

POLITECNICO DI MILANO

Facoltà di Ingegneria dei Sistemi



POLO REGIONALE DI COMO

**Master of Science in
Management, Economics and Industrial Engineering**

**THE TAX REVENUES EFFECTS ON THE ATTRACTION
OF FOREIGN DIRECT INVESTMENTS, THE CASE OF
LATIN AMERICAN ECONOMIES: CHILE, COSTA RICA,
BRAZIL, PANAMA AND MEXICO.**

Supervisor: Prof. Lucia Tajoli

Master Graduation Thesis by: Rodolfo Salinas Vázquez

Student Id. Number: 736481

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ABSTRACT

In the context of globalization the interdependency between economies is unquestionably relevant for transition, developing and developed countries. The continuous growth and development is a major preoccupation for governments which with recent events have been threatened and the revision of macroeconomic policies are gaining importance in forums and discussions.

The flows of capitals and investments have been specially promoting the progress in transition and developing economies, many countries in Latin America have received the benefits of these movements of resources and in response, a revision of main policies for maintaining international competitiveness and attracting investments is continually performed. This investigation will focus on the importance of fiscal policy particularly in most representative countries of the Latin American region.

Contrary to the conventional views of fiscal policy as threat to growth (via the disincentive effect of taxes on work and investment), this research points out the relevance of obtaining and collecting enough government resources to provide pro-growth investments and other benefits in a region which is still affected by problems of poverty and inequality.

Measurement and comparisons of performances of taxation collection in the selected Latin American countries are studied through statistical examinations with the purpose to detect and identify the effects on foreign investment flows. Complementary revision of recommendations in terms of fiscal policies provided by economic institutions addressed to these economies, are included with the aim to highlight directions, challenges and constraints that nations should face to preserve the attractiveness of investing.

CONTENTS

1	INTRODUCTION.....	10
1.1	General Context.....	10
1.2	Objective.....	14
2	FOREIGN DIRECT INVESTMENTS AND TAXES.....	17
2.1	Capital Flows and Foreign Direct Investment Theory.....	17
2.1.1	The Theory of the Multinational Enterprise.....	17
2.1.2	Foreign Direct Investment definition and measurement.....	19
2.2	Macroeconomic decision factors for investing abroad.....	20
2.2.1	Exchange Rate Effects.....	20
2.2.2	Institutions.....	21
2.2.3	Trade protection.....	21
2.2.4	Trade effects.....	21
2.2.5	Taxes.....	21
2.3	Models for analyzing tax effects on FDI.....	28
3	TAXATION SYSTEMS AND MACROECONOMIC PERSPECTIVE.....	31
3.1	Taxation systems.....	31
3.1.1	Main concepts of taxes.....	31
3.1.2	Characteristics of a good taxation system.....	33
3.1.3	Tax Classification.....	34
3.2	Macroeconomics of the Latin American Region.....	36
3.2.1	Gross Domestic Product (GDP).....	36
3.2.2	Foreign Direct Investment inflows.....	38
3.2.3	Government Finance, Tax Revenues as percentage of GDP.....	39
3.3	Latin American Tax Structures.....	40
3.3.1	Chile.....	40

3.3.2	Costa Rica.....	43
3.3.3	Brazil	44
3.3.4	Panama.....	46
3.3.5	Mexico.....	47
3.3.6	Common weaknesses of Latin American Tax Structures	49
4	MEASUREMENT OF TAX REVENUES EFFECT ON FDI IN CHILE, COSTA RICA, BRAZIL, PANAMA AND MEXICO.....	53
4.1	Methodology of Research.....	53
4.2	Macroeconomic variables definition.....	53
4.2.1	Causality relationships between FDI and growth of GDP	55
4.3	Sources of data	57
4.4	Statistical Analysis.....	57
4.4.1	Multiple Regression model	57
4.4.2	Test for significance of regression	58
4.4.3	Tests on Individual Regression Coefficients	60
4.4.4	Models by country	61
4.4.5	General model.....	66
4.5	Results	67
4.5.1	Effects of Direct Taxes Revenues on FDI inflows	67
4.5.2	Effects of Indirect Taxes Revenues on FDI inflows	71
4.5.3	Effects of Other Taxes Revenues on FDI inflows.....	73
4.5.4	Effects of Social Contributions Revenues on FDI inflows.....	75
5	CONCLUSIONS	78
5.1	About models construction and analysis.....	78
5.2	About Taxation Systems improvement suggestions.....	79
5.3	About this research and current economic situation.....	80
6	BIBLIOGRAPHY.....	82

7	APPENDIX	85
7.1	Acronyms	85
7.2	Chile: main Economic Indicators.....	86
7.3	Costa Rica: main Economic Indicators	87
7.4	Brazil main: Economic Indicators.....	88
7.5	Panama main: Economic Indicators.....	89
7.6	Mexico: main Economic Indicators.....	90
7.7	The OECD Classification of Taxes.....	91
7.8	IMF GFS 1986 Tax Classification	93
7.9	IMF GFS 2001 Tax Classification	94
7.10	Global Competitiveness Report	95
7.11	Benchmark of the Tax Revenues as percentage of GDP of Latin American countries and OECD.	98
7.12	Raw data retrieved from the UNCTAD about FDI	99
7.13	Data retrieved from CEPALSTAT	100
7.14	Data extracted OECD.Stat.....	101
7.15	Fisher Distribution Values Table $\alpha = 95\%$	102
7.16	t-Student Distribution Values Table.....	103
7.17	Latin American current fiscal policies responses to international crisis	104

FIGURES

<i>Figure 1-I FDI Inflows, global and by groups of economies, 1980-2008 (Billions of dollars). UNCTAD.....</i>	11
<i>Figure 1-II Latin America and the Caribbean: Foreign Direct Investments inflows (Billions of dollars), by sub region, 2000-2009. ECLAC.....</i>	11
<i>Figure 1-III Latin America: Variation in Fiscal Revenues and Expenditures, 2008-2009. ECLAC.</i>	14
<i>Figure 1-IV Overview of the structure of this research.....</i>	16
<i>Figure 3-I GDP by country, 1999-2008 (millions of dollars). ECLAC.....</i>	37

Figure 3-II FDI inflows by Latin American countries 2000-2008 (Millions of Dollars). UNCTAD.	38
Figure 3-III Tax Revenues as percentage of GDP by economy, 1999-2008. ECLAC.....	39
Figure 3-IV Chilean Tax Structure (Servicio de Impuestos Internos - Chile, 2010).....	40
Figure 3-V Labor informality in Latin America.	50
Figure 3-VI Latin America (18 countries): people who believe that the tax burden is very heavy, by degree of confidence in tax spending and social gaps in countries, 2003 and 2005.....	52
Figure 4-I Macroeconomic variables definition for statistical analysis	54
Figure 4-II Double causality between FDI and GDP growth.....	56
Figure 4-III Example of manipulation of variables for avoiding double causality in the regression model.....	56
Figure 4-IV Analysis of Variance (ANOVA) for Testing Significance of Regression in Multiple Regression	59
Figure 4-V Chilean Data of FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).....	61
Figure 4-VI Costa Rican Data of FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).....	62
Figure 4-VII Brazilian Data of FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).....	63
Figure 4-VIII Panama Data of FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).....	64
Figure 4-IX Mexican Data of FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).....	65
Figure 4-X Aggregated Data of the 5 economies concerning FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).....	66
Figure 4-XI Relevance and proportionality of Direct Tax Revenues effects on FDI inflows.....	68
Figure 4-XII Benchmarking of the collection of Direct Tax Revenues. Latin American and OECD countries.....	69
Figure 4-XIII Latin America and the Caribbean and the Organisation for Economic Cooperation and Development (OECD): Comparison of Income Taxation. (Economic Commission for Latin America and the Caribbean. United Nations., 2010)	70
Figure 4-XIV Relevance and proportionality of Indirect Tax Revenues effects on FDI inflows... ..	71
Figure 4-XV Benchmarking of the collection of Indirect Tax Revenues. Latin American and OECD countries.....	73
Figure 4-XVI Relevance and proportionality of Other Tax Revenues effects on FDI inflows.....	74
Figure 4-XVII Benchmarking of the collection of Other Tax Revenues. Latin American and OECD countries.....	74
Figure 4-XVIII Relevance and proportionality of Social Contributions Tax Revenues effects on FDI inflows.....	75
Figure 4-XIX Benchmarking of the collection of Social Contributions Revenues. Latin American and OECD countries.....	76
Figure 5-I Current effects of different types of Tax Revenues on FDI levels of the studied countries.....	79
Figure 5-II Main drivers in improving Latin American Taxation Systems.....	80

1 INTRODUCTION

1.1 General Context

Today, there are some 82,000 MNEs worldwide, with 810,000 foreign affiliates. These companies play a major and growing role in the world economy. For instance, exports by foreign affiliates of MNEs are estimated to account for about a third of total world exports of goods and services, and the number of people employed by them worldwide totaled about 77 million in 2008 (United Nations Conference on Trade and Development, 2009).

The financial crisis had a profound impact on FDI, with global flows declining by about 19 percent to just over \$1.5 trillion in 2008, according to the World Bank. FDI to industrialized countries, which account for the bulk of global FDI, shrank to \$927 billion from \$1.3 trillion in 2007. Underscoring those trends was a fall in cross-border mergers and acquisitions, the value of which decreased sharply in 2008 and fell by 35 percent in the first half of 2009. MNEs also accelerated their repatriation of profits, opting against reinvestment, which would have counted towards the overall FDI figures. Divestment also accelerated, as troubled financial institutions raised capital by selling their overseas assets, usually to local companies. Recovery of these flows is expected to begin slowly in 2010, and will gather momentum in 2011 when the level could approach almost the same level as in 2008 (United Nations Conference on Trade and Development, 2009).

The decline in global FDI flows took place via several channels. First, tighter credit affected the ability of MNEs to finance their projects abroad. Second, the economic recession hit corporate earnings, and hence their ability to finance expansions through reinvesting their own profits declined. Third, the recession led many MNEs to reduce or postpone their global expansion plans, and even divest from existing operations. FDI in certain sectors, such as financial services, the automotive industry, construction, building materials, intermediate goods and some consumer goods, have been amongst the most affected by the crisis.

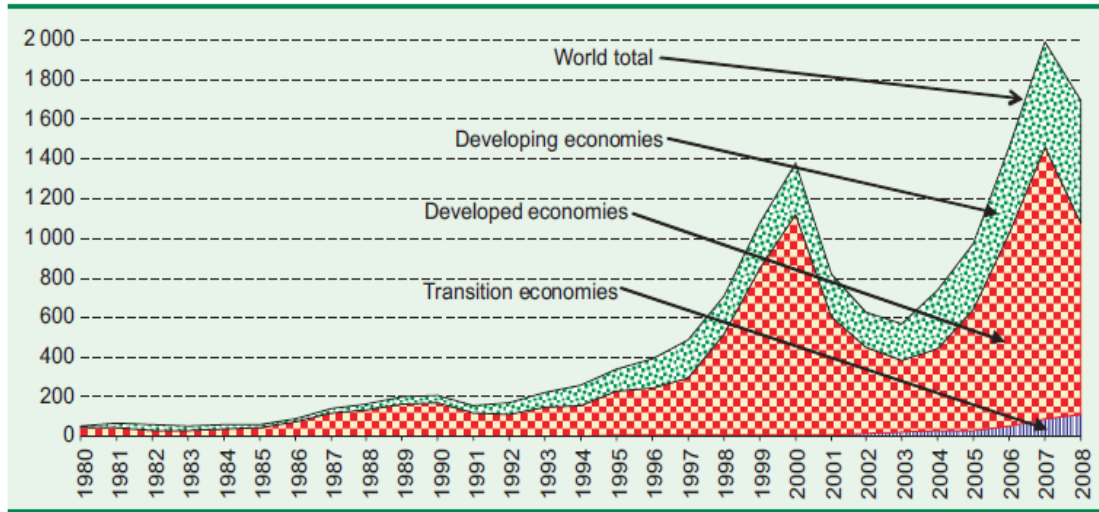


Figure 1-I FDI Inflows, global and by groups of economies, 1980-2008 (Billions of dollars). UNCTAD.

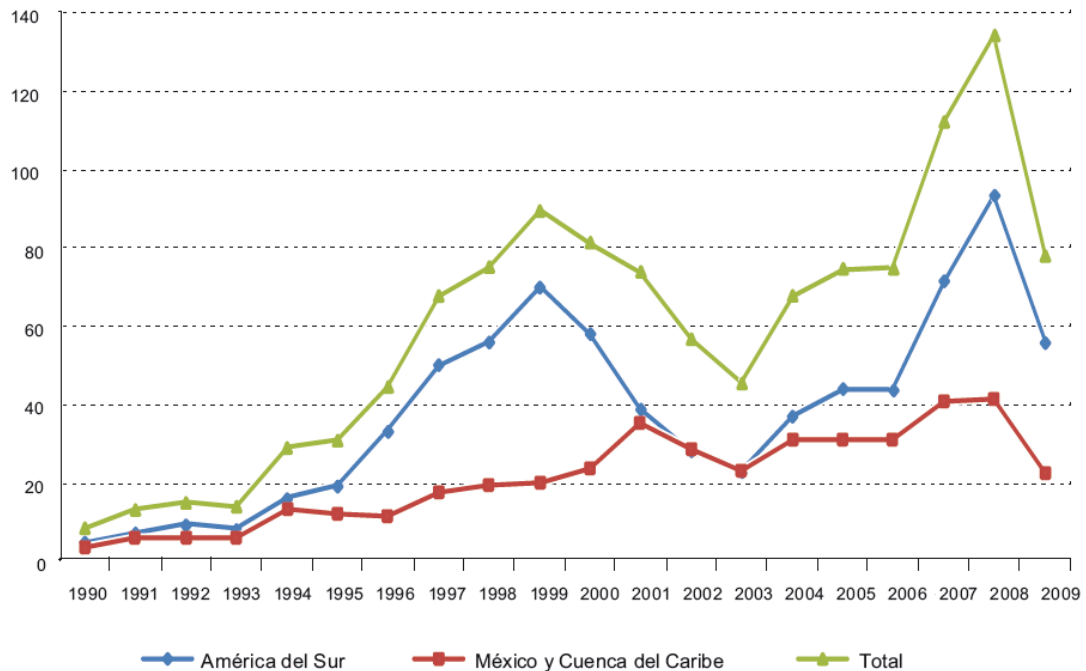


Figure 1-II Latin America and the Caribbean: Foreign Direct Investments inflows (Billions of dollars), by sub region, 2000-2009. ECLAC

In spite of this situation, major economic institutions and specialists agree that Foreign Direct Investment is an integral part of an open and effective international economic system and an important catalyst to development. Developing countries, emerging economies and countries in transition have come increasingly to see FDI as a source of economic development and modernization, income growth and employment.

The overall benefits of FDI, especially for developing countries are well documented. Given the appropriate policies, studies shows that FDI triggers technology spillovers, assists human capital formation, contributes to international trade integration, helps create a more competitive business environment and enhance enterprise development. All of these contribute to higher economic growth and also others non economic benefits such as cleaner technologies and leading to more socially responsible corporate policies.

A country's tax regime is a key policy instrument that may negatively or positively influence investment. Imposing a tax burden that is high relative to tax burdens levied in other competing locations, may discourage investment, particularly where location-specific profit opportunities are limited or profit margins are thin. A poorly designed tax system may discourage capital investment where the rules and their application are non-transparent, or overly-complex, or unpredictable, adding to project costs and uncertainty over net profitability (Organisation for Economic Co-operation and Development, 2006).

The structure of a tax system is vital for an economy in order to provide certainty through an appropriate management of income, expenditure and rules. For instance, a modern, competitive, stable and transparent tax system, one that links host and home country tax systems through a well established tax treaty network to avoid double taxation, can send a strong signal to investors, both domestic and foreign. In the same way, a tax system, that allows a government to have enough resources to give macroeconomic stability and allocate sufficient budgets to expenditure and investments, is considered by investors as a competitive environment to do business.

The fiscal policy encloses a delicate connection with economic activity and growth. According to (International Monetary Fund, 2010), the current euro area crisis results from fiscally unsustainable policies in some countries. At the same time the IMF says that countries facing market pressures have no choice but to go ahead with forceful fiscal adjustment. After years of slow reforms, the longstanding problem of anemic growth in the euro area must now be forcefully addressed, the IMF statement said.

“Higher growth is not only important for its own sake, but essential to help secure fiscal sustainability and strengthen the cohesion of the euro area.”

Latin America and the Caribbean have been also affected by factors that have shaped the Fiscal position and fiscal space available¹. First slackening economic activity, which impacted heavily on fiscal revenues. Second, prices for natural resources, which dropped from the values seen in mid- 2008 to figures close to those recorded in 2004-2005, cutting into the fiscal income of the exporting economies. Third, the implementation of measures to lessen the impact of the crisis by propping up aggregate demand and offsetting the damage to the most vulnerable sectors, which pushed up public spending. These combined effects led to a deterioration in the public accounts in the countries of the region (Economic Commission for Latin America and the Caribbean. United Nations., 2009).

Latin America’s central governments recorded a primary fiscal deficit of 1.0% of GDP, as a simple average, at the close of 2009, compared with a surplus of 1.4% of GDP in 2008. The overall balance (including public debt servicing payments) was in deficit by 2.8% of GDP, compared to a deficit of 0.3% in 2008. The deterioration in the average fiscal balance in the region reflects the position of the fiscal accounts more or less across the board (ECLAC, 2009).

The generalized deterioration in the public accounts reflected the combination of differing performances in the countries of the region, as shown in figure 1.III, whose two axes depict the evolution of fiscal revenues and expenditures in 2008-2009 in percentages of GDP. Most of the countries show lower revenues and higher spending (upper left quadrant). Only four countries registered increases in both spending and revenues (Argentina, Colombia, Paraguay and Uruguay) and another four have seen both income and spending fall (the Bolivarian Republic of Venezuela, the Dominican Republic, Ecuador and the Plurinational State of Bolivia). Coincidentally, three of these

¹ The policy space available to governments for pursuing their objectives is a function of three factors: the volume of fiscal resources available, the number of independent instruments for meeting their proposed objectives and the competency of the policies competing for the use of resources and instruments. Macroeconomic shocks affect the fiscal space not only because they affect resources, but also because they determine the extent and intensity of competition among policies ECLAC (2009).

last four rely heavily on natural resources for their fiscal revenues. As might be expected, the empty quadrant corresponds to higher income and lower spending.

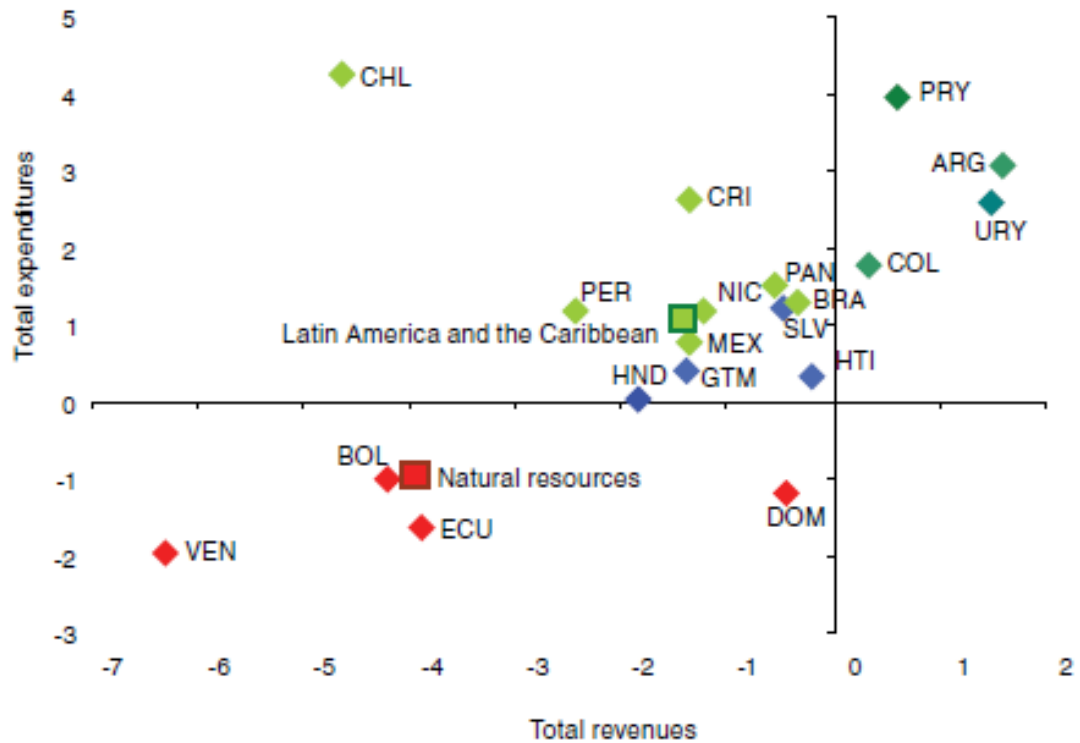


Figure 1-III Latin America: Variation in Fiscal Revenues and Expenditures, 2008-2009. ECLAC.

As it is highlighted, macroeconomic policies such as the fiscal one is affected by international macroeconomic shocks which in the same way can also affect policies in the opposite direction. Within these perspectives, in which way do the fiscal policy affect decisions of foreign investors? Does the intention to strength fiscal systems (via collection of taxes) encourage investments in Latin American countries? How can we measure the effects of such intentions? How can we measure and compare the collection performance of the Latin American fiscal systems? What are the constraints and barriers that impede purposes to fortify fiscal systems in this region?

1.2 Objective

The objective of this work is to study and analyze the effects that Tax Systems have on the attraction of Foreign Direct Investments, especially, in Latin American

countries. Specifically, the analysis will be focus on the relationship between the levels of Tax Revenues that governments obtain and the amounts on Foreign Direct Investment inflows. In terms of the macroeconomic point of view is how a country is able to attract FDI flows given the effectiveness of a government to collect revenues from different taxes in relation to the size of the economy. The basic hypothesis to test is: an appropriate level of collection of taxes gives the opportunity to an economy to send a good macroeconomic signal to attract in a proportional quantity flows of FDI. For achieving this purpose, data of selected Latin American countries is analyzed and tested with statistical tools with a posterior explanation of the findings.

A review of the literature and theory of Foreign Direct Investments and Taxes will be presented in the first part of this paper in order to capture the basic concepts about Multinational Enterprises and the role of Taxation policies which affect the levels of FDI. A brief review of the models that have been developed to study this relationship is also included.

In the second part of the document there is a revision of some Macroeconomic indicators and Taxation systems that are working on the selected Latin American countries, due to the complexity of all the kind of taxes applied on these regions only the main characteristics and rates are presented considering the different type of taxes: Direct Taxes (Income, capital gains, property taxes), Indirect Taxes (Goods, Services, Consumption Taxes, ...), Social security contributions, and others. The intention is to have an idea of the differences and similarities of taxes levied by the governments that constitute the level of revenues they obtain.

As a third step, macroeconomic variables are chosen to carry out a statistical analysis in order to detect and measure the relationship between levels of FDI and the tax revenues obtained by the governments during the last years. These variables are studied with a multiple regression model that tries to represent the effect of the several types of tax revenues in the levels of FDI received by an economy and then in a general model aggregating data of the 5 economies with the intention to know if there is a more general behavior within these variables.

