



Personalized VAT Increasing Revenue Collection and Compensating the Poor

**Alberto Barreix
Martín Bès
Jerónimo Roca¹**

July 2010

Abstract

This document examines the role played by Value Added Tax in a modern tax system and analyses alternative ways of increasing the amount collected so as to reduce the regressive impact of this tax. It outlines a proposal for broadening the tax base, compensated by transfers to the poorest deciles of the population. To be able to implement this proposal the authors propose adopting methodologies to identify beneficiaries and deliver benefits which are used in the conditional cash transfer programs successfully applied in most Latin American countries. Estimates are examined for eight Latin American countries so as to identify the conditions in which the proposal would be viable. The final section summarizes the main conclusions of the work.

This article is part of a larger project the authors are undertaking on fiscal policies and equity.

¹ Alberto Barreix (albertba@iadb.org) and Martín Bès (bes.martin@gmail.com) (Inter-American Development Bank), Jerónimo Roca (jeronimor@rcn.com) (Consultant to the Office of Planning and Budget, Uruguay). This study does not necessarily reflect the Inter-American Development Bank's position, or that of Uruguay's Office of Planning and Budget.

Personalized VAT

Increasing Revenue Collection and Compensating the Poor

Table of Contents

1. Introduction.....	3
2. Modern Tax Systems.....	4
2.1. Changes in the Tax system.....	5
2.2. The Resulting Tax Structure.....	7
2.3. Agenda for Tax System Reforms.....	10
3. Equity and Fiscal Policy.....	13
4. Personalized VAT.....	15
4.1. The Standard System.....	17
4.2. The Japanese Solution	19
4.3. The Canadian Solution.....	21
4.4. Digital VAT.....	23
4.5. Personalized VAT: A Possible Trinity.....	24
5. Estimates of the Proposal for Personalizing VAT.....	27
6. Conclusions and Alternative Policies.....	36
 Bibliography.....	41
Appendix.....	47

1. Introduction²

Latin American inequality is chronic by nature and is always highlighted in any analysis of the region. Our inequality is greater than that of the developed countries, than what's been measured in Asian, Eastern European and even African countries (World Bank, 2004). Inequality persists despite the economic boom which a large part of Latin America and the Caribbean have benefited from in recent years and even after taking into account the improvements found in some countries by several authors (Lopez-Calva and Lustig, 2010).

One of the most undesirable characteristics of inequality in the region is that it leads to a differential in opportunities and is perpetuated from one generation to the next, as a recent World Bank study showed quantitatively (Paes de Barros *et al*, 2009). Such a high incidence of inequality, along with serious poverty and destitution levels exacerbates ideological debates and political action, which reduces the possibility of reaching agreements over appropriate development policies. Furthermore the serious international crisis unleashed towards the end of 2008 is having an unequal impact in this region through trade , foreign investment, remittances and credit restrictions, worsening the problems of destitution, poverty and inequality. This forces the different countries to apply compensatory mechanisms which the fiscal systems are not prepared for, neither at the level of income nor expenditure.

In this context, it becomes relevant to know how governments, through tax and expenditure policies can contribute to equitable distribution of welfare in the region. With this in mind a series of studies was made on Fiscal Equity in Latin America, undertaken for the countries of the Andean Community (Barreix, Roca and Villela, 2006) and those that make up the subregion consisting of Central America, Panama and the Dominican Republic (Barreix, Bès and Roca, 2009). The latter presents the ideas that are further developed in this document about the role of VAT in a modern tax system and the measures that can be introduced to increase its revenue potential and, at the same time,

² The authors would like to thank Juan Ron for his help in preparing the statistics and Delenise Lettieri Vidal and Aida Fernandez for help in editing the document.

reduce its regressivity by refunding tax paid by the lower deciles in income distribution.³ A complementary document on income tax is in an advanced state of preparation and some of its conclusions are found in subsection 2.3 and section 6.

This document is organized in the following way. Section 2 looks at the characteristics of modern tax systems, which highlight features that are common to all Latin American and Caribbean countries. Section 3 analyses the relationship between equity and fiscal policy and the next one outlines different proposals put into practice which lessen the regressivity of VAT as well as our proposal for “VAT personalization”. The fifth section presents estimates for our proposal for Colombia, Costa Rica, Chile, Ecuador, El Salvador, Nicaragua, the Dominican Republic and Uruguay. Our conclusions are presented in the sixth and final section.

2. Modern Tax Systems

The 1990s saw a lot of changes in Latin America and the Caribbean, with the development strategy based on import substitution with strong state intervention in the production of goods and services being replaced by a different set of policies which favored the role of the market in resource allocation, trade as a driver of growth and the private sector, including foreign companies, in the production of goods and services. In many of these countries the development strategy was replaced at the same time as stabilization policies were implemented in order to reverse severe and persistent inflationary processes.⁴ Tax policy was an instrument which played a significant role both in the new development strategy and in stabilization policies. Tax reforms were consolidated in Latin America and the Caribbean during the 1990s leading to a relatively homogenous tax system in this region. In the next few paragraphs we will present a general outline of these tax reforms.

³ Several consultants were hired to validate this proposal empirically. They are featured in the bibliography as Andino (2009), Cabrera (2009), Díaz (2009), Jorrat (2009 and 2010), Roca (2009 a and b) and Trejos (2010).

⁴ In some cases these inflationary processes ended up as hyper-inflationary processes: Bolivia (1985), Argentina (1989/1990) and Nicaragua (1988/90).

2.1 Changes in the Tax System

The basically static view of the impact of taxation on economic activity gave way when development strategy was reformulated, as greater concern grew over its effects on resource allocation and consequently on growth. In addition to consistency with the structural reforms that were being implemented, tax reforms had to contribute to the fiscal sustainability demanded by the stabilization policies applied by these countries. Tax reform therefore played an important part in the economic policy agenda in the early 1990s, coming into force at the same time as trade liberalization and on the whole preceding other economic reforms, such as those in the financial sector, privatization and social security.⁵

Tax reforms in this region were shaped by three main goals: (i) the search for neutrality, (ii) rationalization of the tax system, both in terms of tax policy and tax administration, and (iii) less importance to be given to equity issues, particularly in their vertical dimension. A fourth goal that should be mentioned separately is the sufficiency of resources.⁶

The neutrality goal aimed at reducing the distortions which the preferential treatment given to some sectors caused in the economy, as well as the lack of incentive that the tax system in place brought out in economic agents, mainly with regard to work-leisure and spend-save trade-offs. The fulfillment of this tax reform goal happened in four areas: (i) the loss of relative importance of trade taxes, (ii) a tendency to broaden the tax bases and make, (iii) lowering the rate levels in income tax, and (iv) the growing participation of consumption taxes at the expense of direct taxation.

⁵ Although the poor economic performance of the Latin American economies themselves is the main factor which led to changes in the tax sector, the 1986 United States tax reform, had a major influence on how these reforms were drawn up. The interdependence of national tax policies in the context of growing economic globalization led to a harmonization of tax systems in countries exporting capital with that of the countries receiving foreign investment.

⁶ See Pita (1993) and Shome (1992).

Table 1
Percentage Share of Trade Taxes
in Total Tax Revenue

In percentages	1990	1995	2000	2005	2007
Argentina	10.2	4.0	3.4	11.4	11.7
Bolivia	7.8	7.1	5.5	3.4	3.4
Brazil	1.4	2.5	2.4	1.2	1.4
Chile	10.3	9.2	6.6	1.8	1.2
Colombia	8.1	6.0	5.5	4.3	4.6
Costa Rica	19.1	16.8	5.4	5.7	5.6
Ecuador	24.1	18.7	12.6	11.8	10.3
El Salvador	12.1	16.1	8.6	7.5	6.7
Guatemala	21.7	23.4	13.5	16.5	9.0
Honduras	36.8	25.2	13.5	7.5	7.0
Mexico	4.2	3.1	3.0	1.6	1.4
Nicaragua	14.2	20.0	23.8	5.4	4.7
Panama	14.1	16.4	9.8	13.5	14.5
Paraguay	19.0	19.7	13.1	11.2	8.2
Peru	10.2	11.5	11.3	7.9	3.8
Dominican Republic	28.9	28.6	32.7	24.8	10.7
Uruguay	8.9	3.5	2.8	2.9	3.4
Venezuela	5.7	9.3	6.4	4.9	4.9

Source: own calculation based on ECLAC database.

The level and dispersion of import duties fell and export taxes levied on most of the region's primary products were eliminated as the import substitution model was abandoned. This led to a major shift of public sector finance in most countries. At the same time this had serious consequences on the performance of the real sector as a result of changes in relative prices. As can be seen in Table 1, the share of trade taxes in total tax revenue dropped sharply in the countries analyzed.⁷ In addition, substituting trade taxes with VAT improved efficiency in assigning resources comparatively; even though it is recognized that the main characteristic of VAT on a consumption basis is its neutrality, not its economic efficiency.

Broadening the tax base and reducing the dispersion of rates aimed at minimizing tax considerations when individuals made decisions regarding the economic sectors and the production factors used in them. In parallel, reducing the average rate and its marginal values made it possible to offset incentives for tax evasion.

⁷ Argentina re-introduced export taxes when the convertibility regime was abandoned in 2002.

The goal of neutrality was mirrored in the rationalization of the tax system, both at the regulatory and administrative level. The reform of the tax system was implemented by eliminating literally hundreds of taxes which contributed very little to overall revenue. These were replaced by a reduced number of taxes, mostly indirect ones, through broadening the tax base and streamlining rates as already mentioned. A large amount of goods and services were taxed mainly through VAT and to a lesser extent with excise taxes, which explains the high concentration of those taxes and income tax in total revenue.

Finally, the reform's goal of simplicity was fulfilled by an extensive modernization at an administrative level. This represented a change from what was done by most countries in the region in the past, when the effort behind modernizing the tax system gave priority to reproducing the tax system in place in developed countries without the corresponding effort in the administrative machinery which had to enforce it and without giving due attention to the informal context in which it was to be implemented.

