Turkey	289.0
Costa Rica	31.4	United Republic of Tanzania	252.4

Source: (UNCTAD, 2009)

a Based on approval data

Note: Data were available for a selected number of countries only. Moreover, certain countries reported only FDI flows or FDI stock in agriculture. Although UNCTAD did not clarify the definition of Agriculture here, it seems to refer to agriculture, livestock, and related services; silviculture, forest exploitation and related services, and related services; fishery, aquiculture and related services

43. Agriculture is an important sector for the Brazilian economy and represents a good portion of the capital formed every year, although it has been decreasing over the years. Figure 9 shows that Agriculture Value Added is in a general decreasing mode and varies from around up to 60% in late 1970s to around 35% in late 2000s. Nevertheless, this proportion continues to be a substation amount in absolute terms.

**Figure 9 - Agriculture Value Added as a percentage of Gross Fixed Capital Formation. Brazil 1970-2009**

Source: Prepared by the author based on data from World Development Indicators of the World Bank (28/sept/2010).

44. FDI inflows into agriculture related sector, however, are only a small portion of the economy's Agriculture Value Added. Figure 10 shows that FDI contribution has varied in general up to 1.5% since 1996 through 2009, except in 2006 when it reached nearly 4.5%.

**Figure 10 - FDI Inflow into agriculture related sector\* as a percentage of total Agriculture Value Added**

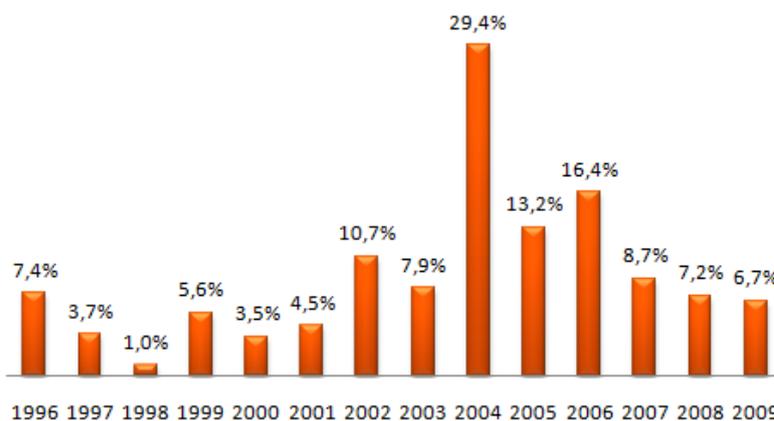


\* Excludes Food and beverage, and textile investments.

Source: Prepared by the author based on data from (Brazilian Central Bank, 2010) and World Development Indicators of the World Bank (28/sept/2010).

45. The relative importance of inward FDI flow in agriculture related sector in Brazil from 1996 to 2009 has varied from 1% to 29.4% (Figure 11) of the total entering the country. Overall, agriculture related sector annual flow for the period is on average 9.4% of total inward FDI flow.

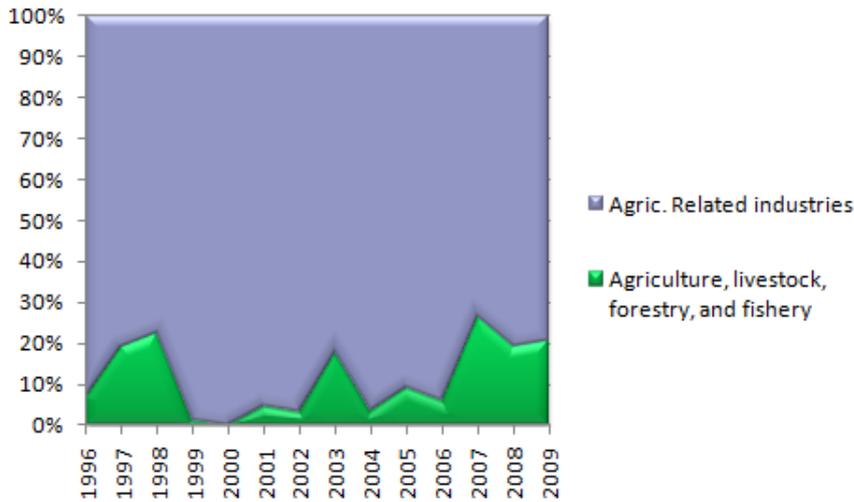
**Figure 11 - Percentage of the total FDI inflow going into agriculture related sector of Brazil**



Source: Prepared by the author based on data from (Brazilian Central Bank, 2010)

46. Almost 90% of the agriculture related sector inward FDI stock was made into agriculture related industries which includes tobacco, textile, food and beverage, leather, wood and pulp and paper industries. From 1996 until 2009, inward FDI flows in agriculture, forestry, livestock, and fisheries only overcame the 20% barriers twice, in 1998 and 2007 (Figure 12).

**Figure 12 - Percentage distribution of the inward FDI flow into agriculture related industries and agriculture, livestock, forestry, and fishery**

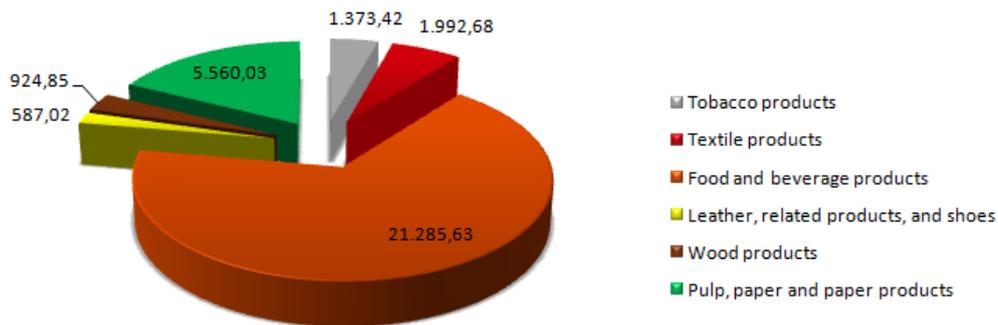


Source: Prepared by the author based on data from Brazilian Central Bank, 2010.

47. Among the agriculture related industries, food and beverage products subsector was the one that received 61% of the inward FDI, for a total of USD 21.3 billion up to 2009. In second place, forest related industries received USD 6.5 billion of inward FDI stock (Figure 13). Only in 2007 was the inward FDI flow into forest related industries surpassed by that that went into the food and beverage industries (Figure 14).

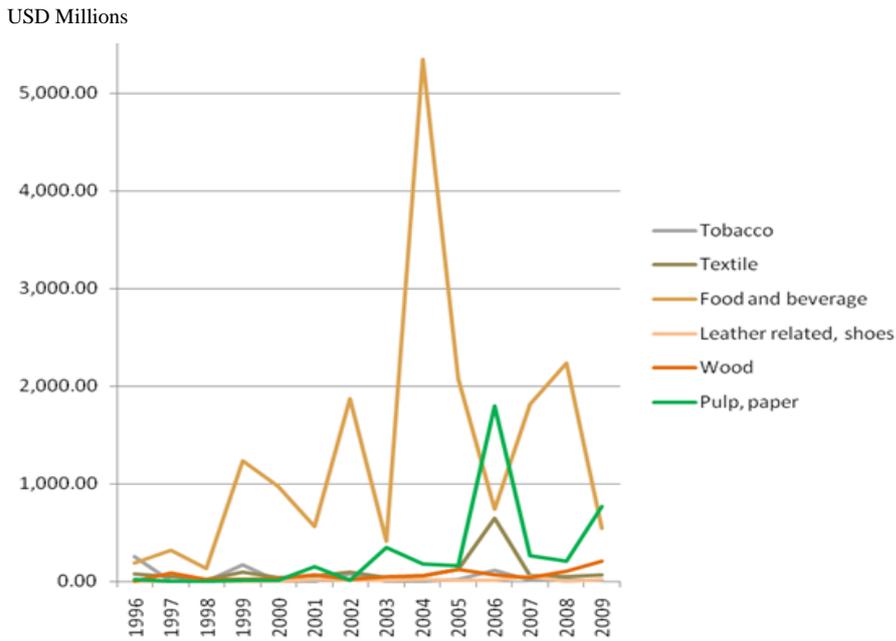
**Figure 13 – Inward FDI stocks in agriculture related industries until 2009. Brazil**

USD Millions



Source: Prepared by the author based on data from Brazilian Central Bank, 2010.

**Figure 14 - FDI inflows into the agriculture related industries. Brazil. 1996-2009.**

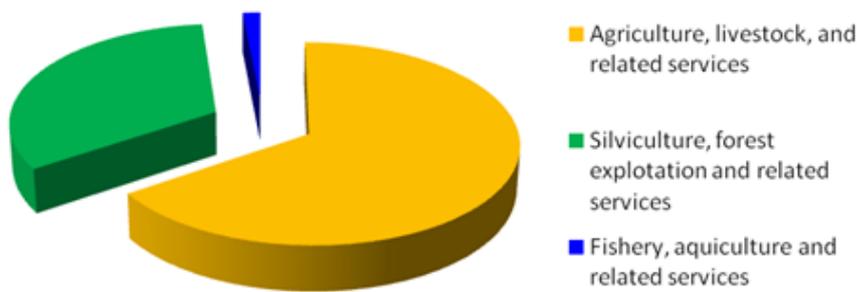


Source: Prepared by the author based on data from Brazilian Central Bank, 2010.

48. Within the agriculture related sector, the agriculture, livestock, and related services is the subsector with the greatest amount of the inward FDI stock, followed by the silviculture, forest exploitations, and related services. Fisheries, aquiculture and related services received an almost negligible amount of investment (Figure 15). Except for 1997 and 2007, inward FDI flows into the agriculture, livestock, and related services was always greater than those into silviculture, forest exploitations, and related services during the 1996-2009 period, as can be seen in Figure 16.

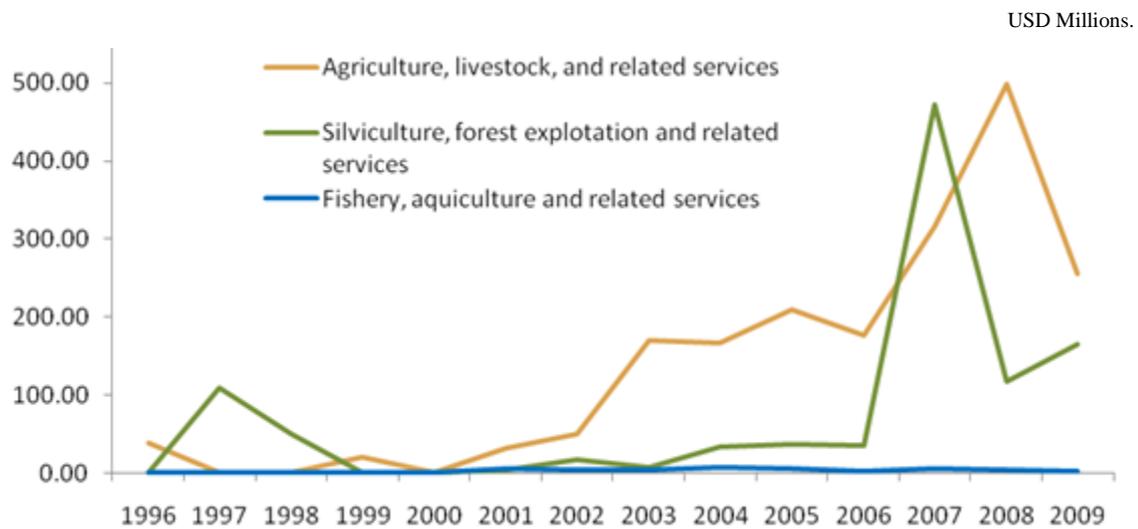
**Figure 15 – Inward FDI stocks in agriculture sector (non industrial) until 2009**

USD Millions.



Source: Prepared by the author based on data from (Brazilian Central Bank, 2010)

Figure 16 - FDI inflows into the agriculture (non industrial) sector. Brazil. 1996-2009.



Source: Prepared by the author based on data from (Brazilian Central Bank, 2010)

49. In sum, FDI inflows into agriculture sector are only a small portion of the economy's Agriculture Value Added. The relative importance of inward FDI flow in agriculture related sector in Brazil from 1996 to 2009 has varied from 1% to 29.4%. From 1998 and 2007, FDI flows in agriculture, forestry, livestock, and fisheries has almost always been below 20% of the total agriculture sector FDI inflows, which includes agriculture related industries. Among the agriculture related industries, food and beverage products subsector was the one that received the most of the inward FDI, 61% of the total up to 2009 or USD 21.3 billion. Within the agriculture related sector, the agriculture, livestock, and related services is the subsector with the greatest amount of the inward FDI stock, followed by the silviculture, forest exploitations, and related services.

### C. TNC Investment in Brazilian Agriculture

50. As mentioned in Box 1 Trans National Corporations have had an important role in Brazil economic history since the 1940s. This feature was illustrated with industrial examples but indeed have several cases in the agriculture and forest based sector as well. Since the policy and public investment and divestment taken by the GoB in the 1990s, the presence of TNCs in the sector has amplified substantially (Box 2).

51. TNCs such Monsanto (Box 3), and Corn Products, DuPont, Dow chemical, Bunge (Annex 12), just to name a few, have been active in the country for decades, some for a century. This important TNC presence in the country can be further demonstrated in Table 3 which lists the world's 25 largest TNC suppliers of agricultural inputs. Out of these 25, all are present in Brazil, except Terra Industries, Inc.; Bucher Industries AG; Claas KGaA; Aktieselskabet Schouw & Company A/S; and Scotts Miracle-Gro Company.

### **Box 2- TNCs and the Brazilian Agrifood Sector**

*In the last 2 decades, the Brazilian agrifood system transitioned from a traditional to an increasingly global and industrial model. Fostered by rising incomes, urbanization, economic liberalization, and access to competitive raw materials, multinational food processors and retailers entered or increased their investments in the Brazilian market during the 1990s. Increased ... FDI by large, private agribusinesses in Brazil displaced domestic competitors, increased industry concentration, and eliminated many medium and small companies. As a result, the market share of multinational corporations in the domestic food market increased. For instance, Brazilian affiliates of multinational agrifood companies generated 137,000 jobs, almost US\$5 billion in exports, and sales of US\$17 billion in 2000. Given the total value of food industry shipments in Brazil of US\$58 billion, the aggregate market share of foreign companies reached 30% in 2000. Among the top ten food processors in the country, eight are multinational firms with foreign headquarters. ... Official data show that FDI inflow in the Brazilian agrifood processing industry totaled US\$8.2 billion between 2001 and 2004. The top-three food retailers in the country ... were then ... controlled by two French supermarket chains (Casino and Carrefour) and one US based company (Wal-Mart), with a combined market share of 39%. Concomitant to these structural changes in the post-farm gate stages of the agrifood system, agricultural production also modernized and became increasingly capital intensive and integrated with upstream and downstream supply chain participants. Tightly coordinated agrifood supply chains have been developed by the private sector – in particular, large multinational food processors, fast-food restaurant chains and retailers – to cater to increasingly differentiated domestic and export markets. Farmers in Brazil are increasingly exposed to markets that are much more demanding in terms of food quality and safety, more concentrated and vertically coordinated, and more open to international competition. (Chaddad and Jank 2006)*

52. Indeed one can find the presence of TNCs in Brazil in all stages of the value chain; from suppliers of agriculture and forest inputs, to machine and equipment producers, to agriculture or forest output producer, to processors and industrial firms, to wholesalers, retailers and exporters. For instance, Monsanto (Box 3) provides seeds and herbicides for agriculture production; while Louis Dreyfus Commodities Brazil (Box 4) produces, processes, stores, transports and markets commodities (soybeans, rice, corn, cotton, coffee, sugar and ethanol, citrus fruits, and fertilizers); and Archer-Daniels-Midland Company (Annex 12) procures, transports, stores, processes, and merchandises agricultural commodities and produces fertilizers and biofuels. International Paper (Box 5) and Stora Enso (Annex 12), two of the largest pulp and paper firms in the world, are good examples of forest TNCs invested in Brazil.

**Table 3 - The world's 25 largest TNC suppliers of agriculture, ranked by foreign assets, 2007**

(USD millions and number of employees)

Rank	Corporation	Home economy	Assets		Sales		Employment
			Foreign	Total	Foreign	Total	Total
1	BASF AG <sup>a</sup>	Germany	44 633	68 897	49 520	85 310	95 175
2	Bayer AG <sup>a</sup>	Germany	24 573	75 634	24 746	47 674	106 200
3	Dow Chemical Company <sup>a</sup>	United States	23 071	48 801	35 242	53 513	45 900
4	Deere & Company	United States	13 160	37 176	7 894	23 999	52 000
5	El Du Pont De Nemours	United States	9 938	34 131	18 101	29 378	60 000
6	Syngenta AG	Switzerland	9 065	12 585	9 281	9 794	21 200
7	Yara International ASA	Norway	8 009	8 541	9 939	10 430	8 173
8	Potash Corp. of Saskatchewan	Canada	6 079	9 766	3 698	5 632	5 003
9	Kubota Corp.	Japan	5 575	12 691	4 146	9 549	23 727
10	Monsanto Company	United States	4 040	12 253	3 718	8 563	18 800
11	Agco Corporation	United States	4 034	4 699	5 654	6 828	13 720
12	The Mosaic Company	United States	3 881	9 164	3 859	5 774	7 100
13	ICL-Isreal Chemicals Ltd	Israel	2 066	4 617	2 092	4 351	..
14	Provimi SA	France	1 962	2 237	2 523	2 805	8 608
15	Bucher Industries AG	Switzerland	1 648	1 850	2 058	2 172	7 261
16	Nufarm Limited	Australia	1 191	2 010	925	1 512	..
17	CLAAS KGaA	Germany	1 000	2 619	2 884	3 781	8 425
18	Saptec SA	Belgium	826	826	837	837	692
19	Terra Industries Inc	United States	735	1 888	389	2 360	871
20	Aktieselskabet Schouw & Company A/S	Denmark	695	2 016	1 350	1 598	3 541
21	Genus PLC	United Kingdom	652	851	394	469	2 124
22	Scotts Miracle-Gro Company	United States	591	2 277	470	2 872	6 120
23	Kvemeland ASA	Norway	367	487	649	741	2 717
24	Sakata Seed Corp.	Japan	331	843	140	383	1 711
25	Auriga Industries A/S	Denmark	319	849	624	856	1 615

Source: UNCTAD. 2009

<sup>a</sup> General chemical/pharmaceutical companies with significant activities in agricultural supplies, especially crop protection, seeds, plant science, animal health and pest management.