Finally, in the chapter 5, conclusions about the research will be presented regarding the findings obtained during the analysis. After that, a synthesis of the main drivers to improve taxation systems, and consequently attract investors, is also provided. Finally there is the purpose to fit this research within the current economic context.

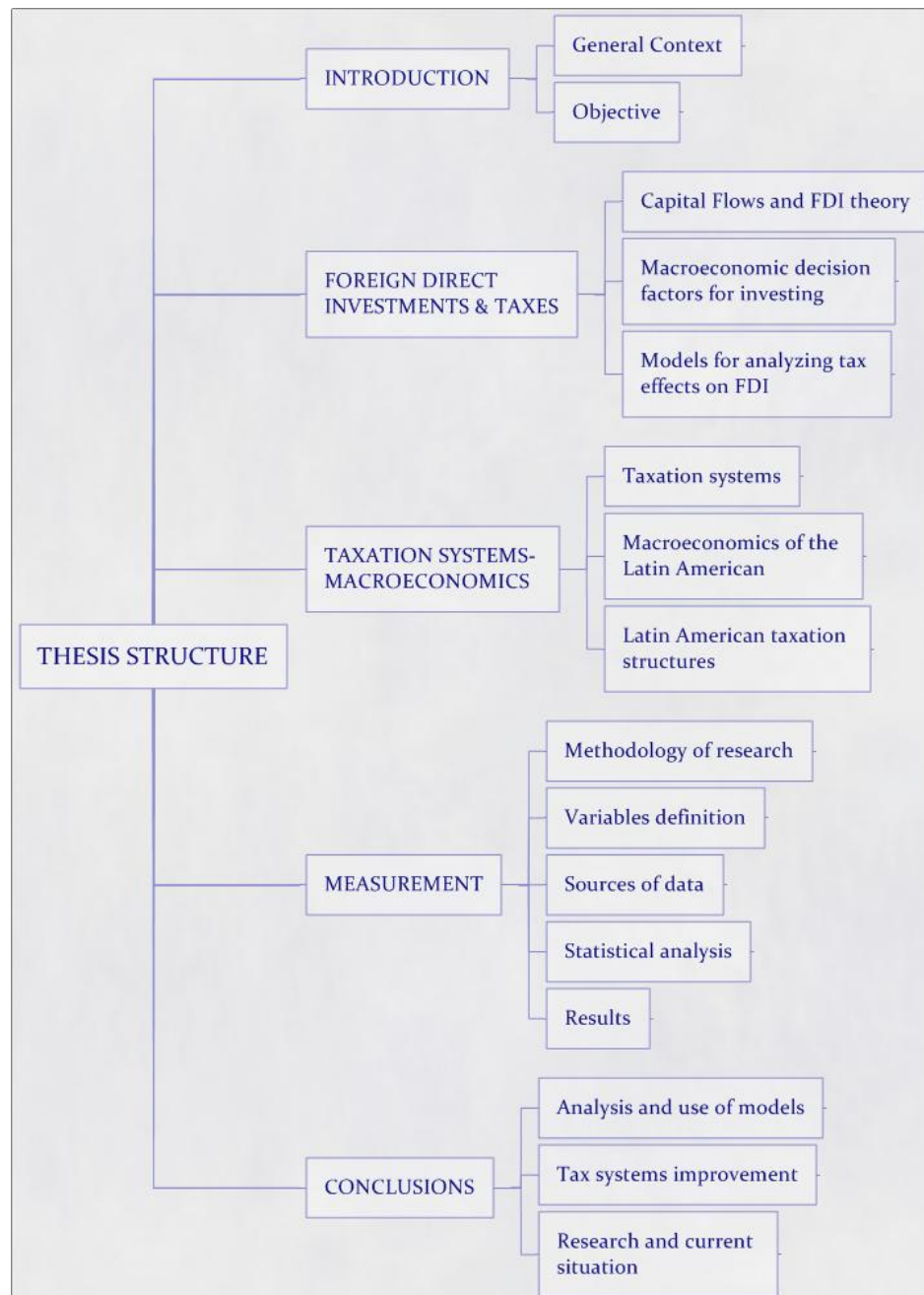


Figure 1-IV Overview of the structure of this research.

2 FOREIGN DIRECT INVESTMENTS AND TAXES

In the analysis it will be reviewed the main concepts and theories that are important to understand much better the research problem. The theory of FDI is review for providing a general context and the importance in the economic field. The concept of FDI is mentioned in order to define the limitations when it is measured. After that, the most important factors for deciding to invest abroad and the special focus on taxation are included. Finally, there is a revision of the models developed to explain the influence of Tax policies on investments.

2.1 Capital Flows and Foreign Direct Investment Theory

2.1.1 The Theory of the Multinational Enterprise

In the literature there are theories that have sought to explain why MNEs exist. The modern theory of multinational enterprise starts by distinguishing between the questions of which this larger question is composed. The first question, why is a good produced in two (or more) different countries rather than one? This is known as the question of location. The second question, why is production in different locations done by the same firm rather than by separate firms? This is known as the question of internalization.

The theory of location is, in fact, just the theory of international trade. The location of production is often determined by resources. Alternatively, transport costs and other barriers to trade may determine location. The factors that determine a multinational corporation's decisions about where to produce are probably not much different from those that determine the pattern of trade in general. Jean F. Hennart (Hennart, 2001) finds that the cause of FDI, like any type of factor movement, capital flowed from one country to another in response to differences in real interest rates. He remarks two limitations: first, there is no exact match between FDI and the growth of MNEs. Second, differences in real interest rates provide neither a necessary nor a sufficient reason for the existence of MNEs.

The theory of internalization is another matter. It is noted first that there are always important transactions between multinational's operations in different countries. The output of one subsidiary is often an input into the production of another. Or technology developed in one country may be used in others. Or management may usefully coordinate the activities of plants in several countries. These transactions are tie multinational firm together, and the firm presumably exists to facilitate these transactions. But international transactions need not be carried out inside a firm. Components can be sold in an open market, and technology can be licensed to other firms. Multinationals exist because it turns out to be more profitable to carry out these transactions within a firm rather than between firms. This is why the motive form multinationals is referred to as "internalization". There are a variety of theories for explaining what gives rise to internalization, however, there are two influential views about why activities in different countries may usefully be integrated in a single firm (Krugman, et al., 2008).

The first view stresses the advantages of internalization for technology transfer. Technology, broadly defined as any kind of economically useful knowledge, can sometimes be sold or licensed. There are important difficulties in doing this, however. Often the technology involved in, say, running a factory has never been written down; it is embodied in the knowledge of a group of individuals and cannot be packaged and sold. Also, it is difficult for a prospective buyer to know how much knowledge is worth – if the buyer knew as much as the seller, there would be no need to buy. Finally, property rights in knowledge are often hard to establish. All these problems may be reduced if a firm, instead of selling technology, sets about capturing the returns from the technology in other countries by setting up foreign subsidiaries.

The second view stresses the advantages of internalization for vertical integration. If one firm (the "upstream" firm) produces a good that is used as an input for another firm (the "downstream" firm), a number of problems can result. For one thing, if each has monopoly position, they may get into a conflict as the downstream firm tries to hold the price down while the upstream firm tries to raise it. There may be problems of coordination if demand or supply is uncertain. Finally, a fluctuating price

may impose excessive risk on one or the other party. If the upstream and downstream firms are combined into a single “vertically integrated” firm, these problems may be avoided or at least reduced.

2.1.2 Foreign Direct Investment definition and measurement

The OECD adopted a new “Benchmark Definition of FDI” which provides a comprehensive set of rules to improve statistical measures of FDI. This definition is a standard for investment statistics which is a single point of reference for compilers and users of FDI statistics. (Organisation for Economic Co-operation and Development, 2008)

“Foreign direct investment reflects the objective of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an enterprise (direct investment enterprise) that is resident in an economy other than that of the direct investor. The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise. The direct or indirect ownership of 10% or more of the voting power of an enterprise resident in one economy by an investor resident in another economy is evidence of such a relationship. Some compilers may argue that in some cases an ownership of as little as 10% of the voting power may not lead to the exercise of any significant influence while on the other hand, an investor may own less than 10% but have an effective voice in the management. Nevertheless, the recommended methodology does not allow any qualification of the 10% threshold and recommends its strict application to ensure statistical consistency across countries”.

2.1.2.1 Why measure FDI?

There are main reasons to measure FDI such as:

- A significant increase in cross-border capital movements including direct investment has become a key factor in international economic integration, more generally referred to as globalization.

- FDI has an impact on the development of labor and financial markets, and influences other aspects of economic performance such as the balance of payments balance through its other spill-over effects.
- Identifying partner countries and industries for inward and outward investments is central to most analysis.
- Indicators based on direct investment statistics facilitate the measurement of the extent and impact of globalization.
- Statistics should reflect the changes and new developments implemented by market participants. At the centre of these changes are the complex structures put in place by MNEs for financing and managerial purposes and that are leading increasingly to the distortion of FDI data.

2.2 Macroeconomic decision factors for investing abroad

Theories of the Multinational Enterprise explain, somehow, the internal factors that affect the decision of location and internalization of the firm. Beyond these theories there is also an examination of how exogenous macroeconomic factors affect the firm's FDI decision with the primary focus on exchange rate movements, taxes and tariffs.

2.2.1 Exchange Rate Effects

The available literature about exchange rate effects has derived important and interesting firm-level models of how exchange rate uncertainty can affect FDI flows, depending on firm characteristics. The topic of exchange rate effects on FDI is an area rich for future work. One related issue that likely deserves more attention is how one measures expected exchange rate levels, uncertainty, or even volatility. Each of the studies related to this topic have their own way of measuring these variables, but further investigation into appropriate measures and sensitivity of results to alternative measures deserves some attention as well.

2.2.2 Institutions

The quality of institutions is likely an important determinant of FDI activity, particularly for less-developed countries for a variety of reasons. First, poor legal protection of assets increases the chance of expropriation of a firm's assets making investment less likely. Poor quality of institutions necessary for well-functioning markets (and/or corruption) increases the cost of doing business and, thus, should also diminish FDI activity. And finally, to the extent that poor institutions lead to poor infrastructure (i.e., public goods), expected profitability falls, as does FDI into a market.

2.2.3 Trade protection

The hypothesized link between FDI and trade protection is seen as fairly clear by most trade economists-higher trade protection should make firms more likely to substitute affiliate production for exports to avoid the costs of trade production. This is commonly termed tariff-jumping FDI.

2.2.4 Trade effects

Perhaps the most commonly cited motivation for FDI in terms of trade effects is as substitute for exports to a host country, one can think of exports as involving lower fixed costs, but higher variable costs of transportation and trade barriers. Servicing the same market with affiliate sales from FDI allows one to substantially lower these variable costs, but likely involves higher fixed costs than exports. This suggests a natural progression from exports to FDI once the foreign market's demand for the MNE's products reach a large enough scale.

2.2.5 Taxes

Given the potential benefits of attracting FDI, tax policy makers continually re-examine their tax rules to ensure they are attractive to inbound investment. At the same time, governments continually balance the desire to offer a competitive tax environment for FDI, with the need to ensure that an appropriate share of domestic tax is collected from multinationals.

2.2.5.1 FDI sensitiveness to Taxation

At the centre of debate over what is the appropriate level of a host country's corporate tax burden is the difficult question of how FDI reacts to taxation. Addressing this issue is crucial to assessing how to address pressures for internationally competitive tax treatment of FDI. It is also essential for carrying out cost/benefit assessments of tax relief provided for such investments, and for estimating the impact on tax revenues of any reform of corporate tax policy.

An obvious hypothesis is that higher taxes discourage FDI with the more important question one of magnitude. De Mooij and Ederveen (De Mooij, et al., 2003) provide an even more detailed discussion of the literature and finds a median tax-elasticity of FDI of -3.2 (measuring the percentage change in FDI in response to a 1 percentage point change in the tax rate) across 25 studies. However, some of the more well-placed articles in the literature have highlighted why such a number may be quite misleading. As several papers point out, the effects of taxes on FDI can vary substantially by type of taxes, measurement of FDI activity, and tax treatment in the host and parent countries. Some recent studies find, for example, that FDI is becoming increasingly sensitive to taxation, reflecting the increasing mobility of capital as non-tax barriers to FDI are removed. Such estimates may be used to estimate the long-run impact on FDI of corporate tax reform. Another important issue is that a MNE potentially faces taxes in the host and the home countries. Countries have different ways of addressing this double taxation issue, which further complicates expected effects of taxes on FDI.

In gauging how FDI responds to tax reform, one uncertainty is how tax factors into FDI decisions, and what tax rate(s) are considered by investors. Comparisons may focus on statutory "headline" corporate income tax (CIT) rates. Or it may be that average effective tax rates (AETRs) or marginal effective tax rates (METRs) matter more than headline rates, as they incorporate rules determining the percentage of profits that are taxable. AETRs consider the average tax burden on investment projects, while METRs consider the tax burden at the margin (on the last unit of capital invested in a given project, where profits are exhausted). Statutory tax rates may differ significantly

from effective tax rates, to the extent that taxable profits differ from true (economic) profits.

There is also the question of how tax planning factors in. Most studies of the effects of tax reform on FDI ignore tax-planning strategies used by investors to lower their tax burden. But tax planning activities seem to be significant and growing. Another difficulty is that the FDI response to tax reform is unlikely to be uniform (as standard analytical frameworks assume), and could be expected to depend on a number of factors that are difficult to measure and account for.

Recent analysis supports the view that the sensitivity of FDI to tax depends on the host country and the mobility of business activities underlying the tax base. In particular, where firms benefit from locating production in large markets to reduce the costs of trade, such as transportation costs, a certain degree of inertia is predicted in the location choice of firms. Host country benefits and some fixity of capital mean that profits may be taxed up to some point without discouraging investment. This view is consistent with the observation that a number of economies with large domestic output markets and strong FDI inflows (e.g. US, Japan and Germany) have relatively high corporate tax rates. New explanatory models also suggest that the optimal tax rate on business falls as trade costs fall and capital is more mobile. This view is consistent with the observation that a number of countries impose a lower tax burden on more mobile business activities such as shipping, film production or head-office activities.

The literature has pointed out quite nicely that there is more than meets the eye initially when considering the effects of taxes on FDI. MNEs face tax rates at a variety of levels in both the host and parent country and policies to deal with double taxation can substantially alter the effects of these taxes on a MNEs incentive to invest. The literature has also only recently begun to examine other related taxes beyond corporate income taxes. For example, a recent working paper by Desai et al. (Desai, et al., 2004) finds evidence that indirect business taxes have an effect on FDI that is in the same range as corporate income taxes. In a similar vein, the effect of bilateral international tax treaties on FDI activity has been an unexplored issue empirically until just recently.

There are thousands of such tax treaties which negotiate reductions in countries' withholding rates among other things.

2.2.5.2 Inbound FDI Tax Policies

Tax competition for FDI is a reality in today's global environment. Investors routinely compare tax burdens in different locations, as do policy makers, with comparisons typically made across countries that are similar in terms of location and market size. A widely-held view is that taxes are likely to matter more in choosing an investment location as non-tax barriers are removed and as national economies converge.

There is broad recognition that international tax competition is increasing, and that what may have been regarded as a competitive tax burden on business in a given host country at one point in time may no longer be so after rounds of tax rate reductions in other countries.

However, it is not always clear that a tax reduction is required (or is able) to attract FDI. Where a higher corporate tax burden is matched by well-developed infrastructure, public services and other host country attributes attractive to business, including market size, tax competition from relatively low-tax countries not offering similar advantages may not seriously affect location choice. Indeed, a number of large countries with relatively high effective tax rates are very successful in attracting FDI. This points to the importance of market size and other host country attributes in attracting FDI and the presence of location-specific profits that governments are able to tax.

It is also clear that a low tax burden cannot compensate for a generally weak or unattractive FDI environment. Tax is but one element and cannot compensate for poor infrastructure, limited access to markets, or other weak investment conditions.

Another factor is how business-friendly the tax administration is perceived to be. Investors look for certainty, predictability, consistency and timeliness in the application

of tax rules, and in many cases these considerations are as important as the effective tax rate paid.

The tax environment will also be influenced by the need of governments to introduce anti-abuse measures to protect the tax system from sophisticated tax planning and aggressive tax schemes which exploit differences across tax systems. A key challenge is striking a balance in devising rules to adequately protect the tax base, without imposing excessive compliance cost on business. In doing so, it can be difficult to accurately weigh business arguments that FDI will locate elsewhere unless the scope of tax base protection measures is reduced.

2.2.5.3 Outbound FDI Tax Policies

In many countries, while there has been a great deal of debate about taxing inbound FDI, there has been surprisingly little public debate over what tax policies should be followed for outbound investment, and how the tax burden should compare with that for domestic investment and inward FDI.

Tax neutrality between domestic and outbound investment (imposing the same tax burden on both) is an underlying policy goal for certain countries. Neutrality encourages investment decision-making on the basis of business considerations aiming to maximize (pre-tax) returns. Indeed, the approach of taxing domestic and outbound investment at equivalent rates is often identified as a core principle underlying the adoption of a “dividend credit” system (taxing foreign profits at domestic rates, with a tax credit for foreign taxes already paid on foreign profit). The main insight is that a fixed pool of capital is most productive when allocated across countries so that pre-tax rates of return are everywhere the same, a result predicted in the absence of taxation under competitive conditions. The same outcome may be predicted with taxation, where investors allocate capital so that after-corporate tax rates of return are equalized, if domestic and foreign profits are subject to the same effective tax rate.

Fully equivalent treatment of domestic and foreign profits requires current taxation at domestic tax rates of foreign profits, with full relief for income and withholding tax levied by the host country. In practice, this treatment is not observed for

various reasons, including complexity, cash-flow problems, possible revenue loss, and international competitiveness pressures that limit the reach of domestic taxation of foreign profits.

Dividend credit systems generally allow deferral of home country tax until foreign profits are paid out. Also, rules may not exist to tax foreign profits routed to a tax haven. If such rules are in place, various techniques (e.g. the use of so-called “hybrid entities” regarded by one country as a separate corporation, and by another as a branch) may be used by investors to circumvent their application. Home country tax may also be avoided by using sophisticated financial instruments, for example so-called “hybrid instruments” regarded by one country as debt, and by another as equity.

Several countries operate dividend exemption systems. Exempting foreign profit from domestic tax avoids a possible tax impediment for domestic firms competing in foreign markets with other investors subject only to the same local (host country) tax burden. Moreover, exempt treatment may avoid distorting ownership patterns which, when free of tax, would tend to maximize world output through a competitive bidding process that would normally result in firms with higher productivity outbidding others competing for capital.

However, this argument assumes that investors face only local competitors operating in a given host location. While this may be the case for certain business activities, it may not be the case for geographically mobile business activities employing intangibles, such as research and development or computer chip production. Such mobile activities may access markets efficiently from any one of a number of locations. In such cases, consideration must be given to effective tax rates in (all) host countries in which competing businesses are located, which may differ considerably across host countries. Moreover, various tax-planning strategies used by companies may mean different effective tax rates on profits for different competing investors, even where competition is localized in one country. Thus, on balance, tax distortions to investment may result under either system (dividend credit or exemption) on account of these considerations.

2.2.5.4 Countries' response to pressures to lower tax on FDI

Governments have responded to these competitive pressures in different ways. Many have reduced the statutory corporate income tax rate, as this is a relatively simple change to introduce and is readily observed. It is also directly relevant to investors anticipating pure economic profits, improves tax efficiency when combined with reforms to broaden the tax base and limits incentives for tax avoidance. However, such reductions tend to be expensive in terms of revenue foregone, may be seen as unfair, and may create pressures to reduce personal income tax rates as well. In general, rate cuts have been accompanied by measures to broaden the tax base, thereby reducing the overall revenue costs.

Rather than reducing the burden of general tax provisions, some countries prefer to explicitly target tax relief to certain sectors or activities, to encourage investment at lower foreign revenue cost. Belgium, for example, previously targeted relief to co-ordination centres performing certain group service functions, while certain other countries give preferential treatment to holding companies. Targeting mobile activities is regarded by some as an attractive option. Some countries target certain activities as a matter of national industry policy, while others target tax relief only where there is believed to be market failure.

Governments are also reviewing the tax treatment of outbound FDI. Some provide tax treatment that permits relief from home country tax that goes well beyond that under the 'old' competitiveness argument, which calls for a home country tax exemption or deferral for undistributed foreign active business income, despite neutrality and equity considerations favouring increased (not reduced) taxation of foreign income. Decisions to waive or preferentially treat outbound FDI reflect increased mobility of capital and business calls for more lenient home country treatment. These developments, combined with the "hollowing-out" of host country corporate tax bases by exempting interest, royalties and other amounts deductible at source are inconsistent with equity and neutrality, but may be viewed as difficult to resist given their acceptance by other governments, and fears over the mobility of capital.

Governments are trying to improve the business friendliness of their tax administration by improving the transparency and certainty of tax treatment. Many countries have introduced advance ruling procedures where tax authorities will respond in advance to questions about the tax status of a particular type of investment. Tax treaties and mutual agreement procedures are also identified as key to certainty and stability in the treatment of cross-border investment.

2.3 Models for analyzing tax effects on FDI

Since the purpose of this work is to study the relationship between taxes and FDI flows there is a brief revision of the models that exist in the literature and policies frameworks developed by organizations such as the OECD (Organisation for Economic Co-operation and Development, 2007).

To guide tax policy in relation to FDI, policy analysts may rely on one or more economic models or frameworks to examine possible channels of influence. A selection of these includes: the OLI framework; the OECD policy framework for investment; the neoclassical investment model, and models derived from the new economic geography literature.

Under the OLI framework, FDI decisions involve an assessment of ownership, location and internalization (OLI) conditions. Horizontal FDI involving production abroad can be expected in place of exports or licensing where OLI conditions are met. First, an MNE must possess ownership advantages (patents, know-how, trademark) conferring profit advantage over local firms in foreign markets. Second, FDI must offer location advantages (e.g. low trade, labor or energy costs, low tax burden) that make local production more profitable than exporting. Third, FDI must offer internalization advantages that make undertaking a business activity directly through FDI more profitable than licensing to other firms in foreign markets the right to use assets conferring ownership advantage, for example by safeguarding knowledge capital. Vertical FDI decisions over locating or outsourcing certain stages of production to a foreign location similarly centre around ownership, location and internalization advantages.

The Policy Framework for Investment (OECD, 2005), targeted at policy makers in developing and transition economies, proposes guidance in ten policy fields including tax, in an effort to identify priorities and help develop effective policies. The tax chapter draws largely on survey studies to identify key issues in weighing the pros/cons of corporate tax incentives and alternative tax policies and design options to attract FDI, while also raising revenue from FDI to help finance infrastructure development.

In setting the tax burden on inbound investment, policy makers are encouraged to assess whether their host country offers attractive risk/return opportunities, taking into account framework conditions (e.g. political/monetary/fiscal stability; legal protection; public governance), market characteristics (market size, availability/cost of labor, energy, state of infrastructure) and the prevalence of location-specific profits. As emphasized in the tax chapter, host country framework conditions and market characteristics depend in part on past and current levels of public expenditures on programs in areas of critical importance to investors (e.g. education, infra-structure development). This link establishes the critical importance of collecting tax where possible on economic profit in order to finance public expenditures that strengthen host country fundamentals and attract FDI.