2.2. The Resulting Tax Structure

This subsection discusses some features of the evolution and current level of tax revenue. Firstly, some countries increased tax collection significantly as shown in Table 2. Particularly noticeable are the increases in tax burden of more than eight points of GDP in Argentina, Bolivia, Brazil, Colombia and Venezuela between 2005 and 2007 and 1990 to 1994. Secondly, the tax burden continues to be uneven, varying from 25 percent to 30 percent of GDP to percentages less than half that in some countries.

Thirdly, although the relative share of direct and indirect taxes has not changed substantially, major changes can be identified in indirect taxation in the final five-year period. The starting point of these changes corresponds to the relative lowering in the share of trade taxes, which was seen in Table 1.

Table 2
Central Government Tax Revenue as a Percentage of GDP

	Average in the given period				Increase 95/99 vs 90/94	Increase 00/04 vs 90/94	Increase 05/07 vs 90/94
	1990/1994	1995/1999	2000/2004	2005/2007			
Argentina	14.8	16.6	19.4	24.0	1.9	4.6	9.2
Bolivia	17.6	20.4	20.6	29.1	2.8	3.1	11.5
Brazil	18.1	20.6	24.1	26.1	2.5	6.0	8.0
Chile	19.2	18.7	18.9	24.5	-0.5	-0.3	5.3
Colombia	11.3	13.1	16.4	19.3	1.8	5.1	8.0
Costa Rica	11.5	12.2	13.5	14.9	0.7	1.9	3.4
Ecuador	7.1	7.7	10.4	10.3	0.6	3.3	3.3
El Salvador	9.8	10.4	11.0	13.1	0.6	1.2	3.3
Guatemala	8.6	9.8	11.3	11.8	1.2	2.7	3.2
Honduras	12.7	13.2	14.7	15.4	0.5	1.9	2.6
Mexico	16.7	16.3	17.2	17.8	-0.4	0.5	1.1
Nicaragua	10.9	13.6	14.4	17.4	2.7	3.5	6.5
Panama	11.7	11.7	11.4	13.9	0.0	-0.2	2.2
Paraguay	12.1	14.0	14.7	15.9	2.0	2.6	3.8
Peru	12.0	13.7	12.6	14.8	1.8	0.6	2.8
Dominican Republic	9.3	11.2	12.3	15.1	1.8	3.0	5.8
Uruguay	18.9	20.5	21.5	22.5	1.5	2.6	3.6
Venezuela	19.4	18.4	19.2	27.5	-1.0	-0.2	8.0

Note: (1) Excludes Social Security. (2) In the case of Brazil the ICMS (VAT) is a sub-national tax assignment and collects around 8 percent of GDP.

Source: own calculation based on ECLAC database.

This has meant that the responsibility for administering tax revenue has been transferred from the customs authorities to internal revenue administrations. In the same way, the number of tax payers has grown from a relatively small number of importers and exporters geographically situated in the ports to a large number of economic agents spread out geographically. Finally, services are gradually becoming part of the tax base. Finally the importance of VAT and income tax has increased over the last 15 years and then are the main sources of revenue in most countries.

In this way, the tax system of the countries in this region can be defined by two of the fiscal “pillars” and their complements proposed in Barreix and Roca (2007). A pillar is defined as a tax that is able to bring in significant and stable revenue, and at the same time would be defined by a broad base which would make it possible to ensure its neutrality and elasticity. The two pillars in Latin America and the Caribbean are income

tax (strictly speaking, the income tax system) and general consumption taxes (VAT or other general sales taxes). The complements are: taxes on renewable and nonrenewable natural resources; trade taxes property, especially real estate, personal assets and capital transfer (mainly inheritances and legacies) and excise taxes.⁸

Table 3 Breakdown of Central Government Tax Revenue in percentage					
	Income Tax	VAT	Excise Tax	International	Total
				Trade	Other Indirect Taxes
Argentina	18.7	25.8	8.2	10.3	37.0 100.0
Bolivia	10.2	22.5	11.6	3.9	51.8 100.0
Brazil	20.2	35.4	4.9	1.5	38.0 100.0
Chile	24.5	36.1	10.6	2.9	25.8 100.0
Colombia	25.8	26.9	1.0	4.6	41.7 100.0
Costa Rica	16.2	24.5	15.8	5.4	38.1 100.0
Ecuador	20.9	41.7	4.7	11.5	21.2 100.0
El Salvador	26.7	45.9	5.9	7.9	13.5 100.0
Guatemala	16.3	45.4	11.3	12.2	14.7 100.0
Honduras	22.9	32.1	29.9	7.5	7.6 100.0
Mexico	23.2	18.0	5.5	1.8	51.5 100.0
Nicaragua	21.0	34.1	20.5	5.5	18.8 100.0
Panama	21.4	8.4	8.7	12.0	49.5 100.0
Paraguay	11.7	29.9	12.9	11.0	34.4 100.0
Peru	29.5	34.9	11.8	7.5	16.3 100.0
Dominican Rep.	24.4	27.8	23.2	20.7	4.0 100.0
Uruguay	14.8	32.3	11.8	2.8	38.2 100.0
Venezuela	10.1	23.4	3.6	4.9	58.0 100.0

NB: Average figures for period 2001-2007 not including Social Security
Source: own calculation based on ECLAC database.

⁸ These cannot be “pillars” due to their instability or limited revenue for various reasons in a commercially and financially integrated economy.

2.3 Agenda for Tax System Reforms

Table 4 presents the tax structure verified in 2006 for countries in the OECD and Latin America.⁹ The comparison is useful from the point of view of identifying areas where changes to the tax system can be expected.

As can be seen in the table, despite modernization of the tax system in Latin American and the Caribbean countries, when measured in terms of GDP their fiscal revenues are still very low by international standards.¹⁰ The difference in income between both groups of countries, equivalent to 13 percent of GDP, is basically explained through personal income tax (7.6 percent of GDP) and Social Security contributions (5.4 percent).¹¹ This contrasts with what happens with VAT collection, which is comparable between both groups of countries in terms of GDP. Something similar, only to a lesser degree, can be seen with corporate income tax collection.

Table 4 Fiscal Pillars in the OECD and Latin America (percent of GDP) Total and Main Headings – 2006		
	OECD	Latin America ^{b/}
Fiscal revenue ^{a/}	36.2	23.1
VAT ^{c/}	6.9	5.9
Income tax	12.9	4.0
Corporate income tax	3.7	2.4
Personal income tax	9.2	1.6
Social security ^{d/}	9.2	3.8

Source: OECD, ECLAC, IDB and IMF. a.: Including Social Security (pensions), b. income from oil resources in Colombia, Ecuador, Mexico and Venezuela, minerals in Chile and Bolivia and hydroelectricity in Paraguay c. ICMS in Brazil. d. Including obligatory public and private Social Security.

It is expected that the countries in this region will tackle second-generation reforms to the tax system in the next few years driven by the need to increase resources so as to carry out public policies which promote social development as called for by their citizens. Similarly, although the fiscal accounts have improved, the high expenditures and

⁹ We use 2006 as a base year as it is regarded as “normal”, i.e. so as to avoid any distortion caused by the sharp rise in the price of commodities that occurred in subsequent years. The reader should remember that five commodities (including tourism as one of them) represented on average 64 percent of goods and services exported. In fact this rise in prices has an important direct effect on the fiscal income in half of them (Barreix, Bès and Roca, 2009).

¹⁰ To compare the fiscal effort, it was decided to look at a “normal” definition of revenue, which includes all tax revenue, income from renewable and non-renewable resources and Social Security contributions, both public and private.

¹¹ Barreix and Roca (2007) regard Social Security contributions (with the variant of private and mixed regimes) as the third pillar of a modern tax system.

relatively high levels of debt of some of these countries make it necessary to increase fiscal revenue. Although these reforms are going to differ in each country, the mid-term objective should be to increase the tax burden so it reaches 22 percent to 25 percent of the GDP for most of the countries of the region.

It is obvious that personal income tax (PIT) should lead any effort to increase revenue due to its low share in the total tax burden. In this sense, we must remember that this tax collects about 1 percent of GDP when the contribution from the wealthiest decile on average exceeds 40 percent of total income.

Increasing revenue from PIT demands structural changes, especially adopting more modern schemes such as a dual approach to income. This requires distinguishing between working and non-working sources in individuals' income as well as making adjustments to the base, like eliminating exemptions and allowances so as to reach a significant return. In particular it is advisable to include financial income and adopt a criterion for broad territorial income which will take in passive income from capital earned by people abroad, treating external and internal savings in the same way.

An increase in PIT should be instrumental in social cohesion considering its increase will be boosted by the highest deciles, contributing to financial expenditure that focuses on the less privileged segments of the population. At the same time, an individual tax contribution not only strengthens the relationship between taxpayers and the state, but also justifies their demands for improvements in public services. A proposal for reforming personal income tax along these lines will be presented in Barreix, Bès and Roca (forthcoming).

It should be pointed out that the success of this increase in income tax revenue depends on improved collaboration between tax administrations. That would imply organizing discussions that should take place in the context of the G-20 and other fora so they go beyond formal declarations.

We believe an increase in revenue from corporate income tax has less potential. This is due to the fact that the greater effort in broadening the corporate income tax base—eliminating incentives given on the basis of externalities that are not always confirmed—will be partially offset by the international trend towards lowering rates. In addition, it is

to be expected that incentives which favor withholding profits will be introduced so as to encourage investment.

Something similar happens with payroll taxes to finance pensions which have very low revenue potential in most Latin American countries. This is due to the fact that in open, competitive economies with chronically high underemployment or unemployment, the noncapitalizable component in the Social Security contribution is simply one more tax on the labor that is deducted from the salary and/or leads to lower employment.

In parallel to this, the need to strengthen the decentralization process in these countries means we can anticipate an improvement in the planning and administration of both urban and rural property tax. The collection of these taxes in Latin America is very low, around 0.3 percent of GDP, so it should be possible to double this percentage with some effort.

Additional adjustments to indirect taxation are going to be more modest than those mentioned for income tax. First of all, one cannot expect significant changes in the area of excises, with the possible exception of fuel taxes associated with negative externalities (congestion, pollution, accidents), maintenance of the road network and issues related to climate change.¹² This is due to the fact that these taxes are a complement to but not a fiscal pillar, they are regressive in nature and raising their rates to increase revenue ends up causing problems with smuggling.