**Note:** Data are missing for various companies. In some companies, foreign or domestic investors or holding companies may hold a minority share of more than 10%. In cases where companies are present in more than one agri-food industry, they have been classified according to their main core business.

### Box 3 - Monsanto Company

Monsanto Company, together with its subsidiaries, provides agricultural products for farmers in the United States and internationally. It has two segments, Seeds and Genomics, and Agricultural Productivity. The Seeds and Genomics segment produces corn, soybeans, canola, and cotton seeds, as well as vegetable and fruit seeds, including tomato, pepper, eggplant, melon, cucumber, pumpkin, squash, beans, broccoli, onions, and lettuce. This segment also develops biotechnology traits that assist farmers in controlling insects and weeds, as well as provide genetic material and biotechnology traits to other seed companies. The Agricultural Productivity segment offers glyphosate-based herbicides for agricultural, industrial, ornamental, and turf applications; lawn-and-garden herbicides for residential lawn-and-garden applications; and other herbicides for control of preemergent annual grass and small seeded broadleaf weeds in corn and other crops. The company offers its traits products under Roundup Ready, Bollgard, Bollgard II, YieldGard, YieldGard VT, Roundup Ready 2 Yield, and SmartStax; row crop seeds under DEKALB, Asgrow, Deltapine, and Vistive; vegetable seeds under Seminis and De Ruiters; herbicides under Roundup; and corn and cotton under Harness brand names. It also licenses germplasm and trait technologies to seed companies. The company sells its products through distributors, retailers, dealers, agricultural co-operatives, plant raisers, and agents, as well as directly to farmers. Monsanto Company has a joint venture with Cargill, Inc. to commercialize a proprietary grain processing technology under the name Extrax. It also has a collaboration agreement with BASF in plant biotechnology that focuses on high-yielding crops and crops that are tolerant to adverse conditions. The company was founded in 2000 and is based in St. Louis, Missouri.

Source: <http://finance.yahoo.com/q/pr?s=MON+Profile>

Monsanto arrived in Brazil in 1951 and has its headquarters located in Sao Paulo, the state where it installed the first factory in Sao Jose dos Campos (SP) in 1976. In Brazil, Monsanto produces herbicides and seeds of corn, soybeans, cotton and vegetables, and varieties of cane sugar.

Source: <http://www.monsanto.com.br/institucional/monsanto-no-brasil/monsanto-no-brasil.asp>

#### Box 4 - Louis Dreyfus Commodities Brazil.

The Louis Dreyfus Commodities Brazil (LDCCommodities) is a subsidiary of Louis Dreyfus Commodities, which has more than 160 years the world market for agricultural commodities and has offices strategically distributed in over 50 countries.

In Brazil since the 1940s, the company operates in the production, processing, storage, transportation and marketing of commodities, making its presence felt in the markets for soybeans, rice, corn, cotton, coffee, sugar and ethanol, citrus fruits, and fertilizers.

Listed among the top 10 export companies in Brazil, the LDCCommodities is present in the main producing regions of the country, with units in the South, Southeast, Northeast and Midwest. The company is headquartered in Sao Paulo and operates four oil processing plants, three of orange juice, five port terminals, two river port terminals, thirteen sugar mills and ethanol (LDC-SEV) and over 30 grain warehouses, and manage more than 340,000 hectares of land.

With revenues of approximately USD 3.4 billion in Brazil (Dec/2009), the LDCCommodities generates about 20,000 jobs, reaching 30,000 in harvest times. Besides providing an important contribution to the economy, the company maintains its ongoing effort to support farmers in close relationship with partners and community and commitment to the environment. The LDC-SEV is the second largest company in the world in the processing of sugar cane and production of renewable energy. It was created in October 2009 from the association between the LDC Bioenergy (ethanol and sugar operations of Louis Dreyfus Commodities) and the Brazilian company Santelisa. With 13 branches located in major producing regions of Brazil, the LDC-SEV has a processing capacity of 40 million tons of cane sugar per year and generates about 20,000 direct jobs.

#### KEY FIGURES:

**Offices in Brazil:** Regional head office in São Paulo and many others spread around the country; 7 processing plants; 7 ports and river terminals; Around 30,000 hectares of orange plantations; N°1 cotton merchandiser in Brazil.

**Processing assets:** 4 oilseed crushing plants in Brazil, processing soybeans and cotton into edible oil; meal and lecithin: Ponta Grossa, Paraguaçu Paulista, Jataí and Alto Araguaia; 3 industrial orange processing plants with a combined capacity of more than 60 million boxes per year: Bebedouro, Matão and Engenheiro Coelho.

**Logistics assets:** Ports and river terminals: Santos (São Paulo state), with three deep draft exporting terminals; Paranaguá (Paraná state), with one deep draft exporting terminal; São Simão (Goiás state) with one river barge terminal; Pederneiras (São Paulo state), with one river barge terminal; Transshipments, conducting logistics operations around seven major export-capable ports along the Brazilian coast; Significant storage capacities for oilseeds (more than 30 warehouses), citrus, cotton and coffee. Source: <http://www.ldcommodities.com>

#### Box 5 - International Paper Company

**International Paper Company** operates as a paper and packaging company with operations in North America, Europe, Latin America, Russia, Asia, and North Africa. Its Industrial Packaging segment manufactures containerboards. Its products include linerboard, medium, whitetop, recycled linerboard, recycled medium, and saturating kraft. The company's Printing Papers segment produces uncoated freesheet printing papers, including uncoated papers, market pulp, coated papers, and uncoated bristols. Its Consumer Packaging segment offers coated paperboard for various packaging and commercial printing end uses. The company's Distribution segment distributes products and services to various customer markets, supplying printing papers and graphic pre-press, printing presses, and post-press equipment for commercial printers; facility supplies for building services and away-from-home markets; and packaging supplies and equipment for manufacturers, as well as offers warehousing and delivery services. Its Forest Products segment owns and manages approximately 200,000 acres of forestlands and development properties primarily in the United States. The company was founded in 1898 and is based in Memphis, Tennessee.

Source: <http://finance.yahoo.com/q/pr?s=IP+Profile> accessed on August 21th, 2010

In Brazil International Paper's production system is comprised of two pulp and paper mills in Mogi Guaçu and Luiz Antônio, and a paper mill in Três Lagoas. Together, the three mills produce paper for Brazil and export markets, in addition to products on the Chambril line for conversion and printing. The mill located in Mogi Guaçu, in São Paulo, is the first mill of IP within Brazil and has a production capacity of 440 tons of paper per year. Incorporated into the business portfolio of IP in 2007, the Luiz Antônio mill located near Ribeirão Preto, in São Paulo, is capable of producing annually 360 thousand tons of paper. In operation since 2009, the Três Lagoas mill in Mato Grosso do Sul state has automated finishing lines, capable of producing up to 140 reams of Chamex paper a minute, non-coated paper production capacity – 200,000 tons a year, and operates some of the most advanced technology on the market. It has had US\$ 300 million invested in it. The newest enterprise of IP in Brazil is the first factory to be built by International Paper out of the U.S..

International Paper owns 72,000 hectares of renewable eucalyptus forests used in pulp and paper production. It also has 24,000 hectares of preserved areas, to conserve the original characteristics of the native vegetation. These areas are distributed amongst Mogi Guaçu, Brotas and Luiz Antônio, municipalities in São Paulo State. The necessary care required to guarantee productivity in renewable forests includes research, studies and analysis to improve the eucalyptus species to develop new technologies. The company produces about 16 million cuttings a year which are used in eucalyptus planting. Fire prevention and eco-efficiency in forestry management are also constantly invested in by the company. IP has a Research Centre with laboratories and researchers in different areas, working together and developing more sustainable techniques and processes.

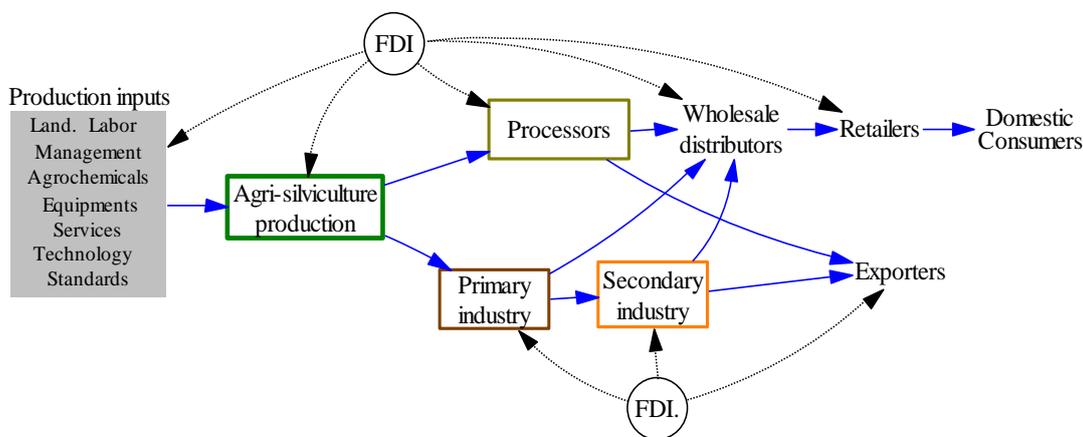
**Contract forestry and Partnering:** In addition to its own forests, International Paper gets raw material through fostering forests and partnering. In contract forestry, there are about 9,500 hectares in São Paulo and Minas Gerais States. The company supplies cuttings, technical assistance, forestry inventory, soil analysis, a map of the plantation, and recommends fertilizer to local producers. Later, the wood is sold to the company at market prices. So far, 122.7 million cuttings have been donated, grown, on 12,500 hectares of plantation. In its partnering, International paper takes responsibility for expenses in the implantation and maintenance of renewable forests. Later, these amounts are converted into wood for the company.

Source: <http://www.internationalpaper.com/BRAZIL/EN/index.html> accessed on October 20th, 2010

### III. Impacts of FDI in the agriculture sector of Brazil

53. The impacts of inward FDI flows in a host country can be grouped in three basic classes: economic, environmental, and social impacts. These impacts may be derived from nearly any step of the value chain associated with the investments involved, from the provision of production inputs through retail distribution or export. Figure 17 presents a simplified representation of the value chain. It should be stressed that obviously, the types of production inputs listed in the figure are also needed at the industrial, processing and distribution and export phases. Also, financial resources, like FDI, are listed as one input type for simplification's sake, but naturally it can be used to acquire other inputs.

Figure 17- Simplified agri - silviculture value chain and FDI.



54. Nearly all stages of the value chain are subject to FDI, and nearly all of them will have one or more type of impact on the host country. Given the complexity of this analysis, the unavailability of secondary information about all of them, and the fact that this study is not expected to collect primary information, the present chapter will approach these issues with illustrations found in secondary sources.

#### Box 6 – Study Comparing the Impacts of FDI in Pulp and Paper in Brazil

The study is based on secondary and primary data from nine big companies (five national and four TNCs), making use of indicators for the three dimensions of sustainable development – economic, social and environmental - to compare their performance. The main findings are:

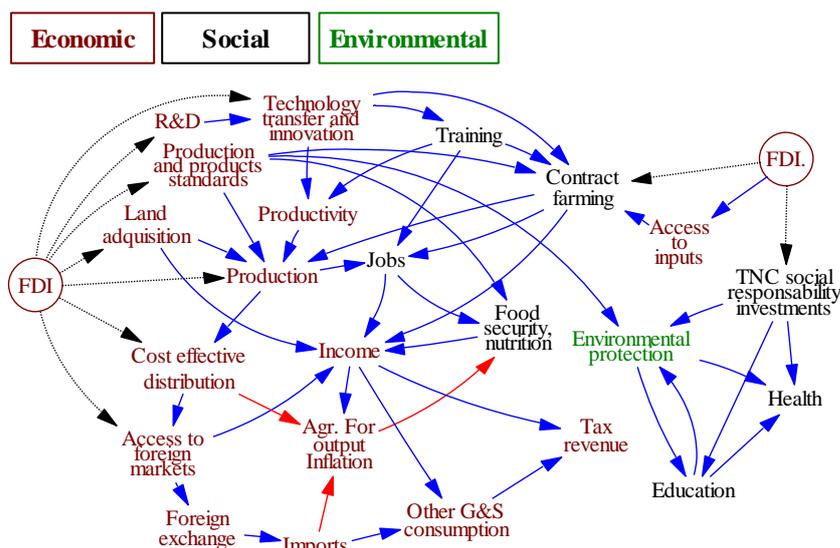
... TNCs have contributed to the Brazilian pulp and paper industry sustainability in many ways. On the economic dimension, they have established important links with the local supplier chain and introduced efficient and technologically advanced plants. On the environmental dimension, although foreign affiliates do not lead the improvement of environmental control, they at least have adopted measures that minimize negative impacts, contributing to the high pattern of environmental performance of the industry. On the social aspect, they have developed the human capital demanded by the industry and paid higher wages. (Rocha and Togeiro 2007)

55. The following sections will describe briefly the nature of the impacts of FDI in economic, the environmental, and social terms, providing whenever possible, examples from Brazil. Studies on such matters are rare and limited in scope (see Box 6 for an example).

## A. Economic Impacts

56. The impacts of inward FDI flows in the economy of the host country such as Brazil are diverse, as shown in Figure 18. In this section, the principal economic impacts will be discussed. FDI to agriculture supplements domestic capital for investment. It also embodies advanced technologies in the form of superior inputs, and equipment; introduces new products, production packages, advanced management, engages in the development of the food processing industry, participates in competitive food distribution and export through their access channels, accelerates reform in rural areas and in agriculture in general, creates jobs, improve income, and combats poverty (UNCTAD 2009). In the case of Brazil, this can be perceived in the increased supply of inputs and agro processing industries that utilize the state of the art technology of processing, packaging and marketing the agricultural products for the domestic and international markets. In the milk subsector the main international companies that act in Brazil include Parmalat, Nestle, and other. In the supply of inputs: Monsanto (Box 3), Cargill, Pioneer, and several others.

Figure 18 - Economic, Social, and Environmental Impacts of FDI.



57. FDI affects agriculture and forest productivity through two basic means. With the financial resources brought, investors also often bring managerial skills, operational standards, and production technologies either readily applicable or they adapt them to local conditions and then use them. If needed, as frequently is with biologically based production systems, investors may need to undertake local research and/or collaborate with local capacities to generate, and transfer the technology and innovation needed and train stakeholders. These partnerships to support research are common in Brazil with universities and public enterprises. Box 7 illustrates a partnership between a Brazilian federal university and TNCs and domestic firms to undertake forest related research, a model that is repeated by several of the major universities with forestry department. Box 8 presents the case of the Brazilian Agricultural Research Corporation (EMBRAPA).

**Box 7 - Forestry Research Society**

The Forestry Research Society (SIF) is a privately funded, non-profit organization, established in 1974 by the University - Private partnership, with the objective of promoting sustainable development in the forestry sector through the generation of new knowledge and technology transfer. This partnership includes companies, public institutions and private entities and similar non-governmental organizations, *national and foreign*, operating in the forest-based sector. The Federal University of Viçosa (UFV), which is known in Brazil and abroad for excellence in teaching, research and extension, hosts SIF.

SIF's businesses are research, consulting, and human resource development and knowledge management and innovation, aiming to promote forestry research through the development, implementation, analysis and dissemination of research and studies related to technical and economic problems of the forest-based sector in Brazil.

SIF is associated with the largest domestic and foreign companies in the forestry sector, contributing jointly to advance the industry, solving problems that may exist in the company through research, consultancy projects, or through training or other events.

Some advantages that led TNCs to associate with the SIF were:

1. Integration of needs and resources of UFV with the Company for the benefit of both parties and society in general;
  - a. UFV has a staff of about 800 professors, over 500 doctors and 200 masters in various fields of knowledge potentially available to work on projects with the SIF;
  - b. UFV has more than 500 laboratories with modern equipment, in several areas, the disposal of its faculty, research support;
  - c. All the physical infrastructure, personnel and logistics UFV is available for use by teachers / researchers working with the SIF;
2. Use of the SIF infrastructure (technical and administrative) in seeking solutions to specific problems or specific and Company;
3. Cost reduction in the consulting and technical visits;
4. Exemption from the administration of the SIF projects or agreements, resulting in reduced costs of research and consultancy, and
5. Participation in Technical Committees and Issue Groups coordinated by the SIF.