Perhaps the framework most widely used by public finance economists to analyze tax effects on domestic and cross-border direct investment is the neo-classical investment framework. A main attraction is its incorporation of main statutory tax parameters influencing capital costs and establishing the statutory tax burden on investment returns. In particular, parameter-based marginal and average effective tax rates (METRs/AETRs) derived from the neo-classical investment model may be analyzed to determine the percentage change to these tax burden measures resulting from a single or package of corporate tax policy adjustments. When combined with empirical estimates of the sensitivity of FDI to these effective tax rates, the framework lends itself to estimating the long-run effects of corporate tax reform on FDI.

At the same time, such summary tax measures must be used with care as they ignore a number of factors influencing the actual tax burden on FDI (e.g. tax-planning,

administrative discretion in deciding tax liabilities, other taxes not captured by the model). Some would also question, at least in certain cases, the central assumption of declining marginal productivity of capital. In particular, business concentrations may give rise to increased rates of return (increasing returns to scale at the industry level), with possibly very different policy implications.

Central predictions of the neo-classical theory of investment as regards tax effects on investment have been challenged in recent years by the new economic geography framework, emphasizing the role of self-reinforcing business concentration (agglomeration) economies. Under the core-periphery (CP) model, market access effects may dominate and create incentives for firms to locate production in large markets, to reduce transportation costs, and to export to small markets. With firms profiting from concentration economies, a degree of inertia is predicted in the location choice of firms, implying a degree of fixity of economic profits that can be taxed up to some point without discouraging investment.

In a standard neo-classical investment model where capital stocks are adjusted such that after-corporate tax rates of return are equalized across locations, an increase in the tax rate in country A would cause capital to relocate from country A, causing pre-tax rates of return in A to rise, and in other countries to fall, until after-tax rates of return are again equalized. In contrast, under a CP model, the same tax rate increase may not lead to significant capital relocation if business concentration benefits of country A more than offset the higher tax burden. However should country A increase its tax rate significantly, business concentration economies may be more than outweighed by a higher tax burden, causing capital to relocate from country A. Business concentration economies imply that effects of tax rate changes will be non-linear – policy adjustments under certain conditions may have minimal impact on the location of capital, while subsequent adjustments may have dramatic effects. Thus the response of capital to past reforms may offer a poor guide to gauge the impact of similar reforms, and the (common) assumption of a linear relationship between FDI and tax may be inappropriate for statistical work.

3 TAXATION SYSTEMS AND MACROECONOMIC PERSPECTIVE

There is no doubt that the macroeconomic environment is determinant in selecting where to move capitals and investments. Indicators about economic performance constitute a guide to complement de decision-making process in project evaluations. One of these relevant measures is the situation about the government finance and the revenues through taxes that an economy is obtaining in order to support the exercise of expenditure, which managed in an appropriate way, promotes the growth and the stability necessary to be attractive for investors.

As already explain, taxes matter more and more in choosing an investment location. Taxations systems may play an important role of providing general and specific information to investors about the rules they have to follow while doing business in a country. Due to this importance, in this section the main concepts of taxes are explained. The review of frameworks to classify taxes is significant in order to understand the tax structures and the statistics that they generate. The tax structures studied are from selected Latin American countries where the main characteristics of them are also included.

3.1 Taxation systems

3.1.1 Main concepts of taxes

3.1.1.1 Significance

Money earned by the State thanks to taxation. It is the main income for the state, funding public expenditure and other costs, tangibly expressing the common efforts of the community.

Taxes are good ways for financing the costs of public goods, a special group of goods whose consumption by one person does not decrease the consumption by others and, at the same time, for which it is costly or impossible to prevent consumption (e.g. street lightening). A normal pricing for these goods would arrive to a zero-level price; thus, it would provide no incentives to supply.

Similarly, it is common to finance by taxes the costs of goods and services having large positive externalities if they are not supplied enough by the private sector.

Taxes are mandatory payments, ruled by laws. Tax revenue is collected from the whole society with differentiated intensity, inspired by considerations of justice, efficiency and effectiveness.

In particular, the tax system can have the broad goal of reducing income inequality.

Many fiscal systems, however, are highly irrational, exceedingly complex and the taxpayer risks to need a professional advice for computing the tax amount and for figuring out ways to decrease the tax burden (Piana, 2003).

3.1.1.2 Composition

The tax revenue is the sum of the revenues of different kind of taxes, depending on what is taxed (Piana, 2003):

1. the revenue of physical and juridical persons ("direct taxes");
2. wealth and assets as real estates and houses;
3. the domestic economic transactions ("indirect taxes" - e.g. VAT);
4. international trade, typically through import duties.

3.1.1.3 Determinants

Tax revenue is the result of the application of a tax rate to a tax base.

Taxes are ranked according to the tax rate:

1. progressive taxes, with a tax percentage rate growing with the amount taxed;
2. proportional taxes, with a tax rate constant whatever the tax base;
3. regressive taxes, with falling tax rate whilst increasing base;

4. lump sum taxes, with a fixed absolute value of the tax, irrespective of the tax base.

Thus, the tax base dynamics is a key determinant for the revenue from progressive, proportional and regressive taxes, whereas it becomes irrelevant for lump sum taxes.

Fiscal systems differ a lot throughout the world but usually the personal revenue tax is progressive, the firm revenue tax is proportional as well as the taxation of domestic and international economic activity. Also wealth taxation is usually proportional, with some use of lump sums.

Lump sums are particularly common for taxes of a small absolute value.

In macroeconomic terms, GDP dynamics is a major determinant of tax revenue. The higher the GDP, the larger the tax base, the higher the tax revenue (Piana, 2003).

3.1.2 Characteristics of a good taxation system

According to (Equihua Zamora, 2002) there are characteristics that a good taxation system should accomplish.

1. **Sufficient collection:** A tax system should collect all the sufficient resources to finance all necessities stated in an expenditure budget.
2. **Economic activity promoter:** Taxes design should promote human capabilities development, savings, companies' creation, investments, employment, innovation, exports and knowledge development.
3. **Juridical certainty:** Taxpayers should have the certainty of fairly paying their contributions. The system should be supported by a consistent legal system of rules and norms.
4. **Simple:** The taxation system should be designed with few rules, procedures and regulations which need to be easy to understand and follow.

5. **Long term consistency:** Regulations and procedures should remain unalterable through the long term.
6. **Equity:** The contribution obligations should be distributed in proportion to taxpayer's income.
7. **General:** Taxes should be paid by all people with possibilities to work.
8. **Competitive:** Tax rates should be calculated in order to maintain international competitiveness.

3.1.3 Tax Classification

With the existence of several kinds of taxes it is convenient to use a standard classification. Institutions like the OECD and the IMF have developed frameworks in order to give coherence when taxes should be classified and measured.

3.1.3.1 OECD framework

The classification of receipts among the main headings (1000, 2000 ...) is generally governed by the base on which the tax is levied:

- 1000 income, profits and capital gains
- 2000 social security contributions
- 3000 taxes on payroll and workforce
- 4000 taxes on property
- 5000 taxes on goods and services
- 6000 other taxes

Each of these headings is split in subheadings which give more details about what is included in each category and who are considered as the taxpayers, the complete classification is included in the annexes.

3.1.3.2 IMF GFS 1986 and 2001

Currently, Latin American and Caribbean countries use the Manual on Government Finance Statistics (GFS) published by the International Monetary Fund in 1986 to classify their tax revenues. Chile and Nicaragua started the process to adapt changes introduced in the GFS 2001. The differences between the two versions are two:

- The taxes do not include the social security contributions in GSF 2001 but they do in the GFS 1986.
- In the GFS 2001, the social security contributions include the social security contributions, classified as taxes in GSF 1986, and the social security contributions managed in benefit of the government employees, which are classified as non tax revenues in GFS 1986.

The GFS 2001 is very similar to the OECD classification framework. The main differences are: in the OECD classification the social security contributions are treated as taxes and the goods and services taxes and taxes on international trade are included in only one category.

The Economic Commission for Latin America and the Caribbean (ECLAC) follows the next tax structure for compiling statistics (Economic Commission for Latin America, 2000):

- Direct Taxes
 - Taxes on income, profits and capital gains.
 - Taxes on property
 - Other direct taxes
- Indirect tax revenues
 - General taxes on goods and services

- Specific taxes on goods and services
- Taxes on international trade and transactions
- Other indirect taxes
- Other taxes
- Social contributions

3.2 Macroeconomics of the Latin American Region

In this section a description of the main macroeconomic indicators is included due to the relevance in the posterior analysis and results. The indicators studied are from the main Latin American economies of the region. It is assumed that the purpose of this work can be achieved selecting a reduced sample of representative countries of the region. For the selection of the countries it is used the last ranking of competitiveness provided by the World Economic Forum.

The Global Competitiveness² Report 2009-2010 of the World Economic Forum addresses that the highest world ranked countries in Latin American (consequently, probably more attractive for foreign investors in this region) are Chile (30), Costa Rica (55), Brazil (56), Panama (59) and Mexico (60). (See annexes).

3.2.1 Gross Domestic Product (GDP)

The concept of GDP is better explained in terms of the Gross National Product (GNP). The GNP is the value of all final goods and services produced by a country's factors of production and sold on the market in a given period. The components of GNP are:

- Consumption
- Investment

² Competitiveness is defined by the (World Economic Forum, 2009) as the set of institutions, policies, and factors that determine the level of productivity of a country.

- Government purchases
- Current Account

Gross Domestic Product is supposed to measure the volume of production within a country's boarder. GNP equals GDP plus net receipts of factor income from the rest of the world. These net receipts are primarily the net income domestic residents earn on wealth they hold in other countries less the payments domestic residents make to foreign owners of wealth that is located in the domestic country (Krugman, et al., 2008).

Brazil and Mexico are the biggest countries of the region in terms of GDP. Panama and Costa Rica are smaller. All the countries show somehow a growth in this indicator since 1999. After six years of economic growth, the GDP of the Latin American and Caribbean region will shrink by an estimated 1.8% in 2009, which translates into a contraction of around 2.9% in per capita GDP. The impact of the international crisis was felt heavily in late 2008 and early 2009, albeit in different ways, in all the countries of the region (Economic Commission for Latin America and the Caribbean. United Nations., 2009).

The following chart describes the behavior in the last years of the GDP by country:

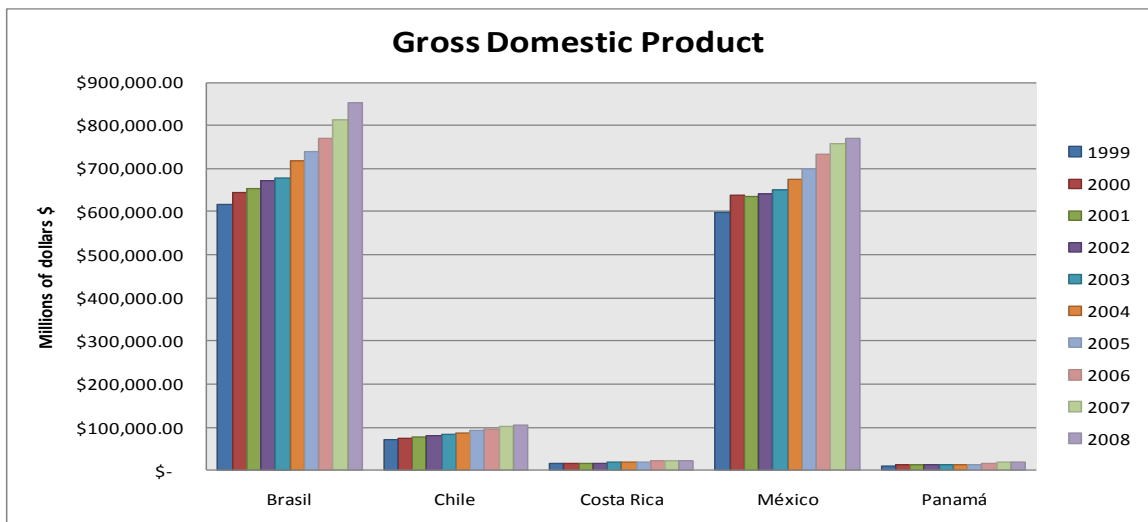


Figure 3-I GDP by country, 1999-2008 (millions of dollars). ECLAC.

3.2.2 Foreign Direct Investment inflows

This measure shows the progress or retreat of levels of investments. In some documents like the World Investment Report (United Nations Conference on Trade and Development, 2009) there are some figures that try to explain the variation of FDI around the world. The main data that is presented refers to FDI flows (inward and outward) and FDI stock (inward and outward).

Flows of FDI comprise capital provided (either directly or through other related enterprises) by a foreign investor to an FDI enterprise, or capital received from a FDI enterprise by a foreign direct investor. FDI has three components: equity capital, reinvested earnings and intra-company loans.

FDI stock is the value of the share of their capital and reserves (including retained profits) attributable to the parent enterprise, plus the net indebtedness of affiliates to the parent enterprise.

The most important indicator for this paper is the measure of FDI inflows. The following chart shows the levels of inflows that the Latin American countries are receiving during last years. Notice that, levels of FDI inflows are quite proportional to the size of the economy.

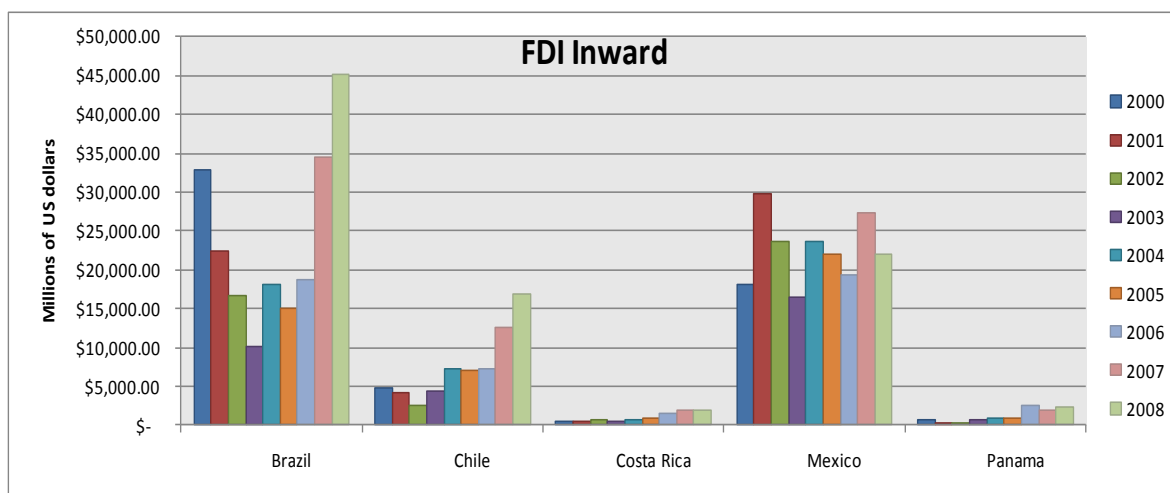


Figure 3-II FDI inflows by Latin American countries 2000-2008 (Millions of Dollars). UNCTAD.

Brazil and Mexico have the highest levels of FDI inflows; smaller countries receive less income for this concept such as Costa Rica and Panama. Chile shows a good progress in attracting capitals during last years.

3.2.3 Government Finance, Tax Revenues as percentage of GDP

In order to give an approximation of the health of public finances we can use the level of Tax Revenues obtained by the countries, this variable is absolute and it does not say too much about the effectiveness of the taxation system. Many reports published by public institutions give a better reference of the success of the public finances measuring the relationship of the Tax Revenues with the Gross Domestic Product (GDP), in this way the measurement of the Tax Revenues is much more significant when it is compared with the size of the economy.

This measure can be split in Tax revenues coming from the different types of taxes that the economies impose. Each of these disaggregated revenues can be considered also as significant variables for evaluating the effects of each individual type of tax. The following chart summarizes this indicator for the considered economies. A complete and detailed benchmark is included in the appendix considering the tax structures that are explained in the next section.

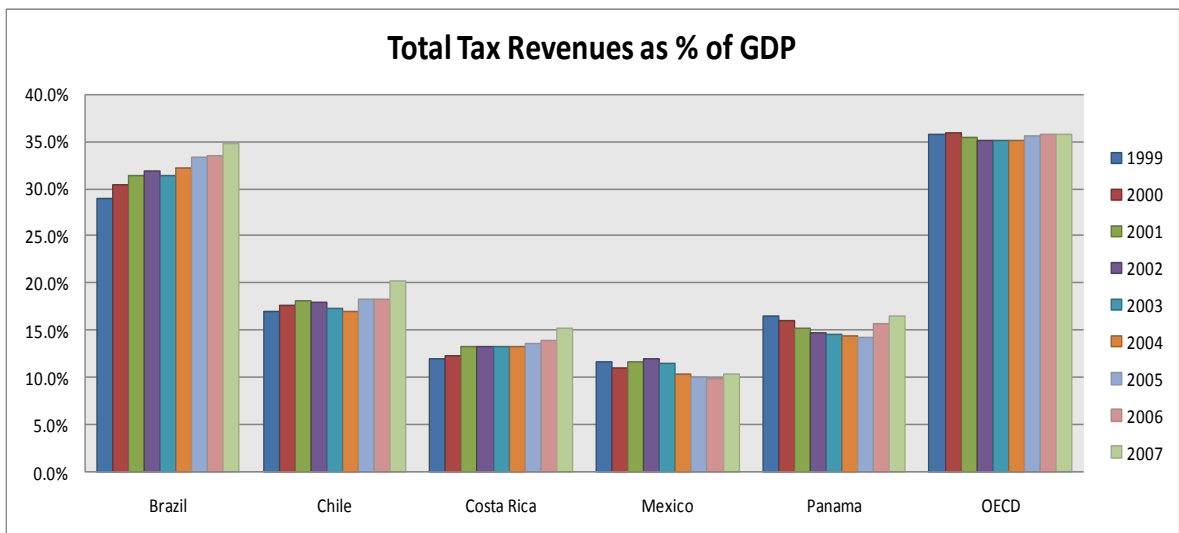


Figure 3-III Tax Revenues as percentage of GDP by economy, 1999-2008. ECLAC

All countries have a low level of tax collection regarding their economy size, except Brazil. In general, Latin American countries have a low performance in this indicator when compared to OECD countries where the average is 35% (Organisation for Economic Co-operation and Development, 2009).

3.3 Latin American Tax Structures

Despite the existence of frameworks for classification of taxes, each economy has its particularities in terms of types, rates and taxpayers. A brief description of the main and current taxes of each country is provided with the intention to give an idea of the diversity of taxes that are levied within the ECLAC classification.

3.3.1 Chile

The Chilean tax system comprises a few high-yielding taxes. According to the Chilean Constitution taxes cannot have a predetermined use or target and the government has the prerogative of proposing to Parliament any changes to the system (Servicio de Impuestos Internos - Chile, 2010).

Chilean taxes can be classified in four categories: Income Tax, Tax on Sales of Goods and Services, Specific Taxes and Others as it is shown in the following chart. However, the taxes levied are clustered in the GSF 1986 classification to give coherence with the statistics retrieved from ECLAC.

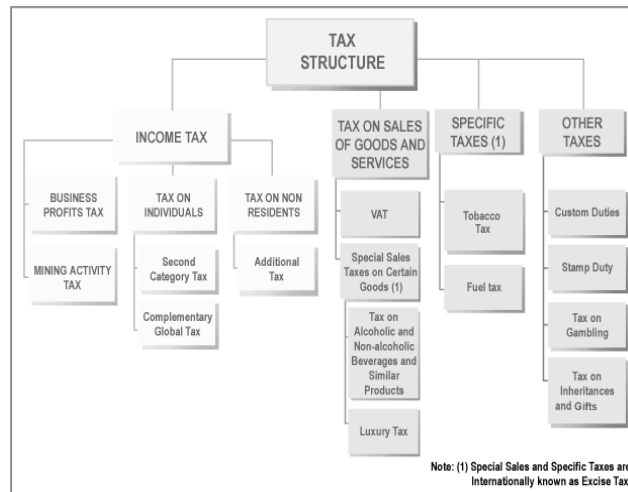


Figure 3-IV Chilean Tax Structure (Servicio de Impuestos Internos - Chile, 2010)

3.3.1.1 Direct Taxes

Income Tax

The income tax is divided in:

- First Category Tax (Business Profits Tax), the amount of this tax is determined based on the liquid earnings.
- Specific Tax on Mining Activities (Mining Activity Tax), from a 5% of tax rate.
- Second Category Tax (Tax on income from dependent employment), Second Category Tax is progressive and is charged at rates ranging from 0% to 40%. It is calculated on total salary and remuneration for work, less social security payments.
- Complementary Global Tax (Personal tax on total income), It is calculated on a progressive scale of rates, ranging from 0% to 40%.
- Additional Tax (Tax on persons not resident or not domiciled in Chile). The general rate of additional tax is 35%, with lower rates applying for some types of income.

Taxes on property

- Tax on Inheritance and Gifts, The tax varies depending on the amount involved, the purpose of the transfer or gift, and the degree of descendant's relationship with the beneficiary.
- Real Estate Tax. The annual Land Tax rate for real estate of non-farming use is of 1.2%, and for real estate of farming use is of 1%.
- Custom Duties. Imports are subject to an ad valorem duty which varies depending on the type of merchandise and which, on average, is of around 6%.

- Tax on Casinos. Companies operating casinos in Chile must pay a 20% tax on gross income.

3.3.1.2 Indirect Taxes

Taxes on sales goods and services

- Value Added Tax, main consumption tax at rate of 19% with a few exemptions.
- Special sales taxes on certain goods
 - Tax on alcoholic and non-alcoholic beverages and similar products. In the case of alcoholic beverages, the tax rate ranges from 15% to 27% on sales, depending on alcohol content. Non-alcoholic beverages are subject to a 13% tax
 - Luxury Tax, this is a 15% surtax on the sale or import of luxury goods that is paid together with VAT.

Specific Taxes

These taxes include Tobacco and Fuel Taxes. Cigars are charged at a rate of 51%, cigarettes at 50.4%, and processed tobacco at 47.9%. Cigarettes and processed tobacco are subject to a 10% tax. The law imposes a tax on the first sale of import of automobile gasoline and diesel. This affects the producer or importer, and the tax base is determined by the amount of fuel expressed in cubic meters.

3.3.1.3 Other Taxes

Other taxes are considered as follows:

- Stamp Tax (Stamp Duty). The tax base is the amount of the capital specified in each document. The tax rate varies depending on the period of the loan 0.1% of the par value of the document for each month of the loan's term up to a maximum of 1.2%.

- Municipal Duty (Commercial License). This tax rate is set by each municipality, ranging from a minimum of 0.25% to 0.5%

3.3.2 Costa Rica

In Costa Rica there are two types of taxes: direct and indirect taxes. The fiscal period is October 1st to September 30th (Ministerio de Hacienda - Direccion General de Tributacion, 2010).

3.3.2.1 Direct Taxes

- Income taxes. The corporate tax rate varies from 10 to 30% according to the net income. Personal income tax rate goes from 0 to 25%.
- Education and culture tax. It is a progressive tax based on the net capital.
- Casino tax. Casinos pay 10% per year and game tables pay 50,000 colones.
- Fix assets transfer. 1.5% of the value of the property.
- Vehicle property and transfers. For the property it is paid according to the value a progressive tax rate from 1.2% to 3.5%. For the transfer it is the 2.5% of the value.
- Special tax on banks and financial institutions no resident in the Country. \$125,000 USD per year.