We believe that there also exists a possibility of increasing revenue from VAT. This could seem paradoxical bearing in mind that the burden of this tax in Latin America and the Caribbean is comparable to that of developed countries. However, we believe that strengthening VAT is a way of boosting fiscal solvency as it is one of the tax pillars. In general terms, increasing revenue with this tax requires broadening the tax base and eventually increasing the current rate in most of the region's countries. However, any increase in this tax will only be possible when society recognizes that these resources will be directed to combat poverty and exclusion. In the following section we will look at changes that have been made and/or proposed to reduce the regressive aspects of VAT so as to then be able to present a proposal for "personalizing" VAT.

¹² See Parry and Strand (2009).

3. Equity and Fiscal Policy

Although the countries of Latin America do not lead a ranking of world poverty, various studies confirm that the region is at the top of any list of inequality in income distribution (World Bank, 2004; Thorp, 1998)¹³. Several analysts interpret this as the result of the inability of fiscal policy to significantly improve equity in the region. These analysts all point out that, there is not much difference between the developed and the Latin American countries using the Gini index as an indicator of inequality of income distribution, *before fiscal policy* (Barreix, Roca and Villela, 2006; Goñi, López and Servén, 2008)¹⁴. These analyses point out that the difference between both groups of countries is found in the disposable income—the income after tax and transfers—, as in developed countries “the fiscal policy determines a reduction of at least ten points in the Gini index” (Barreix, Roca and Villela, 2006).

Table 5		
Inequality and Expenditure in LAC 6 and EU 15		
	LAC 6	Europe 15
Gini – Market income	0.52	0.46
Gini – Disposable income	0.50	0.31
Difference	-0.02	-0.15
Social security - % of GDP	6.3	14.7
Social Assistance % of GDP	1.0	1.6
Total - % of GDP	7.3	16.3
<i>Source: Goñi et al (2008)</i>		

In the same way, Goñi et al. (2008) emphasize that inequality in developed countries falls sharply after Social Assistance and Social Security expenditure. This expenditure is not only significantly less in underdeveloped countries but there are also problems of exclusion which affect the informal sector. The informal sector makes up 40 to 60 percent of the population in many of these countries, a significant share of which live

¹³ World Bank (2004) y Thorp (1998).

¹⁴ Barreix, Roca y Villela (2006); Goñi, et al (2008).

in rural environments. These statements are synthesized in Table 5, where inequality measured by income before and after policy intervention is compared in six Latin American countries and 15 in Europe, as well as the size of fiscal interventions in both regions.¹⁵

It should be pointed out that using only the Gini index as an indicator of income distribution concentration may be excessively limited as it does not allow for considering other relevant aspects of inequality which should be taken into account in public policy options. The four main aspects that are omitted are the polarization of the population around income distribution, social mobility, poverty levels and the degree of informality of the economic structure that determines the exclusion of a fraction of the population¹⁶.

In any case, although the limitations pointed out in the last paragraph invalidate the initial proposal regarding the similarity in income distribution in Latin America and developed countries *before fiscal policy*, they do not invalidate the improvement which can happen to this distribution *as a result of fiscal policy*.

Goñi et al. (2008) point out that inequality in the European countries improves considerably, with the Gini coefficient dropping 15 points. This improvement contrast with that of six Latin American countries, as there is not significant change in the Gini coefficient after the intervention of the fiscal system (i.e. after paying direct taxes and receiving transfers).¹⁷ The authors conclude that the amount of fiscal resources is the determining factor in policies aiming to reduce inequality and in line with the current consensus in economic literature, they point out that the larger part of the effort to redistribute in European countries is based on public social expenditure, and in particular on the transfer system more than on the tax system¹⁸.

¹⁵ The Latin American countries are: Argentina, Brazil, Chile, Colombia, Mexico and Peru. The European countries are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

¹⁶ For an analysis of this issue see Duclos, Esteban and Ray (1994), Gasparini et al. (2006) and Barreix, Bès and Roca (2009).

¹⁷ The consideration of indirect taxes partially reverts the value of Gini's coefficient but does not manage to neutralize the improvement.

¹⁸ Barreix, Bès and Roca (2009) analyze fiscal policy in Central America, Panama and the Dominican Republic and find that the distributive impact of public social expenditure is 4.4 times more than that of the tax policy in this group of countries.

Even though there is agreement regarding the relatively lesser importance of the tax system *vis-à-vis* public social expenditure with regard to contributing towards improvement in income distribution, there is still criticism over the regressive nature of the former. However, although there is consensus that the described tax reforms reduced the importance of the vertical dimension of equity , these criticisms do not take into account three facts: (i) world trends in tax matters, which made it necessary to harmonize rates so as not to deter investment; (ii) the low collection from income tax in the period before the reform, either because of generalized exemptions and incentives or because of the high levels of non compliance, and (iii) the elimination of inflation tax, the most regressive tax there is, as a result of stabilization policies from the 1990s.¹⁹

Finally, two objections strengthen the arguments in favor of pursuing further reforms of the tax system. The first is that the level of tax burden in more than a few Latin American and Caribbean countries is not enough to look after their development needs, nor to take on minimal social policies which could impact in a significant way on income distribution and tackling poverty. The second refers to the idea of burden sharing in a modern society for which it is obviously necessary to increase the share of income tax in the total collection.

4. Personalized VAT

VAT has been set up as a tax levied on consumption in most countries where it is used and the tax payments associated with investment are given a tax credit while exports are zero-rated. The tax base is very broad due to the fact that consumption represents between 70 percent and 80 percent of the GDP in a modern economy. This tax base, together with its rate determines the level of collection. In Latin America and the Caribbean it represents about six percentage points of the GDP, a percentage not far off the 6.9 percent of the GDP collected in the OECD countries (see Table 4).

The first question to ask is why bother with this subject, bearing in mind that the difference in revenue seen in the Latin American and Caribbean countries and those of the OECD is much less than with other taxes. The answer is manifold. Firstly, VAT is

¹⁹ In particular fiscal dominance over monetary policy was eliminated. It frequently determined the monetization of the fiscal deficits with the consequent impact on inflation and output.

one of the most important pillars of any modern tax system, regardless of the country's degree of development. Consequently it should be safeguarded and siren calls that undermine fiscal accounts should be ignored. However, the reality is that in many countries attempts to reduce tax regressivity have ended up benefiting slightly more the deciles of the population who have higher income, neutralizing the initial intentions at a considerable fiscal cost. The fiscal cost of this relief ends up reflected in a lower level of tax revenue, which limits the sources that finance public social expenditure.

It is a well-known fact that the regressivity of VAT is because it is an indirect tax that does not discriminate according to individuals' purchasing power. Consequently, if we take an individual's income as the welfare indicator in an analysis on the distributive impact of VAT, we can see its regressivity as the lowest deciles devote a larger percentage of their income to consumption than the higher deciles. It is interesting to note that if we were to take consumption as the welfare indicator then VAT would be progressive: the incidence of the tax increases with the level of consumption. A summary of the distributive impact of VAT, on consumption and income, which came out of work done on Fiscal Equity by the IDB, can be seen in the Appendix.²⁰

Questions about VAT's regressive nature have been replied in different ways. The first is that the distributive impact should be measured on fiscal policy as a whole and not just on taxes and even less on just one of those taxes, however important it may be. According to this line of reasoning, the relatively regressive impact of a tax could be neutralized and even reversed through focusing expenditure on goods, services and transfers in the lower income sectors of the population. In keeping with this approach, the progressivity or regressivity of fiscal policy becomes an empirical issue. Examples of a progressive fiscal framework are presented by Goñi and others (2008) for the case of a group of European countries as outlined in Table 5. However this is not the only possible outcome as frequently the size and/or focus of expenditure do not revert regressive tax structures which means that fiscal policy does not contribute to improving the income distribution in a country. This outcome was found by Barreix, Bès and Roca (2009) in their study of the Fiscal policy of Central American countries, Panama and the Dominican Republic.

²⁰ See Barreix, Roca and Villela (2006) for the Andean countries and Barreix, Bès and Roca (2009) for Central America, Panama and the Dominican Republic, and currently in preparation for MERCOSUR and Chile.

The second line of arguments against the objection of regressivity moves away from the analytical discussion and concentrates on the tax's design, with the goal of reverting what we could call the *impossible trinity of consumption taxes*.²¹ According to Ainsworth (2006b) "No consumption tax has ever had all three of the critical attributes of a progressive consumption tax: a broad base, a single rate and measured relief for those in greatest need."

The following sections will offer various solutions for the problem of VAT regressivity by means of interventions on the tax base, tax rates, taxpayer relief or a combination of all three. We'll call the first one the Universal Solution as to a certain extent it has been adopted by most of the world's tax systems. The next four attempt to solve the impossible trinity of consumption taxes mentioned in the previous paragraph. The answers implemented in Japan and Canada to address this problem are reviewed first and then we go on to present two theoretical proposals, the one developed by Ainsworth (2006a) and our own.

4.1 The Universal Solution

Most tax systems have introduced a common answer for offsetting VAT regressivity. The first step of this intervention requires identifying the goods and services with large weights in the consumption basket of the lower income population, which are frequently considered of social interest. The classical examples are food products and health, education and transport services. The next step is to eliminate them from the tax base (exemptions) and/or introduce multiple rates (lower rates than the general rate or even zero-rated) and apply them to the group of goods and services identified in the first stage. This kind of intervention is of a universal nature as it is benefiting all the consumers, regardless of their income level.

The Universal Solution is a crude response to the problem arising from VAT regressivity. Its crudeness comes from the fact that the tax relief introduced through multiple rates and exemptions from the taxable base benefit more in *absolute* terms those who consume more, which are the higher deciles of income distribution.²² The universal nature of this

²¹ The Impossible Trinity is a proposition of international economics, which states that it is impossible for a country to adopt a fixed exchange rate, free capital movement and an independent monetary policy all at the same time.