58. Brazil has benefited from the participation of TNCs in the process of productivity improvement. The sample of companies mentioned in Annex 12 and the boxes 2-6 have brought to the country equipment, production inputs and processes, and managerial capabilities that they have sold or used themselves and which have increased the productivity in the country. However, it has to be noticed that this is likely related to the domestic innovation capabilities of the country. UNCTAD adverts for some of the potential costs that TNCs involvement in a country's innovation system may bring.

*..., agricultural R&D undertaken by TNCs locally may trigger concerns in host developing countries. The potential costs of TNC involvement in the agricultural innovation system for a host developing country depend mainly on the type of R&D and TNCs' motives, as well as on the strength of the domestic innovation system. Major issues of concern relate to the potential downsizing of domestic R&D, the narrow scope of R&D activities (focusing too much on short-term commercial interests), unfair sharing of intellectual properties resulting from local R&D and related revenues, and possible technology leakage. A related concern is that the knowledge created by TNCs in cooperation with local institutions may be used by the TNCs in other markets, thereby enabling them to cream off the returns. Another concern is that foreign research affiliates might become "gene pirates" if they transfer domestic-specific germplasm resources abroad and utilize them commercially for international markets. ( UNCTAD, 2009)*

59. In addition to more productive technologies, TNCs have also brought to Brazil modern inputs such as genetically improved seeds, machines, and agrochemicals which have substantially helped in the increase of productivity and production (Box 3, Box 4, and annex 12 for summaries of selected TNCs which provide inputs for agriculture and forest production).

**Box 8 - International public-private partnership between public research institutes and TNCs: the case of EMBRAPA in Brazil**

EMBRAPA is the leading agricultural research institution in Brazil. It has established several types of domestic and international partnerships with TNCs:

Partnerships with TNCs for the development of new technologies. In this kind of partnership, EMBRAPA and its partner develop R&D projects together, and the resulting technology is then made available for broader local use. For example, BASF and EMBRAPA signed a technical collaboration agreement to create cultivars resistant to herbicides. These cultivars will soon be available in the market.

Partnerships for incorporating technologies from other corporations into EMBRAPA products. This type of agreement enables EMBRAPA to identify license technologies from other organizations, and incorporate them into its own products. It helps the R&D process and facilitates technology transfer. Some TNCs and technologies involved are, for example, BASF (herbicide resistance) and Monsanto (resistance to glyphosate-based herbicide).

Partnerships where EMBRAPA provides licenses of its technologies to TNCs. In this type of partnership, EMBRAPA's technologies are licensed to be validated and commercialized abroad. In this kind of contract the licensee pays royalties or a similar fee.

*Source:* Modified from UNCTAD, 2009, based on inputs from Antonio Flavio Dias Avila, EMBRAPA (Brazil). See also (EMBRAPA 2008)

60. The increased production since the 1980s in Brazil, in which TNCs have participated, has had an important contribution to the food security, improved nutrition, job creation, income and foreign exchange earnings, and the control of food inflation. These contributions will be further discussed in Chapter IV.
61. With the increased economic activity generated by FDI, tax collection increases as well providing resources that governments can use to provide socially desired expenditures. In Brazil this is especially true due to the substantial tax burden that affects nearly all stages and transactions of all agricultural value chain. Tax compliance costs are also substantial and are a major source of demand for tax lawyers and accountants, besides the ones that work for the government collection agencies in tax enforcement activities. Tax evasion is not an option for FDI operations and tax breaks, when they exist are limited and frequently temporary. For the sake of simplicity, Figure 18 represents the increase in tax revenue from only two sources, namely, income tax and consumption tax. Other taxes on land transaction; labor; input sales, etc. are not taken into account. Even though these taxes represent costs for investors, they are an economic benefit for the country, regardless of how efficiently these resources are applied.
62. Another economic impact of TNCs in Brazil has been the application of production and products standards. These standards assure the quality of the products that they offer in domestic and international markets, thereby helping them to preserve their mark's credibility, assure the safety of their products, and demonstrate their commitment with the environmental, and compliance of labor and other socially desirable practices during the production processes (Box 5 and Box 9). Contract farming or forestry involves and other procurement activities are the principal instruments used by TNCs to assure the compliance with such standards. By doing so, Brazil has benefited by having access to fiber and safer food, produced with production processes comparable with those of developed countries.

**Box 9 - Production and products standard adoption**

For major agribusiness TNCs, ensuring the quality and safety of the foods they produce is an important part of their business strategies, especially since the reputation of their brand is an integral element of their competitiveness. They therefore require their suppliers to comply with stringent quality and safety standards, which are often more demanding than internationally recognized food safety standard developed by FAO and the World Health Organization (WHO).

Standards allow firms to specify, harmonize and manage the product quality and delivery conditions that they require from suppliers, contract farmers included. Standards are also used to set criteria for rewarding suppliers who invest in quality and safety management systems. Traditionally, agribusiness firms used standards for coordinating supply chains, which might be spread over many regions or even countries. More recently, however, these firms also use standards as a marketing tool for differentiating goods in response to consumer demand for quality. As a result, in some cases, standards extend to labor and environmental aspects of farming as well.

The main tools transnational supermarkets deploy in managing their supply chains are product standards. Since public standards for food quality and safety are relatively low, or not enforced in practice, in many developing countries there has been a proliferation of private standards by agribusiness TNCs and, subsequently, systems of third-party certification.

Indeed, in most cases, the standards that agribusiness TNCs apply in developing countries today are no less stringent than those in use in developed-country markets as a result of the centralization of distribution systems and exports of farm produce.

Source: (UNCTAD 2009).

63. Contract farming is one of the most effective ways to vertically integrate local landowners with TNC production. Besides the requirement of production and product standards mentioned above, this integration often involves the use of highly productive inputs, access to technical assistance in the use of technology, assurance of compensatory prices and market for the production, and competitive financing (Box 10). This strategy has been important for food production for decades generating jobs, better income and reducing poverty in rural areas. However, it has only more recently been used by TNCs and local forest companies to engage landowners in fiber, wood, and fuelwood production (Nascimento and Mota-Villanueva 2004). Until 2009, the Brazilian Association of Forest Plantation Producer, which includes TNCs and local companies) estimated that more nearly 25,000 landowners have been contracted to plant 457,000 ha forest using outgrowers agreements.

**Box 10 - Significance of contract farming in developing countries**

Contract farming is a significant component of TNCs' participation in agricultural production, in terms of its geographical distribution, intensity of activity at the country level, coverage by commodities and types of TNCs involved. In this context contract farming can be defined as non-equity contractual arrangements entered into by farmers with TNC affiliates (or agents on behalf of TNCs) whereby the former agree to deliver to the latter a quantity of farm outputs at an agreed price, quality standard, delivery date and other specifications. It is an attractive option for TNCs, because it allows better control over product specifications and supply than spot markets. At the same time it is less capital intensive, less risky and more flexible than land lease or ownership. From the perspectives of farmers, contract farming can provide predictable incomes, access to markets, and TNC support in areas such as credit and know-how.

TNCs engaged in contract farming activities and other non-equity forms are spread worldwide in over 110 countries across Africa, Asia and Latin America. For example, in 2008 the food processor Nestlé (Switzerland) had contracts with more than 600,000 farms in over 80 developing and transition economies as direct suppliers of various agricultural commodities. Similarly, Olam (Singapore) has a globally spread contract farming network with approximately 200,000 suppliers in 60 countries (most of them developing countries).

Contract farming is not only widespread, but also intensive in many emerging and poorer countries. For instance, in Brazil, 75% of poultry production and 35% of soya bean production are sourced through contract farming, including by TNCs. (UNCTAD, 2009)

**B. Environmental Impacts**

64. Decisions on agriculture or forest uses on the same land often generate conflicts not only for landowners and investors themselves but also for neighbors, society in general, and even for the international community. At a highly competitive commercial level, agriculture and forest uses of a given piece of land are frequently mutually exclusive alternatives. In many cases, lands covered with native forests

are converted into agriculture land uses, resulting in deforestation. Misused land often generates erosion, and runoff which deteriorate the quality of the environment, reduce natural fertility of the soils, and pollute waters.

65. The impacts of inward FDI flows in agriculture on the environment are varied and depend on several factors. As any economic activity with a physical presence, they can be direct or indirect, positive or negative. Direct impact are those on the site where the production is taking place like soil erosion, runoff, loss of biodiversity due to land use change, pollution generated through misuse of agrochemicals, etc. These direct impacts are associated with the production technology used, the vulnerability of the site where production takes place, and the scale of the endeavor. Direct impacts are usually handled by the adoption of measures to prevent, mitigate, correct, or compensate for the impact. In Brazil, there are standards for some agricultural activities both legally<sup>3</sup> imposed as well as voluntary, which must be complied with by TNCs operating in the country (Box 11). These impacts are also an integral part of the requirements for certification that TNCs often seek and are increasingly requested by importing developing countries (OECD 2005). The adoption of the appropriate and sustainable production system and voluntary conduct codes (see Box 12) is usually very effective and often a TNCs' common practice.

Box 11- Environment Certification

Environmental certification is a useful gauge of technology effects. In the pulp and paper industry, all major foreign and domestic operations are ISO 14001 certified. Many companies also FSC-certified (Forest Stewardship Council), though more Brazilian-owned plants are certified than foreign-owned plants. Some domestic companies are certified by the national CERFLOR (Forest Certification of Brazil) scheme which is "much more flexible" in terms of international environmental norms, socio-cultural impacts, and labour relations with third party suppliers. One study found that "Brazilian companies were leading the transition" towards more advanced environmental management systems and technologies aimed at reducing pollution. In 1998, the domestic company Klabin's operation in Parana was the first in Latin America to be FSC certified. Other companies, domestic and foreign, followed suit. (Borregaard, Dufey and Winchester 2008)

66. Indirect adverse impacts of agriculture are a little more complex to understand and address. They are a consequence of the economic influence of a given enterprise in the third parties landscape where it is being undertaken. They usually affect land use and cannot be addressed directly by those that generate them because of lack of capacity and authority to act. These impacts to be properly addressed usually require the intervention of the State.

<sup>3</sup> The Brazilian New Forest Code, under major review by the country's Congress, and the Environmental Protection legislation have several requirements for land use, biodiversity protection, and environmental impact management affecting the way agriculture and forest activities should be undertaken.

Box 12- Environment and the OECD Guidelines for TNCs

Sound environmental management is an important contribution to sustainable development, and it is increasingly seen as both a business responsibility and a business opportunity. Multinational enterprises have a role to play in both respects. The OECD Guidelines for Multinational Enterprises recommend that managers of enterprises give appropriate attention to environmental issues in their business strategies and day-to-day operations. The Guidelines are recognised as one of the world's foremost corporate voluntary codes of conduct. Their ten chapters cover a broad range of corporate activities, several of which are relevant to companies' environmental performance. One of the chapters deals specifically with environmental issues.

The Environment Chapter of the Guidelines encourages multinational enterprises to raise their environmental performance by improving internal environmental management practices and seeking continuous environmental improvements. These can be achieved through a range of tools and approaches relating to environmental management, such as engaging in public information and stakeholder consultation; assessing environmental impacts through the whole life cycle of processes; acting with precaution; providing for contingency planning; ensuring environmental training and contributing to the development of environmental policy. (OECD 2005)

67. TNCs usually are law obedient and indeed go beyond their legal obligations and apply additional good practices established in their home countries or at international level<sup>4</sup>. They also have philanthropic or corporate responsibility activities that help to address indirect environmental impacts, like undertaking directly or financing NGOs which provide environmental education services and training.
68. TNCs forest plantation are good examples of activities which have direct positive impact since they contribute to soil and water conservation and protection in the watersheds they are located. As part of the measures to keep good relations with stakeholders, large commercial forest plantations in Brazil often invest in the preservation of natural forests in their properties. In part, these privately protected areas are required by law, but in fact these firms go beyond their obligations. For instance,

*In 2009, natural forest areas set aside as permanent preservation areas by ABRAF (Brazilian Association of Plantation Forest Producers) individual members were 5.6% higher than the previous year, increasing from 1.65 million ha in 2008 to 1.75 million ha in 2009. It is noteworthy that for every 1 ha of planted forests, ABRAF members contribute to preservation of 0.89 ha of natural forests. This indicator has evolved over time, which in 2005 the share was 1 ha to 0.67 ha of area set aside as preservation areas. (ABRAF 2010)*

69. Clear rules regarding land use decisions are critical for investors to ensure access to markets as well as to maintain or improve their reputations (UNCTAD 2009). This situation has been recently illustrated in the Brazilian Amazonia in the cases of soybean and livestock production. Major soybean commercialization companies and producers' associations agreed not to buy soybeans produced in areas deforested since 2006 (Nery 2009). Major supermarket chains and meat packers were accused of buying meat produced in illegally deforested areas in Amazonia. They reacted by

<sup>4</sup> The OECD ... has Guidelines for Multinational Enterprises which, since 1991, have contained a chapter on the environment. The Guidelines date from 1976, and they are still the only international code of conduct for multinational enterprises endorsed by governments as well as business and labour representatives ... Each OECD Member country has agreed to recommend these guidelines to their enterprises, and has established a contact point in its administration to deal with inquiries etc. Argentina, Brazil and Chile have also adopted the OECD investment instruments, including the non-binding guidelines. (OECD 1999). Enterprises in sectors relating to life sciences, food and agriculture can find guidance in work of the Codex Alimentarius, the International Plant Protection Convention and the International Organization for Epizootics, standardising bodies recognised by the WTO Agreement on Sanitary and Phytosanitary Measures. (OECD 2005)

suspending all purchases of meat from the region until a solution was found to assure that only legally produced cattle was used (Albuquerque 2009). Those radical solutions have led to a greater need to trace the origin of outputs, an issue that is easily addressed by well-functioning zones. The situation in the Amazon and, to different degrees, in other parts of Brazil has been exacerbated by a complex, scientifically unfounded, and economically questionable legislation that compounds the conflicts and imposes substantial risks, and costs, including opportunity cost, to society.<sup>5</sup>

70. Market incentives, host countries' legal requirements and policies (OECD 1999), home country and host social pressure, and standard practices lead TNCs to adopt production and corporate responsibility measures to address potential negative environmental impacts and promote positive impacts. TNCs not always are accomplishing this goal, but they are an easy target for stakeholders and governments so they usually perform as well if not better than the average Brazilian firm (See previous paragraph and (Almeida and Rocha 2008)).

### **C. Social Impacts**

71. The social impacts of inward FDI flows are also varied. The principal and direct ones is the increased income generated by TNCs activities in the various stages of the chain of value. The jobs they create, the better wages they pay (Hiratuka 2008), and the lower prices for food and fiber their increased supply often generate increase the quality and availability of food increase security and nutrition, as well as promote prosperity. By being active actors in rural zones, they often contribute to reduce poverty.
72. TNCs also comply with laws related to social impact of their activities such as labor laws to avoid slavery like work conditions or under aged workers.
73. TNCs frequently have foundations or other institutional arrangements to facilitate their investments in corporate responsibility and gain the goodwill of neighbors and authorities. They often finance health, education, cultural, training projects for workers' children, neighbors, and other community stakeholders. (For concrete examples, see Annex 12 and boxes 2-6 above).

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<sup>5</sup> The 1965 Forest Code of Brazil has been in a major overhaul by the country's Congress. It has been under intense discussion among pro-environment pro-rural groups. The Code requires, for instance, that 80% of each rural property in the Amazon Region be kept as Forest Reserve, which limits substantially its use alternatives. In addition, each property has to set aside land alongside water bodies, steep slopes, and other supposedly environmentally sensitive areas. Although these requirements have existed for decades, only recently they have been regulated, and enforced. For instance, rural credit access has been conditioned by the formal registration in the official register of forest reserve and protection areas. The government has also been considering requiring landowners to return to protection lands that have been under production in environment protection areas and forest reserves of long occupied properties. For a review of the position of the rural landowners and entrepreneurs, see the site of the Brazilian Agriculture National Confederation <http://www.canaldoprodutor.com.br/codigoflorestal> .

## **IV. Lessons from the Brazilian Agriculture Development**

74. Agriculture has been an important part of the Brazilian economy throughout most of the country's history. This importance has resulted as a response from investors to the business climate that prevailed at the time and affected their expectation of agriculture based investment project profitability. To trace the changes in the policies and factors affecting business climate, the consequent profitability of agriculture investment levels, and investors responses over time is a challenge only partially fulfilled in the literature. Here an equally deficient attempt will be made to trace policies and factors affecting agriculture business climate over time which, nevertheless is believed to shade some light on these conditions and yield some lessons on how policies can contribute to influence investment levels in the sector.
75. The chapter is divided in two main sections. The first tries to trace the main policy conditions and other major factor influencing the business climate for agriculture based investments in the past 40 years. The second part tries to describe the process of agriculture development of the Brazilian Savannah, which is the region of the country where major investments in the sector were made in the recent past converting it into a major food producing region of the country.