3.3.2.2 Indirect Taxes

- Sales tax and selective consumption tax. The rate is the 13% of the value of sales.
- Fuel tax. According to the type of fuel there is a lump tax paid per liter.
- Alcoholic, non-alcoholic beverages and toilette soap taxes. According to the type of alcoholic beverage and the percentage of alcohol the tax is calculated. In the

case of non-alcoholic beverages there is also a tax depending on the consumption unit, for the toilette soap is calculated based on the grams per unit.

3.3.2.3 Other Taxes

- Departure tax. Before leaving the country citizens are charged with \$26 USD.

3.3.3 Brazil

In Brazil, the major tax guidelines are defined by the Federal Constitution, which sets down general principles, the limits of taxing authority, jurisdictions and the question of sharing of tax revenues. The Brazilian fiscal year begins on Jan. 1 and ends on Dec. 31 (International Living Publishing, Ltd., 2009-2010).

3.3.3.1 Direct Taxes

Individual Income Tax

The rate is progressive from 0% to 27.5% and shared out into three brackets. These taxation brackets apply to monthly income amounts, on a yearly basis.

Corporate Tax

The applicable tax rate will vary from 4% to 17.42%, depending on the type of activity—industry, commerce, services, and so on.

Tax on Rental Income

Tax is charged on worldwide income for residents of Brazil at 15%, although some foreign tax relief and credits can be allowed under specific tax treaties.

Mortgage interest is not deducted when calculating taxable rental income.

Capital Gains Tax

Capital gains are generally subject to tax at 15% (with exceptions), and gains from the sale of securities on a public stock exchange are taxed at 20%, for all Brazilian

residents. Non-residents have to pay 15% on capital gains relating to property in Brazil at the moment the gain is obtained.

Inheritance/Wealth Tax

Brazil has no inheritance or wealth taxes. However, some states may impose a death transfer and a donation/gift tax.

Municipal/Local Tax

Some municipalities may charge a service tax on certain businesses or real estate transfer tax (2% on transfers of real estate). An annual urban real estate tax for property owners is also applicable at approximately 0.6%, but in some locations it can be as high as 1.4% of the assessed value of the property, but this will vary according to the municipality concerned.

3.3.3.2 Indirect Taxes

Value Added Sales and Services Tax/Excise Tax

It is important to note that Brazil does not have VAT as such. The Brazilian tax regime for sales and production is not similar to those of Europe.

Two types of value added type taxes exist in Brazil: value added sales and services tax (ICMS) and excise tax (IPI).

3.3.3.3 Social security contributions

Social Security Tax

Employer: 37.3% of the gross salary comprising 28.8% social security and 8.5% for severance fund.

Employee: 7.65% to 11% of the gross salary. The employee's payment, which is capped, is based on a contribution salary table, provided by the government.

3.3.4 Panama

The main taxes in Panama (PKF International, 2009) are described as follows:

3.3.4.1 Direct Taxes

Company Tax. Panama's income tax law affects aggregate and annual revenue from business activities conducted in Panama or from assets situated in the country, when any of the causes of such revenue occur within the national territory.

Alternative Minimum Income Tax - A tax rate of 30% is applied to the net taxable income on whichever is larger between:

- The amount of the net taxable income (Traditional calculation of deducting costs and expenses from gross taxable income), and
- The net taxable income that arises after deducting a 95.33% from gross taxable income.

Branches of foreign companies are subject to the same tax rates as Panamanian companies. For Personal Tax the tax rate is progressive from 0% to 27%.

Capital Gains Tax. On sales of real estate there are two taxes involved. One is a 2% transfer tax and the other is a 10% income tax on the net profit.

- **Prepaid Dividend Tax:** Local corporations must pay a 4% complementary tax on each fiscal year's net taxed profit on behalf of their shareholders if no dividends are declared. This 4% will be applied to dividend tax when dividends are declared.
- **Annual License Tax.** All industrial or commercial business, except those exempted by specific laws, are required to have a license to operate. This tax is 2% of a company's net worth, including amounts owed to the foreign home office or affiliated companies. The tax is payable annually up to a maximum of US \$40,000.

Taxes on property

- Franchise Tax. Foreign and domestic corporations registered in the Public Registry are subject to an annual tax of US\$300, regardless of whether they are doing business in Panama.
- Annual Banking Institutions Tax. Banking Institutions are subject to an annual tax from \$ 50,000 to \$ 350,000 depending on the assets value.

3.3.4.2 Indirect Taxes

Sales Tax/Value Added Tax (VAT). Many consumer services and goods are subject to a 5% value added tax. Alcoholic beverages have a 10% tax rate and cigarettes have a 15% tax rate. The following items are exempt from VAT: Food (except restaurants that serve alcohol beverages which are taxed), medicine and medical services, and house rentals.

3.3.4.3 Social security contributions

- Social Security Tax. These are payments that are made monthly by employers and employees on the payroll of companies for the purpose of guaranteeing the functioning of the worker social security system and retirement benefits at the national level.

3.3.5 Mexico

Tax regime in México is mainly governed with a self declaration and self calculation policy. The principal fiscal obligations of entities and individuals are to calculate their taxes in order to make monthly provisional payments and to prepare an annual declaration for those taxes that require doing so, as well as to pay, transfer or withhold the predetermined tax, given the case, for those taxes that requires doing so (Tax Advisors and Consulting Group, 2010).

3.3.5.1 Direct Taxes

- **Income Tax ISR.** This tax is calculated on net taxable income. Monthly provisional payments are to be made during the fiscal year also an annual declaration is required. Net taxable income is subject to a graduated rate of 30% in 2010 to 2012; in 2013 is 29% and 28% in 2014.
- **Business Flat Tax IETU.** To calculate this tax it is necessary to determine the total income of the year, minus deductions and apply the rate of 16.5% in 2008, 17 in 2009, being these two years a period of transition and starting in 2010 a rate of 17.5% will be applied.
- **Local Payroll Taxes.** Most cities in Mexico have a payroll tax.
- **Vehicles Ownership.** All motorized vehicles (including scooters, motorcycles, care, tractors, trucks, trailers, etc.) are all taxed on their value annually.

3.3.5.2 Indirect Taxes

- **Value Added Tax.** The general rate is 16% but there is also a 0% rate in the sale of patents, medicines and some nutritional product. There are also lower rates applied to certain locations in the country. 11% is applicable rate in the areas located 100 km (62.14 miles) south from the border and 50 km (31.07 miles) from the coast going inland.
- **Special Product and Service Tax.** This tax is applicable to entities and individuals that sell import certain goods in a definitive manner or render certain services. Some of these products are: alcoholic beverages; alcohol and denatured alcohol; tobacco and cigarettes; gasoline and diesel; mineral water, hydrating or re-hydrating beverages; and certain services as telecommunications.
- **Tax on Cash Deposits IDE.** This tax was designed as a measure against the tax evasion of informal businesses owners. For every cash deposit of more than \$15,000.00 Mexican pesos made on any bank account, in a single transaction or

in several transactions in the course of one month, the bank will retain a 3% of the amount that surpasses the \$15,000.00 pesos limit.

3.3.5.3 Social security contributions

- Social Security Tax. Employers must make monthly payments to IMSS (Mexican Social Security Institute) for the medical services to registered workers who also incur in a monthly payment.
- Retirement Savings Tax. In actuality this is a part of the social security payment, but is deposited bi-monthly (every two months) in a special bank account. (Payment equal to 2% of the employee's salary).
- Employee Housing Tax. Employers are required by law to furnish housing to their employees. This is accomplished by contributing to the INFONAVIT (Mexican Federal Government agency) bi-monthly (every two months). This agency then in turn finances the purchase of housing by the workers. The payment is equal to 5% of the employee's salary.

3.3.6 Common weaknesses of Latin American Tax Structures

As it is explained in the macroeconomic section, the performance of the tax systems in terms of collection has similar roots that reduce the effectiveness to obtain appropriate levels of revenues in Latin America.

3.3.6.1 The narrow tax base (informality)

The informal economy is large in Latin America and its existence is intimately related to the fiscal system. Almost by definition, employers and workers in the informal economy do not pay personal or corporate income taxes (either because their incomes are too low, or because they are not registered with tax authorities), nor do their customers generally pay any relevant sales taxes. Against this, the people left out of the social safety net mean that informality is associated with lower public-sector expenditures.

Whether informality is defined in terms of those who do not contribute to tax revenues, or those who are not covered by social security, it is an important indicator of a weak or broken social contract. Some people in the informal economy are there as the result of a deliberate choice not to engage with the state, based on a personal cost-benefit calculation – even if they might not see it that way. Others have been excluded from the formal sector, and for them informal employment is really disguised under-employment stemming from rigidities in labor-market institutions. There is evidence in the region of a pick-and-mix approach to taxes and benefits, with individuals or enterprises accepting some but not all of the engagements the state offers (Organisation for Economic Co-operation and Development, 2009).

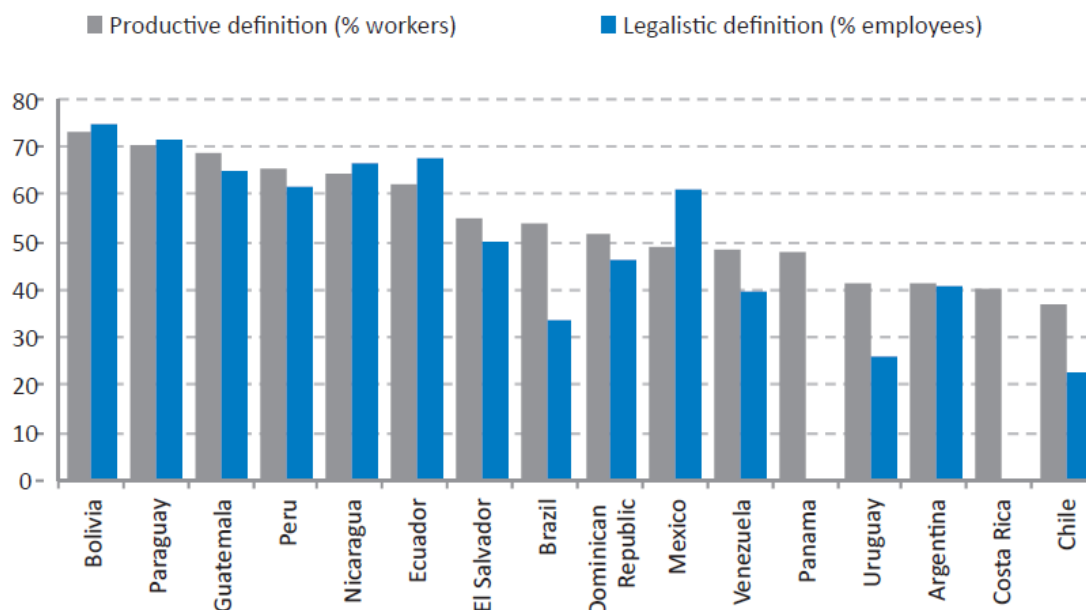


Figure 3-V Labor informality in Latin America.3

3.3.6.2 Evasion

Closely related to informality, the region has serious tax evasion problems. According to various ECLAC studies (Economic Commission for Latin America and the Caribbean. United Nations., 2010), income tax evasion is very common and ranges

³ The productive definition of informality includes the unskilled self-employed workers, workers in small private firms of fewer than five employees, and workers receiving zero-income; the legalistic definition of informality refers to employees with no pension entitlement through their jobs (Organisation for Economic Co-operation and Development, 2009).

from 40% to 65% approximately, representing a shortfall of 4.6% of GDP on average. These high levels of evasion undermine the redistributive effect of income tax. On the one hand, evasion affects horizontal equity, since evaders end up paying less than taxpayers with the same capacity to pay who choose to fulfill their tax obligations. On the other hand, it may also reduce vertical equity, especially in progressive income taxes: the higher the taxes, the greater the incentive to evade them. In addition, people with more resources have easier access to professional advisers, who often promote tax avoidance strategies or reduce the risks of noncompliance. Monitoring of evasion and avoidance is therefore essential in order to improve the distributive effects of tax systems in the region.

3.3.6.3 Confidence in tax system

Another common characteristic is the awareness of population about the performance of tax system. The willingness to pay more taxes is not particularly widespread in society. This “tax hostility” is a problem that must be tackled precisely by greater transparency in the use of tax resources, as well as tangible impacts on well-being as a result of their use. The vicious cycle of low tax collection and limited tax legitimacy must be broken and replaced with a virtuous cycle of higher tax collection and greater consensus regarding tax reforms (Economic Commission for Latin America and the Caribbean. United Nations., 2010).

The traditional belief of Latin American citizens is that their governments have enough resources for public spending due to the revenues created by the exploitation of natural resources such as oil in some countries when they actually, as already seen, is not the case; in addition to this they have doubts about the legitimacy of the usage of these resources. Besides these common beliefs, the culture of paying taxes is not a particular virtue of residents in this region and consequently there is a difficulty to create awareness among the population about the importance of this system. Under these justifications, people, simply do not contribute.

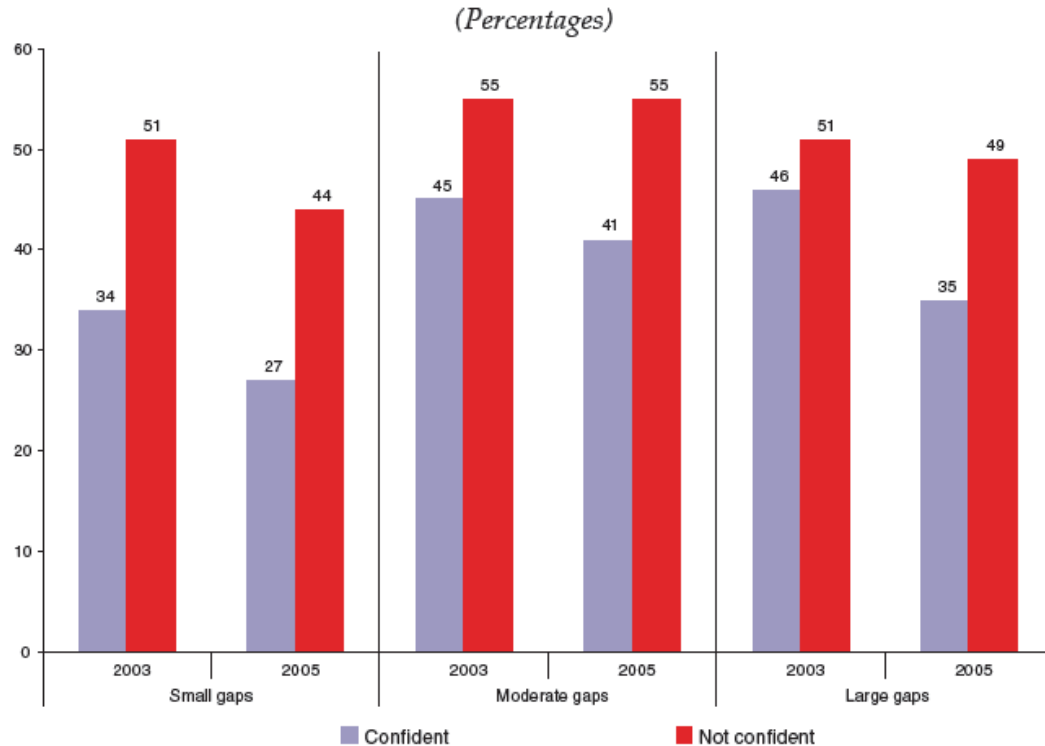


Figure 3-VI Latin America (18 countries): people who believe that the tax burden is very heavy, by degree of confidence in tax spending and social gaps in countries, 2003 and 2005.⁴

3.3.6.4 Local governments collection

Local governments in Latin America are flexing their fiscal muscles but relative to their counterparts in the OECD remain relatively small and heavily dependent on central government transfers. While the level of local government expenditures was around 41 per cent of central government expenditures in OECD countries during the period 1990-2006, the corresponding figure for Latin America was only 23 per cent. The ratio for revenues was similar (Organisation for Economic Co-operation and Development, 2009).

⁴ The questions used in the survey were: All things considered, do you think that taxation levels in [country] are very high, high, low, very low or just right? Are you confident that tax money will be well spent by the State? Countries are divided into three groups according to size of the social gap (Economic Commission for Latin America and the Caribbean. United Nations., 2010).

4 MEASUREMENT OF TAX REVENUES EFFECT ON FDI IN CHILE, COSTA RICA, BRAZIL, PANAMA AND MEXICO

4.1 Methodology of Research

As already mentioned the objective of this document is to find an explanation of the behavior of the inbound FDI flows due to the Tax Revenues obtained by governments in Latin America. The Analysis will be done through a combination of quantitative and qualitative evaluation as follows:

- i. Define the macroeconomic variables that will be object of evaluation with the statistical tools. It is assumed that two or more independent variables are analyzed at the same time and the statistical tool is multiple linear regression.
- ii. Retrieve significant data with an appropriate sample size. The data should be officially published by well known and respectful organizations or institutions.
- iii. Analyze the relationship between the chosen variables in order to validate the hypotheses proposed. The statistical model and the validation will be run in software able to do computations quickly, in this case, models and tests will be run in a spreadsheet application.
- iv. No serious analysis is complete without an appropriate interpretation of the findings. A benchmarking of the main performances is carried out with the purpose to explain much better what models are giving as output. Recommendations and suggestions by experts, organizations and institutions are cited with the intention to complement the study.

4.2 Macroeconomic variables definition

Multiple linear regression uses the values from an existing data set consisting of measurements of the values of more than two variables, X_1, X_2, \dots, X_n and Y , to develop a model that is useful for predicting the value of the dependent variable, Y for a collection of values of X . For this analysis, the variables that measure the FDI level is

considered as the dependent variable (Y), and the independent variables will be measures of tax revenues and a control variable GDP⁵ (X).

For this analysis, the most relevant variable to take in consideration should be the inward FDI flows measured in millions of dollars. This variable will be considered as independent variable in the multiple regression model (Y).

In terms of taxes, the range of possible variables is broader, but with the intention to simplify the management of independent variables, the tax revenues will be split only in the 4 general categories of taxes. Additionally, a fifth variable, the GDP will be considered as a variable control with the aim of giving a better consistency in the model due to the strong assumption of relationship between inward FDI and GDP.

Independent Variables (X _n)	Dependent Variable (Y)
$X_1 = \frac{\text{Direct Tax Revenues (million S/year)}}{\text{Gross Domestic Product GDP (million S/year)}} [\%]$	$Y = \text{Inward FDI flows} \left[\frac{\text{million \$}}{\text{year}} \right]$
$X_2 = \frac{\text{Total Income and Capital Gains Tax Revenues (million S/year)}}{\text{Gross Domestic Product GDP (million S/year)}} [\%]$	
$X_3 = \frac{\text{Total General goods and services Tax Revenues (million S/year)}}{\text{Gross Domestic Product GDP (million S/year)}} [\%]$	
$X_4 = \frac{\text{Total Social Security Contributions Tax Revenues (million S/year)}}{\text{Gross Domestic Product GDP (million S/year)}} [\%]$	
$X_5 = \text{Gross Domestic Product GDP (million \$ / year)}$	

Figure 4-I Macroeconomic variables definition for statistical analysis

⁵ To control for a variable is to try to separate its effect from the treatment effect, so it will not confound with the treatment. There are many methods that try to control for variables. Some are based on matching individuals between treatment and control; others use assumptions about the nature of the effects of the variables to try to model the effect mathematically, for example, using regression (Stark, 2010).

Due to the strong relationship between the size of the economy and the levels of FDI, it is assumed that the GDP variable will help to maintain this effect in modeling and separate the possible distortions created the percentages of tax revenues as independent variables.

4.2.1 Causality relationships between FDI and growth of GDP

As (Lean, 2008) documented, many studies have given greater attention to long-run and causality relationships between FDI and growth. Their results are mixed. There seems to be a strong relationship between FDI and growth.

The causality between FDI and GDP growth could run in either direction because FDI could promote further GDP growth. In line with the ‘new growth theory’, some economists argued that through the process of capital inflow and accumulation in the recipient economy, FDI is expected to generate non-convex growth by encouraging the incorporation of new economic inputs and adoption and transfer of foreign technologies into the production functions of the recipient economy. Further, through technology and new knowledge, transfers of technical expertise and the introduction of alternative and progressive management practices and organizational arrangements, FDI is expected to augment the skill acquisition of the host country’s workforce. As a result, foreign investors may increase productivity in the recipient economy and FDI can be deemed to be a channel for subsequent domestic investment and technological progress.

On the other hand, it is also argued that the causality could also run the opposite way where rapid GDP growth could induce the inflow of FDI. This is because rapid GDP growth will usually create a shortage or a high level of requirement for needed capital in the host country and hence the host country will demand more FDI by offering attractive, preferential or advantageous terms to attract overseas investors in order to gain more FDI. Further, rapid economic growth in the host country will build the confidence of potential overseas investors who intend to invest in the host country. More importantly, rapid economic growth, accompanied by an increased higher per capital income, will create huge opportunities for FDI to invest not only in the productive industrial sectors, but also in the consumption sectors like consumers’ durable goods and infrastructure and utility sectors of the host country. It is additionally mentioned a country’s rate of growth and development level also in part determines the attractiveness of the economy as a location for FDI. Hence, the high growth rate is also likely to influence the quantum level, type and structure of FDI.



Figure 4-II Double causality between FDI and GDP growth.

According to these perspectives the definition of variables can be affected and distorted in knowing exactly which the real independent or dependent variable is. With the purpose of overcome this double causality in the model and for the aims of this work it is manipulated the temporal dimension for the variables, in this way, the FDI inflows will be ahead one year more than the data of independent variables.

For instance, the set of data for regression the FDI of 2000, 2001, ..., will be calculated with X variables of 1999,2000, ... , and the same for the following years until the completion of all the sample of data. With this adjustment the dependent variable will be always the FDI inflows caused by a combination of variables (X)

Independent Variables (X_n)	Dependent Variable (Y)
$X_{1,1999} = \frac{\text{Direct Tax Revenues (million S/year)}}{\text{Gross Domestic Product GDP (million S/year)}} [\%]$	$Y_{2000} =$ <p><i>Inward FDI flows</i> $\left[\frac{\text{million \\$}}{\text{year}} \right]$</p>
$X_{2,1999} = \frac{\text{Total Income and Capital Gains Tax Revenues (million S/year)}}{\text{Gross Domestic Product GDP (million S/year)}} [\%]$	
$X_{3,1999} = \frac{\text{Total General goods and services Tax Revenues (million S/year)}}{\text{Gross Domestic Product GDP (million S/year)}} [\%]$	
$X_{4,1999} = \frac{\text{Total Social Security Contributions Tax Revenues (million S/year)}}{\text{Gross Domestic Product GDP (million S/year)}} [\%]$	
$X_{5,1999} = \text{Gross Domestic Product GDP (million \$ /year)}$	

Figure 4-III Example of manipulation of variables for avoiding double causality in the regression model

4.3 Sources of data

Regarding the levels of Inward FDI, the data comes from The United Nations Conference on Trade and Development UNCTAD. This organization compiles statistics on FDI in a database which presents aggregate inflows, outflows, inward stocks and outward stocks of Foreign Direct Investment for 196 reporting economies. The website allows submitting a query for retrieving data by economy, year, mode and type of measure.

In the case of data of Tax revenues it comes from the United Nations - Economic Commission for Latin America (ECLAC). The ECLAC compiles socioeconomic and environmental data which is available in CEPALSTAT.

CEPALSTAT provides access to statistical databases produced by many ECLAC Divisions. In each of them the user can export data and cross-tabulate indicators to produce tables combining data from different series and / or countries and / or periods. Charts can also be prepared based on the stored data. Metadata containing the definition of the variables, description of the sources, and other relevant characteristics can be consulted and downloaded.