²² Note that this result is independent of whether we take consumption or income as a welfare indicator .

tax intervention does not make it possible to differentiate between taxpayers and thus benefit the target group, those in the lower deciles of the population. In short, the VAT exemption is equivalent to an un-targeted subsidy.

This can be seen in Table 6, which shows the distribution of consumption by decile in the Uruguayan economy, a situation similar to that of all Latin American and Caribbean countries. Here the goods and services are grouped together according to their treatment by VAT legislation. It is possible to see that regardless of whether goods and services are taxed at the basic rate, the minimum rate or exempted, consumption is concentrated in the three richest deciles of the population. This could be called the “inclusion error” of VAT exemption and comes from the fact that around 65 percent of consumption of exempted goods is concentrated in deciles 8 to 10. This highlights the paradoxical situation in which the attempt to deliver relief to individuals in the poorest deciles by universal means (tax exemption for goods and services) ends up benefiting the higher income bracket more. As well as causing this undesirable effect, this scheme has an indirect effect, also negative, as it takes away tax revenue which could have gone towards financing public social expenditure aimed at the poorest deciles.

The result of trying to solve problems of VAT regressivity through what we generically call the Universal Solution is that the capacity of collecting the taxes is reduced, benefiting the higher income deciles and reducing the pool of public funds that could have been directed towards financing public social expenditure. The universal solution is easy to implement from the tax policy point of view following the steps outlined in the preceding paragraphs. However this simplicity does not extend VAT administration, leading to problems which will be greater when the exemption and multi-rated structure for goods and services gets more complex and the weaker the tax administrations are.

Table 6
The Cost of VAT Inclusion
Uruguay – Consumption Taxed and Exempt from VAT

	Basic rate	Minimum rate	Exempt
1	2.2	2.7	2.3
2	3.2	3.8	3.0
3	4.3	5.0	4.0
4	5.4	5.8	4.7
5	6.7	7.3	6.1
6	8.1	9.0	6.9
7	10.4	11.1	9.5
8	12.2	13.5	10.9
9	16.9	16.7	16.4
10	30.7	25.3	36.2
Total	100	100	100
40-	15.0	17.2	13.9
20+	47.6	41.9	52.6
<i>Source: Roca (2009)</i>			

4.2 The Japanese Solution²³

As discussed in the previous section, the Universal System identifies the goods and services considered of social interest and then introduces multiple rates and/or exemptions to the taxable base to revert the regressivity of VAT. In Japan the design of this tax inverts the logic as it starts by identifying the individuals they want to benefit and later they exempt these individuals from the tax when they buy this selected group of goods and services.

According to Ainsworth (2006d) and Beyer and Ishimura (1993) the goods and services which the VAT legislation seeks to eliminate from the tax base of Japanese consumption tax are grouped into 13 categories and at the same time in two different modalities: universal and focused. Within the universal group are the loan and transfer of land, transfer of financial assets, interests paid on loans and on public and private bonds and

²³ This section is based on Ainsworth (2006d).

insurance policies, stamp duty, most government services, goods related to childbirth, funeral and cremation services and goods used by people with physical disabilities.²⁴

The distinctive feature of the five remaining targeted categories of goods and services which Ainsworth calls “surgical” is that it affects specific groups of beneficiaries, which were explicitly identified in the legislative process. The first category of exempted goods and services refers to those associated with medical treatments but only benefit individuals whom receive services defined in a restricted group of laws. The result of the exemptions is that the medical services are taxed when the beneficiaries are not included in these laws, which correspond to people with a higher income and foreigners.²⁵

The remaining four “surgical” categories are social services in the home, educational texts and services and home rentals. Exemptions to these remaining goods and services are applied in similar ways to medical treatments mentioned in the preceding paragraph. In all cases it is specified that the exemptions will apply only to a group of beneficiaries defined by the law who use these services.

The outcome of the way VAT is handled in Japan is that individuals who demand a same goods or service will face a different fiscal expense according to whether the law has identified them as a beneficiary of this tax relief. This entails an initial requirement when drawing up the tax policy of identifying the benefiting consumers of each of the goods and services which are to be exempt. The second requirement is on the tax administration. To understand this it is useful to look at one of the examples outlined by Ainsworth (2006d). Under Japanese law the amount of VAT charged on the sale of a dictionary will depend on whether this dictionary is sold to a secondary school pupil, a university student or a pupil from a tertiary college when the course lasts less than a year.

The way VAT is designed in Japan avoids the loss of revenue that occurs in the Universal Solution, which derives from benefiting sectors of the population of the upper income deciles that do not actually need tax relief. However, it is clear that specifying which goods and services and which sectors of the population should benefit in the tax legislation introduces complications into the tax administration and needs a society with a

²⁴ These goods are defined in decrees subsidiary to the law of Consumption Tax.

²⁵ Health Insurance Scheme, National Health Insurance Scheme, Seamen’s Insurance, Mutual Aid Schemes for National and Local Government employees, Law for the Elderly and Mutual Aid Schemes for Private School Employees.

strong social cohesion to enforce that legislation. The other negative side to Japanese VAT is its intrusive character which comes from the need to be sure that the tax exemptions linked to specific consumption only benefit those segments of the population previously identified.

4.3 The Canadian Solution

In Canada VAT has a single rate and exemptions for goods and services with important weight in the consumption basket of low income population. The classical examples of these exemptions are food and medicine, which have a greater share in the consumption basket of people with lower income levels. As is usual, exports are zero-rated.

The design of VAT in Canada is similar to the Universal Solution discussed under the subheading 4.1. However the distinctive feature in the Canadian solution lies in the fact it introduces a compensation which benefits a group of taxpayers so as to partially revert the VAT's impact on their income. The amount of compensation is defined according to marital status, number of family members and income level of the taxpayer. As can be seen in Table 7, the sum of the annual compensation increases for married couples and as the number of children rises, and falls at higher income levels. Payments are made quarterly and administered by the Canada Revenue Agency, the body responsible for tax administration in Canada.²⁶

The Canadian solution adopts a mixed approach, combining central elements of the Universal Solution with compensation to taxpayers according to the three parameters indicated. This means that the fiscal revenue is reduced by both the exemptions from the base and by the compensations provided. From the point of view of implementation, the system is relatively simple when it comes to the exemptions but complex in identifying the beneficiaries eligible to receive credit.

²⁶ This compensation is known as *Goods and Services Tax Credit*. The *Goods and Services Tax* is the name of VAT in Canada.

Table 7
Summary of Benefits linked to VAT in Canada
July 2010 to June 2011
Benefits per year in Canadian Dollars

Not married					
Family net income	No children	One child	Two children	Three children	Four children
< 8,096	250.00	631.00	762.00	893.00	1,024.00
10,000	288.08	631.00	762.00	893.00	1,024.00
20,000	381.00	631.00	762.00	893.00	1,024.00
30,000	381.00	631.00	762.00	893.00	1,024.00
40,000	6.30	256.30	387.30	518.30	649.30
50,000	-	-	-	18.30	149.30
52,000	-	-	-	-	49.30
Married					
Family net income	No children	One child	Two children	Three children	Four children
<8,096	500.00	631.00	762.00	893.00	1,024.00
10,000	500.00	631.00	762.00	893.00	1,024.00
20,000	500.00	631.00	762.00	893.00	1,024.00
30,000	500.00	631.00	762.00	893.00	1,024.00
40,000	125.30	256.30	387.30	518.30	649.30
50,000	-	-	-	18.30	149.30
52,000	-	-	-	-	49.30

Source: http://www.cra-arc.gc.ca/bnfts/gsthst/gstc_pymnt09-eng.html
This is a summary of the benefit scale applicable to the period July 2010 – June 2011 which actually has 31 sub-divisions for non-married taxpayers and 32 for married ones.
The benefits are revised on an annual basis.

The first requirement is to have reliable information of the income and family members of the population. This is easy to come by in this country due to the minimal degree of informality in its economic structure. This is reflected in the quality of information available to the Canada Revenue Agency, the institution responsible for the country's tax administration, which also administers the federal government's social program payments. This has made it possible to develop a very reliable information system the

likes of which only very few developed countries have access to. However it is precisely the existence of informality, which tend to be in the range of 40 to 60 percent of the population in emerging economies, that makes it difficult to apply the Canadian solution in them.

4.4. Digital VAT

Ainsworth (2006 a) examines the alternative of combining a VAT with features similar to that of most countries in the European Union with a large injection of technology, which he calls D-VAT. The author presented this alternative as a contribution to the Presidential Tax Reform Panel arranged in the United States in 2005. It is interesting to analyze this proposal even though VAT is not applied in the United States and it has little chance of being implemented.

In Ainsworth's proposal the tax invoicing, declaration and collection is done in real time, which would be undertaken by service providers of Certified Transaction Technology. The exception to this technological requirement would be businesses whose sales are below a threshold which is to be determined. The proposed system would be complemented with a biometric identity card which would entitle its holder to tax exemption at the time of any transaction with a very low risk of fraud. The purchases made by the benefiting group who receive these cards would be zero rated, that is to say they would not accumulate VAT payments in their previous stages. In Ainsworth's proposal this happens in real time for every transaction.

The main requirement of this proposal is a huge investment in information systems, something that would only be within reach of developed countries. Furthermore, although there may be experience with the performance of the components of this system individually, there is no experience of them working collectively with millions of transactions in real time.

Using the Digital-VAT card also presents problems of intrusion worse than those indicated in the Japanese solution mentioned under subheading 4.2. In this case the problem about people's privacy comes from the fact that the system would make it possible to know, and it would be a requirement for the auditing of the tax, every single

transaction made by the beneficiaries of the tax exemption, the place and the time when they made their purchases and so on.

4.5 Personalized VAT: A Possible Trinity

The starting point of the proposal herein to resolve the *impossible trinity of consumption taxes* is to generalize the tax base.²⁷ Broadening the tax base eliminates the exemptions on goods and services that are frequently introduced in the tax legislation so as to favor people with lower income and end up benefitting in relative terms, the higher deciles of the population. The only exemptions to be kept would be those that make sense from the point of view of the tax administration and in some cases to ensure consistency with the tax treatment of similar concepts.