### ***A. Business Climate History for Agriculture Investment***

76. To describe the policy conditions influencing FDI in Agriculture over time in Brazil is challenging. The number of agriculture and macro economic policies and variations, government investments projects and rules, the effects of economic crises on investments, and the several macroeconomic stabilization plans Brazil has frequently adopted make the compilation and analysis of such combinations a true challenge.
77. Here, an attempt is made to describe the following selected critical policies and actions that have contribute to the investment levels and production increased observed in Brazil: agriculture output domestic price affecting policies and contingencies; subsidized rural credit; agriculture productivity increases resulting from a significant investment in research and development; and minimum price assurances for commercialization at harvest time.
78. The agriculture project ERR will be greater the larger the revenue the farmer can obtain from it at successive harvest times. The revenue will depend on the output prices at the farm gate and the quantities produced and delivered to wholesalers or consumers. Output prices depend on domestic market conditions, and on how international prices are transmitted into the domestic market. International prices influence on domestic prices depend on the foreign exchange rate, and on how the domestic economy is open to international trade. International prices themselves are determined by worldwide demand and supply for the crop as well as other countries trade policies and producer support subsidies . It is beyond the scope of this paper to discuss how international food and fiber prices are affected by different factors.

79. Until the 1930 Brazil's economy dependent on a substantial degree on agriculture products exports, being most noteworthy coffee, and sugar. Although on that decade a new import substitution and industrialization policy began their effect on agriculture production and exports were slow to be fully felt (Abreu and Bevilaqua 2000).
80. Between 1960 and 1972, agriculture adverse and discriminating policies such as overvalued exchange rate, high tariffs for imported industrial products, quantitative restriction for agriculture exports, discrimination against raw commodities export and preference for industrialized value added agriculture products aggravated the transfer of rural based income generating activities tin benefit of the urban industrial centers. Combined with a policy of affordable domestic food prices, these adverse policies resulted in lower domestic prices for agriculture products and less profitably for the agriculture investors.
81. In a tentative to mitigate the adverse consequences to agriculture from the import substitution policies, the GoB tried to increase food and fiber production by offering subsidized credit and fiscal incentives for forest plantations, as well as by creating in 1973 the Brazilian Agriculture Research Enterprise (EMBRAPA) to generate more productive technological packages and thereby increase the supply of food and fiber.
82. However, the discriminatory policies, combined with export embargos and price controls as responses to the 1972-4 international price explosion, resulted in such an unfavorable business climate that led to a substantial reduction in production and exports from the early 1970s to mid 1980s. Neither the favorable international prices were transmitted to the domestic market nor the potential price increases expected from increased domestic food demand took place and undersupply resulted (Abreu 2004) (Lopes, Lopes and Barcelos 2007).
83. Another compensatory policy adopted by the GoB to compensate for the adverse consequences of the import substitution and industrialization support was the creation in mid 1960 a highly subsidized rural credit system. Credit was offered for working capital (purchase of inputs), investment (purchase of machinery, cattle, forestry, etc.) and marketing (discounting promissory notes, bills and for the transport of rural products). Some consider the subsidized credit policy as a factor responsible for the 66% increase in agriculture production that took place in 1970s (Lucena and Souza NA).
84. Due to the growing fiscal deficit, foreign debt problems, the 1979 second petroleum crisis, and rampant inflation, the subsidies built into the rural credit began to decline in 1979 becoming progressively less favorable to investors until 1984-5 when it started to charge positive real interest rates.
85. To reduce risks associated with the volatility of agriculture products prices, the government started around the same time the subsidies of the rural credit were reduced a minimum price policy to try to recue the role of prices as incentives for investments. The idea was to assure investors that they would obtain a minimum but compensatory price for their production at harvesting time. Producers could sell their production directly to the government or they could finance short term storage costs to postpone sale of their outputs to a between-harvest-period when prices were

expected to rise and increase revenues. This policy worked reasonably well and increased production but suffered from the problems of the deterioration of their real value due to the hyperinflation Brazil suffered in the 1980s. The indexation of the minimum prices was needed but resulted in lower than market prices turning the minimum prices irrelevant (Lucena and Souza NA) (Silva Dias and Amaral 2001). This policy also suffered adjustments due to budgetary constraints so as to reduce the role of the government increasing the participation of the private sector as well as the adoption of more modern instruments such futures trading (Ramos 2009).

86. The policies and actions by the GoB that led to low agriculture domestic prices and consequent reduction of investment and agriculture production started to change in late 1980s and the 1990s ( Box 13 ). The progressive elimination or substantial reduction of the import substitution policies, the adoption of trade liberalization policies, the adoption of more favorable exchange rate policy, combined with an improvement in the macroeconomic stabilization that started in mid 1990s improved agriculture prices and the profitability of the sector (Abreu 2004) (Lopes, Lopes and Barcelos 2007) .

87. Investors have since progressively had international prices (see Figure 19) being transmitted to domestic markets and providing the appropriate price signals that more clearly indicated the prospects for profitability of agriculture based businesses and lead to a supply increase response (OECD 2008). This business climate that allowed domestic food and fiber prices better reflect international prices and often favor greater profitability of agriculture production has also attracted the interest of foreign investors.

Box 13 - Landmarks of agricultural trade liberalization in Brazil.

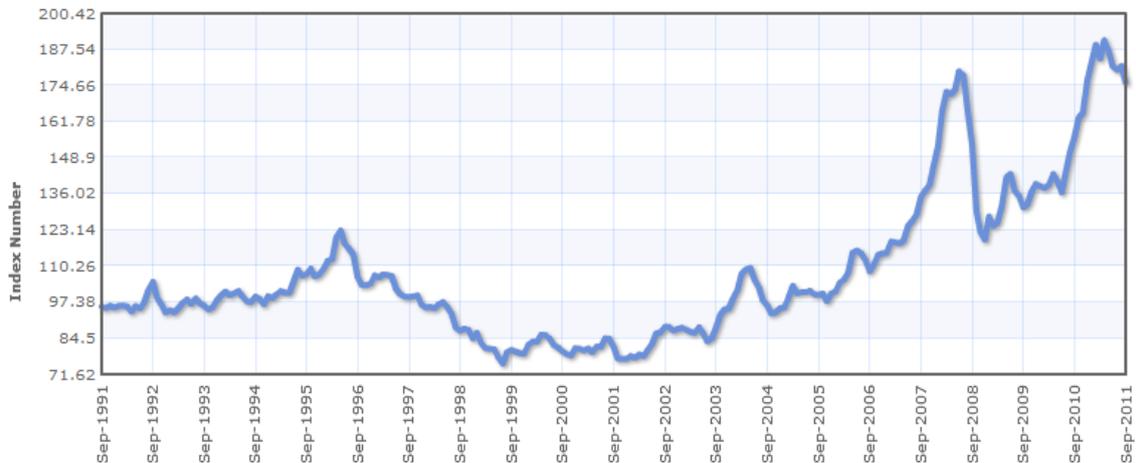
The main landmarks of agricultural trade liberalisation in Brazil were:

- 1987: abolition of export licensing.
- 1989: elimination of quantitative restrictions on exports of soybeans, soybean oil and meal, maize and cotton.
- 1990-92: removal of the main non-tariff barriers to trade under Collor's macroeconomic stabilisation plans, including those related to agricultural commodities and agricultural inputs. Adoption of a new transparent and simplified tariff schedule providing for phased reduction in border protection. Abolition of the state monopoly on wheat marketing and trade.
- 1994: introduction of the real and exchange rate peg under the Real Plan.
- 1995: adoption of URAA disciplines on market access, export competition and domestic support and coming into force of the Mercosur Customs Union with about one half of Brazil's agro-food imports falling under free trade within the Mercosur area. Elimination of sugar export controls.
- 1996: adoption of the Kandir Law exempting raw materials and "semi-manufactured" products destined for export from ICMS taxes.
- 1997-99: removal of state monopoly on ethanol trade. (OECD 2005)

88. Therefore, one can say that the Brazilian case illustrates the importance of liberalization policies that allow international prices be transmitted to the domestic market. Provided trade is fair without dumping or subsidies to foreign producers, liberalization allows the price signal for investors both to increase their production when prices increase or divest when prices reduce and importation of affected food or fiber products are cheaper than the local production costs which turn their investments unprofitable.

89. It should be noticed, however, that for high product prices to prove to be an opportunity for farmers in other developing countries to invest and raise their production and productivity, investors need also other favorable business conditions (FAO 2009).

**Figure 19 - Food commodity monthly price index. September 1991-September 2011.**



Commodity Food Price Index, 2005 = 100, includes Cereal, Vegetable Oils, Meat, Seafood, Sugar, Bananas, and Oranges Price Indices.

Source: Obtained from <http://www.indexmundi.com/commodities/?commodity=food-price-index&months=240> based on original data from IMF.

90. A strong agricultural and rural credit program through the National Program for Family Agriculture (PRONAF) that gave access to credit to a large number of small and medium farmers;
91. An infrastructure investment program as part of the First and Second National Development Plans (PND) was implemented during the 1970s. The program built: a large network of key roads to allow transportation of agricultural production from far way frontier areas in the savannahs; power lines; communications facilities; and a network of factories to produce and distribute agricultural inputs, machinery, and tractors;
92. With the intent of mitigating the adverse consequences to agriculture from the import substitution policies, the GoB tried to increase food and fiber production by offering subsidized credit, fiscal incentives for forest plantations, and created EMBRAPA to generate more productive technological packages and thereby increase the supply of food and fiber. The massive investments on research would start bearing fruits years later.
93. EMBRAPA is a public company linked to the Ministry of Agriculture, Livestock and Food Supply, with legal characteristics similar to a private company. Networking through 38 Research Centers, 3 Service Centers and 13 Central Divisions, EMBRAPA is present in almost all Brazilian states. In 2008 it had 8,275 employees, of which 2,113 are researchers, 25% with master's degrees and 74% with doctoral degrees. At the end of the 2010, the workforce at EMBRAPA was 9,248 employees. The Enterprise coordinates the National Agricultural Research System created in 1992, which includes most public and private entities involved in agricultural research in the country.
94. EMBRAPA has generated and recommended more than nine thousand technologies for Brazilian agriculture, reduced production costs and helped Brazil to increase the offer of food while, at the same time, conserving natural resources and the

environment and diminishing external dependence on technologies, basic products and genetic materials. It has, for example, transformed Brazil's *Cerrado* areas into a productive region after identifying and overcoming adverse soil conditions for food and fiber production. These technological developments have also allowed foreigners to invest in agriculture and fiber production, marketing and industrialization based on *Cerrado* areas.

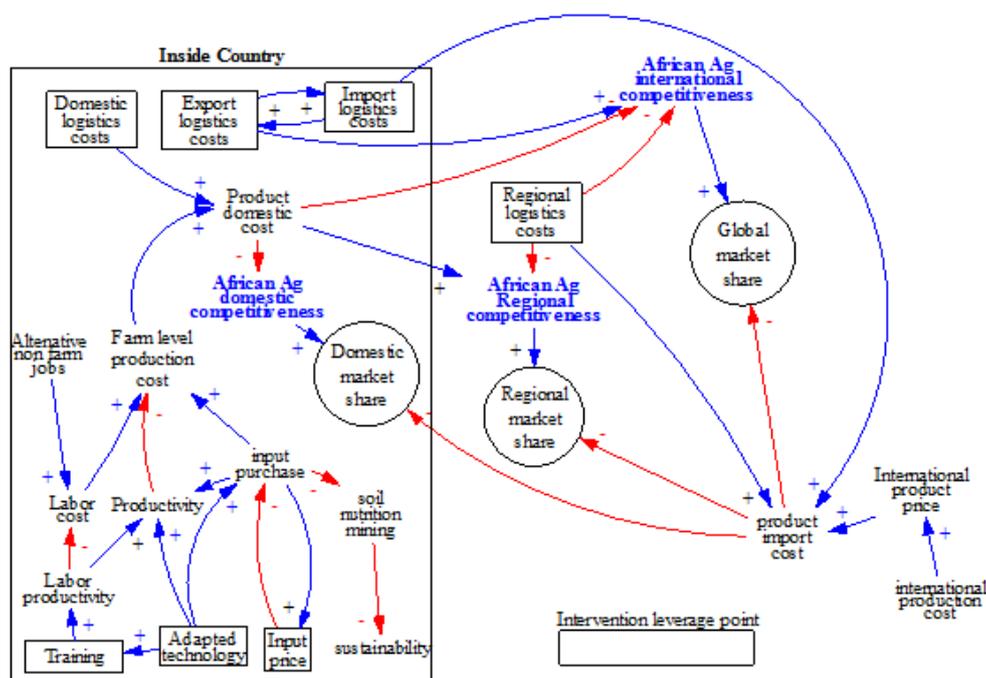
95. Brazil's substantial investments in agriculture research have yielded important benefits. In 2010, EMBRAPA estimated it got the highest operating income in its history, more than US\$1,15 billion. This record revenue returned US\$ 9.35 for each dollar applied, an estimated rate of return of 39.3%. (EMBRAPA 2008) (EMBRAPA 2010)
96. In addition, a comprehensive agricultural and rural extension service, initially created in 1954 for the state of Minas Gerais, and late in 1970's expanded to all states, known as the National System for Rural Extension and Technical Assistance, was implemented by means of the Brazilian Enterprise of Technical Assistance and Rural Extension (EMBRATER). A huge network of storage facilities ruled by the Brazilian Storage Company (CIBRAZEM) was also established to buy, store and distribute agricultural production in the major producing areas of the country.

### ***B. Agriculture Development of the Brazilian Savannah***

97. This part of the chapter tries to describe the process of agriculture development of the Brazilian Savannah, the *Cerrado*. This region of the country has not been important for agriculture production historically. However, in the past 50 years or so it has received major investments in the sector converting it into one Brazil's principal food producing regions.
98. Several studies have been undertaken in recent years to describe the process of agriculture based development of the Brazilian Savannahs (Annex 1). Here, two of those studies found to be most useful for the purposes of the present study are reviewed.
99. The first study recently published by FAO and the World Bank in the form of a book (World Bank 2009) can be summarized by the model presented as

100. Figure 20. This model was prepared based on the revision made by the book authors of the agriculture based development that happened in the savannahs of Brazil (Known as *Cerrado*) and Northeast Thailand. In these cases, a series of factors that affect the domestic production cost were identified; as well as the impacts of domestic, export, and import logistic costs on the competitiveness of agriculture products in the domestic, regional and global markets. Farm level production costs in the Brazilian savannah are affected by the use and cost of purchased inputs, labor costs, and the productivity of the land resulting from the use of suitable technology. Labor productivity also is affected by the workers limited capacity of applying more efficient technologies which can be improved by training.

Figure 20 - Factors affecting agriculture competitiveness in developing countries



Source: (J. R. Nascimento 2009)

101. High domestic logistics costs to bring agriculture products to domestic urban markets increase the price of such products. These higher prices for domestic production often reduce its competitiveness when compared to imported products leaving the domestic producers with a smaller share of this market. For some products, however, domestic production costs plus domestic and regional logistics costs may still be small enough to compete successfully and take share of regional markets. The book clearly establishes the importance of the adaptation and adoption of highly productive technologies which often requires competitively priced inputs, including labor. It also stresses the importance of training to improve the productivity of labor. The authors, however, show the impact of the costs of logistics (domestic, regional, for imports and for exports) in the competitiveness of agriculture products and the shares that they can have of the domestic, regional, and global markets.
102. The authors clearly showed the importance of intervening on leverage factors such as the adoption of technology, the training of labor, and the reduction of logistic costs.
103. The study by (Tollini ND), on the other hand, concentrated in explaining the factors that resulted in the impressive growth of agriculture production in the Savannahs region of Brazil. His explanation, summarized in Figure 21, helps to identify key issues and intervention strategies that were instrumental to the transformation of the region.
104. Tollini's analysis of the factors that contributed to the agriculture based development of the Brazilian Cerrados classified them into two basic groups: those that affected the supply of agriculture products, and those involved with the demand. He described the real and potential impact of the growing demand for

these products on price formation and inflation pressures. He showed that government authorities were motivated to act by the need to control inflation in Brazil.

105. Besides the growth of foreign demand under an increasingly open economy and export favorable exchange rate, agriculture prices in Brazil were being pressured by a growing domestic demand resulting from population and income growth, especially in urban areas. Urban immigration also reduced the supply of labor in rural areas for agriculture production. Income growth contributed as well to the increase in demand as poorer members of society became more able to buy food and other



goods and services. These demand pressures indicated to producers that agriculture prices would remain attractive over time generating an important incentive for production.

106. Government understood that the control of inflationary pressures from agriculture products could be addressed by greater growth in the supply of those products. Such an increase also could result in the generation of jobs, income, foreign exchange, and the reduction of poverty, therefore, providing an important contribution to the development of the nation.
107. Although not explicitly discussed by Tollini, it is clear that the authorities understood the critical role of the private sector and the importance of improving or maintaining the profitability of agriculture based entrepreneurs and investors as the basic strategy to achieve the growth in supply.
108. Government interventions were mainly designed to reduce cost and risks for producer and other related entrepreneurs as well as to increase factor productivity so that they would not need to rely on high prices to make their businesses profitable and investing in this sector attractive. Among the interventions<sup>6</sup> taken that supported this business climate improving strategy, Tollini highlighted:
- a. Investments to improve economic infrastructure in the areas of transportation, energy, and communications;
  - b. Measures that improved the works of the land market, assuring the increased availability of securely titled and accessible lands at a reasonable price;
  - c. The mobilization of public and private banks in the financing of agriculture production at reasonable costs;
  - d. Increased and sustained investments in research and development so as to generate new technologies that could overcome the agronomical limitations of the *Cerrado* soils and increase productivity. Although these technologies might have raised costs of production, producers would be more than compensated by the increase in output;
  - e. Creation of business opportunities for service providers to help in the several operations direct or indirectly associated with agriculture production;
  - f. Mobilization of southern agriculture producers (*gauchos*<sup>7</sup>) to bring to the *Cerrados* their production skills, knowledge, entrepreneurship, and capital; and
  - g. Measures to support the training and education of labor and professionals to contribute to increase productivity.