4.4 Statistical Analysis

4.4.1 Multiple Regression model

In majority of applications, the response of an experiment can be predicted more adequately not on the basis of a single independent input variable but on a collection of such variables. Indeed, a typical situation is one of which there are a set of, say, k input variables and the response Y is related to them by the relation

$$Y = \beta_0 + \beta_1 x_1 + \dots + \beta_k x_k + e$$

Where $x_j, j = 1, \dots, k$ is the level of the j th input variable and e is a random error that we shall assume is normally distributed with mean 0 and (constant) variance σ^2 . The parameters $\beta_0, \beta_1, \dots, \beta_k$ and σ^2 are assumed to be unknown and must be estimated from the data (Ross, 2000).

It is noted that (Marques de Sá, 2007):

- The general linear regression model implies that the observations are independent normal variables.
- When the x_j represent values of different predictor variables the model is called a first-order model, in which there are no interaction effects between the predictor variables.
- The general linear regression model encompasses also qualitative predictors.

4.4.2 Test for significance of regression

A statistical hypothesis is usually a statement about a set of parameters of population distribution. It is called a hypothesis because it is not known whether or not is true.

Note that in accepting a given hypothesis we are not actually claiming that it is true but rather we are saying that the resulting data appear to be consistent with it (Ross, 2000).

The test for significance of regression is a test to determine whether a linear relationship exists between the response variable y and a subset of the regressor variables x_1, x_2, \dots, x_k . The appropriate hypotheses are:

$$H_0: \beta_1 = \beta_2 = \dots = \beta_k = 0$$

$$H_1: \beta_j \neq 0 \text{ for at least one } j$$

Rejection of $H_0: \beta_1 = \beta_2 = \dots = \beta_k = 0$ implies that at least one of the regressors variables x_1, x_2, \dots, x_k contributes significantly to the model.

The test for significance of regression is a generalization of the procedure used in simple linear regression. The total sum of squares SST is partitioned into a sum of squares due to regression and a sum of squares due to error, say,

$$SS_T = SS_R + SS_E$$

Now if $H_0: \beta_1 = \beta_2 = \dots = \beta_k = 0$ is true, SS_R/σ^2 is a chi-square random variable with k degrees of freedom. Note that the number of degrees of freedom for this chi-square random variable is equal to the number of regressor variables in the model. We can also show the SS_E/σ^2 is a chi-square random variable with $n - p$ degrees of freedom, and that SS_R and SS_E are independent. The test statistic for $H_0: \beta_1 = \beta_2 = \dots = \beta_k = 0$ is

$$F_0 = \frac{SS_R/k}{SS_E/(n-p)} = \frac{MS_R}{MS_E}$$

We should reject H_0 if the computed value of this statistic, f_0 , is greater than $f_{\alpha, k, n-p}$. The procedure is usually summarized in an analysis of variance such as the following table:

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F_0
Regression	SS_R	k	MS_R	MS_R/MS_E
Error or residual	SS_E	$n - p$	MS_E	
Total	SS_T	$n - 1$		

Figure 4-IV Analysis of Variance (ANOVA) for Testing Significance of Regression in Multiple Regression

R^2 and Adjusted R^2

We may also use the coefficient of multiple determination R^2 as a global statistic to assess the fit of the model. Computationally,

$$R^2 = \frac{SS_R}{SS_T} = 1 - \frac{SS_E}{SS_T}$$

Many regression users prefer to use an adjusted R^2 statistic:

$$R_{adj}^2 = 1 - \frac{SS_E/(n-p)}{SS_T/(n-1)}$$

The adjusted R^2 statistic essentially penalizes the analyst for adding terms to the model. It is an easy way to guard against over fitting, that is, including regressors that are not really useful. Consequently, it is very useful in comparing and evaluating competing regression models.

4.4.3 Tests on Individual Regression Coefficients

We are frequently interested in testing hypotheses on the individual regression coefficients. Such tests would be useful in determining the potential value of each of the regressor variables in the regression model. For example, the model might be more effective with the inclusion of additional variables or perhaps with the deletion of one or more of the regressors presently in the model.

Adding a variable to a regression model always causes the sum of squares for regression to increase and the error sum of squares to decrease (this is why R^2 always increases when a variable is added). We must decide whether the increase in the regression sum of squares is large enough to justify using the additional variable in the model. Furthermore, adding an unimportant variable to the model can actually increase the error mean square, indicating that adding such a variable has actually made the model a poorer fit to the data (this is why R^2_{adj} is a better measure of global model fit than the ordinary R^2). The hypotheses for testing the significance of any individual regression coefficient, say β_j , are

$$H_0: \beta_j = 0$$

$$H_1: \beta_j \neq 0$$

If $H_0: \beta_j = 0$ is not rejected, this indicates that the regressor x_j can be deleted from the model. The test statistic for this hypothesis is

$$T_0 = \frac{\hat{\beta}_j}{se(\hat{\beta}_j)}$$

The denominator is the standard error of the regression coefficient $\hat{\beta}_j$. The null hypothesis

$H_0: \beta_j = 0$ is rejected if $|t_0| > t_{\alpha/2, n-p}$. This is called a partial or marginal test because the regression coefficient $\hat{\beta}_j$ depends on all the other regressor variables $x_i (i \neq j)$ that are in the model.

4.4.4 Models by country

With the support of the spreadsheet application all computations about regression are run. Several runs are performed due to results of tests where some variables should be deleted and not considered in the model until there is a satisfactory significance of the model. The main results for each country are provided in the following section. Note that tests of models and regressors are performed with a level of 95% of confidence.

4.4.4.1 Chile

Data of FDI (2000-2008), Tax Revenues and GDP (1999-2007) are manipulated by the spreadsheet application and the regression results and hypothesis tests are also included.

Economy	Y (FDI inflows)	X1(Direct/GDP)	X2(Indirect/GDP)	X3(Other taxes/GDP)	X4(Soc Cont/GDP)	X5(GDP)
Chile	\$ 4,860.01	3.70%	11.20%	0.68%	1.41%	\$ 72,251.60
Chile	\$ 4,199.75	4.30%	11.47%	0.47%	1.42%	\$ 75,494.99
Chile	\$ 2,549.92	4.63%	11.29%	0.71%	1.44%	\$ 78,044.48
Chile	\$ 4,307.42	4.63%	11.23%	0.71%	1.46%	\$ 79,749.06
Chile	\$ 7,172.72	4.43%	10.76%	0.68%	1.42%	\$ 82,872.76
Chile	\$ 6,983.80	4.50%	10.41%	0.72%	1.42%	\$ 87,879.18
Chile	\$ 7,298.38	5.97%	10.24%	0.68%	1.41%	\$ 92,764.78
Chile	\$ 12,577.18	6.96%	9.26%	0.76%	1.35%	\$ 97,022.64
Chile	\$ 16,786.86	8.41%	9.79%	0.68%	1.34%	\$101,563.60

Figure 4-V Chilean Data of FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).

After some computations and validations of hypothesis of the models and regressors, the best model is:

$$Y = 71806.94 + 174777.46X_2 - 7682518.47X_4 + 0.30X_5$$

The summary output of the model is:

Regression Statistics	
Multiple R	0.970682089
R Square	0.942223718
Adjusted R Square	0.907557949
Standard Error	1380.510187
Observations	9

ANOVA								
	df	SS	MS	F	Significance F	<i>f</i> _{0.05,3,5}	Ho	Result
Regression	3	155400953.7	51800317.91	27.18023413	0.001600456	5.409	Rejected	statistically significant
Residual	5	9529041.887	1905808.377					
Total	8	16492995.6						

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	71806.94465	35941.64872	1.997875646	0.10221642	-20584.00467	164197.894	-20584.00467	164197.894
X Variable 1	174777.4613	203549.4975	0.858648454	0.42976582	-348463.1795	698018.1022	-348463.1795	698018.1022
X Variable 2	-7682518.468	2283688.561	-3.364083264	0.020018487	-13552926.8	-1812110.137	-13552926.8	-1812110.137
X Variable 3	0.295285661	0.131664462	2.242713463	0.074958953	-0.043168613	0.633739934	-0.043168613	0.633739934

This means that the model is statistically significant considering that the FDI inflows are proportional to the Indirect Tax Revenues, Social contributions Revenues and GDP.

4.4.4.2 Costa Rica

In an equivalent way, data of Costa Rican FDI (2000-2008), Tax Revenues and GDP (1999-2007) are treated by the spreadsheet application and the regression results and hypothesis tests are also showed.

Economy	Y (FDI inflows)	X1(Direct/GDP)	X2(Indirect/GDP)	X3(Other taxes/GDP)	X4(Soc Cont/GDP)	X5(GDP)
Costa Rica	\$ 408.56	3.25%	8.23%	0.07%	0.39%	\$15,664.50
Costa Rica	\$ 460.38	3.14%	8.68%	0.09%	0.38%	\$15,946.59
Costa Rica	\$ 659.36	3.48%	9.28%	0.07%	0.39%	\$16,118.24
Costa Rica	\$ 575.06	3.57%	9.21%	0.06%	0.38%	\$16,586.02
Costa Rica	\$ 793.83	3.82%	9.09%	0.07%	0.36%	\$17,648.28
Costa Rica	\$ 861.04	3.78%	9.16%	0.04%	0.34%	\$18,400.00
Costa Rica	\$ 1,469.09	3.90%	9.34%	0.03%	0.32%	\$19,483.09
Costa Rica	\$ 1,896.10	3.96%	9.71%	0.03%	0.29%	\$21,193.64
Costa Rica	\$ 2,021.00	4.52%	10.38%	0.05%	0.28%	\$22,845.78

Figure 4-VI Costa Rican Data of FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).

After calculations and tests of hypothesis of the models and regressors, the best model is:

$$Y = -2642.08 - 35588.25X_1 - 236705.70X_3 + 0.28X_5$$

The summary output of the model is:

Regression Statistics	
Multiple R	0.983411596
R Square	0.967098367
Adjusted R Square	0.947357387
Standard Error	141.9604522
Observations	9

ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	<i>f_{0.05,3,5}</i>	<i>H₀</i>	<i>Result</i>
Regression	3	2961815.139	987271.7129	48.98938029	0.000395282	5.409	Rejected	statistically significant
Residual	5	100763.8499	20152.76999					
Total	8	3062578.989						

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-2642.079728	738.4155259	-3.578039241	0.015907805	-4540.237265	-743.92219	-4540.237265	-743.9221908
X Variable 1	-35588.25047	34689.36677	-1.02591237	0.351979685	-124760.1066	53583.6056	-124760.1066	53583.60562
X Variable 2	-236705.6995	348458.1587	-0.679294468	0.527117989	-1132445.912	659034.513	-1132445.912	659034.5134
X Variable 3	0.280828761	0.061065791	4.598790227	0.00584674	0.123854149	0.43780337	0.123854149	0.437803372

This means that the model is statistically significant considering that the FDI inflows are proportional to the Direct Tax Revenues, Other Taxes Revenues and GDP.

4.4.4.3 Brazil

Statistics of FDI (2000-2008), Tax Revenues and GDP (1999-2007) are manipulated by the same spreadsheet application and the regression results and hypothesis tests are also included.

Economy	Y (FDI inflows)	X1(Direct/GDP)	X2(Indirect/GDP)	X3(Other taxes/GDP)	X4(Soc Cont/GDP)	X5(GDP)
Brazil	\$ 32,779.24	8.50%	13.07%	0.50%	6.95%	\$618,112.90
Brazil	\$ 22,457.35	8.72%	13.98%	0.50%	7.18%	\$644,730.02
Brazil	\$ 16,590.20	9.17%	14.38%	0.52%	7.24%	\$653,196.09
Brazil	\$ 10,143.52	9.54%	14.47%	0.38%	7.47%	\$670,558.66
Brazil	\$ 18,145.88	9.50%	14.14%	0.38%	7.40%	\$678,247.87
Brazil	\$ 15,066.29	9.35%	14.80%	0.46%	7.62%	\$716,991.37
Brazil	\$ 18,822.21	10.13%	14.74%	0.48%	7.98%	\$739,646.00
Brazil	\$ 34,584.90	10.22%	14.72%	0.47%	8.14%	\$769,017.35
Brazil	\$ 45,058.16	10.87%	14.90%	0.47%	8.48%	\$812,600.00

Figure 4-VII Brazilian Data of FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).

After the routinely calculations and validations of hypothesis of the models and regressors, the best model is:

$$Y = 151378.14 - 2360872.06X_2 + 5537999.99X_3 + 0.26X_5$$

The summary output of the model is:

Regression Statistics	
Multiple R	0.952974143
R Square	0.908159717
Adjusted R Square	0.853055547
Standard Error	4332.948143
Observations	9

ANOVA								
	df	SS	MS	F	Significance F	f _{0.05,3,5}	Ho	Result
Regression	3	928252243.5	309417414.5	16.4807803	0.005033336	5.409	Rejected	statistically significant
Residual	5	93872198.05	18774439.61					
Total	8	1022124442						

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	151378.1405	51317.51497	2.949833805	0.031891522	19462.26868	283294.0123	19462.26868	283294.0123
X Variable 1	-2360872.055	460121.1464	-5.130979251	0.003673057	-3543651.116	-1178092.99	-3543651.116	-1178092.994
X Variable 2	5537999.987	3127287.471	1.77086374	0.136795314	-2500948.379	13576948.35	-2500948.379	13576948.35
X Variable 3	0.265125149	0.04076703	6.503420722	0.00128358	0.160330162	0.369920136	0.160330162	0.369920136

This means that the model is statistically significant considering that the FDI inflows are proportional to the Indirect Tax Revenues, Other Taxes Revenues and GDP.

4.4.4.4 Panama

Figures of FDI (2000-2008), Tax Revenues and GDP (1999-2007) are analyzed by the spreadsheet application and the regression results and hypothesis tests are in the same way also included.

Economy	Y (FDI inflows)	X1(Direct/GDP)	X2(Indirect/GDP)	X3(Other taxes/GDP)	X4(Soc Cont/GDP)	X5(GDP)
Panama	\$ 700.30	4.80%	5.42%	0.34%	6.02%	\$15,664.50
Panama	\$ 404.60	4.54%	4.71%	0.36%	6.39%	\$15,946.59
Panama	\$ 77.90	4.47%	4.24%	0.30%	6.22%	\$16,118.24
Panama	\$ 770.80	4.32%	4.25%	0.28%	5.91%	\$16,586.02
Panama	\$ 1,003.90	4.05%	4.67%	0.26%	5.61%	\$17,648.28
Panama	\$ 962.10	4.05%	4.54%	0.19%	5.62%	\$18,400.00
Panama	\$ 2,497.90	4.37%	4.36%	0.18%	5.35%	\$19,483.09
Panama	\$ 1,907.20	5.77%	4.64%	0.18%	5.14%	\$21,193.64
Panama	\$ 2,401.70	5.63%	5.06%	0.19%	5.67%	\$22,845.78

Figure 4-VIII Panama Data of FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).

After some runs of calculations and validations of hypothesis of the models and regressors, the best model is:

$$Y = 670.73 - 8894.23X_1 - 61556.13X_4 + 0.25X_5$$

The summary output of the model is:

Regression Statistics	
Multiple R	0.908873485
R Square	0.826051013
Adjusted R Square	0.72168162
Standard Error	458.7370696
Observations	9

ANOVA									
	df	SS	MS	F	Significance F	<i>f</i> _{0.05,3,5}	<i>H</i> ₀	Result	
Regression	3	4996692.681	1665564.227	7.914686416	0.024053558	5.409	Rejected	statistically significant	
Residual	5	1052198.495	210439.699						
Total	8	6048891.176							

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	670.7340878	5014.066019	0.133770494	0.898801572	-12218.33294	13559.8011	-12218.33294	13559.8011
X Variable 1	-8894.229117	36840.90553	-0.241422652	0.818815837	-103596.7916	85808.3334	-103596.7916	85808.3334
X Variable 2	-61556.13411	63700.9286	-0.966330248	0.378260526	-225304.584	102192.316	-225304.584	102192.3158
X Variable 3	0.24646056	0.129584388	1.901930972	0.115576566	-0.086646713	0.57956783	-0.086646713	0.579567833

This means that the model is statistically significant considering that the FDI inflows are proportional to the Direct Tax Revenues, Social security contributions Revenues and GDP.

4.4.4.5 Mexico

Data of FDI (2000-2008), Tax Revenues and GDP (1999-2007) are manipulated by the spreadsheet application and the regression results and hypothesis tests are also included.

Economy	Y (FDI inflows)	X1(Direct/GDP)	X2(Indirect/GDP)	X3(Other taxes/GDP)	X4(Soc Cont/GDP)	X5(GDP)
Mexico	\$ 18,028.35	4.44%	5.73%	0.18%	1.31%	\$597,359.30
Mexico	\$ 29,801.63	4.44%	5.13%	0.10%	1.32%	\$636,731.10
Mexico	\$ 23,721.82	4.64%	5.53%	0.10%	1.40%	\$636,522.09
Mexico	\$ 16,474.94	4.81%	5.66%	0.14%	1.39%	\$641,435.70
Mexico	\$ 23,658.86	4.62%	5.35%	0.18%	1.43%	\$650,353.35
Mexico	\$ 21,922.06	4.18%	4.73%	0.08%	1.35%	\$676,445.35
Mexico	\$ 19,316.31	4.34%	4.35%	0.12%	1.31%	\$698,651.30
Mexico	\$ 27,278.00	4.52%	4.00%	0.12%	1.30%	\$733,833.76
Mexico	\$ 21,949.50	4.91%	3.96%	0.15%	1.28%	\$759,026.70

Figure 4-IX Mexican Data of FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).

For this case, and after several runs, there was no a statistically significant model for Mexican economy, at least, the behavior of these variables are not consistent with the performance of the Inward FDI. The summary output of the “best” model is described as follows:

SUMMARY OUTPUT RUN MEX1

Regression Statistics	
Multiple R	0.869253844
R Square	0.755602246
Adjusted R Square	0.348272656
Standard Error	3449.188981
Observations	9

ANOVA						Ho	Result
	df	SS	MS	F	Significance F		
Regression	5	110344645.6	22068929.12	1.855014378	0.324067814	9.013 No rejected	statistically no significant
Residual	3	35690713.87	11896904.62				
Total	8	146035359.5					

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	376650.216	141579.7247	2.66034008	0.076316512	-73919.65557	827220.0876	-73919.65557	827220.0876
X Variable 1	3340550.723	1430077.186	2.335923372	0.101598013	-1210593.134	7891694.581	-1210593.134	7891694.581
X Variable 2	-4846001.032	1817093.496	-2.666896912	0.075890829	-10628803.51	936801.4489	-10628803.51	936801.4489
X Variable 3	-5744016.033	4157323.671	-1.381661975	0.260990211	-18974475.39	7486443.322	-18974475.39	7486443.322
X Variable 4	10335297.12	4873774.114	2.120594201	0.124112504	-5175227.299	25845821.54	-5175227.299	25845821.54
X Variable 5	-0.594119768	0.229034237	-2.594021644	0.080792365	-1.32300893	0.134769393	-1.32300893	0.134769393

4.4.5 General model

Aggregated Data of the five economies about FDI (2000-2008), Tax Revenues and GDP (1999-2007) are now manipulated by the spreadsheet application and the regression results and hypothesis tests are included as well.

Economy	Y (FDI inflows)	X1(Direct/GDP)	X2(Indirect/GDP)	X3(Other taxes/GDP)	X4(Soc Cont/GDP)	X5(GDP)
All 5 economies	\$ 56,776.46	6.30%	9.51%	0.36%	4.00%	\$ 1,314,701.70
All 5 economies	\$ 57,323.71	6.41%	9.63%	0.31%	4.09%	\$ 1,384,523.34
All 5 economies	\$ 43,599.21	6.74%	10.03%	0.33%	4.16%	\$ 1,395,568.28
All 5 economies	\$ 32,271.75	7.01%	10.16%	0.29%	4.29%	\$ 1,420,277.32
All 5 economies	\$ 50,775.20	6.89%	9.84%	0.30%	4.26%	\$ 1,441,572.64
All 5 economies	\$ 45,795.30	6.64%	9.88%	0.30%	4.35%	\$ 1,513,102.80
All 5 economies	\$ 49,403.89	7.17%	9.67%	0.32%	4.49%	\$ 1,564,894.76
All 5 economies	\$ 78,243.39	7.35%	9.43%	0.32%	4.54%	\$ 1,636,640.68
All 5 economies	\$ 88,217.22	7.95%	9.59%	0.33%	4.73%	\$ 1,713,495.71

Figure 4-X Aggregated Data of the 5 economies concerning FDI inflows (2000-2008), Taxes revenues by type (1999-2007) and GDP (1999-2007).

After similar computations and tests of hypothesis of the models and regressors, the best model is:

$$Y = 554649.66 + 4206644.25X_1 - 2696853.53X_2 - 24483766.47X_4 + 0.36X_5$$

The summary output of the model is:

Regression Statistics	
Multiple R	0.983098683
R Square	0.96648302
Adjusted R Square	0.932966039
Standard Error	4509.168568
Observations	9

ANOVA							<i>f</i> 0.05,4,4	<i>H</i> ₀	<i>Result</i>
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>				
Regression	4	2345212910	586303227.5	28.83562327	0.003294859	6.388	Rejected	statistically significant	
Residual	4	81330404.69	20332601.17						
Total	8	2426543315							

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	554649.6622	85713.73122	6.470954586	0.002938419	316670.1927	792629.1316	316670.1927	792629.1316
X Variable 1	4206644.254	1072800.878	3.921178981	0.017230553	1228071.507	7185217.002	1228071.507	7185217.002
X Variable 2	-2696853.53	1051791.407	-2.56405739	0.062369613	-5617094.633	223387.5731	-5617094.633	223387.5731
X Variable 3	-24483766.47	7129875.233	-3.433968432	0.02643933	-44279473.67	-4688059.283	-44279473.67	-4688059.283
X Variable 4	0.356869521	0.110905035	3.217793689	0.032348261	0.04894778	0.664791262	0.04894778	0.664791262

This means that the model is statistically significant considering that the FDI inflows are proportional to the Direct Tax Revenues, Indirect Taxes, Social security contributions Revenues and GDP. The variable of other taxes was no relevant in a general model.

4.5 Results

Regression models show the proportionality, positive or negative, of the independent variables (Tax Revenues and GDP) with respect to the independent variable (Inward FDI). With the hypothesis tests of the models and regressors it is possible to know which of these variables (X_j) are more relevant in the calculation of the dependent variable (Y). The proportionality comes from the sign of the regressors (β_j) and the relevance comes from the presence and tests of regressors in the model during computations. A matrix with these two dimensions is designed with the intention to represent results for each country and the effects of all the five countries.

4.5.1 Effects of Direct Taxes Revenues on FDI inflows

Results of models show that the level of Direct Taxes Revenues matter for some economies and for some not, regarding the effects on FDI inflows. The next figure summarizes the findings concerning the effects of these types of tax revenues according to the results obtained in previous computations.

Direct Tax Revenues effects on FDI inflows	Relevant relationship	No relevant relationship
Positive proportional (+)	General	Brazil
		Mexico
Negative proportional (-)	Costa Rica	Chile
	Panama	

Figure 4-XI Relevance and proportionality of Direct Tax Revenues effects on FDI inflows.