A typical example would be financial intermediary services where the crossover of service channels, to the saver and borrower, does not allow clear allocation of VAT as in the case of unidirectional flows, whether it is sales between companies in different sectors, for example from agricultural to industry, or industry to business (vertical flow), or between companies within the same sector (horizontal flow). Another example is provided by the need to balance the treatment of investment in physical assets with that of human capital formation, for which we propose the elimination of expenditures of health and education services from the VAT tax base.²⁸

The proposal's second step is about making the tax rate uniform. The level of the rate varies a great deal in the countries where VAT is applied, from a minimum of 5 percent in Canada²⁹ to rates of over 20 percent in Argentina, Brazil and Uruguay and some European countries. The third step in the VAT personalization proposal is implementing tax relief for those individuals who belong to the lowest deciles of the population. This requires deciding on the amount of relief to be given and identifying the people who will benefit from this relief.

²⁷ The recommendation herein is to make a single rate in those countries where multiple rates are used. However, personalized VAT can also be applied using various rates.

²⁸ Health and education services are excluded because of their investment content (human capital) in a consumption based VAT. Financial intermediary services are exempt as it is technically impossible to assign the VAT to those who are savers and those who are borrowers of the financial system (VAT has no efficient solution when the economic flows are not unidirectional as bank services are provided to borrowers and depositors). Rental properties are exempt from the base because of the administrative difficulties involved in controlling a significant number of non-registered individuals; if they could be efficiently identified, this exception would not be justified.

²⁹ This corresponds to the Federal Government rate only. Some Canadian provinces put an additional rate on top of this rate which is applied to the same tax base; this is known as the Harmonized Sales Tax (HST).

With regards to the first question, the incidence of applying a generalized VAT on the consumption baskets of the different deciles that make up the population of a country has to be estimated. The second step consists of choosing a decile cut-off point (i.e. the level at which the poverty line strikes) and deciding on the amount of tax relief to be provided. In our proposal the relief will be the amount of the increased tax the cut-off decile would pay as a result of the generalization of VAT. This amount would be transferred to those individuals belonging to low income groups (i.e. up to the cut off decile). This supposes an average consumption pattern which is identified through the household survey undertaken by the statistical institute of each country. These rules out any attempt to encourage any specific consumption by the beneficiaries of tax relief.

Even though we know we want to provide relief to the population that makes up the subgroup between the poorest decile and the cut-off decile, specifically identifying these individuals is something that still has to be done to resolve the *trinity*. This is the second step and it is the problem faced by targeted programs, unlike universal ones.

Identifying public programs beneficiaries is challenging for the developed world and emerging economies alike and it is generically vulnerable to corruption, which often takes the form of clientelism. However, valuable experience has been accumulated over the last 10 to 15 with conditional cash transfers programs in Latin America. Successful targeting of beneficiaries has been achieved in various countries, notably in Chile, Colombia, Brazil, Mexico and Uruguay. This knowledge has been used in the delivery of other social programs (different from conditional cash transfers where many targeting tools were developed) in several of these countries.³⁰ These targeting techniques have still not been taken into account for designing tax policy, but we consider them one of the elements that make VAT personalization viable.

Targeting beneficiaries requires defining the program's eligibility parameters. Once defined, candidates apply for the benefit (self-selection) and the program's administrators verify that these eligibility conditions are effectively met. This is a complex process where mistakes may be made by including people who do not fulfill the requirements to be entitled to the benefits, as well as mistakes of excluding people who should be

³⁰ The World Bank puts the capacity to identify beneficiaries in the category of "institutional capital" in the countries where the system is correctly implemented. See World Bank (2009).

entitled. The methodology for identifying and monitoring beneficiaries vary in the different countries; successful methods have been developed for proxy means testing, whereby a strict statistical analysis is carried out, comparing the information about the potential beneficiaries with the information that comes from household surveys, field visits, cross-checking information about requirements for eligibility with the transfer conditions, and so on.

Actual delivery of benefits has become significantly simpler using available technology. The idea here is to make monthly transfers to an electronic card for at least the amount equivalent of the incidence of VAT in the cut-off decile's consumption basket. Payments can then be used with the electronic card in retail outlets or withdrawing funds from cash dispensers/ATMs.³¹ Experience with this process is not limited to conditional cash transfer programs which have used electronic means this system for several years. In Argentina, in addition to social programs, the tax administration (AFIP) has made VAT refunds by electronic means since the beginning of the decade. The Dominican Republic successfully applied a similar process for providing an energy subsidy (Gas Licuado de Petróleo) since 2008, including it as one more category in the magnetic card where the funds are transferred for every beneficiary of the conditional transfers program.

This proposal has various advantages. First the standardization of the VAT tax base increases revenue collection, a part of which is transferred to the groups needing tax relief. Second the VAT generalization simplifies the tax administration and at the same time encourages formality by using electronic payment methods. Also, deciding on the amount to be refunded obeys objective criteria (for example, the tax incidence in the decile's consumer basket), which means it is not intrusive regarding people's purchasing decisions. Finally, the proposed technology for deciding the amount of benefit (refunded VAT in this case), identifying the beneficiaries and the delivery mechanism is widely available in most countries in the world.

³¹ This solution works well in urban environments but can present problems in rural areas where there are fewer banks or poor connections between the retail outlets and the pay network. However the rapid process of urbanization in Latin America limits this problem to specific regions in these countries.

5. Estimates for the Proposal of VAT Personalization

The first step of our estimate is to generalize the VAT tax base, collecting as much revenue as possible for that rate and maximizing the neutrality of the tax. To do that only education, health, financial services and home rental are exempt from the tax base. Next, an analysis is made of the amount of tax which would be paid for the goods and services which make up the consumption basket of someone from the second poorest decile of the population; this information will come from the household survey. The amount of tax calculated in this way would be refunded to those in the poorest three deciles by means of a transfer of a fixed amount at the beginning of each month.

This exercise opted for undertaking a Slutsky - type compensation, transferring the tax charged, without doing any kind of social engineering connected to the recipient of the transferred funds.³² The results of this estimate make it possible to see the impact in terms of revenue of generalizing the tax base, eliminating the benefit for the middle and upper deciles that originate in exemptions from the tax base of the “promoted” goods and services. Finally, the exercise lets us estimate the impact of the proposal on income distribution, poverty and destitution.

The results of the proposal for personalizing VAT’s estimates are summarized in Table 8. The estimates were carried out for Colombia, Costa Rica, Chile, Ecuador, El Salvador, Nicaragua, the Dominican Republic and Uruguay.³³ These countries were chosen so as to be able to identify elements which may help to define the viability of the proposal. With this in mind countries were chosen which had distinct socio-economic characteristics (GDP per capita, institutional capacity, distributional equity, poverty and destitution levels, etc.).

The conclusions of the estimate of the personalized VAT proposal are the following:

³² The main idea of the Slutsky compensation is the “elimination” of the income effect which comes from a price change observing the change of the group of goods and services of optimum consumption as a result of the substitute effect. The Hicks compensation is a different case, where the consumer is refunded exactly so as to be able to acquire a group of goods and services which stay in the same indifference curve (level of utility coming from consumer preferences for the different compositions of the consumer basket) as before the tax. To be precise, Slutsky has the advantage that allowing the purchase of the same group of goods and services seems easier to apply than determining utility levels.

³³ The estimates followed the methodology proposed by the authors of this study. The individual studies were undertaken by Andino (2009), Cabrera (2009), Díaz (2009), Jorrat (2009 and 2010), Roca (2009 a and b) and Trejos (2010).

1) The viability of the proposal is not independent from the level (incidence) of poverty and destitution of the country where it is going to be applied. The cases of Costa Rica, Chile and Uruguay on the one hand and that of Nicaragua on the other are useful for illustrating this statement. For example, progress made in Chile over the last two decades in terms of reducing poverty is reflected in the fact that about 18.5 percent of the population could be classified as poor in 2009. This is very different from the situation in Nicaragua, where about 60 percent of the population lives below the poverty line. In the first case, the generalization of the tax base linked to a rate increase of one point is enough to generate resources to improve the situation of the poor in that country, something which is not possible in the cases where the poverty level is so dominant.

Table 8

	Colombia			Costa Rica			Chile			Ecuador		
1. VAT revenue increase and transfer	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change
VAT revenue increase - % current revenue	18.4			33.9			7.0			62.4		
Transfer/VAT revenue increase – %	21.3			24.7			38.8			42.4		
Transfer/Current VAT revenue – %	3.9			8.4			2.7			26.5		
2. Who pays net VAT (New VAT – Transfers) - %	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change
Deciles 1 to 4 (40-)	20.6	22.9	2.3	12.1	6.0	-6.1	15.7	13.3	-2.4	15.3	6.0	-9.3
Deciles 5 to 6	15.6	16.4	-0.8	13.9	16.5	2.6	13.6	13.8	0.2	13.4	16.8	3.4
Deciles 7 to 8	22.2	21.9	-0.3	19.4	22.3	2.9	20.4	20.8	0.3	20.7	24.1	3.5
Deciles 9 and 10 (20+)	41.6	38.8	-2.8	54.6	55.2	0.6	50.3	52.2	1.9	50.7	53.1	2.4
Total	100	100		100	100		100	100		100	100	
3. Income distribution	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change

Table 8 (continued)

Gini	0.6049	0.6101	0.052	0.5801	0.5786	-0.0015	0.5026	0.4972	-0.0054	0.5232	0.4782	-0.0451
Share of total income - %												
Deciles 1 to 4 (40-)	10.6	10.3	-0.3	9.3	9.6	0.3	13.3	13.7	0.3	11.2	11.7	0.5
Deciles 5 to 6	13.6	13.5	-0.1	10.8	10.6	-0.2	11.9	11.8	0.0	12.2	11.9	-0.3
Deciles 7 to 8	21.7	21.7	0	17.5	17.3	-0.2	18.3	18.3	-0.1	19.7	19.4	-0.3
Deciles 9 and 10 (20+)	54.1	54.5	0.4	62.5	62.6	0.1	56.5	56.2	-0.2	56.9	57.0	0.0
4. Destitution	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change
Number destitute	NA	NA		239,216	201,945	-37,271	728,100	640,581	-87,519			
% destitute				5.6	4.7	-15.6 percent	4.7	4.1	-12.0 percent	13.1	11.7	-11 percent
5. Poverty	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change
Number poor (incl. the destitute)	NA	NA		989,251	961,232	-28,019	2,907,700	2,676,534	-231,166			
Population below poverty line - %				23.2	22.5	-2.8 percent	18.6	17.1	-8.0 percent	39.0	41.0	+5 percent

Note: Simulation years: Colombia (2010); Costa Rica (2004); Chile (2003); Ecuador (2005-06); El Salvador (2006); Nicaragua (2001); Dominican Republic (2004) and Uruguay (2009)

Source: based on Andino (2009); Cabrera (2009); Díaz (2009); Jorrat (2009 and 2010); Roca (2009 a and b) and Trejos (2010).