109. Tollini recalls that “a point to note is that Brazil received support of bilateral and multilateral agencies in its effort to promote institutional development. For instance, EMBRAPA, over the years, has benefited from projects financed in part by the World Bank and by the Inter-American Development Bank. The Inter-American Institute for Cooperation on Agriculture, IICA, also assisted EMBRAPA during its first years with the allocation of some professionals to help with the installation and initial research planning and programming. EMBRAPA, recognized as a good administrator of resources received through these projects, has been able to benefit from several sequential projects, each adding new objectives as the research program develops.”

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<sup>6</sup> The supply box in Figure 21 - Factors that contributed to the agriculture based development of the Brazilian Savannah includes variables and factors normally associated with the rural or agriculture branches of government responsibility at the time. Several other extra sectorial policy instruments were also used by the government in a mostly coordinated effort.

<sup>7</sup> *Gauchos* are the decedents of early Europeans that migrated to Southern Brazil t the end of 1800's and early 1900's. They have been key for the development of Brazilian *Cerrados*.

110. It must be reminded that the more favorable business climate measures were taken in varied degrees and sequencing that were contingent to the situation found in the region and the country. The results of these interventions were not immediate nor always in the right direction. Different government administrations, with the active motivation provided by stakeholders, withstood the general course during more than 4 decades. The improvement of competitiveness requires continuous and incremental efforts to give investors the incentives to make life changing decisions and take risks.
111. The following chapter tries to take advantage of the lessons learned in these two studies and other sources to design a model that can help in the understanding of the business climate for agriculture and forest based investments and how it can be improved. These elements will be useful for the development of a framework that may help other countries to increase prosperity of the country by becoming a major and competitive producer of these products.
112. Another class of lessons that comes from the development of the Brazilian *Cerrado* that can be useful for other countries is related to the technologies and production packages that have been developed over the years for that region and that are available for adaptation and adoption.

## V. Factors affecting the Business Climate for FDI in Agriculture Sector

113. The success of business initiatives depend on several factors, many of which are internal to the firms. Those conditions are usually under the control of managers and success or failure of their operations depends on their capabilities and decisions. Although such internal performance is indispensable, it is by no means sufficient for the success of firms.
114. Entrepreneurs also operate within an external system that offers varying degrees of conditions that favor and facilitate their activities, or not. Individual firms cannot usually control those external factors such as the rules of the game (laws, regulations, tax burden, and their enforcement), input and output markets, or others that directly affect their costs, revenues, and profitability. Firms' success therefore will increase with the improvement of business climate that a given country can offer to investors. (OECD 2003)
115. Successful agriculture and forest businesses depend on natural resources, productive human resources, competitively priced capital and inputs, and other favorable climate conditions for investments. Without such conditions, investments become too costly and risky while benefits too small and uncertain so that profits are not sufficient to motive entrepreneurs and investors to act.
116. Even if a country counts with abundant natural resources such as soil, topography, and climate, which are the only resources that cannot easily be created or hired anywhere, it may not offers other needed conditions to investors. Agriculture and forest based businesses, therefore, cannot prosper and cannot generate the benefits to society that they otherwise could.
117. This chapter of the study will first discuss the performance of Brazil in various indexes measured by different organizations that seek to compare the conditions that entrepreneurs face in different countries to invest successfully. These indexes show the challenges businesses in Brazil have to face to succeed and prosper.
118. The second part of the chapter discusses a model that tries to identify the factors and relationships that affect the success of businesses in agriculture, forestry, and rural sector, which are critical for development in rural areas. To take advantage of the substantial natural resources that Brazil has and allow them to become a source of prosperity, the country needs to understand such factors. That understanding would also allow the identification of the critical intervention leverage points to improve the conditions that facilitate the profitable and sustainable operation of private businesses. The model presents a framework that helps in the development of strategies and the identification of measures to improve such conditions.

### ***A. Brazil's Conditions for Successful FDI***

119. The success of business initiatives depends on several factors, many of which are internal to the firms while others are external. Those internal conditions are usually under the control of managers and success or failure of their operations depends on their capabilities and decisions. Managers also have to operate within an external environment which may favor or hinder their chances of success.
120. Table 4 summarizes the performance of Brazil in selected indexes created to compare several countries in terms of indicators that affect businesses (Annexes 2, 3, and 4). These indexes show not only the scores that try to quantify the performance of a country. It also ranks these scores to show the relative performance of a country in relation to its peers. In a world where countries

have to increasingly compete with each other, the ranking of countries and how these relative performances vary in time, become critical for investors' decision making. Countries have not only to perform well in a given year, they also need to improve over time the conditions they offer more than other countries with which they compete for investments. This healthy competition leads to a positive feedback cycle that should benefit investors and society as a whole.

**Table 4 - Brazil's performance in selected indexes**

Index Name	Brazil's score and rank.	Brief description
<b>Ease of Doing Business Ranking</b>	Rank: 127 out of 183.	The <i>Ease of Doing Business Ranking</i> is reported yearly by The World Bank, a financial assistant to developing countries. The Doing Business Ranking provides measures of business regulations and their enforcement across countries by measuring specific regulatory obstacles to doing business, such as protection of investors, protection of property rights, employment issues, and contract enforcement capabilities. The highest ranked country has the most favorable environment for conducting business in the world. <i>Data collected in 2010.</i> Source: The World Bank. <a href="http://www.doingbusiness.org/data/exploreeconomies/brazil">http://www.doingbusiness.org/data/exploreeconomies/brazil</a>
<b>Global Competitiveness Report</b>	Score: 4.23 out of 7 Rank: 56 out of 133	The <i>Global Competitiveness Report</i> is compiled yearly by the World Economic Forum, an independent international organization based in Geneva, Switzerland. The rankings provide a description of the economic competitiveness based on twelve pillars of competitiveness for countries at all stages of development. Some of the factors included come from publicly available data, but the majority comes from a survey the World Economic Forum sends to over 11,000 business executives worldwide. The highest ranked countries are the most competitive. <i>Data collected in 2009.</i> Source: <a href="http://www.weforum.org/pdf/GCR09/GCR20092010fullreport.pdf">http://www.weforum.org/pdf/GCR09/GCR20092010fullreport.pdf</a>
<b>Human Development Index</b>	Score: 0.699 out of 1 Rank: 73 out of 182.	The Human Development Index (HDI) which looks beyond GDP to a broader definition of well-being. The HDI provides a composite measure of three dimensions of human development: living a long and healthy life (measured by life expectancy), being educated (measured by adult literacy and enrolment at the primary, secondary and tertiary level) and having a decent standard of living (measured by purchasing power parity, PPP, income). The index is not in any sense a comprehensive measure of human development. It does not, for example, include important indicators such as gender or income inequality and more difficult to measure indicators like respect for human rights and political freedoms. What it does provide is a broadened prism for viewing human progress and the complex relationship between income and well-being. <i>Data: 2010.</i> Source: UNDP. <a href="http://hdrstats.undp.org/en/countries/profiles/BRA.html">http://hdrstats.undp.org/en/countries/profiles/BRA.html</a>
<b>Index of Economic Freedom</b>	Score: 55.6 out of 100. Rank: 113 out of 179.	<i>The Index of Economic Freedom</i> is reported annually by the Heritage Foundation, a research and educational institute. The Index of Economic Freedom analyzes a wide range of issues including trade barriers, corruption, government expenditures, property rights, and tax rates to generate an overall ranking of economic freedom. The highest ranked country is the country with the least number of restrictions and constraints on businesses. <i>Data collected in 2010.</i> Source: <a href="http://www.heritage.org/Index/Ranking.aspx">http://www.heritage.org/Index/Ranking.aspx</a>
<b>Economic Freedom of the World</b>	Score: 6.0 out of 10.0 Rank: 111 out of 141	The index published in <i>Economic Freedom of the World</i> measures the degree to which the policies and institutions of countries are supportive of economic freedom. The cornerstones of economic freedom are personal choice, voluntary exchange, freedom to compete, and security of privately owned property. Forty-two variables are used to construct a summary index and to measure the degree of economic freedom in five broad areas: (1) size of government; (2) legal structure and security of property rights; (3) access to sound money; (4) freedom to trade internationally; and (5) regulation of credit, labor and business. <i>Data collected in 2007</i> Source: Fraser Institute. <a href="http://www.fraserinstitute.org/research-news/research/display.aspx?id=13006">http://www.fraserinstitute.org/research-news/research/display.aspx?id=13006</a>
<b>Corruptions Perception Index (CPI)</b>	Score: 3.7 out of 10. Rank: 69 out of 178 countries studied.	The <i>Corruptions Perception Index (CPI)</i> is reported annually by Transparency International, an international civil society organization. The CPI ranks countries in terms of the degree to which corruption exists in the misuse of public power for private benefit among public officials and politicians. CPI is a composite index determined by expert assessments and opinion surveys. The highest ranked country is the country with the least amount of perceived corruption. Index units, 10=least corrupt, 0=most corrupt. <i>Data collected in 2010.</i> Source: <a href="http://www.transparency.org/policy_research/surveys_indices/cpi/2010/results">http://www.transparency.org/policy_research/surveys_indices/cpi/2010/results</a>

121. The indexes shown in Table 4 illustrate the difficulties investors in most sectors face in Brazil. Even though some of these indexes may have an overlap among some variables or factors considered, they do provide an useful indication of the absolute and relative performance of countries. In many of them, Brazil reaches relatively low scores and ranks, being found among the countries that face the substantial challenges in the specific conditions measured. Under such contingencies, businesses are unlikely to prosper as much as they otherwise could. This performance also demonstrates that the private sector faces challenges to increase its contribution to the development of the country.

122. It is beyond the purpose and scope of this study to further analyze the results of such indexes. It suffices here, that they clearly show the challenges faced by investors to profitably operate in Brazil and the need for the adoption of strategic measures to further improve the business climate of the country.
123. Agriculture and forest businesses are also affected by many of the conditions that these indexes try to measure (also Annexes 4 and 5). However, due to their special characteristics, it is more useful to try to identify the principal factors that influence businesses in this sector, the relationships among them, and how they impact investment profitability. This modeling helps not only to understand the situations better, but also is critical for the design of actions that can improve the chances for entrepreneurs' success. These are the goals of the next section of the chapter.
124. One example of index that tries to measure the business climate for forest based investments is the Forest Investment Attractiveness Index (IAIF, from the Spanish acronym). The IAIF's purpose is to clarify governments, investors and other stakeholders which are the factors that affect, lead to success, and attract private direct investment, domestic or foreign, to the forestry sector.
125. This Index seeks to measure countries' attraction for direct investment in sustainable forestry business. The IAIF allows: (i) to compare the performance of countries in the same year and the trend over time, (ii) to assist investors to pre-identify the countries where sustainable forest business will most likely be successful, and (iii) to clarify for countries which SUPRA, INTER and INTRA factors most affect their business climate for sustainable forestry investments.
126. The IAIF methodology considers 80 variables that make up a total of 20 indicators (several of them, exclusive) that are integrated into a model that seeks to explain and predict levels of direct investment in the sector. The IAIF was applied to the IDB borrowing countries based on data from 2004 and 2006. The results achieved for 2006 and furthers details about IAIF's methodology are presented in Annex 9. Table 5 shows the detailed IAIF results for indicators and sub indexes for Brazil calculated using 2006 data.
127. Brazil, according to this Index, is the most attractive country for investment in forest based businesses in Latin America and the Caribbean region. However, it reaches only 60 out of a total of 100 points possible, implying that there is much room for improvement in the conditions that lead to greater investments in the sector. This can best be seen by identifying the indicators that have the greatest potential for improvement when one compares the 2006 performance with the theoretical possible score which is shown in the last column of the Table 5. For instance, the IAIF indicates that Inter Sectorial factors such as Labor, Licenses and Permits, Property Rights, and Capital and Foreign Investment Flow can more than double their performance, while Intra Sectorial factors such as Favorable Support, Forest Resources and Adverse Actions can be almost three times better.

**Table 5 - Brazil's performance. Forest Investment Attractiveness Index (2006)**

Indicators / Sub index / IAIF	Rating in 2006	Max. rating possible	Potential growth in %
GDP Growth Rate	75	100	34
Passive Real Interest Rate	97	100	3
Exchange Rate Stability	100	100	0
Trade Openness	58	100	72
Political Risk	67	100	50
Tax Share of GDP	53	100	90
<b>SUPRA Sectorial Sub index</b>	<b>75</b>	<b>100</b>	<b>34</b>
Economic infrastructure	62	100	61
Social Infrastructure	79	100	26
Licenses and Permits	50	100	100
Labor	39	100	156
Capital Market	55	100	82
Property Rights	50	100	100
Capital and Foreign Investment Flow	50	100	100
Agricultural Policies	57	100	76
Planting and Harvesting Restrictions	52	100	91
<b>INTER Sectorial Sub index</b>	<b>55</b>	<b>100</b>	<b>82</b>
Forest Resources	40	95	138
Favorable Support	37	100	168
Domestic Market	95	100	5
FVL	80	100	25
Adverse Actions	42	100	137
<b>INTRA Sectorial Sub index</b>	<b>59</b>	<b>99</b>	<b>68</b>
<b>IAIF</b>	<b>60</b>	<b>99</b>	<b>65</b>

Source: Annex 9.

128. Growth potential for the Brazilian IAIF is 65%, pointing to the existence of substantial room for implementing policies aimed at improving the attractiveness of forest investment. The detailed analysis of the indicators that form the Index suggests the priority areas for intervention.
129. The model discussed here is helpful to understand the current situation of a country, how its performance compares with others, what its potential performance could be if all factors could be made to reach their maximum scores, and how to identify priority areas and actions to create an action plans to improve such business climate. To design these plans, however, it is necessary to undertake a detailed and periodic planning process that can systematically identify the priority factors, analyze their current and potential situations, and design interventions to move the future expected situation towards a desired future or vision for the sector.
130. It is beyond the scope of this study to calculate the most recent score Brazil can obtain in the corresponding indicators for agriculture related investment attractiveness. It is, however, strongly recommendable that such calculation be undertaken periodically not only for this country, but also for other nations. Besides its use in the design, monitoring and evaluation of interventions, this periodic calculation would allow several types of comparisons among countries, promote healthy competition among them, and help investors select the best countries to establish their agriculture and forest businesses.
131. Nevertheless, the present discussion and that of other chapters of this study does provide sufficient information for the preparation of a framework that includes the design of interventions

to improve the business climate for agriculture, forest, and rural investments in Brazil<sup>8</sup>. This is the purpose of a latter chapter of the present study.

### ***B. Business Climate Model for Agriculture Investment***

132. A model has been developed to better understand and serve as the basis to improve the conditions for successful investing in agriculture and forest based sustainable businesses. It assumes that a country will be more attractive for agriculture and forest based sustainable business investments, the more profitable such investments are likely to be. The profitability of these businesses in a country depends on the costs investors have to face and the expected benefits from their operations. Box 14 shows a checklist prepared by OECD for attracting FDI in an economy in general. It mentions several issues discussed in the model presented here as they are equally relevant for agriculture and forest based direct investments.
133. The model shown on Figure 22, proposes that costs investors have to face and the expected benefits from their operations are affected by three groups of factors: the SUPRA Sectorial, the INTER Sectorial, and the INTRA Sectorial factors. Combined, the SUPRA and the INTER sectorial factors are also called EXTRA sectorial conditions since they are variables that are not considered as part of the agriculture or forest based sector. The following sections will discuss briefly the principal factors that constitute each of these three groups.

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<sup>8</sup> For large countries such as Brazil with substantial regional differences, aggregate number in an Index brings only limited information to investors. The provision of more detailed information may improve investors decision making and can be done through the development of state level models of investment attractiveness and calculate sub national indexes such as the Brazil Index for Forest Investment Attractiveness <http://www.step.com.br/iaifbrasil/> .