In general, for the region represented by the 5 countries, there is a relevant relationship and positively proportional of the effects of the Direct Tax Revenues on the levels of FDI inflows.

This behavior seems to be consistent with the fact that the main source of revenues for economies should come from Direct Taxes⁶. If the levels of income from this tax concept are good enough, countries have the possibility of using resources to destine to expenditure and investments that can attract capital investors, who, in the same way will contribute with more direct taxes to governments, both corporate and individual.

However, when we look at the performance of each individual country it is noted that the Direct Tax Revenues in Costa Rica and Panama have a relevant effect on Inward FDI, according to the model, this effect is negative proportional, which is interpreted that the more these governments tries to increase the Direct Tax Revenues they will discourage the flows of FDI. For the cases of Chile, Brazil and Mexico there

⁶ For instance, Personal Income Taxes, which are considered as Direct Taxes, provide more than a quarter of Tax Revenues in OECD countries. (Organisation for Economic Co-operation and Development, 2009)

was no relevance of this variable in the model. Some possible argumentations of these findings come from a benchmarking of the performance of the same measure with OECD countries.

The levels of the ratio of the Direct Tax Revenues compared with the GDP are very low in comparison with the OECD countries, while the bulk comes from excise tax and other indirect levies. The tax ratio difference between the OECD countries and the Latin American countries can be explained mainly by the low burden of tax income and net worth in the region, since the level of excise taxes is quite similar.

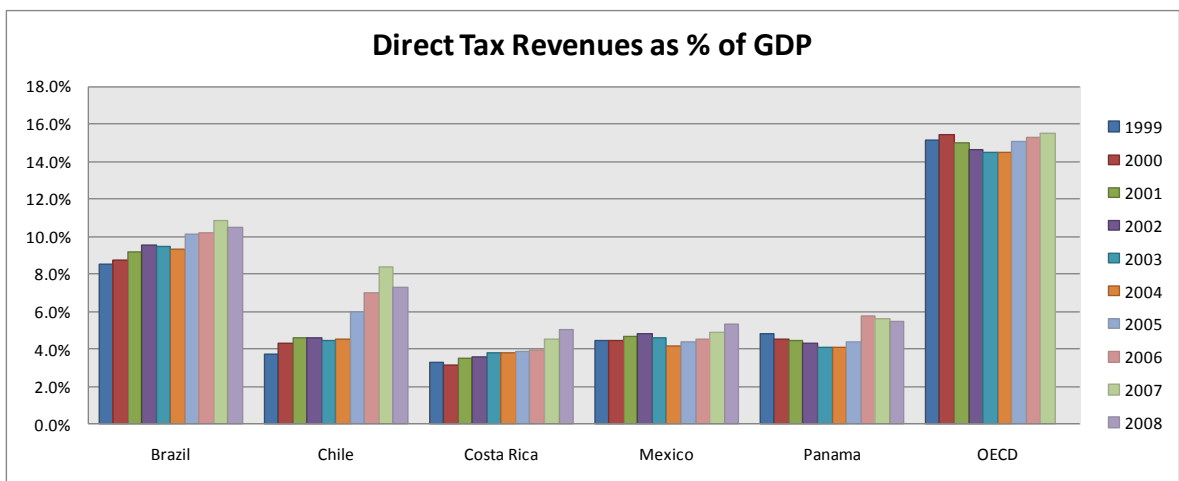


Figure 4-XII Benchmarking of the collection of Direct Tax Revenues. Latin American and OECD countries.

Although corporate income tax is quite similar in the two groups (just over 3% of GDP in OECD), there are significant differences in income tax (0.9% of GDP in Latin America, compared with almost 9% of GDP in OECD). Since personal income tax is the most progressive kind of tax, this would indicate that the Latin American countries' tax structure is more regressive than that of the developed economies, which adversely affects income distribution and is one of the reasons why the Latin American and Caribbean region is among the most unequal on the planet.

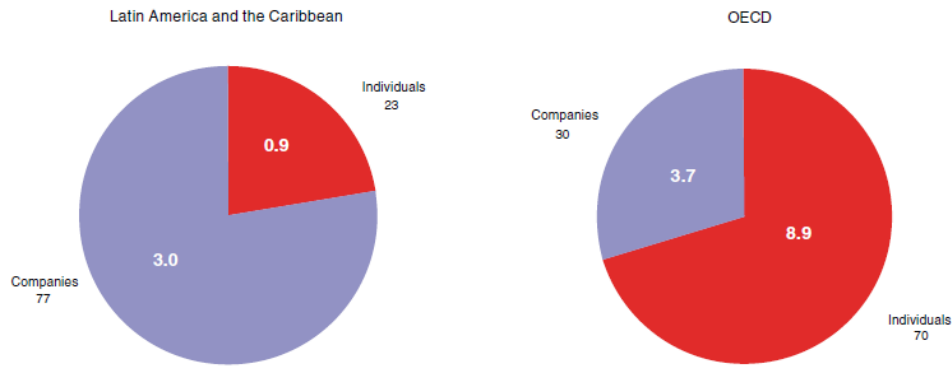


Figure 4-XIII Latin America and the Caribbean and the Organisation for Economic Cooperation and Development (OECD): Comparison of Income Taxation. (Economic Commission for Latin America and the Caribbean. United Nations., 2010)

The weakness of direct tax collection in Latin America and the Caribbean is basically due to two factors: the narrow tax base and high non-compliance levels. Both of these are also the result of the preferential treatment and tax loopholes that characterize the region's tax systems, resulting in considerable forgone revenue. As regards income tax, most of the countries afford preferential treatment to capital income through a series of exemptions or special incentives for financial placements, interest on government securities, mutual fund earnings, capital gains from immovable property and shares. Favorable treatment is also often given to reinvested profits. This forgone revenue reduces the tax base and increases the complexity of tax systems. This not only violates the basic requirements of equity, which are that persons with equal capacity to pay should pay the same amount in taxes (horizontal equity) and that those with greater capacity should pay a proportionally larger amount (vertical equity) but also creates economic distortions in resource allocation which undermine the global efficiency of the economy and make countries less competitive internationally.

Finally, in addition to the regressive structure of the tax burden, the region has serious tax evasion problems. According to various ECLAC studies, income tax evasion is very common and ranges from 40% to 65% approximately, representing a shortfall of 4.6% of GDP on average. These high levels of evasion undermine the redistributive effect of income tax. On the one hand, evasion affects horizontal equity, since evaders end up paying less than taxpayers with the same capacity to pay who choose to fulfill

their tax obligations. On the other hand, it may also reduce vertical equity, especially in progressive income taxes: the higher the taxes, the greater the incentive to evade them. In addition, people with more resources have easier access to professional advisers, who often promote tax avoidance strategies or reduce the risks of noncompliance. Monitoring of evasion and avoidance is therefore essential in order to improve the distributive effects of tax systems in the region (Economic Commission for Latin America and the Caribbean. United Nations., 2010).

Due to the weaknesses of the poor collection of Direct Taxes, countries need to modify rules and practices to obtain a more significant quantity of this kind of taxes. Foreign investors probably will consider a “negative” effect if a country tries to burden more direct taxes but they should also consider that more revenues for the government will reorient public spending that could be beneficial for doing business.

4.5.2 Effects of Indirect Taxes Revenues on FDI inflows

In a similar way, results of computations show that the level of Indirect Taxes Revenues matter just for some economies, in relation to the effects on FDI inflows. The next figure summarizes the results concerning the effects of these types of tax revenues.

Indirect Tax Revenues effects on FDI inflows	Relevant relationship	No relevant relationship
Positive proportional (+)	Chile	Costa Rica Panama
Negative proportional (-)	Brazil General	Mexico

Figure 4-XIV Relevance and proportionality of Indirect Tax Revenues effects on FDI inflows

The general model suggests that there is a negative proportion between the Indirect Tax Revenues and the levels of Inbound FDI. The possible explanation about this phenomenon is described by (KPMG Tax Advisors Ltda, 2010). A significant amount of a company's financial resources is spent on indirect taxes. For example, indirect taxes streaming through an organization account for approximately 40% to 55% of its operational revenue. As a result, indirect taxes take the 3rd largest financial value within an organization, following the amount spent on sales and purchases.

Indirect taxes are levied with the companies in the entire production chain, but ultimately paid by the final consumers. Some of these taxes are not directly noticed by the final consumers as they are charged to the consumers as an increase of the sales price of goods and services. Indirect taxes influence business competition as they cause a raise of the final sales price offered to a customer.

In a non-cumulative taxation system, the companies in the production chain have the right to offset taxes paid on its purchases against the indirect taxes due on their sales. In the situation that an indirect tax has a cumulative character, a supplier in the production chain may not be able to offset the indirect taxes paid on purchases against the taxes due on its sales. This leads to a “cascade effect” and accumulation of taxes (i.e. taxes on taxes) which in its turn affects the market prices even more.

The impact of indirect taxes on prices depends on the ability to effectively apply the non-cumulative concept. Due to legislative complexities, operational peculiarities, but also due to administrative flaws, indirect taxes may cause significant risks and also have a cumulative character (accumulation of taxes). This ultimately increases market prices, pressure on profit margins, competitive disadvantages, and a reduction of the net result available to shareholders.

Summarizing, the more a taxation system tries to burden with indirect taxes (consequently, with the intention to have more revenues under this concept) the more the possibility to reduce incentives to attract inversions. Comparing the levels of income of this kind of taxes, it is observed that only Chile has similar levels in relation to OECD

countries, Brazil shows a higher level and in contrast, Costa Rica, Panama and Mexico are under this point of reference.

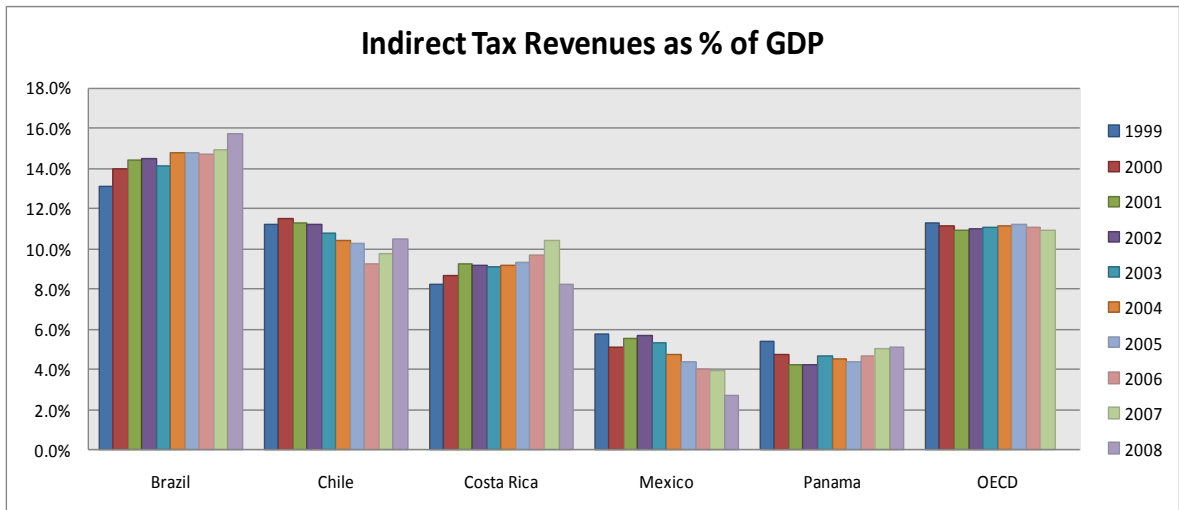


Figure 4-XV Benchmarking of the collection of Indirect Tax Revenues. Latin American and OECD countries.

It seems that for countries which are under the OECD comparison it is advisory that they should increase the indirect tax revenues for compensating the low level of collection but without discouraging investments. For Brazil and Chile they need to take control of this type of levies with the aim of not to promote the effects that indirect taxes can cause previously described.

4.5.3 Effects of Other Taxes Revenues on FDI inflows

The same procedures are performed for the case of Other Taxes. The inclusion of this variable in the calculations was a bit tricky attributable to the particular nature of this type of revenues which have a more random behavior.

The different situations for each economy and for the model in general according of the diverse runs are shown in the next table in a similar way:

Other Tax Revenues effects on FDI inflows	Relevant relationship	No relevant relationship
Positive proportional (+)	Brazil	Chile Panama General
	Negative proportional (-)	Costa Rica Mexico

Figure 4-XVI Relevance and proportionality of Other Tax Revenues effects on FDI inflows.

The general model, and for some economies, this variable is not relevant in relation to FDI inbound. Just Brazil and Costa Rica have some relevance even though the level of collection is very low in comparison with the GDP. Comparing with OECD countries just Brazil and Chile are above the average which is around the 0.3% of GDP.

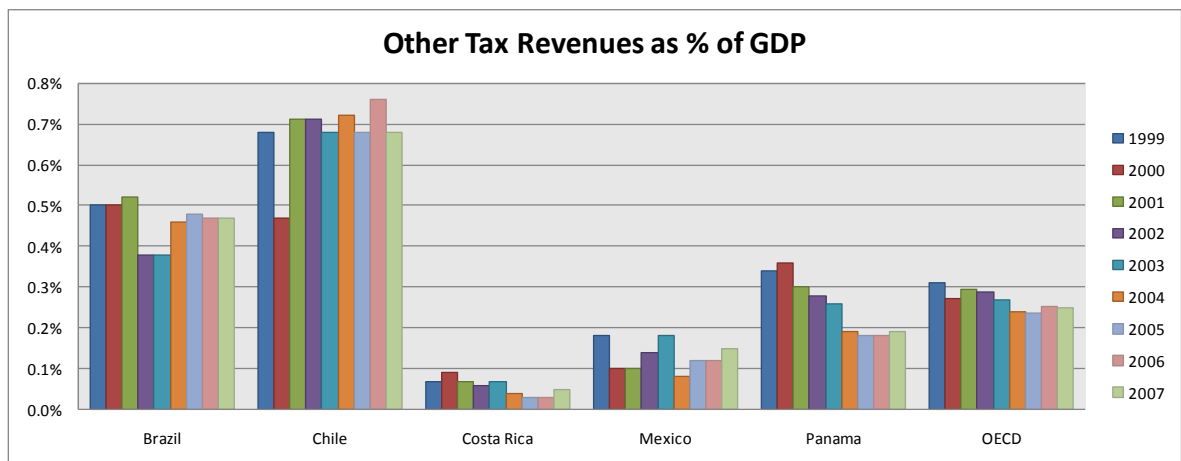


Figure 4-XVII Benchmarking of the collection of Other Tax Revenues. Latin American and OECD countries.

4.5.4 Effects of Social Contributions Revenues on FDI inflows

The next variable is the social contribution revenues, which is analyzed also during computations in the same way as others:

Social Contributions Revenues effects on FDI inflows	Relevant relationship	No relevant relationship
Positive proportional (+)		Costa Rica Mexico
Negative proportional (-)	Chile Panama General	Brazil

Figure 4-XVIII Relevance and proportionality of Social Contributions Tax Revenues effects on FDI inflows.

According to the results of the model, social contributions revenue generally matter in a negative proportion to FDI inflows. The empirical justification of this situation is that many systems, especially in developing and transition countries, unfortunately display very high administrative costs with low levels of efficiency. Also, the administrative costs of funded, individual account schemes are often relatively high in relation to the contributions collected or assets managed (Ross, 2004). In other words, there is no value perceived, in general, when social contributions are collected and transfer in benefits by pension or social institutions.

There is a disparity among the levels of social contributions revenues of Latin American countries and OECD members. Just Brazil and Panama have close levels of this type of revenues in comparison with OECD countries, the rest represent the same

situation of Latin American economies: a poor collection of contributions. As it is stated in the document of Latin America Economic Outlook (Organisation for Economic Co-operation and Development, 2009), one of the main reasons of this poor collection is informality as already explain in the common weaknesses of Latin American Taxation Systems.

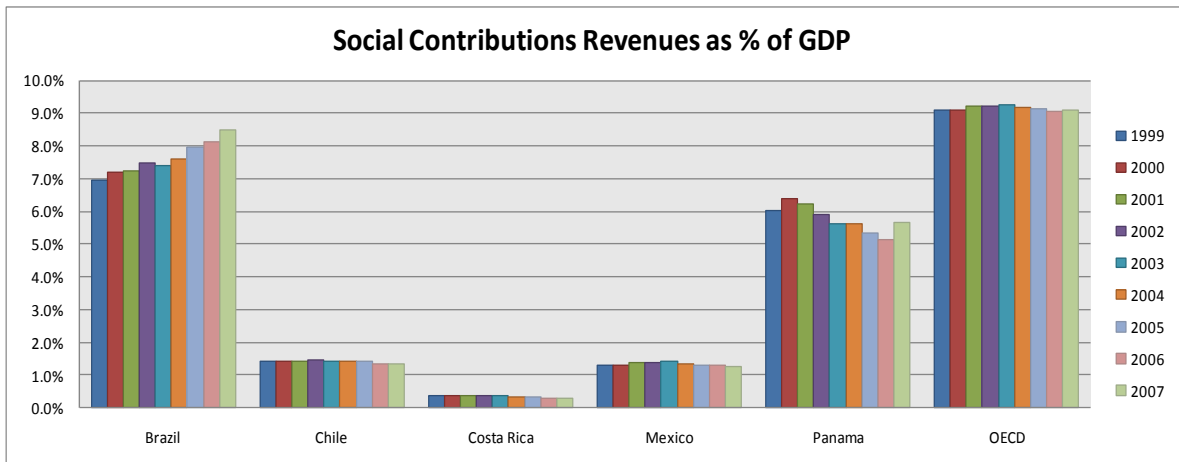


Figure 4-XIX Benchmarking of the collection of Social Contributions Revenues. Latin American and OECD countries.

Recommendations provided by (Ross, 2004) are highlighting the appropriate and efficient collection of social contributions to give viability to pension and social systems with the observation Contributory pension systems cannot pay benefits unless the required contributions are made. Further, there are no assets to manage to produce investment returns if collections are not made. While all of this may seem elemental, it is indeed the fact that in many places in the world weak collection mechanisms are conspicuous.

One of the key aspects of any pension system is its effective coverage, that is, the number of people who actually are brought into the system as contributors and who will ultimately receive a pension as a beneficiary. Where collection systems are weak, effective coverage is weak. Indeed, if systems are not carefully managed, people can come in without having made the required contributions and that makes a system even weaker. If effective coverage is inadequate, government subsidization generally

becomes important and, while subsidies for some social pensions may be in order, major government subsidization of a contributory scheme often undermines its basic rationale.

Another issue that is tied to collection is the adequacy of benefits. Unless contributions are reliably collected at a sufficient level, benefits cannot be adequate. Moreover, benefits need to be calibrated to collections in a contributory system. If the level of collections is low, benefits need to be kept low. In this regard, it is important for policymakers to avoid over-promising about the benefits that will be forthcoming based on dubious assumptions about revenues. Prescribed benefits may not be attained or may become impossible to pay when actual collections lag those erroneously assumed.

Fundamentally, revenues are essential to achieving financial solvency and fiscal sustainability. Program reforms and institutional modernization are inherently dependent on collection performance at projected levels. Given the importance of the collection function, this aspect of pension institutions deserves far more attention than it is frequently given.

5 CONCLUSIONS

5.1 About models construction and analysis

The quantitative analysis with a statistical model supports much better the explanation about the effects that the collection of different taxes have on the levels of foreign investments in Latin American countries. Although this kind of experiments with social sciences is difficult to be totally accurate due to the difficulty to model economic behaviors with diverse assumptions and points of views of analysts, these quantitative models provide at least a good reference of the possible trends of macroeconomic variables with the possibility to take actions with the aim to elaborate or modify policies which have effect on the main indicators and measures of a country.

Not only is the construction of the model sufficient to recognize patterns in economic issues, a meaningful comparison through time and among other economies is necessary with the purpose to detect gaps and obtain feedback to take control and promote decisions aiming to close gaps when the performance is not the desirable one. These comparisons are relevant for some organizations such as OECD or IMF when they recommend corrective actions to transition and developing economies as the case of Latin American countries.

Information about the five economies subject to study in this research converged in a general model that proposes to pay attention in the way how different types of tax revenues affect in a positive or negative mode to FDI levels. The increment in collection of Direct Taxes seems to be a positive factor for promoting a growth in FDI income if Latin American countries try to broaden the number of tax payers and review the system of exemptions or special incentives that represent considerable forgone revenue. Such actions might give more equity and reduce economic distortions in resource allocation which undermine the global efficiency of the economy and make countries less competitive internationally. This is a different perspective regarding the effects of this type of taxes when traditionally an increase in just rates, and not in the base of taxpayers, disappoints investors.

On the other hand, and according to the results of the model, Indirect Taxes and Social Contributions collection can represent inhibitors for the same source of foreign income. Despite being a region with reduced amounts of tax revenues, these kinds of taxes should be managed and control carefully in order to avoid the risks they represent when complexity or inefficiency are present in this type of taxations systems. Simplification and better administration seem to be formulas to shift the current negative effect to a positive one.

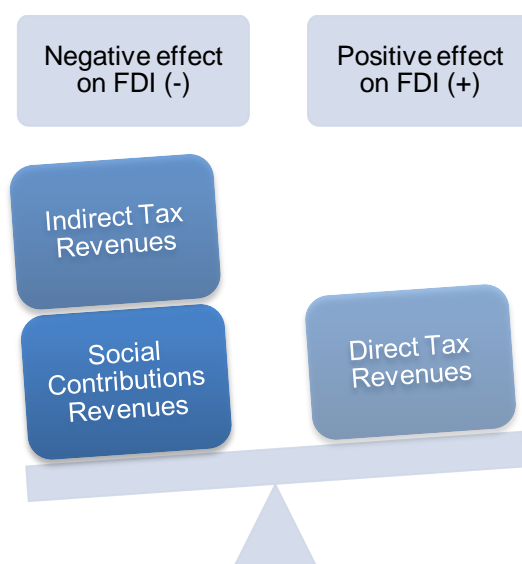
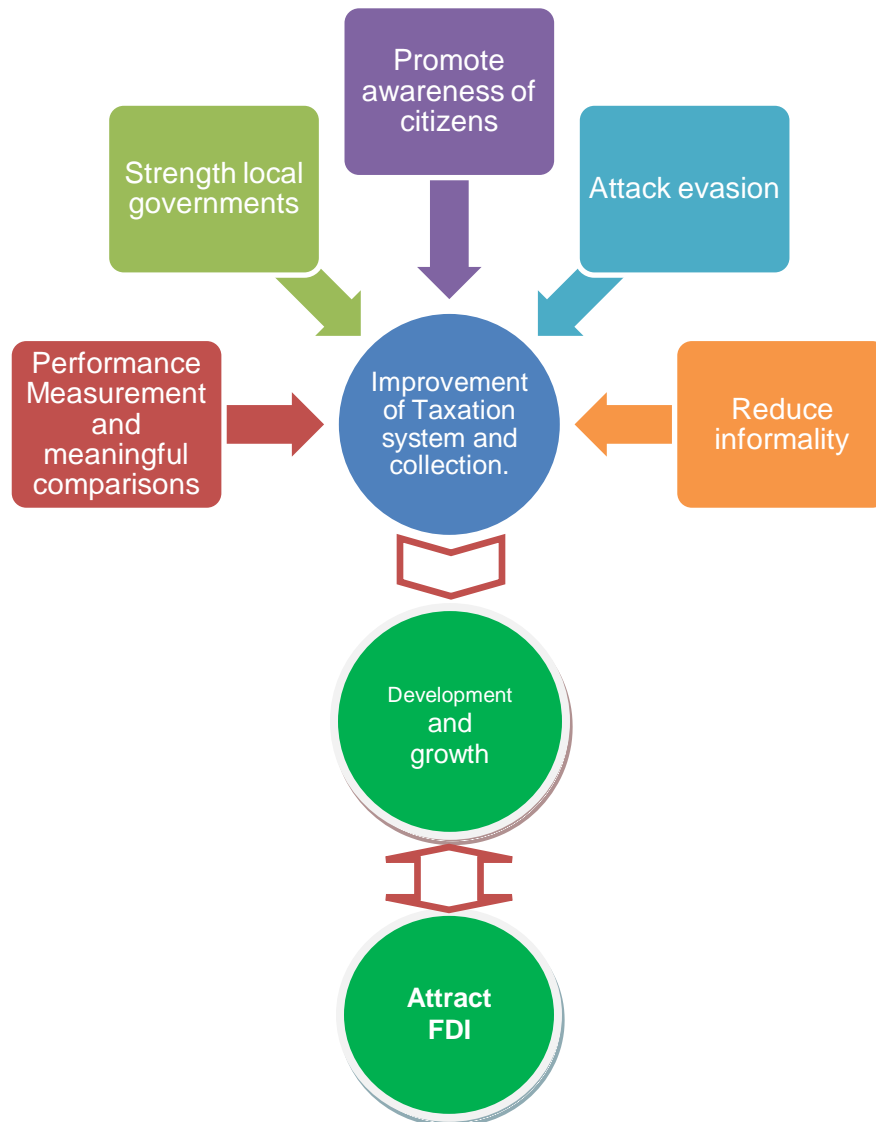


Figure 5-1 Current effects of different types of Tax Revenues on FDI levels of the studied countries.