	El Salvador			Nicaragua			Dominican Republic			Uruguay		
1. VAT revenue increase and transfer	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change
VAT revenue increase - % current revenue	9.8			115.0			92.5			15.6		
Transfer/VAT revenue increase – %	31.0			94.7			58.9			20.5		
Transfer/Current VAT revenue – %	3.1			109.0			54.5			3.2		
2. Who pays net VAT (New VAT – Transfers) - %	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change
Deciles 1 to 4 (40-)	20.1	17.8	-2.3	12.1	10.6	-1.5	21.3	7.2	-14.1	15.4	13.6	-1.8
Deciles 5 to 6	15.2	15.6	0.4	12.6	11.0	-1.6	15.4	22.3	6.9	15.1	15.6	0.5
Deciles 7 to 8	22.0	22.6	0.6	19.1	17.8	-1.3	21.6	27.1	5.5	23.1	23.8	0.7
Deciles 9 and 10 (20+)	42.8	44.0	1.2	56.2	60.6	4.5	41.8	43.7	1.9	46.4	47.0	0.6
Total	100	100		100	100		100.0	100.0		100.0	100.0	
3. Income distribution	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change
Gini	0.5121	0.5053	-0.0068	0.5757	0.5591	-0.0166	0.5044	0.5012	-0.0032	0.4778	0.4764	-0.0014
Share of total income - %												
Deciles 1 to 4 (40-)	10.8	10.9	0.13	9.6	10.6	1.1	12.7	13.2	0.5	12.3	12.4	0.1
Deciles 5 to 6	12.8	12.8	-0.05	10.7	11.0	0.4	12.7	12.3	-0.4	13.6	13.5	-0.1
Deciles 7 to 8	21.2	21.2	-0.06	18.1	17.8	-0.4	19.4	19.0	-0.4	21.7	21.6	-0.1
Deciles 9 and 10 (20+)	55.2	55.1	-0.02	61.6	60.6	-1.0	55.2	55.5	0.3	52.5	52.5	0.0
4. Destitution	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change
Number destitute	698.247	654.402	-43.845	2.088.285	2.017.596	-70.689				50,161	35,562	-14,598
% destitute	10.0	9.8	-2 percent	40.1	38.8	-3.4 percent	16.7	16.4	-1.4 percent	1.2	0.8	-0.4
5. Poverty	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change	Current	Reform	Change
Number poor (incl. the destitute)	1,925.089	1,924.472	-617	3.520.328	3.605.561	85.233				655,413	653,165	-2,248
Population below poverty line - %	27.6	27.6	0 percent	67.6	69.3	2.4 percent	44.0	49.3	+12.1 percent	20.9	20.8	-0.1

Note: Simulation years: Colombia (2010); Costa Rica (2004); Chile (2003); Ecuador (2005-06); El Salvador (2006); Nicaragua (2001); Dominican Republic (2004) and Uruguay (2009)

Source: based on Andino (2009); Cabrera (2009); Díaz (2009); Jorrat (2009 and 2010); Roca (2009 a and b) and Trejos (2010).

SCENARIOS OF THE SIMULATIONS IN TABLE 8

Colombia

- Broad tax base, except for real estate rentals, health and education services, passenger transport and financial services. Zero-rated goods (apart from exports) become exempt. The first sale of real estate is taxed.
- The rate remains at 16 percent.
- The increase in VAT is refunded to the three lowest income deciles.
- The increase in VAT revenue does not reflect any amount for non-compliance nor VAT on purchases from the sectors currently exempt.
- Source: processing micro-data from the National Survey of Household Income and Expenditure in 2006-2007, the most recent available.

Costa Rica

- Broad tax base, except for real estate rentals, health and education services, passenger transport and financial services.
- The rate remains at 13 percent.
- Transfer to the 3 poorest deciles one and a half times the increase in VAT which is paid on the third decile (the third poorest) after the reform.
- The increase in VAT revenue does not reflect any amount for non-compliance nor VAT on purchases from the sectors currently exempt.
- Source: processing micro-data from the National Survey of Household Income and Expenditure in 2004, the most recent available.
- .

Chile

- Broad tax base, except for real estate rentals, health and education services, passenger transport and financial services.
- Rise in current rate by one point to 20 percent.
- Transfer to the three poorest deciles triples the increase in VAT that is paid by the third decile (the third poorest) after the reform.
- The increase in VAT revenue reflects a discount for non-compliance and VAT on purchases from the sectors currently exempt (25 percent).
- Source: processing micro-data from 2003 Survey of Socio-economic Features [*Encuesta de Caracterización Socioeconómica (CASEN)*].

Ecuador

- Broad tax base, except for real estate rentals, health and education services, passenger transport and financial services.
- Rise in current rate by one point to 13 percent.
- Transfer to the three poorest deciles of the new VAT of decile 2 (the second poorest).
- The increase in VAT revenue reflects a discount for non-compliance (30 percent) and also the VAT on purchases from the sectors currently exempt (15 percent).
- Source: processing micro-data from the Survey on Living Conditions [*Encuesta de Condiciones de Vida*] 2005-2006.

El Salvador

- No change to the tax base, as it is already broad.
- Increase of two points to current rate of 15 percent.
- Transfer to the 3 poorest deciles so as to keep the poverty percentage constant.
- The increase in VAT revenue includes deduction for non-compliance (36 percent).
- Source: processing micro-data from the Household Survey on Multiple Proposals [*Encuesta de Hogares de Propósitos Múltiples*] 2006.

Nicaragua

- Broad tax base
- Rate remains at 15 percent
- Transfer to the 7 poorest deciles the VAT increase which is paid by decile 7 (the seventh poorest) after the reform.
- The increase in VAT revenue includes deduction for non-compliance (30 percent).
- Source: processing of micro-data from the National Household Survey on Measurement of Living Standards [*Medición del Nivel de Vida*] 2001.

Dominican Republic

- Broad tax base
- Rate stays at 16 percent
- Transfer to the 3 poorest deciles of the new VAT of decile 3 (the third poorest).
- The increase in VAT revenue includes deduction for non-compliance (25 percent) and also the VAT on purchases from the sectors currently exempt (15 percent).
- Source: processing micro-data from the Survey on Living Conditions [*Encuesta de Condiciones de Vida*] 2004.

Uruguay

- Broad tax base. The four exemptions of the exercise and gasoline. It should be remembered that in Uruguay private health services are taxed at the minimum rate (10 percent).
- Current rates: basic 22 percent; minimum 10 percent. The rate was unified at 18 percent.
- Transfer to the 3 poorest deciles: 1.75 times the VAT increase which is paid by decile 3 (the third poorest decile) after the reform.
- The increase in VAT revenue includes deduction for non-compliance and the VAT on purchases from the sectors currently exempt (20 percent for both).
- Source: processing micro-data from Survey on Household Income and Expenditure [*Encuesta de Gasto e Ingresos de los Hogares*] (EGIH) 2005-2006.

- 2) The degree of poverty is also a determining factor when considering the composition of the consumption basket. Once again, looking at the estimate in Nicaragua we can see that according to the household survey food items represent half the basket and most of them are tax exempt.³⁴ This is reflected in the fact that although the VAT payment of the three poorest deciles represents 8 percent of the collected tax initially, this percentage would double after the generalization of the tax base and increase of the rate. It is quite the opposite with the two higher deciles on the scale of income distribution, which originally contributed 56.2 percent of the tax revenue but only 38.6 percent of the increase after the proposal.
- 3) The initial amount of exempt goods and services and their relative importance in people's consumption habits are critical factors when it comes to analyzing the effectiveness of the VAT personalization proposal. The VAT tax bases used both in Chile and in El Salvador are perhaps the broadest of those in this region. This means that extending the base per se (without it being linked to a rate increase) does not have a significant impact in terms of generating the increase of tax revenue needed to transfer to the lower deciles. This contrasts with the situation observed in Nicaragua, the Dominican Republic and even Ecuador, where the tax base is eroded by all the exemptions introduced in the original design of VAT.³⁵ In the latter case, broadening the tax base (i.e. eliminating exemptions) on its own achieves a significant increase in revenue, which may turn out to be enough to compensate the lower deciles.
- 4) The initial tax rate level is also something which should be borne in mind when analyzing the proposal to personalize VAT. First of all, the current rates in the south of the continent, which stand in the range of 19 percent and 22 percent, leave little room for a future increase. This contrasts with the rates between 10 percent and 16 percent which are applied in Central America, Bolivia, Colombia, Ecuador, Mexico, Paraguay, etc., in which an increase is feasible. An intermediary situation is the one

³⁴ It should be pointed out that the household survey tends to overestimate the share of foodstuffs and drinks, which usually form part of the exempt basic basket, and does not reflect the share of services adequately. As will be seen further on, this problem has shown up in the simulations of Nicaragua and the Dominican Republic. As a result of this twist, the increase in revenue coming from the proposed reform tends to be overestimated.

³⁵ As mentioned in the previous footnote.

of those countries that apply multiple VAT rates. In these cases the proposal to personalize VAT offers the possibility of standardizing the different rates into a single rate which normally comes out lower than the maximum rate.