### Box 14- Checklist For Foreign Direct Investment Incentive Policies

The aim of policies for attracting FDI must necessarily be to provide investors with an environment in which they can conduct their business profitably and without incurring unnecessary risk. Experience shows that some of the most important factors considered by investors as they decide on investment location are:

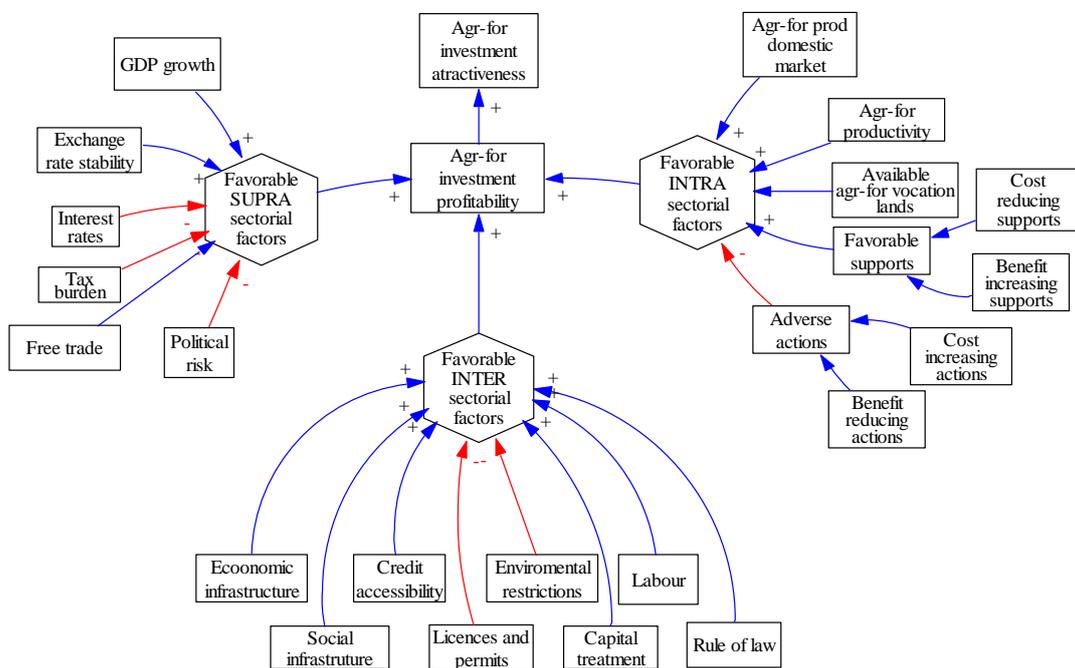
- A predictable and non-discriminatory regulatory environment and an absence of undue administrative impediments to business more generally.
- A stable macroeconomic environment, including access to engaging in international trade.
- Sufficient and accessible resources, including the presence of relevant infrastructure and human capital.

The conditions sought by foreign enterprises are largely equivalent to those that constitute a healthy business environment more generally. However, internationally mobile investors may be more rapidly responsive to changes in business conditions. The most effective action by host country authorities to meet investors' expectations is:

- Safeguarding public sector transparency, including an impartial system of courts and law enforcement.
- Ensuring that rules and their implementation rest on the principle of nondiscrimination between foreign and domestic enterprises and are in accordance with international law.
- Providing the right of free transfers related to an investment and protecting against arbitrary expropriation.
- Putting in place adequate frameworks for a healthy competitive environment in the domestic business sector.
- Removing obstacles to international trade.
- Redress those aspects of the tax system that constitute barriers to FDI.
- Ensuring that public spending is adequate and relevant.

The usage of tax incentives, financial subsidies and regulatory exemptions directed at attracting foreign investors is no substitute for pursuing the appropriate general policy measures (and focusing on the broader objective of encouraging investment regardless of source). In some circumstances, incentives may serve either as a supplement to an already attractive enabling environment for investment or as a compensation for proven market imperfections that cannot be otherwise addressed. However, authorities engaging in incentive-based strategies face the important task of assessing these measures' relevance, appropriateness and economic benefits against their budgetary and other costs, including long-term impacts on domestic allocative efficiency. (OECD 2003)

Figure 22 - Model of factors influencing the attractiveness of direct investments in agriculture and forest businesses



Modified from (Nascimento and Tomaselli 2007).

#### 1. SUPRA Sectorial Factors

134. SUPRA sectorial factors influence the performance of firms in all sector of the economy, including the agriculture, forestry, and rural based ones. They include macro-economic

conditions and political risk. There are six main factor in the SUPRA sectorial group that are found to affect substantially the conditions for the success of agriculture or forest based businesses: 1- Gross Domestic Product growth; 2- Exchange rate stability; 3- Interest rate; 4- Tax burden; 5- Free trade; and 6- Political risk.

135. There are two hypotheses relating these factors and how they affect the profitability of agriculture or forest based business. The first indicates that, as the factor increases (decreases), then the profitability is also expected to increase (decrease); that is, they move in the same direction. As mentioned in the Chapter I, this is represented in Figure 22 by a blue arrow with a positive (+) sign at the point of the arrow. Therefore, the model states that profitability is expected to increase the faster GDP grows, the Exchange rate is more stable; and/or the economy is more open allowing for cheaper transaction costs for import and export. On the other hand, profitability is expected to decrease as GDP shrinks, the Exchange rate is more unstable; and/or the economy is more closed allowing for more expensive transaction costs for import and export.
136. The red arrows with a negative sign at their points (-) indicate the second hypothesis. In this case, as the factor increases (decreases), then the profitability is expected to decrease (increase); that is, they move in opposite directions. Therefore, profitability of agriculture or forest based business is expected to increase as Interest rates get smaller, the Tax burden is less expensive; and/or the political risk reduces. On the other hand, profitability is expected to decrease as Interest rates get larger, the Tax burden is greater; and/or the political risk increases.

## 2. INTER Sectorial Factors

137. The INTER sectorial factors are those that are managed by other sectors of the economy but which have substantial impacts on the cost and benefit structures of agriculture or forest based businesses. The model identifies eight of these factors: 1- Economic infrastructure; 2- Social infrastructure; 3- Credit accessibility; 4- Licenses and permits; 5- Environmental restrictions; 6- Capital treatment; 7- Labor; and 8- Rule of law. Table 6 provides a summary of explanations of these factors.
138. Here too there are the same two hypotheses relating these INTER sectorial factors and how they affect the profitability of agriculture or forest based businesses. Thus, the blue arrows indicate that, as factors like Economic infrastructure, Social infrastructure, Credit accessibility, favorable Capital treatment; competitively priced and productive Labor; and Rule of law effectiveness increases (decreases), then the profitability is also expected to increase (decrease); that is, profits tend to move in the same direction these factors move.
139. On the other hand, the red arrows indicate that as factor like Environmental restrictions and Licenses and permits (decreases), then the profitability of agriculture or forest based business is expected to decrease (increase); that is, they move in opposite directions.

**Table 6 - Brief description of the INTER sectorial factors.**

<b>Factors</b>	<b>Brief description</b>
<b>1-Economic infrastructure</b>	Includes availability of economic infrastructure services at competitive prices and quality such as those provided by roads, communications, energy, ports, railroads, airports.
<b>2-Social infrastructure</b>	Includes availability of social infrastructure services at competitive prices and quality related to human development such as education; health; water, sewage & waste disposal.
<b>3-Credit accessibility</b>	Includes the sophistication of financial and capital markets, availability of credit at competitive terms as well as other capital markets instruments.
<b>4-Licenses and permits</b>	Includes bureaucratic procedures and legal requirements to open, operate, and even close firms and that take much time, efforts, and other resources to comply with.
<b>5-Environmental restrictions</b>	Unfounded or useless environmental restrictions that increase firms' costs without generating environmental benefits.
<b>6-Capital treatment</b>	Includes barriers and restrictions to the movement of capital into, out of, or within the country.
<b>7-Labor</b>	Includes the costs generated by labor legislation, the level of general productivity and the availability of skilled workers at competitive prices.
<b>8-Rule of law</b>	The existence of favorable legislation, enforcement, and justice services. Includes clear definition and protection of property legislation; respect to the letter of contracts, and timely justice at reasonable cost.

Source: Adapted from (Nascimento and Tomaselli 2007)

### 3. INTRA Sectorial Factors

140. The INTRA sectorial factors are those that are managed by public or private actors found inside the agriculture or forest based sector of the economy. These factors, by definition are under the control of these actors and can be intervened more directly by them. The model identifies five of these factors: 1- Agriculture or forest products domestic market; 2- Agriculture and forest productivity; 3- availability of agriculture and forest vocation lands; 4- Favorable supports; and 5- Adverse actions. Table 7 provides a summary of explanations of these factors.

141. Except for Adverse Actions, all other INTER sectorial factors move profitability in the same direction as they move. That is, as these factors increase (decrease), then the agriculture and forest based businesses profitability is also expected to increase (decrease).

**Table 7 - Brief description of the INTRA sectorial factors.**

<b>Factors</b>	<b>Brief description</b>
<b>1-Agriculture or forest products domestic market</b>	Includes the size of the domestic consumption of inputs and outputs of the agriculture and forest based sector. It also includes the domestic consumption associated with the export of outputs from the sector.
<b>2-Agriculture and forest productivity</b>	Includes the land productivity of agriculture or forest based businesses. It is directly associated with the technologies used for production in the country.
<b>3-Availability of agriculture and forest vocation lands</b>	Includes the size of lands in the country that are arable, or are forest vocation lands. Agriculture production is often, but not always, more competitive in arable lands than forest production, while the opposite is true for forest vocation lands. (J. R. Nascimento 2005).
<b>4-Favorable supports</b>	Includes policies and measures taken the public or private sectors that reduce costs or increase benefits for investors.
<b>5-Adverse actions</b>	Includes policies and measures taken the public or private sectors that increase costs or decreases benefits for investors.

Source: Adapted from (Nascimento and Tomaselli 2007)

142. The bigger the domestic market for agriculture and forest products, including those used as input for export products or directly sold overseas, the more profitable the agriculture and forest businesses can be, ceteris paribus. Conversely, the smaller the domestic market for agriculture and forest products, including those used as input for export products or directly sold overseas the less profitable. However, the size of the domestic market is not easily modified by public policy. It can change only if agriculture or forest products prices times the quantities consumed increase. To consume more implies a change of taste of consumers and/or an increase of income,

assuming the products are income elastic. Especially when markets are small and its growth is not expected to be fast, countries have to consider the regional and/or world markets as their targets, and seek to increase export of competitive products. This vision of an agriculture or forest products exporting country requires the adoption of interventions to increase the attractiveness of direct investments in the sector. So policies that seek economic and trade integration or free trade agreements can potentially increase this factor substantially. However, this indicator is based on actual exports, which means that domestic producers are competitive to be able to export.

143. Agriculture and forest productivity are critical factors that are important for the competitiveness of a country. Among other factors, productivity depends on the availability and adoption of appropriate technology; production inputs such as seeds, fertilizers, machinery; skilled labor and professionals; and supporting services. Research, technical assistance, adaptation of technologies, and other innovations are key to increase productivity.
144. Available agriculture and forest vocation lands (FVL)<sup>9</sup> are a critical factor for the attractiveness of a country for sustainable investments in the sector. The greater the land area a country has that can potentially be used for agriculture or forest production, the greater the contribution of this factor to the INTRA sectorial conditions that favor successful agriculture or forest businesses. However, the physical existence of such lands is not enough. They have to be accessible to investors through secure and relatively flexible mechanisms that allow long term investments to be made as well as easiness of exit if so desired.
145. Favorable supports are divided in two groups: those policies, and actions or inactions by governments that reduce investors' costs, and those that increase benefits. These supports are identified usually as a result of detailed analyses of surveys of the perceptions of investors, producers, academics, and other stakeholders.
146. Adverse actions are also divided in two groups: those policies, and actions or inactions by governments that increase investors' costs, and those that decrease benefits. However intriguing, government's mostly good intentions not always result in favorable conditions for investors. Using the same methods described for Favorable supports, it is possible to identify such situations which need to be corrected to improve business climate.

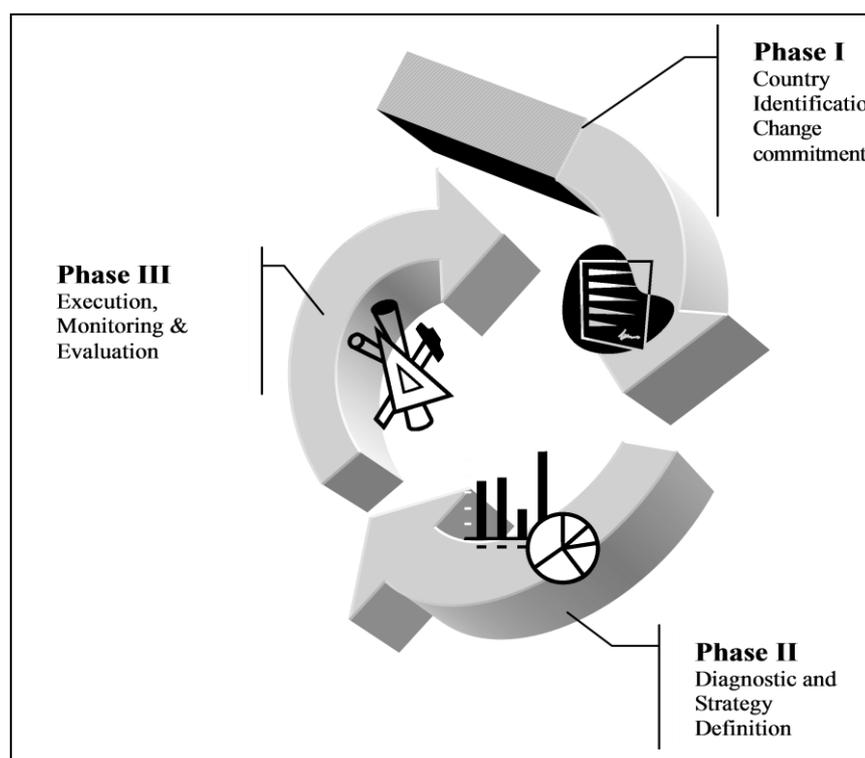
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<sup>9</sup> Forest Vocation Lands are those that, due to their physical site features such as soil, topography, and the rainfall it receives, should be kept under forest cover or other sustainable land use if soil or water related negative externalities are to be avoided. FVL classification does not depend on the type of cover the land actually has, nor does it depend on the requirements it may have for agriculture crop or forest production. Therefore, lands with no forest cover or use can still be classified as FVL if their physical features so indicate; while lands covered with forest may not be FVL. (J. R. Nascimento 2005).

## VI. Business Climate Improvement Process to Attract FDI into Agriculture Sector.

147. Successful agriculture and forest businesses depend on natural resources, human resources, capital and favorable climate for investments. Although Brazil counts with abundant natural resources such as soil, topography, and climate, which are the only resources that cannot easily be created or hired, it has much room for improvement in the other conditions for the success of businesses as discussed in Chapter V. Agriculture and forest based businesses, therefore, cannot further contribute to prosperity and are unlikely to generate additional benefits to society that they otherwise could without these constraints.
148. It is expected that when a country knows its performance in the IAIF (Annex 9), learns the level of attraction of its benchmark countries, and understands what are the factors that contribute to and those that detract from sustainable forest businesses in the country, it is more likely that it becomes interested in finding ways to improve the investment climate for such businesses.
149. With the purpose of helping to organize the efforts of countries to improve the investment climate for sustainable forest businesses, and therefore increase direct investment, the Inter-American Development Bank has prepared a methodology, called Forestry Investment Business Climate Improvement Process - PROMECIF.
150. The PROMECIF (Annex 10) seeks to help countries improve the business climate through the implementation of a systematic and cyclical process that includes confirmation of the interest of the country to take steps to make adjustments necessary, the development of diagnosis, definition of a strategy, and the design, implementation, monitoring and evaluation of an Action Plan with selected measures.

Figure 23 - PROMECIF Phases Cycle



151. The Process supports countries to identify the relative importance of the factors that affect sustainable forest business, facilitating the design of strategies and actions to promote investment attraction. PROMECIF uses the IAIF factors, indicators and sub-indexes at all stages of the process, either as elements of analysis, interventions design, simulations, or as indicators for monitoring and ex-post evaluation.

152. Even though the IAIF and the PROMECIF are tools designed for forest based

investments, the demonstration of their application may help to understand how similar tools designed on the basis of a model such as the one shown in Figure 22 can be used to help Brazil further improve its attractiveness to foreign investors.

### **A. Overall Process**

153. The PROMECIF is a cyclical process that seeks to identify, develop, implement, monitor and evaluate actions that modify the factors that affect the attractiveness of a country to investment in the forestry sector. Such a process is divided into three interdependent phases (Figure 23):
154. Since the purpose of this section is to explain how this process can be useful to understand Brazil's situation, the following sections will try to apply partially only PROMECIF phase II while the other two phases are only briefly explained. The entire process is discussed in more details in Annex 10.

### **Phase I – Country Identification and Change Commitment**

155. Phase I is divided into 3 stages: (i) Promotion, (ii) identification, and (iii) Coordinating Committee. In the promotion stage, available IAIF results will be presented to stakeholders, showing the country's performance in absolute terms or relative to other countries or sub regions, as well as identify the critical factors to the success of investment in sustainable forestry businesses. Then, motivated by those involved in the forest private sector, the government may be persuaded to apply the PROMECIF methodology. For this, the government needs to formalize its interest by signing a commitment to the solution of such factors (identification phase). Finally, the last stage of this phase is to form a committee to coordinate all activities related to the implementation of PROMECIF and allow for stakeholders participation. This Coordinating Committee (CC), whenever possible, should be placed within the scope of the national institutions promoting competitiveness.
156. The CC of PROMECIF will have primary responsibility for coordinating the implementation of Phases II and III of PROMECIF. For the sake of demonstration, it is assumed in this study that Brazil has committed to such changes and created the corresponding CC.

### **Phase II - Assessment and Strategy Definition**

157. The expected outcome of phase II is a strategy to improve the business climate for forest-based business investments, including a Diagnostic and an Action Plan.

#### **Diagnostic**

158. The diagnostic aims to characterize the current situation of the sector and trends, and the future situation desired by stakeholders, so as to allow the identification of problems or opportunities. The diagnostic should also analyze and explain how the expected future situation came to be so.
159. The diagnostic uses the IAIF and its indicators and models to analyze the causes and effects that generate and are generated by each factor. For the identification and examination of these interactions, the use of the systems dynamics methodology of analysis is suggested.
160. To generate these products, the diagnostic stage uses two types of analysis: IAIF analysis, and Complementary Analysis.