5.2 About Taxation Systems improvement suggestions

Through the usage of statistical models and insistent (and frequent) recommendations of institutions to overcome weaknesses of tax structures in the region, it is possible to represent the main drivers that could encourage a better performance of taxation systems able to be eye-catching for foreign investors and at the same time, to be an important component for growth and development in the region. These drivers should be aligned with the principles of a good taxation system. Improvements seem to be logical but they probably will be effective in the long term due to the necessity of removing diverse barriers such as cultural, legislative, structural and political.

Figure 5-II Main drivers in improving Latin American Taxation Systems



5.3 About this research and current economic situation

Taxations systems and fiscal policies are currently key points in macroeconomic decisions. Economies like Greece, United Kingdom and the United States are now under constant debates about the management of fiscal deficits and one of the major obstacles to overcome though situations is the tax collection (Murphy, 2010) due to similar constraints as Latin America has. Consequently these issues seem to be common in several regions of the world. Due to this importance, Latin American countries should pay special attention in the sources of income for government since traditionally this

region has used deficit (debt) or other sources such as the dependency of natural resources instead of taxes.

As already discussed, Latin American countries report a low level of collection of taxes in general. This poor source of income may have an adverse effect to development in this region of the world as the ECLAC and OECD demonstrate in diverse papers and studies. Whether there is a lack of sufficient resources for government, public services and investment in infrastructure decrease in a reasonable degree the quality necessary to maintain an acceptable level of welfare for citizens. For the external economic environment the logic interpretation is not a positive indication to move capitals to locations where conditions with trends of reduced development and growth are present. As a result, the improvement and effectiveness of the fiscal system (among other factors) is a key challenge for policy makers regarding the intense competition for foreign investments in this age of globalization.

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7 APPENDIX

7.1 Acronyms

AETR	Average Effective Tax Rates
CIT	Corporate Income Tax
ECLAC	Economic Commission for Latin America and the Caribbean
FDI	Foreign Direct Investments
GDP	Gross Domestic Product
GFS	Government Finance Statistics
GNP	Gross National Product
IMF	International Monetary Fund
METR	Marginal Effective Tax Rates
MNE	Multinational Enterprise
OECD	Organisation for Economic Cooperation and Development
UNCTAD	The United Nations Conference on Trade and Development
VAT	Value Added Tax

7.2 Chile: main Economic Indicators

	2007	2008	2009 ^a
Annual percentage growth rates			
Gross domestic product	4.7	3.2	-1.8
Per capita gross domestic product	3.6	2.1	-2.8
Consumer prices	7.8	7.1	-1.9 ^b
Average real wage ^c	2.8	-0.2	4.8 ^d
Money (M1)	18.1	6.8	20.1 ^e
Real effective exchange rate ^f	1.6	-0.8	7.0 ^g
Terms of trade	3.4	-13.0	-2.4
Annual average percentages			
Urban unemployment rate	7.1	7.8	9.8 ^d
Central government overall balance/GDP	8.8	5.3	-3.6
Nominal deposit rate	5.9	7.8	2.7 ^h
Nominal lending rate	13.6	15.2	13.4 ⁱ
Millions of dollars			
Exports of goods and services	76 618	77 210	60 829
Imports of goods and services	53 957	69 010	48 719
Current account balance	7 189	-3 440	2 908
Capital and financial account balance ⁱ	-10 403	9 884	1 047
Overall balance	-3 214	6 444	3 955

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

7.3 Costa Rica: main Economic Indicators

	2007	2008	2009 ^a
Annual percentage growth rates			
Gross domestic product	7.8	2.6	-1.2
Per capita gross domestic product	6.3	1.2	-2.5
Consumer prices	10.8	13.9	4.0 ^b
Average real wage ^c	1.4	-2.0	9.4 ^d
Money (M1)	22.6	1.5	0.6 ^e
Real effective exchange rate ^f	-2.5	-3.4	-1.1 ^g
Terms of trade	-1.0	-3.8	8.0
Annual average percentages			
Urban unemployment rate	4.8	4.8	7.6
Central government overall balance/GDP	0.6	0.2	-3.8
Nominal deposit rate	7.1	5.4	8.7 ^h
Nominal lending rate	17.3	16.7	21.7 ^h
Millions of dollars			
Imports of goods and services	12 852	13 660	12 631
Current account balance	14 103	16 444	13 271
Capital and financial account balance ⁱ	-1 646	-2 732	-1 195
Overall balance	2 794	2 384	1 462
	1 148	-348	267

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

7.4 Brazil main: Economic Indicators

	2007	2008	2009 ^a
Annual percentage growth rates			
Gross domestic product	5.7	5.1	0.6
Per capita gross domestic product	4.6	4.1	-0.3
Consumer prices	4.5	5.9	4.2 ^b
Average real wage ^c	1.5	2.1	2.1 ^d
Money (M1)	32.7	-3.5	10.2 ^b
Real effective exchange rate ^e	-7.3	-3.9	7.3 ^f
Terms of trade	2.1	3.6	-5.6
Annual average percentages			
Urban unemployment rate	9.3	7.9	8.1 ^g
Central government operating balance/GDP	-1.9	-1.3	-2.9
Nominal deposit rate	7.7	7.9	7.0 ^h
Nominal lending rate	34.5	38.8	41.1 ^h
Millions of dollars			
Exports of goods and services	184 603	228 393	181 499
Imports of goods and services	157 790	220 247	171 399
Current account balance	1 551	-28 192	-18 418
Capital and financial account balance ⁱ	85 933	31, 161	55 758
Overall balance	87 484	2 969	37 340

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

7.5 Panama main: Economic Indicators

	2007	2008	2009 ^a
	Annual growth rates		
Gross domestic product	12.1	10.7	2.5
Per capita gross domestic product	10.2	8.9	0.9
Consumer prices	6.4	6.8	0.7 ^b
Average real wage	1.3	-0.6	...
Real effective exchange rate ^c	1.4	-1.8	-5.8 ^d
Terms of trade	-1.0	-4.5	4.2
	Annual average percentages		
Urban unemployment rate ^e	7.8	6.5	7.9
Central government			
overall balance/GDP	1.2	0.3	-1.8
Nominal deposit rate ^f	4.8	3.5	3.5 ^g
Nominal lending rate ^h	8.3	8.2	8.3 ^g
	Millions of dollars		
Exports of goods and services	14 263	16 153	16 209
Imports of goods and services	14 627	17 604	16 715
Current account balance	-1 422	-2 792	-1 974
Capital and financial account balance ⁱ	2 044	3 377	2 124
Overall balance	622	584	150

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

7.6 Mexico: main Economic Indicators

	2007	2008	2009 ^a
Annual percentage growth rates			
Gross domestic product	3.4	1.3	-6.7
Per capita gross domestic product	2.3	0.3	-7.7
Consumer prices	3.8	6.5	4.5 ^b
Average real wage ^c	1.0	2.2	0.6 ^d
Money (M1)	11.7	9.0	12.7 ^b
Real effective exchange rate ^e	1.1	2.2	17.6 ^f
Terms of trade	0.9	0.8	-1.1
Annual average percentages			
Urban unemployment rate	4.8	4.9	6.8 ^g
Public sector overall balance/GDP	0.0	-0.1	-2.1
Nominal deposit interest rate	6.0	6.7	5.3 ^h
Nominal lending interest rate	7.6	8.7	7.6 ⁱ
Millions of dollars			
Exports of goods and services	289 365	309 383	243 056
Imports of goods and services	305 743	333 723	256 668
Current account balance	-8 335	-15 806	-6 074
Capital and financial account balance ^j	18 621	23 244	-1 422
Overall balance	10 286	7 438	-7 496

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

7.7 The OECD Classification of Taxes

1000 *Taxes on income, profits and capital gains*

- 1100 Taxes on income, profits and capital gains of individuals
 - 1110 On income and profits
 - 1120 On capital gains
- 1200 Corporate taxes on income, profits and capital gains
 - 1210 On income and profits
 - 1220 On capital gains
- 1300 Unallocable as between 1100 and 1200

2000 *Social security contributions*

- 2100 Employees
 - 2110 On a payroll basis
 - 2120 On an income tax basis
- 2200 Employers
 - 2210 On a payroll basis
 - 2220 On an income tax basis
- 2300 Self-employed or non-employed
 - 2310 On a payroll basis
 - 2320 On an income tax basis
- 2400 Unallocable as between 2100, 2200 and 2300
 - 2410 On a payroll basis
 - 2420 On an income tax basis

3000 *Taxes on payroll and workforce*

4000 *Taxes on property*

- 4100 Recurrent taxes on immovable property
 - 4110 Households
 - 4120 Other
- 4200 Recurrent taxes on net wealth
 - 4210 Individual
 - 4220 Corporate
- 4300 Estate, inheritance and gift taxes
 - 4310 Estate and inheritance taxes
 - 4320 Gift taxes
- 4400 Taxes on financial and capital transactions
- 4500 Other non-recurrent taxes on property
 - 4510 On net wealth
 - 4520 Other non-recurrent taxes
- 4600 Other recurrent taxes on property

5000 *Taxes on goods and services*

- 5100 Taxes on production, sale, transfer, leasing and delivery of goods and rendering of services
 - 5110 General taxes
 - 5111 Value added taxes
 - 5112 Sales taxes
 - 5113 Other general taxes on goods and services

- 5120 Taxes on specific goods and services
 - 5121 Excises
 - 5122 Profits of fiscal monopolies
 - 5123 Customs and import duties
 - 5124 Taxes on exports
 - 5125 Taxes on investment goods
 - 5126 Taxes on specific services
 - 5127 Other taxes on international trade and transactions
 - 5128 Other taxes on specific goods and services
- 5130 Unallocable as between 5110 and 5120
- 5200 Taxes on use of goods, or on permission to use goods or perform activities
 - 5210 Recurrent taxes
 - 5211 Paid by households in respect of motor vehicles
 - 5212 Paid by others in respect of motor vehicles
 - 5213 Other recurrent taxes
 - 5220 Non-recurrent taxes
- 5300 Unallocable as between 5100 and 5200
- 6000 Other taxes
 - 6100 Paid solely by business
 - 6200 Paid by other than business or unidentifiable

7.8 IMF GFS 1986 Tax Classification

1. Taxes on income, profits, and capital gains
 - 1.1. Individual
 - 1.2. Corporate
 - 1.3. Other unallocable taxes on income, profits, and capital gains
2. Social security contributions
 - 2.1. Employees
 - 2.2. Employers
 - 2.3. Self-employed or nonemployed
 - 2.4. Other unallocable social security contributions
3. Taxes on payroll and work force
4. Taxes on property
 - 4.1. Recurrent taxes on immovable property
 - 4.2. Recurrent taxes on net wealth
 - 4.2.1. Individual
 - 4.2.2. Corporate
 - 4.3. Estate, inheritance, and gift taxes
 - 4.4. Taxes on financial and capital transactions
 - 4.5. Nonrecurrent taxes on property
 - 4.6. Other recurrent taxes on property
5. Domestic taxes on goods and services
 - 5.1. General sales, turnover, or value-added taxes
 - 5.2. Excises
 - 5.3. Profits of fiscal monopolies
 - 5.4. Taxes on specific services
 - 5.5. Taxes on use of goods or on permission to use goods or to perform activities
 - 5.5.1. Business and professional licenses
 - 5.5.2. Motor vehicle taxes
 - 5.5.3. Other taxes on use of goods or on permission to use goods or to perform activities
 - 5.6. Other taxes on goods and services
6. Taxes on international trade and transactions
 - 6.1. Import duties
 - 6.1.1. Customs duties
 - 6.1.2. Other import charges
 - 6.2. Export duties
 - 6.3. Profits of export or import monopolies
 - 6.4. Exchange profits
 - 6.5. Exchange taxes
 - 6.6. Other taxes on international trade and transactions
7. Other taxes
 - 7.1. Poll taxes
 - 7.2. Stamp taxes
 - 7.3. Other taxes not elsewhere classified

7.9 IMF GFS 2001 Tax Classification

I	Revenue	I2	Social contributions [GFS]
11	Taxes	121	Social security contributions
111	Taxes on income, profits, and capital gains	1211	Employee contributions
1111	Payable by individuals	1212	Employer contributions
1112	Payable by corporations and other enterprises	1213	Self-employed or nonemployed contributions
1113	Unallocable	1214	Unallocable contributions
112	Taxes on payroll and workforce	122	Other social contributions
113	Taxes on property	1221	Employee contributions
1131	Recurrent taxes on immovable property	1222	Employer contributions
1132	Recurrent taxes on net wealth	1223	Imputed contributions
1133	Estate, inheritance, and gift taxes	13	Grants
1134	Taxes on financial and capital transactions	131	From foreign governments
1135	Other nonrecurrent taxes on property	1311	Current
1136	Other recurrent taxes on property	1312	Capital
114	Taxes on goods and services	132	From international organizations
1141	General taxes on goods and services	1321	Current
11411	Value-added taxes	1322	Capital
11412	Sales taxes	133	From other general government units
11413	Turnover and other general taxes on goods and services	1331	Current
1142	Excises	1332	Capital
1143	Profits of fiscal monopolies	14	Other revenue
1144	Taxes on specific services	141	Property income [GFS]
1145	Taxes on use of goods and on permission to use goods or perform activities	1411	Interest [GFS]
11451	Motor vehicles taxes	1412	Dividends
11452	Other taxes on use of goods and on permission to use goods or perform activities	1413	Withdrawals from income of quasi-corporations
1146	Other taxes on goods and services	1414	Property income attributed to insurance policyholders
115	Taxes on international trade and transactions	1415	Rent
1151	Customs and other import duties	142	Sales of goods and services
1152	Taxes on exports	1421	Sales by market establishments
1153	Profits of export or import monopolies	1422	Administrative fees
1154	Exchange profits	1423	Incidental sales by nonmarket establishments
1155	Exchange taxes	1424	Imputed sales of goods and services
1156	Other taxes on international trade and transactions	143	Fines, penalties, and forfeits
116	Other taxes	144	Voluntary transfers other than grants
1161	Payable solely by business	1441	Current
1162	Payable by other than business or unidentifiable	1442	Capital
		145	Miscellaneous and unidentified revenue

7.10 Global Competitiveness Report

The Global Competitiveness Index 2009–2010 rankings and 2008–2009 comparisons

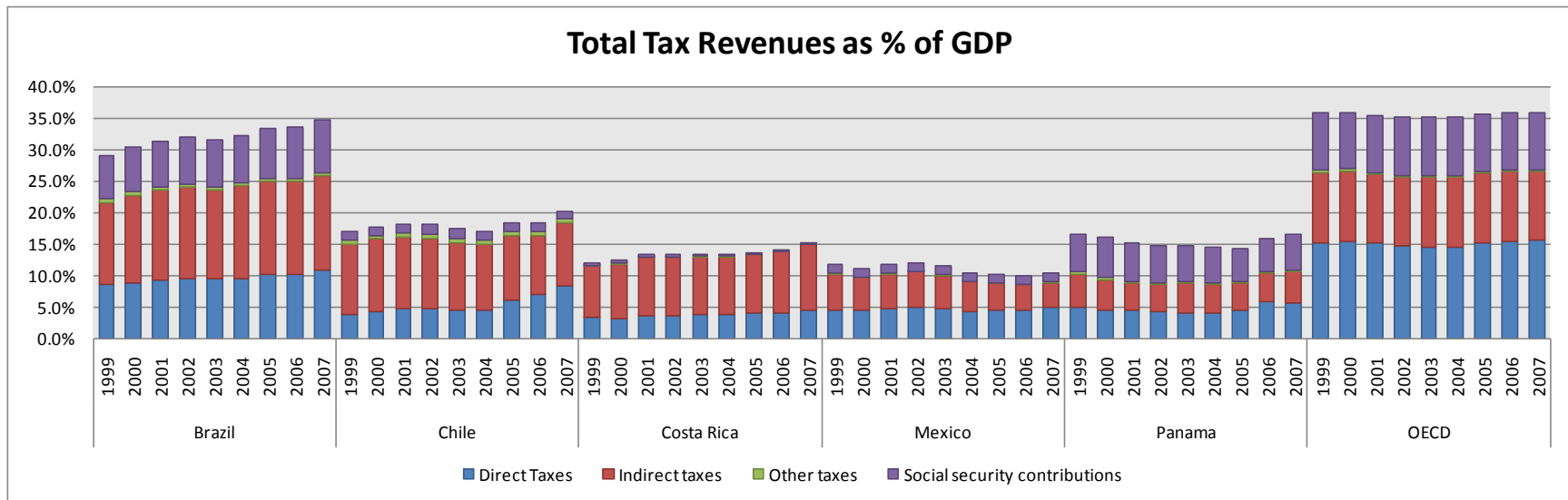
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Country/Economy	GCI 2009–2010		GCI 2008–2009
	Rank	Score	Rank
Switzerland	1	5.60	2
United States	2	5.59	1
Singapore	3	5.55	5
Sweden	4	5.51	4
Denmark	5	5.46	3
Finland	6	5.43	6
Germany	7	5.37	7
Japan	8	5.37	9
Canada	9	5.33	10
Netherlands	10	5.32	8
Hong Kong SAR	11	5.22	11
Taiwan, China	12	5.20	17
United Kingdom	13	5.19	12
Norway	14	5.17	15
Australia	15	5.15	18
France	16	5.13	16
Austria	17	5.13	14
Belgium	18	5.09	19
Korea, Rep.	19	5.00	13
New Zealand	20	4.98	24
Luxembourg	21	4.96	25
Qatar	22	4.95	26
United Arab Emirates	23	4.92	31
Malaysia	24	4.87	21
Ireland	25	4.84	22
Iceland	26	4.80	20
Israel	27	4.80	23
Saudi Arabia	28	4.75	27
China	29	4.74	30
Chile	30	4.70	28
Czech Republic	31	4.67	33
Brunei Darussalam	32	4.64	39
Spain	33	4.59	29
Cyprus	34	4.57	40
Estonia	35	4.56	32
Thailand	36	4.56	34
Slovenia	37	4.55	42
Bahrain	38	4.54	37
Kuwait	39	4.53	35
Tunisia	40	4.50	36
Oman	41	4.49	38
Puerto Rico	42	4.48	41
Portugal	43	4.40	43
Barbados	44	4.35	47

South Africa	45	4.34	45
Poland	46	4.33	53
Slovak Republic	47	4.31	46
Italy	48	4.31	49
India	49	4.30	50
Jordan	50	4.30	48
Azerbaijan	51	4.30	69
Malta	52	4.30	52
Lithuania	53	4.30	44
Indonesia	54	4.26	55
Costa Rica	55	4.25	59
Brazil	56	4.23	64
Mauritius	57	4.22	57
Hungary	58	4.22	62
Panama	59	4.21	58
Mexico	60	4.19	60
Turkey	61	4.16	63
Montenegro	62	4.16	65
Russian Federation	63	4.15	51
Romania	64	4.11	68
Uruguay	65	4.10	75
Botswana	66	4.08	56
Kazakhstan	67	4.08	66
Latvia	68	4.06	54
Colombia	69	4.05	74
Egypt	70	4.04	81
Greece	71	4.04	67
Croatia	72	4.03	61
Morocco	73	4.03	73
Namibia	74	4.03	80
Vietnam	75	4.03	70
Bulgaria	76	4.02	76
El Salvador	77	4.02	79
Peru	78	4.01	83
Sri Lanka	79	4.01	77
Guatemala	80	3.96	84
Gambia, The	81	3.96	87
Ukraine	82	3.95	72
Algeria	83	3.95	99
Macedonia, FYR	84	3.95	89
Argentina	85	3.91	88
Trinidad and Tobago	86	3.91	92
Philippines	87	3.90	71
Libya	88	3.90	91
Honduras	89	3.86	82
Georgia	90	3.81	90
Jamaica	91	3.81	86
Senegal	92	3.78	96
Serbia	93	3.77	85
Syria	94	3.76	78

Dominican Republic	95	3.75	98
Albania	96	3.72	108
Armenia	97	3.71	97
Kenya	98	3.67	93
Nigeria	99	3.65	94
Tanzania	100	3.59	113
Pakistan	101	3.58	101
Suriname	102	3.57	103
Benin	103	3.56	106
Guyana	104	3.56	115
Ecuador	105	3.56	104
Bangladesh	106	3.55	111
Lesotho	107	3.54	123
Uganda	108	3.53	128
Bosnia and Herzegovina	109	3.53	107
Cambodia	110	3.51	109
Cameroon	111	3.50	114
Zambia	112	3.50	112
Venezuela	113	3.48	105
Ghana	114	3.45	102
Nicaragua	115	3.44	120
Côte d'Ivoire	116	3.43	110
Mongolia	117	3.43	100
Ethiopia	118	3.43	121
Malawi	119	3.42	119
Bolivia	120	3.42	118
Madagascar	121	3.42	125
Tajikistan	122	3.38	116
Kyrgyz Republic	123	3.36	122
Paraguay	124	3.35	124
Nepal	125	3.34	126
Timor-Leste	126	3.26	129
Mauritania	127	3.25	131
Burkina Faso	128	3.23	127
Mozambique	129	3.22	130
Mali	130	3.22	117
Chad	131	2.87	134
Zimbabwe	132	2.77	133
Burundi	133	2.58	132