- 5) The comparison of two VAT designs with a similar tax base and a significant difference in the rates shows that extending the tax base will have a greater impact on the revenue in the country with the higher rate. Again we turn to the cases of Chile and El Salvador, which have a relatively comparable tax base but differ in their rates of 19 percent and 13 percent respectively. As can be seen in the estimates presented in Table 8, an increase of one percentage point in the rate (from 19 percent to 20 percent) in Chile, combined with a very small broadening of the base, produces 40 percent more than the increase of each point of the rate in El Salvador (where there was a rise from 13 percent to 15 percent and the tax base was not modified). The reason is that the higher rate is going to bring in more from the increased tax base. Consequently the capacity for generating the necessary resources to compensate the lowest deciles in the income distribution is going to be greater.

The combination of broadening the base with an increased rate yields a 7.0 percent increase in revenue from the tax in the estimate carried out for the Chilean economy. Since these resources are transferred to the three poorest deciles, the distribution of the effort of the revenue is seen in the middle deciles and above all in the highest. This can be seen in the second part of Table 8.

- 6) In the current VAT design in Uruguay different rates and the existence of more exemptions (see section 4.1) distinguish it from the cases of Chile and El Salvador. The usual services are exempt: education, passenger transport, entertainment and financial, while the main category of goods not included in the tax base is publishing (newspapers, magazines and books). The basic rate of 22 percent applies to most goods and services subject to this tax, while the minimum rate of 10 percent, is applied to food and medicines.

In the case of Uruguay the exercise was carried out assuming an extension of the tax base, although keeping the four exemptions mentioned in section 5. In addition, the tax return was estimated assuming a single rate of 18 percent. In this estimate the

combination of broadening the base with unifying the rate yields an increase of 15.6 percent in revenue from the tax. A large part of these resources are transferred to the three poorest deciles so the burden of the tax falls on the intermediary and high deciles.

- 7) The proposal for personalizing VAT ultimately takes the form of changes in income distribution. In those estimates where the exercise to personalize is feasible, an increase in the share of the lower deciles in total income is seen, compensated by a reduction which is usually seen in the higher deciles. The other measure of equity is observed through the reduction in the Gini index, although Colombia is an exception in the simulations presented here.
- 8) As has been explained in the previous seven findings, the compensation and in some cases over-compensation of the lower deciles by extending the tax base for VAT makes it possible to avoid the regressivity of that generalization. At the same time, it is important to point out the positive impact of this measure on the treasury. This is due to the fact that the increase in revenue coming from broadening the tax base, and in some cases in rate adjustment, easily exceeds the amount compensated. The results of the simulations presented in this study are seen in Table 9. The first columns sum up the VAT tax burden over the last twenty years. The sixth column presents revenue in terms of GDP as a result of the VAT personalization. The last column shows the percentage of the revenue increase which the Treasury receives as a result of this exercise.

Table 9
VAT income as a percentage of GDP

	Averages over the period					Collection with Personalization (1)	Surplus for treasury (1)
	1990/1994	1995/1999	2000/2004	2005/2009	2009		
Colombia	3.1	4.3	5.0	5.7	5.2	6.2	0.76
Costa Rica	3.9	4.8	4.8	5.4	5.0	6.7	1.28
Chile	7.3	7.9	8.2	8.2	8.4	9.0	0.36
Ecuador	2.9	3.3	5.7	5.1	6.1	9.9	2.19
El Salvador	3.9	4.8	5.8	6.5	5.6	6.2	0.38
Dominican Republic	1.6	2.2	3.2	4.5	4.1	7.9	1.57
Uruguay	7.2	8.2	8.4	10.0	9.6	11.1	1.19

Note: (1) Using the assumptions of Table 8.
Source: Own calculations based on ECLAC database.

Finally, going beyond the variation of increased revenue, the proposal pursues a strategic goal: the defense of the integrity of one of the two fiscal pillars which Latin American countries have, as opposed to badly thought out attempts at redistribution. Personalizing VAT makes it possible to achieve two important additional aspects. On the one hand, improve tax administration as a result of extending the tax base. And on the other, a broader tax base makes it easier to adjust the rate during different stages of the economic cycle.

6. Conclusions and Alternative Policies

The modernization of tax systems in Latin America and the Caribbean witnessed during the 1980s consolidated VAT as a pillar of fiscal revenue, allowing trade taxes to be replaced and a rationalization of excise taxes. This process intensified during the 1990s, with rate increases and broadening the VAT tax base. Rising concern about the lack of equity in income distribution in all countries in the region has led to a review of the role of fiscal policy in general, and tax policy in particular, both as a source of the problem and how it can help reduce it.

An analysis of the tax systems reveals that the effect on income distribution, whether it be concentrated or redistributive, is hardly relevant in Latin America and the Caribbean. This contrasts with the dominant conventional view which attributes much of the unequal income distribution in the region to the severe regressivity of its tax systems originating in the prevalence of indirect taxation. As we have pointed out in another study, there is no significant variation in the Gini index of income distribution after taxation (Barreix, Bès y Roca, 2009). On a more intuitive level, there is no significant change in the share of total income of losers and winners as a consequence of the current tax systems in the region.

In broad strokes, the general conclusion for the tax system applies when analyzing the redistributive impact of public social expenditure and in some cases its progressivity. This does not prevent that, coinciding with what has been seen in the literature on the subject (Barreix, Bès and Roca, 2009) find that the redistributive impact of public social expenditure in Central America, Panama and the Dominican Republic is approximately

4.4 times higher than that of the tax system. What happens is that, considering taxes and public social expenditure, fiscal policy does not have an important redistributive role. This leads us to believe that action should be taken as much on the sufficiency of resources as on the designs of the tax systems and of public social expenditure if the aspiration is to build societies with fewer poor people and greater equity.

Generalized subsidies, whether through tax expenditures, as VAT exemptions are, or through public social expenditure, show significant “leaks” towards higher-income brackets whom do not require these benefits if we are seeking equity. Consequently, within a framework of fiscal scarcity, generalized subsidies ought to be replaced by others which target the lower deciles of the population. For these to have any effect it is important to take into account the degree of informality that characterizes the regions’ economies, something that disproportionately affects the three poorest deciles of the population.

Acknowledging that informality limits access to Social Security led the new generation of social assistance programs in the region to focus their resources on the informal sector. Conditional cash transfers stand out among the programs successfully put into operation. . Their objective is to increase investment in human capital in the poor so as to disrupt the transmission of poverty from one generation to another in a family group. In addition, the gradual aging of the population will force us to consider how to extend these kinds of transfers to individuals not covered by pensions, something which affects 4 out of every 10 Latin Americans. . Consequently any future public policy agenda ought to prioritize the design, management and generation of resources so as to set up a Universal Income Program (UIP), financed by general taxation.

Alternative Policies

From the point of view of available tools for financing public social expenditure, the region’s two tax pillars are VAT and income tax. In this study the proposal is to “personalize” VAT and in another, under preparation, we will propose “depersonalizing” personal income tax. Personalizing VAT consists of broadening the tax base, and compensating the lower deciles with refunds for these tax increases. This proposal makes it possible to generate the necessary resources for financing these

transfers. This is due to the direct effect of extending the tax base and the indirect effect originating in the positive impact which generalization has on VAT administration. The higher the rate is and the greater the exemptions from the tax base, the larger the potential yield of this “personalization” will be.

This proposal of personalizing VAT is better than the widespread practice of exempting goods and services, or even zero-rating them for redistributive purposes, which reduces dramatically the tax revenue, complicates its administration and transfers resources to individuals who do not need them. To redistribute with a “depersonalized” VAT is not a good idea: our estimates for the Central American countries, Panama and the Dominican Republic indicate that one point of tax expenditure in VAT has approximately three times less impact on income distribution than one point of social assistance programs (Barreix, Bès and Roca, 2009).

Objectivity is maintained in the definition of the broadest tax base, preferably with a single rate, and the greater subjectivity for focusing better on tax expenditure in the poorest deciles, as theory and best practices recommend. The impact in terms of sufficiency, efficiency, equity and simplicity is the result of the complementary application of tools designed to generate and assign fiscal resources. The most serious restriction may come from the institutional capacity of administering the beneficiaries of VAT refunds and handling this compensation in an agile and transparent way (e.g. by electronic means).

It is likely that this mechanism could be valid not only for Latin America, but could prove interesting to developed countries given the current fiscal climate that is affecting them. Indeed, these countries have strong institutions that are able to serve a small amount of poor (relatively) people and present limited capacity for increases in income tax in order to not affect their competitiveness.

As pointed out in this study, VAT compensation has been introduced into the tax systems of various developed countries, and here we have described the cases of Canada and Japan. However, provision of tax relief to the lower deciles has been discouraged in Latin American countries on two grounds: (1) the administrative complexity of targeting and delivering that relief and (2) the fiscal needs of these countries.

The first of these objections can be dismissed using identification systems for beneficiaries and transfer payment mechanisms that the majority of conditional cash transfer programs in Latin America have successfully implemented. These programs make good use of the available technology, developed in many cases so as to operate in economic systems distinguished by a high level of informality. This technology involves targeting systems mentioned in the subsection 4.5 as well as electronic transfers of funds in a debit card, so as to ensure simplicity and transparency in the administration of the tax and subsidy. The second objection can be dealt with by understanding that the tax relief is “financed” from the increase in revenue which comes from the VAT generalization combined with the higher rate, which results in a surplus for the treasury. In fact, as seen in Table 8, governments would benefit from the increase in revenue, which in our estimation went from 80 percent in the case of Uruguay to 5 percent in Nicaragua.

Anticipating our conclusions regarding the personal income tax (PIT), even though the great deficit of the region’s tax systems , it must be recognized that it is impossible to achieve the high revenue levels and huge participation of this tax which is seen in developed countries. Those countries have, on average, a nominal *per capita* income that is more than five times higher than that of the Latin American region, which allows them to have a higher individual burden and reach 60 percent of the population. However we believe there is reasonable potential for improving collection due to the fact that in all the countries, the richest 20 percent receive about 60 percent of total income, while the poorest 40 percent hardly get more than 10 percent on average. Even more so the ratio of 5.5 to 1 between what the 20 percent richest and the 40 percent poorest receive of income, has remained unchanged despite growth of over 70 percent in income since open regionalism was introduced in the early 1990s. This is an additional demonstration that growth in itself is not going to improve the existing distribution problems.