161. The IAIF analysis and that of its sub-indexes, indicators and variables, is based on data which, in most cases, are measures of process outcomes. This analysis is useful, as discussed below, to characterize the expected future situation, the desired future situation, and identify problems and opportunities associated with forest business climate. However, this type of analysis is less useful for explaining the processes that resulted in the expected future situation. For these explanations it is necessary to undertake complementary analysis, which is presented below.

#### - Analysis of IAIF Sub-indexes and Indicators

162. The IAIF is a useful tool to make diagnostics because it allows measuring the indicators that affect a country's forest investment business climate. Due to its characteristics of simplicity, clarity, accuracy, measurability and validity, the IAIF, if properly used, can lead to countless forms of analysis.

163. The analysis of IAIF will cover the results for Brazil and how it compares with other countries or the sub regions most relevant for the country. These results, as shown below, may be presented in different forms in order to allow the analyst better understanding of the situation.

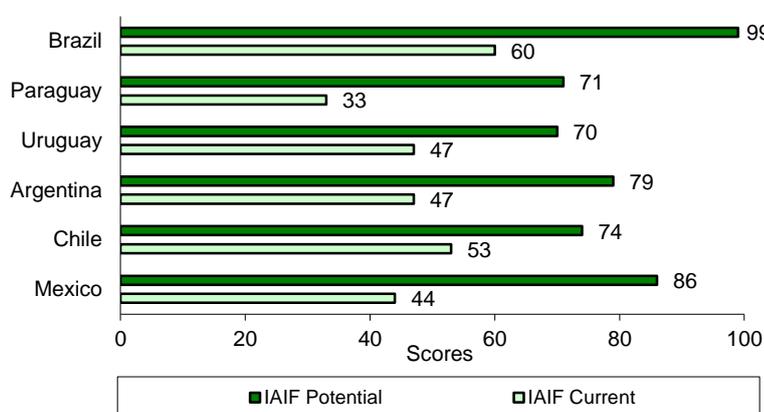
#### The IAIF Analysis

164. The analysis can begin with the use of the IAIF results (in its three forms: actual, potential and differential) and comparisons with results for other countries and/or regions relevant to the selected country.

165. Through the IAIF analysis, it will be possible to identify convergences and contrasts between selected countries and of their performance in terms of attracting investments into the sector. In this sense, one can compare a given country, for example, to countries: (i) with better IAIF performance; (ii) that are neighbors; (iii) with similar GDPs; (iv) with similar TVF; (v) with equivalent territories; among other criteria.

166. Figure 24 presents comparative analysis of Brazil and 5 best ranked countries in the IAIF 2006.

Figure 24 - Comparison between IAIF of Brazil and selected countries



<sup>1</sup> IAIF 2006

#### Sub-indexes Analyses

167. After analyzing the IAIF, one can analyze and compare the results of the SUPRA, INTER and INTRA sub-indexes using also the same three forms (current, potential and differential). The analysis of the sub-indexes is useful to identify which groups of factors deserve greater attention for interventions that seek to improve the business climate.

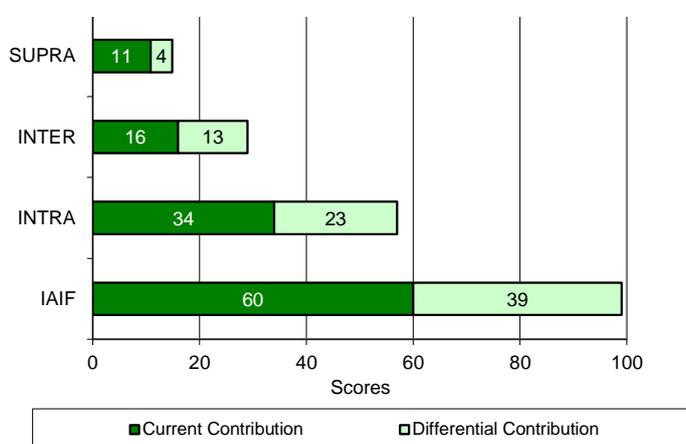
168. Figure 25 shows a simplified example of the type of analysis that can be used for sub-indexes. In this

case, the current contribution of each sub index is being compared with the difference for maximum potential reading for that sub index, clearly showing the importance of Inter and Intra sectoral sub-indices as including important areas of intervention with the greatest potential to improve business climate for forest investments.

### Indicators Analysis

169. One can analyze every factor that makes up the IAIF, i.e., understand and examine each of the 20 indicators and the more than 80 variables that make up these indicators. To increase the effectiveness of diagnostic, it is useful to further analyze the indicators found to have the greatest potential for improvement.

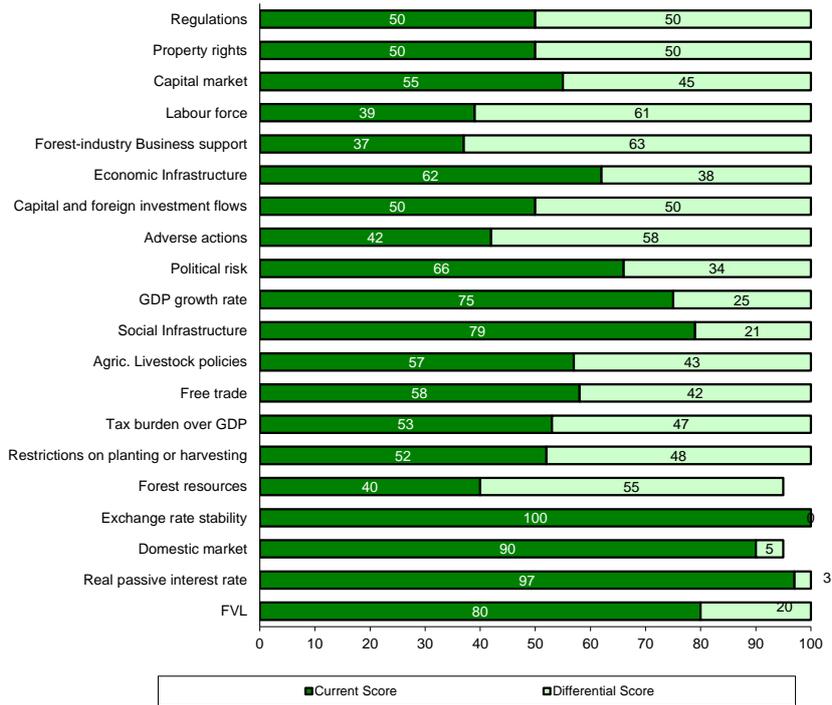
Figure 25 - Sub indices Contributions to Brazil's IAIF 2008 score



170. For that, it is necessary to know what the country's growth potential in each indicator is by calculating the spread between the current and potential scores. The advantage of this type of analysis is to identify the priority factors for further consideration. Thus, in principle, the priority should be given to the factors that have the greatest contribution to increase IAIF performance of the country, and consequently greater impact in improving the investment climate for forest based businesses.

171. Figure 25 shows that the IAIF analysis should concentrate in the indicators of the Inter and Intra Sub Indexes since they are the ones which have the greatest potential for improvement. Figure 26 helps to identify the priority indicators within these sub-indexes and how they compare to each other, by analyzing the current and differential scores for each indicator.

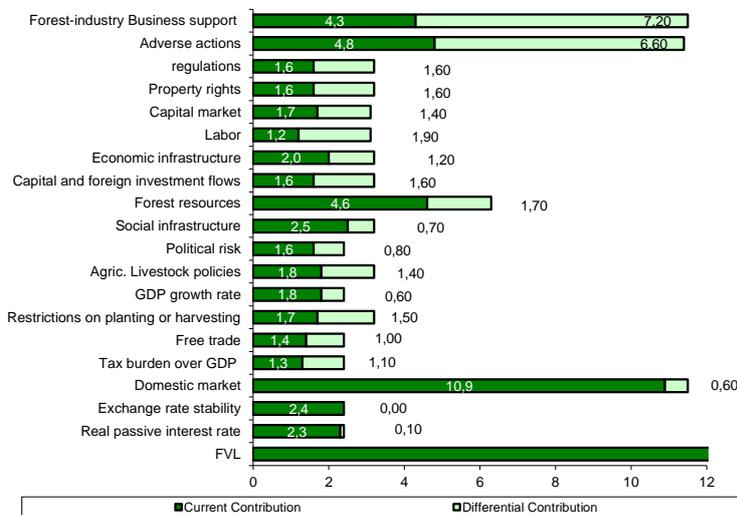
Figure 26 - Current and Differential Scores of IAIF 2008 Indicators - Brazil



172. Analyzing each indicator in absolute terms, Figure 26 shows that the greatest differential scores are in the INTER and INTRA sectoral sub-indexes which, therefore, should receive prioritized attention. Factors such as Forest-Industry Business Support, Labor Force, Adverse Actions, and Forest Resources can be highlighted. However, it is still necessary to analyze how the priority is affected by the weighting of the sub-indexes. The most important indicators may change when considering the weights. This type of analysis, which considers the weighting of the sub-indexes, can be done using the contribution of the indicators to the IAIF score as presented in Figure 27. The use of weighting can confirm some indicators or lead to the identification of other priority indicators.

173.

Figure 27 - Current and Differential Contributions for IAIF 2008 Indicators - Brazil



174. Figure 27 shows the indicators that can contribute most to achieving the potential Brazil's IAIF score, i.e., those indicators that deserve priority interventions to improve their performance and which can result in greater positive impact on the investment climate for sustainable forest businesses.
175. The final result of the IAIF analysis process is to define the priority factors for future intervention. The factors identified by the IAIF analysis for Brazil based on 2006 data are, in decreasing priority order:
1. Forest industry Business support;
  2. Adverse Actions;
  3. Labor
  4. Forest Resources
  5. Licenses and Permits; and
  6. Property rights.
176. Since it is beyond the scope of this study to undertake a complete application of the PROMECIF, from this step of the process forward, only a brief description of the rest of the process will be provided. More details of the methodology can be reviewed in Annex 10<sup>10</sup>.

### **Complementary Analysis**

177. To further the diagnostic, it is necessary to undertake complementary studies for each of these priority indicators. These studies need to identify and fill gaps in data, information and analysis available to explain how their expected future situations came to be. The complementary analysis also helps the CC to define the desired future situation, to identify problems or opportunities, and help to design strategies and specific actions to achieve that desired future situation.
178. The steps that must be observed in the development of complementary analysis for each indicator are: Collection of information; Analysis of the dynamic of factors that explain the business climate; Definition of the expected future situation; and Definition of the desired situation for the future.
179. The priority factors identified in the previous stage (IAIF analysis) must be studied in detail in order to improve understanding of the mechanism by which they affect the investment climate. Furthermore, it should explain the processes that lead to the current factor situation, and identify actions to minimize or maximize their influence, in the case that they inhibit or promote, respectively, investment in sustainable forest businesses.
180. With the identification of problems or opportunities and the processes that have generated them, the diagnostic stage is concluded and a strategy and action plan to improve business climate can be designed.

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<sup>10</sup> The PROMECIF has been fully applied in Panama, Paraguay, and Ecuador with the financial and technical support of the Inter-American Development Bank.

## Defining Strategy

181. Based on the diagnostic and identification of problems and opportunities, one can design and analyze alternative intervention strategies to improve the business climate for forestry investments.
182. It is important that members of the Coordinating Committee, acting within their respective competence, adopt the recommended interventions. They can act directly whenever possible or articulate with other authorities such adjustment. For each group of factors, the strategy to improve the business climate should consider the following types of intervention:
183. • Strategies related to SUPRA sectorial factors should be based on the dissemination of the results of studies demonstrating the impact of the variables involved on the forestry business. It is unlikely that such studies alone are sufficient to lead the competent authorities to change. However, the information is important to contribute to the national debate on these issues and make clear to potential investors in the sector, the nature of the problems and opportunities they face;
184. • INTER sectorial factors are similar to SUPRA ones since forest businesses investors are not the only ones affected by them. However, the relationship between these factors and the profitability of forest based investments are much more direct and may reveal situations where they are the most important ones when compared with other groups of factors. Through case studies and clear evidence, members of the Coordinating Committee may make adjustments, or articulate the need for the competent authorities to take the necessary measures to promote sustainable forest business;
185. • INTRA sectorial factors deserve more attention and detail in the identification, design and analysis of the action lines. This is because forests and other public authorities can have more control over them and because their improvement have a heavier weight in the IAIF. One can expect actions to be proposed legal actions, institutional, policy adjustment, or making investments that result in solving the problems or opportunities.

## Action Plan

186. The set of strategic interventions or actions selected by the CC to make SUPRA, INTER or INTRA factors more favorable to forest businesses will form the Action Plan. The methodological tool recommended to be used to prepare and implement the Plan of Action is the Logical Framework.

### Phase III - Implementation, Monitoring and Evaluation

187. Once the Plan of Action is validated by the CC, the PROMECIF implementation process can start. The process begins with identifying the most appropriate funding sources for each strategic action selected. Then, one has to design and analyze in detail the projects using the procedures and complying with the requirements of the funding source. Once the project is approved, the project is implemented, and monitored & evaluated by the executor, by the CC, and by independent entities. Finally, after the project execution is completed, its results and records of the implementation are evaluated to so that lessons can be learned to be applied in future projects. The ex post evaluation also helps to identify further actions still needed to achieve the future desired situation which should become part of a new cycle of PROMECIF.

## **B. Improving Business Climate Critical Factors**

188. This section tries to provide a more detail though short discussion of some of the critical issues and factors that affect the business climate for FDI in agriculture and forest sector( (Chaddad and Jank 2006) (OECD 2009) ). The discussion is structured using the same Supra, Inter, and Intra classification of factors used in the above.

### **1. Improvement in Supra Sectorial Factors**

189. Supra sectorial factors are those which affect all sectors of an economy and, therefore, are no likely to be changed just because of their adverse effect in one sector. However, it is necessary to show society and officials the consequences in a given sector of these factors and to contribute to the corresponding policy debate.

190. Among the supra sectoral factors that have most affected investments in the agriculture and forest, the following are highlighted and discussed here: overvalued Brazilian Real vis a vis US Dollar; very high interest rates; and excessive tax burden.

#### **a) Exchange Rate**

191. Since 1998, Brazil has adopted a flexible exchange rate, which overcomes the traditional implicit taxation on the agricultural sector due to the overvaluation the national currency with respect to the US Dollar, and to the currencies of other major trade partners. The flexible exchange rate allows for a great competitiveness of Brazilian agricultural products in the international markets and, as a consequence, exports increased and flow of FDI for the agribusiness also increases as shown earlier in this case study. The abundance of US Dollar at low interest rates due to the stimulus policies in the USA combined with high interest rates practice in Brazil have attracted investors and resulted in the devaluation of that currency. This devaluation, when not compensate by increases in commodity prices, has adverse consequences of competitiveness of Brazilian agriculture, reducing exports, and increasing imports.

#### **b) Interest Rate**

192. Interest rate in Brazil has been persistently high as a consequence of an easy fiscal policy, which allowed for huge fiscal deficit in the government accounts. After 1994, with the implementation of Real Plan in 1994 that drastically reduced inflation rate in Brazil, interest rate has been strongly reduced in nominal terms. However, it continues high in real terms due to large spreads associated with the risk premium for private investment ( Box 15 ). However, in the last ten years, nominal and real interest rates have been persistently declining, which has stimulated investment in the agricultural sector. On a worldwide basis, they are still very high, affecting the cost of doing business, including agriculture, in the country and reducing its competitiveness.

##### **Box 15 - Credit Market**

BNDES, the government national development bank, is the primary Brazilian source of longer-term credit, and also provides export credits. FINAME (the Special Agency for Industrial Financing) provides foreign and domestic companies operating in Brazil financing for the manufacturing and marketing of capital goods. FINAMEX (Export Financing), which finances capital good exports for both foreign and domestic companies, is a part of FINAME. One of the goals of these financing options is to support the purchase of domestic over imported equipment and machinery.

PROEX, an export credit program financed by the National Treasury offers assistance in the areas of interest rate equalization, capital and other goods exports, and service exports).

Source: (US State Department 2010)

#### **c) Tax Burden**

193. The tax burden in Brazil has been growing in the last two decades as a result of an easy fiscal policy adopted by the government, mainly due to increase in current expenditure and the

exploding costs of the socio security pension fund. This situation has been one of the major factors also contributing to the loss in competitiveness of the Brazilian business. Only to have an idea, in the last eight years the internal public debt has almost doubled, reaching around USD 1 trillion. This situation will put a heavy burden on the next generation and will be a deterrent to international investment in Brazil. Therefore, international investment in the agricultural and related sectors is also expected continue to suffer from this situation.

## 2. Improvement in Inter Sectorial Factors

194. Inter sectorial factors are those that belong to non-agriculture and forest sector of the economy, but affect substantially the profitability of these businesses. They usually affect the costs in several stages of the value chain. Although these factors are beyond the mandate of agriculture and forest authorities, they do have a major role in trying to persuade the corresponding officials to provide better conditions for the businesses.

195. Among the inter sectorial factors that have most affected investments in the agriculture and forest, the following are highlighted and discussed here: economic infrastructure, social infrastructure, environmental restrictions, and environmental restrictions.