7.11 Benchmark of the Tax Revenues as percentage of GDP of Latin American countries and OECD.



7.12 Raw data retrieved from the UNCTAD about FDI

Inward FDI of selected Latin American countries

US Dollars at current prices and current exchange rates in millions

Economy	2000	2001	2002	2003	2004	2005	2006	2007	2008
Brazil	\$32,779.24	\$22,457.35	\$16,590.20	\$10,143.52	\$18,145.88	\$15,066.29	\$18,822.21	\$34,584.90	\$45,058.16
Chile	\$ 4,860.01	\$ 4,199.75	\$ 2,549.92	\$ 4,307.42	\$ 7,172.72	\$ 6,983.80	\$ 7,298.38	\$12,577.18	\$16,786.86
Costa Rica	\$ 408.56	\$ 460.38	\$ 659.36	\$ 575.06	\$ 793.83	\$ 861.04	\$ 1,469.09	\$ 1,896.10	\$ 2,021.00
Mexico	\$18,028.35	\$29,801.63	\$23,721.82	\$16,474.94	\$23,658.86	\$21,922.06	\$19,316.31	\$27,278.00	\$21,949.50
Panama	\$ 700.30	\$ 404.60	\$ 77.90	\$ 770.80	\$ 1,003.90	\$ 962.10	\$ 2,497.90	\$ 1,907.20	\$ 2,401.70

7.13 Data retrieved from CEPALSTAT

CEPAL - CEPALSTAT

STATISTICS AND INDICATORS

GOVERNMENT FINANCE: Tax Revenue

Tax Revenue by type of taxes as a percentage of GDP
(In percentage of gross domestic product)

CENTRAL GOVERNMENT/ CHILE	[A]	Years												
		2000	2001	2002	2003	2004	2005	2006	2007	2008	/a			
Tax Classification														
Tax Revenue		16.24	16.63	16.57	15.87	15.63	16.90	16.99	18.88	18.60				
Direct Tax Revenue		4.30	4.63	4.63	4.43	4.50	5.97	6.96	8.41	7.30				
Taxes on income, profits and capital gains		4.30	4.63	4.63	4.43	4.50	5.97	6.96	8.41	7.30				
Individuals		1.48	1.56	1.38	1.24	1.15	1.12	1.00	1.20	1.00				
Corporations and enterprises		3.02	3.04	2.96	3.00	3.10	4.52	5.51	7.30	6.30				
Unallocable		- 0.19	0.03	0.29	0.18	0.26	0.33	0.45	0.00	0.00				
Taxes on property		...	...	...	...	...	...	...	...	...
Other direct taxes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Indirect tax revenues		11.47	11.29	11.22	10.76	10.41	10.25	9.26	9.79	10.60				
General taxes on goods and services		8.12	8.04	8.23	8.22	8.25	8.14	7.41	7.92	8.90				
Specific taxes on goods and services		2.00	2.08	2.06	1.92	1.71	1.67	1.45	1.52	1.30				
Taxes on international trade and transactions		1.35	1.17	0.94	0.62	0.45	0.43	0.40	0.35	0.30				
Other indirect taxes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Other taxes		0.47	0.71	0.71	0.68	0.72	0.68	0.76	0.68	0.70				
Social Contributions		1.42	1.44	1.46	1.42	1.42	1.41	1.35	1.34	1.50				
Tax revenue (including social contributions)		17.66	18.06	18.03	17.29	17.05	18.30	18.34	20.22	20.10				
CENTRAL GOVERNMENT/ COSTA RICA	[A]	Years												
Tax Classification														
Tax Revenue		11.90	12.82	12.84	12.98	12.99	13.27	13.70	14.95	15.30				
Direct Tax Revenue		3.13	3.48	3.57	3.82	3.79	3.90	3.96	4.52	5.00				
Taxes on income, profits and capital gains		2.71	3.02	3.06	3.35	3.28	3.40	3.42	3.92	4.40				
Individuals		...	...	...	...	...	...	0.61	0.91	0.70				
Corporations and enterprises		0.09	...	...	0.03	0.01	0.01	2.44	2.57	3.10				
Unallocable		2.62	3.02	3.06	3.32	3.28	3.39	0.37	0.44	0.70				
Taxes on property		0.43	0.46	0.51	0.47	0.50	0.50	0.54	0.60	0.60				
Other direct taxes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Indirect tax revenues		8.68	9.27	9.21	9.09	9.17	9.33	9.71	10.38	8.20				
General taxes on goods and services		4.53	4.94	4.91	4.75	4.88	5.09	5.44	5.88	6.00				
Specific taxes on goods and services		3.20	3.35	3.36	3.39	3.19	3.11	3.13	3.30	1.00				
Taxes on international trade and transactions		0.95	0.99	0.94	0.95	1.09	1.14	1.14	1.20	1.20				
Other indirect taxes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Other taxes		0.09	0.07	0.06	0.07	0.04	0.03	0.03	0.05	2.10				
Social Contributions		0.38	0.39	0.38	0.36	0.34	0.32	0.29	0.28	0.30				
Tax revenue (including social contributions)		12.28	13.22	13.22	13.34	13.34	13.59	13.99	15.23	15.60				
CENTRAL GOVERNMENT / MÉXICO	[A]	Years												
Tax Classification														
Tax Revenue		9.66	10.28	10.61	10.15	9.00	8.81	8.64	9.01	8.10				
Direct Tax Revenue		4.44	4.65	4.81	4.62	4.19	4.34	4.52	4.91	5.20				
Taxes on income, profits and capital gains		4.30	4.48	4.64	4.46	4.03	4.18	4.35	4.74	5.10				
Individuals		1.75	1.99	2.18	...	...	...	...	...	...
Corporations and enterprises		2.54	2.49	2.46	...	...	...	...	...	0.40				
Unallocable		0.00	0.00	0.00	4.46	4.03	4.18	4.35	4.74	4.70				
Taxes on property		0.14	0.16	0.17	0.16	0.15	0.16	0.17	0.17	0.20				
Other direct taxes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Indirect tax revenues		5.13	5.54	5.66	5.34	4.73	4.35	4.00	3.95	2.70				
General taxes on goods and services		3.15	3.27	3.18	3.37	3.33	3.46	3.69	3.68	3.80				
Specific taxes on goods and services		1.43	1.81	2.08	1.62	1.06	0.60	0.00	- 0.01	- 1.40				
Taxes on international trade and transactions		0.55	0.45	0.40	0.36	0.34	0.29	0.31	0.29	0.30				
Other indirect taxes		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Other taxes		0.10	0.10	0.14	0.18	0.08	0.12	0.12	0.15	0.20				
Social Contributions		1.32	1.40	1.39	1.43	1.35	1.31	1.30	1.28	1.30				
Tax revenue (including social contributions)		10.98	11.68	12.00	11.58	10.35	10.12	9.93	10.29	9.40				
CENTRAL GOVERNMENT / PANAMÁ	[A]	Years												
Tax Classification														
Tax Revenue		9.62	9.02	8.85	8.97	8.77	8.91	10.58	10.88	10.80				
Direct Tax Revenue		4.54	4.47	4.31	4.05	4.04	4.37	5.77	5.64	5.50				
Taxes on income, profits and capital gains		4.17	3.78	3.62	3.29	3.35	3.64	4.85	4.82	4.80				
Individuals		0.18	0.24	0.18	0.19	0.15	0.16	0.19	0.14	0.10				
Corporations and enterprises		1.34	1.05	0.93	1.00	1.21	1.35	1.85	1.90	2.00				
Unallocable		2.66	2.49	2.51	2.09	1.99	2.14	2.80	2.78	2.60				
Taxes on property		0.37	0.42	0.39	0.48	0.44	0.50	0.63	0.61	0.50				
Other direct taxes		0.00	0.27	0.31	0.28	0.26	0.23	0.29	0.20	0.20				
Indirect tax revenues		4.71	4.25	4.26	4.67	4.53	4.35	4.64	5.05	5.10				
General taxes on goods and services		1.42	1.29	1.27	1.49	1.61	1.67	1.89	2.16	2.30				
Specific taxes on goods and services		1.55	1.49	1.49	1.58	1.35	1.06	1.09	1.07	1.00				
Taxes on international trade and transactions		1.72	1.44	1.47	1.53	1.52	1.57	1.61	1.78	1.80				
Other indirect taxes		0.02	0.02	0.02	0.07	0.06	0.06	0.05	0.05	0.00				
Other taxes		0.36	0.30	0.28	0.26	0.19	0.18	0.18	0.19	0.20				
Social Contributions		6.39	6.22	5.91	5.61	5.62	5.35	5.14	5.67	5.80				
Tax revenue (including social contributions)		16.01	15.24	14.76	14.58	14.39	14.25	15.72	16.55	16.50				
GENERAL GOVERNMENT/ BRASIL		Years												
Tax Classification														
Tax Revenue		23.20	24.07	24.39	24.01	24.61	25.34	25.41	26.24	26.70				
Direct Tax Revenue		8.73	9.16	9.54	9.49	9.36	10.13	10.22	10.87	10.50				
Taxes on income, profits and capital gains		5.82	6.08	6.36	6.35	6.19	6.96	6.93	7.45	8.20				
Individuals		0.29	0.29	0.28	0.29	0.30	0.32	0.34	0.49	0.50				
Corporations and enterprises		2.16	1.94	3.03	2.78	2.85	3.42	3.41	3.87	4.30				
Unallocable		3.38	3.85	3.04	3.28	3.04	3.22	3.18	3.09	3.40				
Taxes on property		2.44	2.60	2.71	2.68	2.66	2.69	2.76	2.89	2.00				
Other direct taxes		0.46	0.49	0.47	0.47	0.50	0.48	0.53	0.53	0.30				
Indirect tax revenues		13.97	14.39	14.47	14.14	14.80	14.74	14.72	14.90	15.70				
General taxes on goods and services		11.59	12.12	11.98	12.02	12.69	12.75	12.70	12.76	13.50				
Specific taxes on goods and services		1.59	1.48	1.87	1.55	1.54	1.53	1.52	1.57	1.50				
Taxes on international trade and transactions		0.72	0.70	0.54	0.48	0.47	0.42	0.42	0.47	0.60				
Other indirect taxes		0.08	0.08	0.08	0.09	0.10	0.04	0.08	0.10	0.10				
Other taxes		0.50	0.52	0.38	0.38	0.46	0.48	0.47	0.47	0.50				
Social Contributions		7.18	7.24	7.47	7.40	7.62	7.98	8.14	8.48	8.80				
Tax revenue (including social contributions)		30.39	31.31	31.86	31.41	32.23	33.33	33.55	34.72	35.50				

7.14 Data extracted OECD.Stat

Tax Revenues as a % of GDP (OECD average)

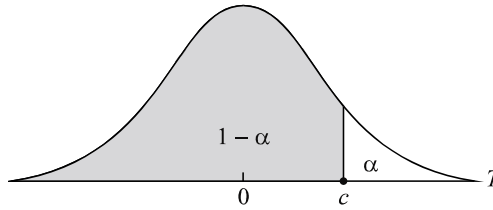
	1999	2000	2001	2002	2003	2004	2005	2006	2007
1000 Taxes on income, profits and capital gains	12.78	13.15	12.81	12.40	12.23	12.29	12.78	13.00	13.20
2000 Social security contributions	9.11	9.08	9.22	9.23	9.26	9.16	9.12	9.07	9.11
3000 Taxes on payroll and workforce	0.40	0.34	0.34	0.34	0.34	0.33	0.33	0.33	0.34
4000 Taxes on property	1.92	1.93	1.87	1.86	1.90	1.90	1.93	1.97	1.94
5000 Taxes on goods and services	11.26	11.15	10.92	10.99	11.09	11.11	11.19	11.07	10.89
6000 Other taxes	0.31	0.27	0.29	0.29	0.27	0.24	0.24	0.25	0.25

7.15 Fisher Distribution Values Table $\alpha = 95\%$

$v_2 \backslash v_1$	1	2	3	4	5	6	7	8	9	10
1	161.446	199.499	215.707	224.583	230.160	233.988	236.767	238.884	240.543	241.882
2	18.513	19.000	19.164	19.247	19.296	19.329	19.353	19.371	19.385	19.396
3	10.128	9.552	9.277	9.117	9.013	8.941	8.887	8.845	8.812	8.785
4	7.709	6.944	6.591	6.388	6.256	6.163	6.094	6.041	5.999	5.964
5	6.608	5.786	5.409	5.192	5.050	4.950	4.876	4.818	4.772	4.735
6	5.987	5.143	4.757	4.534	4.387	4.284	4.207	4.147	4.099	4.060
7	5.591	4.737	4.347	4.120	3.972	3.866	3.787	3.726	3.677	3.637
8	5.318	4.459	4.066	3.838	3.688	3.581	3.500	3.438	3.388	3.347
9	5.117	4.256	3.863	3.633	3.482	3.374	3.293	3.230	3.179	3.137
10	4.965	4.103	3.708	3.478	3.326	3.217	3.135	3.072	3.020	2.978
11	4.844	3.982	3.587	3.357	3.204	3.095	3.012	2.948	2.896	2.854
12	4.747	3.885	3.490	3.259	3.106	2.996	2.913	2.849	2.796	2.753
13	4.667	3.806	3.411	3.179	3.025	2.915	2.832	2.767	2.714	2.671
14	4.600	3.739	3.344	3.112	2.958	2.848	2.764	2.699	2.646	2.602
15	4.543	3.682	3.287	3.056	2.901	2.790	2.707	2.641	2.588	2.544
16	4.494	3.634	3.239	3.007	2.852	2.741	2.657	2.591	2.538	2.494
17	4.451	3.592	3.197	2.965	2.810	2.699	2.614	2.548	2.494	2.450
18	4.414	3.555	3.160	2.928	2.773	2.661	2.577	2.510	2.456	2.412
19	4.381	3.522	3.127	2.895	2.740	2.628	2.544	2.477	2.423	2.378
20	4.351	3.493	3.098	2.866	2.711	2.599	2.514	2.447	2.393	2.348
21	4.325	3.467	3.072	2.840	2.685	2.573	2.488	2.420	2.366	2.321
22	4.301	3.443	3.049	2.817	2.661	2.549	2.464	2.397	2.342	2.297
23	4.279	3.422	3.028	2.796	2.640	2.528	2.442	2.375	2.320	2.275
24	4.260	3.403	3.009	2.776	2.621	2.508	2.423	2.355	2.300	2.255
25	4.242	3.385	2.991	2.759	2.603	2.490	2.405	2.337	2.282	2.236
26	4.225	3.369	2.975	2.743	2.587	2.474	2.388	2.321	2.265	2.220
27	4.210	3.354	2.960	2.728	2.572	2.459	2.373	2.305	2.250	2.204
28	4.196	3.340	2.947	2.714	2.558	2.445	2.359	2.291	2.236	2.190
29	4.183	3.328	2.934	2.701	2.545	2.432	2.346	2.278	2.223	2.177
30	4.171	3.316	2.922	2.690	2.534	2.421	2.334	2.266	2.211	2.165
40	4.085	3.232	2.839	2.606	2.449	2.336	2.249	2.180	2.124	2.077
50	4.034	3.183	2.790	2.557	2.400	2.286	2.199	2.130	2.073	2.026
60	4.001	3.150	2.758	2.525	2.368	2.254	2.167	2.097	2.040	1.993
70	3.978	3.128	2.736	2.503	2.346	2.231	2.143	2.074	2.017	1.969
80	3.960	3.111	2.719	2.486	2.329	2.214	2.126	2.056	1.999	1.951
90	3.947	3.098	2.706	2.473	2.316	2.201	2.113	2.043	1.986	1.938
100	3.936	3.087	2.696	2.463	2.305	2.191	2.103	2.032	1.975	1.927
200	3.888	3.041	2.650	2.417	2.259	2.144	2.056	1.985	1.927	1.878
500	3.860	3.014	2.623	2.390	2.232	2.117	2.028	1.957	1.899	1.850
1000	3.851	3.005	2.614	2.381	2.223	2.108	2.019	1.948	1.889	1.840

7.16 t-Student Distribution Values Table

The table gives areas $1 - \alpha$ and values $c = t_{1-\alpha, r}$, where, $P[T \leq c] = 1 - \alpha$, and T follows a t -Student distribution with r degrees of freedom.



	$1 - \alpha$							
r	0.75	0.80	0.85	0.90	0.95	0.975	0.99	0.995
1	1.000	1.376	1.963	3.078	6.314	12.706	31.821	63.657
2	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925
3	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841
4	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604
5	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032
6	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707
7	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499
8	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355
9	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250
10	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169
11	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106
12	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055
13	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012
14	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977
15	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947
16	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921
17	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898
18	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878
19	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861
20	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845
21	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831
22	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819
23	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807
24	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797
25	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787
26	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779
27	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771
28	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763
29	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756
30	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750
40	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704
60	0.679	0.848	1.046	1.296	1.671	2.000	2.390	2.660
120	0.677	0.845	1.041	1.289	1.658	1.980	2.358	2.617
∞	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576

7.17 Latin American current fiscal policies responses to international crisis

Countries responded to the crisis with a broad range of measures that sought mainly to strengthen aggregate demand and offset the regressive social effects on the more vulnerable sectors of either the crisis itself or the adjustment measures it may have triggered.

The fiscal measures adopted vary widely, given the different capacities each country has to manage and execute them, and depending on the availability of resources. The measures announced may be grouped into two categories of instruments: (i) measures involving tax systems and (ii) measures involving fiscal spending. The following table provides a schematic view of the wide range of government measures. On the income side, these run the gamut from changes to the income tax structure, through adjustments to the tax base (deductions, exemptions or accelerated depreciation systems) or to nominal tax rates, to reform of taxes on goods and services (VAT, specific taxes or tariffs). On the spending side, the measures sought mainly to boost investment in infrastructure, housing, programmes to support small- and medium-sized enterprises (SMEs) and small farmers, or financed variety of social programmes.

However, falling fiscal revenue, tight credit conditions and limited capacity in some countries to execute investment projects have delayed implementation of many of these measures. Some initiatives that have been or are being implemented are discussed below.

Tax measures: Although tax cuts or expanded tax benefits were not as common as spending measures in the Latin American and Caribbean countries, some specific cases are worthy of note. Brazil temporarily lowered the industrialized products tax (IPI), which is levied on vehicles, electrical appliances and construction materials, cut the rate of tax on financial transactions and introduced lower personal income tax rates (of 7.5% and 22.5%) for those earning up to US\$ 875 per month.

As part of its fiscal stimulus plan, Chile temporarily reduced monthly income tax withholdings, eliminated stamp duty on loans extended during 2009 and broadened tax incentives for some sectors.

Uruguay implemented a bonus in the form of a waiver of the economic activities income tax (IRAE), for up to 120% of the value of investments made in 2009, under the law on investments, which especially benefits projects that create new jobs.

Several countries, such as Chile and Peru, implemented mechanisms for early tax rebates and accelerated tax reimbursements for companies and exporters.

Fiscal spending measures:

This type of measure seeks mainly to stabilize aggregate demand and mitigate the effects of the crisis on the most vulnerable sectors. However, these policies need to be implemented in a timely manner in order to have a real effect.

The Government of Argentina sought to sustain public investment, increasing the national public sector's real direct investment by an annualized 82.4% during the first half of 2009, with a sharp rise in investment going to infrastructure and energy.

Chile also adopted a number of spending side countercyclical measures, including its fiscal stimulus plan (PEF), which provided for a US\$ 700-million increase in public investment in urban and rural roads, housing, public health, educational facilities and irrigation works, a plan to stimulate lending, job creation and training schemes, as well as other measures aimed at strengthening social protection. By June 2009, 58.7% of the resources allocated to investments under PEF had been executed.

In Mexico, the National Agreement on Family Economy and Employment (ANFEFE) was set up in January 2009. Like the countercyclical measures contained in the Growth and Employment Stimulus Programme (PICE), ANFEFE was aimed at hastening recovery from the negative impacts of the crisis. Also, in response to the epidemiological emergency, 6 billion pesos were deposited in the trust fund of the

health protection system, and 27 billion pesos were allocated to the sectors worst affected (such as the swine industry, hotels, aviation, restaurants and leisure activities).

Peru implemented a two-year economic stimulus plan for 2009-2010 worth some 3.6% of GDP, which focuses on infrastructure projects and measures to jumpstart economic activity and address social protection issues.

Many countries sought ways to strengthen social programmes, including financial assistance for the most vulnerable; for example, the Plurinational State of Bolivia introduced the Juancito Pinto grant for school children, the Juana Azurduy grant for expectant mothers and the “Dignity Income” programme for those over 60 years of age. Chile offered two one-off payments for low income families, each of approximately US\$ 70 per dependant, which benefited about 1.5 million people. Costa Rica extended the period of social security unemployment benefits, subsidized transport and food and raised pensions under the non-contributory scheme by 15%.

Other fiscal measures:

Several countries, such as Brazil, Chile, Colombia, Panama and Peru, lowered their primary surplus targets. For example, Brazil’s budgetary guidelines Act of 2007 set the primary surplus target for the consolidated public sector at 4.25% of GDP for 2009. The 2008 budgetary guidelines act adjusted the 2009 target downwards, to 3.8% of GDP. Later, the target was further reduced to 2.5% of GDP in response to the crisis.

Colombia also adjusted its deficit target for the consolidated public sector, from 1.5% of GDP at the beginning of the year to 2.6% of GDP in the latest revision.

Chile, whose structural balance rule initially specified a surplus of 1% of GDP, lowered the target to 0.5% early in 2009, then reduced it again to 0%, where it will remain for 2010. Peru modified its fiscal responsibility and transparency law to allow increased public spending. Panama’s fiscal social responsibility law, which went into force in January, capped the fiscal deficit at 1% of GDP, then raised that ceiling to 2.5% of GDP in June.

To compensate for the fall in transfers to sub national governments (occasioned by the decline in central governments' tax revenues), some countries, including Peru, implemented compensatory transfer mechanisms, while others eased restrictions on sub national governments. For example, Argentina's fiscal responsibility law, which had imposed spending and borrowing caps on provincial governments, was reformed so as to lift its core restrictions during fiscal years 2009 and 2010. Brazil provided partial relief to the finances of sub national governments by allowing sub national governments to renegotiate their debts owed to social security.

Lastly, to support investment financing through increased lending, Brazil poured capital into the National Economic and Social Development Bank (BNDES) amounting to three percentage points of GDP over a two year period. Chile also injected fresh capital into government agencies such as the Chilean Development Corporation (CORFO) and Banco Estado, to support lending to SMEs and microenterprises, and into the State-owned copper company (CODELCO).

**LATIN AMERICA (19 COUNTRIES): MAIN FISCAL MEASURES ANNOUNCED
IN RESPONSE TO THE CRISIS ^a**

	Argentina	Bolivia (Plurinational State of)	Brazil	Chile	Colombia	Costa Rica	Ecuador	El Salvador	Guatemala	Haiti	Honduras	Mexico	Nicaragua	Panama	Paraguay	Peru	Dominican Rep.	Uruguay	Venezuela (Bolivarian Republic of)
Tax system																			
Corporate income tax (cuts/depreciation)			X	T	X	T	X		X			T	X			X	X	T	
Personal income tax (cuts)	X		X	T	X		X		X		X	T	X	X				X	
Foreign trade taxes	X	X	T				X					X	T		T		X	X	
Taxes on goods and services			T			X	X					X						X	X
Social contributions	X											T							
Other			X	T	X		T						X			T	X	X	
Public spending																			
Infrastructure investment	X	X	X	X	X	X	X		X		X	X	X		X	X	X	X	X
Housing	X	X	X	T	X	X	X	X	X		X	X	X		X	X	X	X	X
Support for SMEs or agricultural producers		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
Support for strategic sectors	T	X	X	X	X				X		X	X				X		X	
Direct transfers to families	T	X		T		X		X			X	X			X				
Other social programmes	X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	
Other spending			X		X									X					

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

^a T= Temporary measures