### a) Economic Infrastructure

196. Economic infrastructure services are an unavoidable cost for most agriculture or forest based businesses. When they are too expensive they can reduce profitability to the point that investments are not feasible. Investors are not going to create and operate businesses successfully if economic infrastructure is not available at competitive prices, in good quality, and reliable. It is, therefore, critical that entrepreneurs can count with such services (Annex 3).

197. With few exceptions, Brazil has neglected its transportation network be it highways, railroads, ports, airports, and waterways. This need is understood in the country but much has yet to be done to accomplish the goal of having a competitively priced transportation network.

198. Another type of infrastructure that needs to be available at competitive prices is energy. Brazil has a varied energy matrix and count with commercial bioenergy, hydroelectricity, and has encountered abundant deposits of petroleum in deep sea deposits. However, population and income growth have increased demand to a point that requires additional supply if prices are to be competitive for investors.

### b) Social Infrastructure

199. As mentioned in Table 4, Brazil has a very low performance in the Human Development Index scoring only 0.699 points out of 1 possible and ranking 73<sup>rd</sup> in a total of 182 countries evaluated.

200. This low performance increases costs for investors that may need to supplement public provision of health and education services with their own resources. Low levels of health of works decreases productivity, increases costs and reduce competitiveness. Low levels of education and training has similar consequences for businesses. It is, therefore, critical that policies be adopted and investments be made to improve these conditions.

### c) Environmental Restrictions

201. Forest code, and conservation and forest policy in Brazil is in conflict and affect land use and profitability of forest and agriculture businesses. It goes beyond the task of this study to provide a full discussion of these complex issues. Here it will be briefly presented the case of the designation of land for biodiversity Preservation. The obvious conflict here is that more land for biodiversity protection, less will be available for production, however large the country is.
202. Brazil is known for its important biodiversity resources. Agriculture and, to a lesser extent, forest uses of the land have adverse impacts over the ecosystems where they are located. If these ecosystems themselves, or species within them, are at risk of extinction, investors' socially responsible will be reluctant to participate. To do otherwise may bring a reputational risk which can affect their image and businesses anywhere they operate.
203. For many reason including these, it is critical that the country counts with an effective biodiversity preservation and conservation system. The system needs to protect a self-sustaining ecosystem samples so that species can continue to survive and indeed evolve. That means that the size of those samples needs to be technically determined and legally established as a protected area, and management plans be developed and implemented. These units may generate their own revenues based on ecotourism. However, the main concern here is to assure that there will not be conflicts between the use of lands for agriculture and forest based businesses and the need to protect the nation's biodiversity resources. The GoB has the legal means and can take a leadership role to involve third parties, including the private sector, to address this concern.
204. Brazil has 77 million Ha in nature protection areas, 124 million Ha of Federal Community Forests, 239 million Ha of public forests, and 106 million Ha of Indian lands (Brazilian Forest Service 2009), representing 64% of the total area of the country. When combined with the environmental restriction imposed on landowners rights to use their resources, and the prohibitions of production of certain crop in the Amazon region, it turns out that the quantity of land available for investment is much less. In a recent evaluation, Dr. Evaristo Miranda (from EMBRAPA) has estimated that 606 million hectares are set aside for Indian lands, conservation units, legal reserves, and permanent preservation areas, representing 71% of the nation's territory. According to this estimation, 246 million hectares are available for production, cities and infrastructure. However questioned these number may be, it is clear that Brazil needs to reflect on the priorities and policies for efficiently distribute the available land resources among different uses.
205. Most of the biodiversity protection areas are not very effectively managed and protected, and in fact may be excessive for the protection of the resource. The system need to be reevaluated and effectively protected.

### 3. Improvement in Intra Sectorial Factors

206. Intra sectorial factors are those that belong to agriculture and forest sector of the economy. They usually affect directly the costs, benefits and profitability in several stages of the value chain. These factors are under mandate of agriculture and forest authorities, therefore, they have the power to address them, or at lead the policy and other actions. So as to provide better conditions for the businesses.
207. Among the intra sectoral factors that have most affected investments in the agriculture and forest, the following are highlighted and discussed here: Available Agriculture and Forest Vocation Lands; and Reconciling Agricultural and Forest Uses, and Environmental Protection.

### a) Available Agriculture and Forest Vocation Lands

208. Land in Brazil for agriculture and forest based businesses investment is becoming increasingly more scarce. Prices are rising due to increased demand, but also because of artificial reductions in supply.

209. Physical availability of land well located and with acceptable levels of fertility is not enough for entrepreneurs to be able to invest in forest or agriculture businesses. Since these investments require time to mature, it is critical that investor have the certainty that they will be able to harvest the products of their efforts in the future. This certainty in many countries is derived from a clear and titled property rights regimen that is protected by the state. It is also important that these rights can be traded in market so that investors do not feel trapped into the business and are able to exit if needed.

210. Recently the issue of foreign ownership of land beyond the traditionally limited regions (Box 16) has been raised and the legal system is addressing it bringing some uncertainty to investors.

#### Box 16 - Restriction to foreign ownership of lands

A 1995 constitutional amendment terminated the distinction between foreign and local capital in general, yet there are laws that restrict foreign ownership within some sectors, notably media and communications, and aviation.

Foreign investment restrictions remain in a limited number of other sectors, including highway freight (20 percent) and mining of radioactive ore. Foreign ownership of land within 150 km of national borders remains prohibited unless approved by Brazil's National Security Council. In October 2009, the Brazilian Chamber of Deputies approved legislation that would further restrict foreign ownership of land along Brazil's borders, and within the Amazon. The legislation still requires committee review and passage in the Brazilian Senate, followed by presidential approval to become binding. Annex 4

In August 2010, the Nation's General Attorney issued a directive, approved by the Country's President, changing legal interpretation that indicates limitations to the ownership of land by foreigner of Brazilian firms controlled by foreigner. The directive limits the size of the properties that foreigners can own.

211. However, property rights themselves are just one solution that provides investors with the assurances they need. These rights have to be protected by the State as part of the Rule of the Law that must reign in a society which intends to promote FDI and other investments in agriculture and forest businesses. Uncertainty brought by invasions of the Landless Movement can reduce the interest of investors, increase transaction costs for secure titling and possession, and worse scenarios lead to divestment.

### b) Reconciling Agricultural and Forest Uses, and Environmental Protection

212. Decisions on agriculture or forest uses on the same land often generate conflicts not only for landowners themselves but also for neighbors, society in general, and even for the international community. At a highly competitive commercial level, agriculture and forest uses of a given piece of land are frequently mutually exclusive alternatives. In many cases, lands covered with native forests are converted into agriculture land uses, resulting in deforestation. Traditionally, deforestation in a first steps in the slash and burn agriculture process, which is a major source of greenhouse gases that may affect the climate. Misused land often generates erosion, and runoff which deteriorate the quality of the environment, reduce natural fertility of the soils, and pollute waters. All these situations exemplify the need for clear rules of the game so that the decision about land in the country, can be made taking private and social considerations into account.

213. It is, therefore, critical that economic and scientifically sound rules that promote efficient solutions and clarify roles and procedures be adopted. Combined with an effective Biodiversity Preservation System, as discussed above, one alternative solution to reconcile these conflicts and establish clear rules is the adoption of a Forest Vocation Land (FVL) policy<sup>11</sup>.

<sup>11</sup> See footnote 9.

214. This policy, briefly discussed above, helps to avoid the potential conflict of choice among land uses in a very simple manner. It simply identifies lands that are more at risk of erosion and runoff and requires that landowners adopt measures needed to conserve soil and water and their costs.
215. It is often the case that the additional conservation cost makes agriculture less profitable in forest vocation lands. On the other hand, forest covers (which are themselves natural protectors of soils) become the most competitive use for those lands. The natural competitiveness of forest uses or cover on those lands, gives the policy its name.
216. The lands which are not under such erosion and runoff risks, the so-called non-forest vocation lands (Annexes 7 and 8), can have any use, including forest uses, land owners opt without the need for any restriction or controls from the state. Only FVL need to be monitored and controlled to assure the proper internalization of soil and water conservation costs into the land use decisions of landowners.
217. Under this policy, landowners are free to use their forest vocation lands for sustainable agriculture which does not erode soil or generate runoff, or for any type of forest cover, such as native forests, plantation forest, or simply let the natural regeneration reestablish a forest cover.
218. Forest Vocation Land policy is intuitive, simple and inexpensive to establish and enforce, and promotes the most efficient use of the land. Its adoption creates conditions and rules that enable investors to plan, predict costs, and more flexibly select the most profitable land use for a given piece of land.

## VII. CONCLUSIONS AND RECOMMENDATIONS

219. Brazil is a relatively large recipient of foreign direct investments. Up to 2008, the country had accumulated a stock of over USD288 billion in FDI in all sectors of the economy. This represented 45% of all FDI in South American countries, and nearly a quarter of the total invested in Latin America and the Caribbean (LAC) region. These investments, however, represents only a relatively small portion of the country's total Gross Domestic Product. FDI inflows, nevertheless, contributed 15.1% of the fixed capital formation, which itself has been around 15-25% of GDP.
220. FDI inward flows and stocks into Brazil are substantial amounts which have grown especially since the early 1990s. The agriculture related sector is the third most important recipient of such investments.
221. FDI inflows into agriculture sector are only a small portion of the economy's Agriculture Value Added. The relative importance of inward FDI flow in agriculture related sector in Brazil from 1996 to 2009 has varied from 1% to 29.4% of the total FDI entering the country. From 1998 and 2007, FDI flows in agriculture, forestry, livestock, and fisheries were usually smaller than 20% of the total agriculture sector FDI inflows, which includes agriculture related industries. Among the agriculture related industries, food and beverage products subsector was the one that received the most of the inward FDI, for a total of USD 21.3 billion up to 2009, around 61% of the total. Within the agriculture related sector, the agriculture, livestock, and related services is the subsector with the greatest amount of the inward FDI stock, followed by the silviculture, forest exploitations, and related services.
222. Trans National Corporations have had an important role in Brazil economic history since the 1940s, including in the agriculture sector. TNCs such Monsanto, and Corn Products, DuPont, Dow chemical, Bunge, just to name a few, have active in the country for decades, some for a century. This important TNC presence has only grown over the year so that out of the world's 25 largest TNC suppliers of agriculture, only 4 does not have operations in Brazil. Indeed one can find the presence of TNCs in Brazil in all stages of the value chain; from suppliers of agriculture and forest inputs, to machine and equipment producers, to agriculture or forest output producer, to processors and industrial firms, to wholesalers, retailers and exporters.
223. The impacts of inward FDI flows in a host country can be grouped in three basic classes: economic, environmental, and social impacts. These impacts may be derived from nearly any step of the value chain associated with the investments involved, from the provision of production inputs through retail distribution or export. These impacts depend on the conditions TNCs faced by them in Brazil with mostly favorable results. Market incentives, host countries' legal requirements and policies, home country and host social pressure, and standard practices lead TNCs to adopt production and corporate responsibility measures to address potential negative environmental and social impacts and promote positive impacts.
224. The case included an attempt to describe the following selected critical policies and actions that have contribute to the investment levels and production increased observed in Brazil over time: agriculture output domestic price affecting policies and contingencies; subsidized rural credit; agriculture productivity increases resulting from a significant investment in research and development; and minimum price assurances for commercialization at harvest time. This

discussion highlighted the role of attractive prices as an incentive for investors to produce food and fiber products.

225. The case also discussed the successful experience of Brazil in bringing agriculture based development to the savannah region of the country to illustrate some policy and investment issues that influenced domestic and FDI investors. The two studies discussed showed that more favorable business climate measures were taken in varied degrees and sequencing which were contingent to the situation found in the region and the country at the time. The results of these interventions were not immediate nor always in the right direction. Different government administrations, with active motivation provided by stakeholders, withstood the general intervention course during more than 4 decades. The improvement of competitiveness required continuous and incremental efforts to give investors the incentives to make life changing decisions and take risks.
226. The public policies and programs implemented in the period were essential for the substantial increase in capital accumulation in the sector, which allowed for a huge increase in agricultural production all over the country. Among the most important public policies and programs include:
- i. A strong agricultural and rural credit program through the National Program for Family Agriculture (PRONAF) that gave access to credit to a large number of small and medium farmers;
  - ii. A forward looking agricultural research policy that culminated with the creation of the Brazilian Agricultural Research Company (EMBRAPA), in 1973, and with a new paradigm of research development which has yield important technological production packages adequate to the countries major sites;
  - iii. A dynamic partnership policy that got international investment support to develop the inter-land, especially the savannahs of the Center-West Region of Brazil. Today it is one of the most important agricultural producing area of the country;
  - iv. A comprehensive agricultural and rural extension service, initially created in 1954 for the state of Minas Gerais, and late in 1970's expanded to all states, known as the National System for Rural Extension and Technical Assistance, implemented by means of the Brazilian Enterprise of Technical Assistance and Rural Extension (EMBRATER).
  - v. An infrastructure investment program as part of the First and Second National Development Plans (PND) was implemented during the 1970s. The program built: a large network of key roads to allow transportation of agricultural production from far way frontier areas in the savannahs; power lines; communications facilities; and a network of factories to produce and distribute agricultural inputs, machinery, and tractors;
  - vi. A huge network of storage facilities ruled by the Brazilian Storage Company (CIBRAZEM), to buy, store and distribute agricultural production in the major producing areas of the country;

227. It should be pointed out that several of these public initiatives were dismantled, as the private sector took over the supply of such services as well as the production of inputs and machineries. However, others initiatives were maintained like EMBRAPA, and PRONAF.
228. Brazil's agriculture development demonstrates the importance of an appropriate business climate that allow for more profitable investments in agriculture and forest based production.
229. The Brazil case also illustrates the importance of liberalization policies that allow international prices be transmitted to the domestic market. Provided trade is fair without dumping or subsidies to foreign producers, liberalization allows the price signal for investors both to increase their production when prices increase or divest when prices reduce and importation of affected food or fiber products are cheaper than the local production costs which turn their investments unprofitable.
230. This is mainly due the macroeconomic stabilization that resulted from the successful implementation of the Real Plan, in 1994. The Plan was able to control inflation and, at the same time, contributed to reduce pressure for salary increase, and stabilizing the production costs in the economy.
231. The agriculture and rural development of Savannah areas have improved food and nutritional security of Brazil by introducing more productive technologies that increased food and fuelwood supplies leading to local physical availability and lower prices, and increased labor income in rural areas. The increase in supplies and rural income increase also the population's economic access to food and fuelwood.
232. Most of the less favorable factors affecting the business climate for agriculture and forest based businesses in Brazil that remain are manmade, and therefore, it is possible to improve them.
233. Successful agriculture and forest businesses depend on natural resources, productive human resources, competitively priced capital and inputs, and other favorable climate conditions for investments. Without such conditions, investments become too costly and risky while benefits too small and uncertain so that profits are not sufficient to motive entrepreneurs and investors to act.
234. Agriculture and forest businesses are also affected by many of the conditions that indexes such as the ones mentioned in Table 4 try to measure. However, due to its special characteristics, it is more useful to identify the principal factors that influence businesses in this sector, the relationships among them, and how they impact investment profitability. This modeling helps not only to understand the situations better, but also is critical for the design of interventions to improve the chances for entrepreneurs' success.
235. One example of index that tries to measure the business climate for forest based investments is the Forest Investment Attractiveness Index. The IAIF's purpose is to clarify governments, investors and other stakeholders which are the factors that affect, lead to success, and attract private direct investment, domestic or foreign, to the forestry sector. This sector specific index illustrates the usefulness that an agriculture sector index can have for policy makers and other stakeholders.

236. This Index seeks to measure countries' attraction for direct investment in sustainable forestry business. The IAIF allows: (i) to compare the performance of countries in the same year and the trend over time, (ii) to assist investors to pre-identify the countries where sustainable forest business will most likely be successful, and (iii) to clarify for countries which SUPRA, INTER and INTRA factors most affect their business climate for sustainable forestry investments.
237. A modest attempt was made in the study to propose a model that tries to explain direct investments in agriculture and forest investments in Brazil, and indeed elsewhere. It is expected that when a country knows its performance in these indexes, learns the level of attractiveness of its benchmark countries, and understands what are the main factors that contribute to and those that detract from agriculture and forest businesses success in the country, it is more likely to get interested in finding ways to improve its investment climate for such businesses.
238. The paper discusses a process countries can apply to improve the business climate. It involves systematic and cyclical procedures to confirm a country interest to make the adjustments necessary, to prepare a diagnosis, to define a strategy, and to design, implement, monitor and evaluate an Action Plan.
239. Lastly, the study presents a brief analysis and recommendations for improvement in several factors that require attention from stakeholders if a better business climate for investments is desired. Specifically, the following factors were discussed: at Supra sectorial level: Exchange Rate, Interest Rate, and Tax Burden. At Inter sectorial level the study discusses Economic and Social Infrastructures, and Environmental restrictions. And at Intra sectorial level, it analysis Available Agriculture and Forest Vocation Lands, and conflicts generated by environmental issues.
240. The creation and systematic analyses of an Agriculture Investment Attraction Index and the adoption of a business climate improvement methodology similar to PROMECIF could facilitate the understanding of the factors and conditions that facilitate FDI relevant to a given country or region. For large countries, the creation of an index to evaluate sub national administrative units should help to focus interventions with greater consideration to the regional differences.

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