The proposal to “depersonalize” personal income tax (PIT) consists, on one hand in setting a non-taxable threshold so that around 80 percent of the poorest members of the population do not have to pay this tax, and on the other, minimize the deductions. This is complemented by taxing income from all capital sources at a lower rate, with a

withholding mechanism, recognizing the integration of international financial markets. Given the strong concentration of income, a high non-taxable threshold is enough to correctly identify the individuals who are able to pay taxes.

The “integral” or “comprehensive” design which accumulates all income obtained, has aimed at a “personalization” through exemptions. However it has only managed to complicate administration, encourage informality and ignore the mobility of financial capital, thereby reducing the redistributive capacity of the tax.

The starting point of both proposals is acknowledging that public expenditures in Latin America do not have three pillars to finance them, like the case of developed countries. The region has an imbalanced revenue source, based on VAT and an incomplete income tax (a pillar and a half). It is therefore urgent to optimize the quality of these tax pillars, complementing them in an innovative way with the most efficient tools of public social expenditure.

Bibliography

AGOSIN, Manuel R.; BARREIX, Alberto; GOMEZ SABAINI, Juan Carlos and MACHADO, Roberto (2005). Reforma tributaria para el desarrollo humano. *ECLAC magazine*, 87: 79–96.

AINSWORTH, Richard T. (2006 a). The Digital VAT (D-VAT). Working Paper Series, Law and Economics, Working Paper No.06-22. Boston, MA: Boston University School of Law.

AINSWORTH, Richard T. (2006 b) Digital Consumption Tax (D-CT). Working Paper Series, Law and Economics, Working Paper No.06-26. Boston, MA: Boston University School of Law.

AINSWORTH, Richard T. (2006 c) Digital VAT and Development: D-Vat and D-Development. Working Paper Series, Law and Economics, Working Paper No.06-21. Boston, MA: Boston University School of Law.

AINSWORTH, Richard T. (2006 d) Biometrics, Certified Software Solutions, and the Japanese Consumption Tax: a Proposal for the Tax Commission. Working Paper Series, Law and Economics, Working Paper No.06-45. Boston, MA: Boston University School of Law.

ANDINO, Mauro (2009). Generalización del IVA en Ecuador: Una simulación de impacto sobre Distribución, Pobreza y Recaudación. Informe de Consultoría para el BID.

BARREIX, Alberto; BÈS, Martín and ROCA, Jerónimo (2009). Equidad Fiscal en Centroamérica, Panamá y República Dominicana. Washington, DC: Banco Interamericano de Desarrollo.

<http://www.eurosocialfiscal.org/index.php/publicaciones/listado/idmenu/100>

BARREIX, Alberto; ROCA, Jerónimo and VILLELA, Luiz (2006). Política fiscal y equidad. Estimación de la progresividad y capacidad redistributiva de los impuestos y el gasto público social en los países de la Comunidad Andina: Resumen Ejecutivo. Lima: DFID-BID-CAN. http://www.comunidadandina.org/public/libro_EquidadFiscal.pdf

BARREIX, Alberto and ROCA, Jerónimo (2007). Reforzando un pilar fiscal: el impuesto a la renta. *ECLAC magazine*, (92).

BARREIX, Alberto and ROCA, Jerónimo (2007). Uruguay. In: Tax System and Tax Reforms in Latin America, Part II Country studies of tax systems and tax reforms in Latin America. BERNARDI, L; BARREIX, A.; MARENZI, A.; PROFETA, P. (eds), Series: Routledge International Studies in Money and Banking.

BEYER, Vicki and ISHIMURA, Koji (1993). The Progress of the Japanese National Consumption Tax. Revenue Law Journal: Vol 3, Issue 2, Art. 3.

BES, Martín (1996). La Reforma Tributaria. In: Informe de Progreso Económico y Social de América Latina y el Caribe. Washington, DC: Banco Interamericano de Desarrollo.

BES, Martín (1999). Case Study: Estimating Sub-National VAT in Argentina. Program on Tax Analysis and Revenue Forecasting. Harvard University. Mimeo.

BES, Martín (2007). Argentina. In: Tax System and Tax Reforms in Latin America, Part II Country studies of tax systems and tax reforms in Latin America.. BERNARDI, L; BARREIX, A.; MARENZI, A.; PROFETA, P. (eds), Series: Routledge International Studies in Money and Banking.

CABRERA, Maynor (2009). Estimación del Impacto Redistributivo de un IVA generalizado y Transferencia a los Deciles más Pobres en El Salvador. Informe de Consultoría para el BID.

CONCONI, Adriana; CRUCES, Guillermo; OLIVIERI, Sergio and SANCHEZ, Raúl (2007). E pur si muove? Movilidad, pobreza y desigualdad en América Latina. Documento de Trabajo N° 62. Centro de Estudios Distributivos, Laborales y Sociales (CEDLAS) - Universidad Nacional de La Plata.

COWELL, Frank (2007) A. Income distribution and inequality. London: STICERD/London School of Economics.

DÍAZ, Magín (2009). Estimación del Impacto Redistributivo de un IVA generalizado y Transferencia a los Deciles más Pobres en República Dominicana. Informe de Consultoría para el BID.

DUCLOS, Jean-Yves; ESTEBAN, Joan and RAY, Debraj (2004). Polarization: concepts, measurements, estimation. *Econometrica*, 72(6): 1737-1772.

ESTEBAN, Joan-María and RAY, Debraj (1994). On the measurement of polarization. *Econometrica*, 62(4): 819-851.

GASPARINI, Leonardo; MARCHIONNI, Mariana and SOSA ESCUDERO, Walter (2001). La distribución del ingreso en la Argentina: evidencia, determinantes y políticas.

GASPARINI, Leonardo; OLIVIERI, Sergio and HORENSTEIN, Matias (2006). Economic polarisation in Latin America and the Caribbean: what do household surveys tell us? Documento de Trabajo N° 38. Centro de Estudios Distributivos, Laborales y Sociales (CEDLAS)/Universidad Nacional de La Plata.

GOÑI, Edwin; LOPEZ, Humberto and SERVEN, Luis (2008). Fiscal redistribution and income inequality in Latin America. World Bank Policy Research Working Paper No. 4487. Washington, DC: World Bank.

GRADIN, Carlos and DEL RIO, Coral (2001). *La medición de la desigualdad*. Universidad de Vigo.

HIRSCHMAN, Albert and ROTHSCHILD, Michael (1973). The changing tolerance for income inequality in the course of economic development. *The Quarterly Journal of Economics*, 87(4): 544-566.

JORRAT, Michael (2009). Estimación del Impacto Redistributivo de un IVA generalizado y Transferencia a los Deciles más Pobres en Chile. Informe de Consultoría para el BID.

JORRAT, Michael (2010). Diagnóstico de la Estructura Tributaria de Colombia y Propuestas de Reforma Tributaria Informe de Consultoría para el BID.

KAKWANI, Nanak (1977). Applications of Lorenz curves in economic analysis. *Econometrica*, 45(3): 719-727.

LAMBERT, Peter (1989). The distribution and redistribution of income. A mathematical analysis. Manchester University Press.

LINDERT, Kathy; SKOUFIAS, Emmanuel and SHAPIRO, Joseph (2006). Redistributing income to the poor and the rich: public transfers in Latin America and the Caribbean. *SP Discussion Paper*, No. 0605. Washington, DC: World Bank.

LOPEZ-CALVA, Luis; LUSTIG, Nora (2010). Declining Inequality in Latin America. A Decade of Progress? United Nations Development Programme. Brookings Institution Press. Washington, DC.

MORENO, Carmen (2005). Material used during the course “Evaluación del impacto económico y distributivo de las reformas fiscales”. Doctorado en Economía Pública, Departamento de Hacienda Pública y Sistema Fiscal, Universidad Complutense de Madrid.

PITA, Claudino (1993). La reforma tributaria en América Latina en la década de los años ochenta. Working Paper Series No.164, Department of Economic and social Development, Inter-American Development Bank, Washington, D.C.

PARRY, Ian and STRAND, Jon (2009). Fuel Taxes in Chile. Report to the Inter American development Bank. Washington D.C, IDB.

ROCA, Jerónimo (2009 a). Estimación del Impacto Redistributivo de un IVA generalizado y Transferencia a los Deciles más Pobres en Uruguay. Informe de Consultoría para el BID. Washington D.C., BID.

ROCA, Jerónimo (2009 b). Tributación y redistribución del ingreso en Nicaragua. Mimeo BID. Noviembre. Washington D.C., BID.

ROCA, Jerónimo and VALLARINO, Hugo (2003). Incidencia distributiva de la política fiscal en Ecuador. Proyecto SALTO. DAI. Ecuador: USAID.

RUIZ CASTILLO, Javier (2004). Una evaluación de: “El ingreso rural y la producción agropecuaria en México 1989-2002”. Servicio de Información y Estadística Agroalimentaria (SIAP). México: SAGARPA.

RUIZ CASTILLO, Javier (2007). La medición de la desigualdad de la renta: una revisión de la literatura. Departamento de Economía, Documento de Trabajo 07-02, *Serie de Economía 01*. Madrid: Universidad Carlos III.

SAHAY, Ratna and GOYAL, Rishi (2006). Volatility and growth in Latin America: an episodic approach. Finance and Western Hemisphere Department, *IMF Working Paper*. Washington, DC: IMF.

SEN, Amartya (1992). Inequality reexamined. Cambridge University Press.

SHOME, Partha Sarathi (1992). Trends and future directions in tax policy reform: a Latin American perspective. Washington, D.C.; International Monetary Fund.

SKOUFIAS, Emmanuel and PARKER, Susan W. (2001). Conditional Cash transfers and Their Impact on Child Work and Schooling: Evidence from the PROGRESA Programa in Mexico. *Economia*, Fall.

TAIT, Alan A. (1988). Value Added Tax, International Practice and Problems. Washington, DC: IMF.

THORP, Rosemary (1998). Progress, poverty and exclusion. An economic history of Latin America in the 20th Century. Washington, DC: IDB.

TREJOS, Juan Diego (2010) Tributación y redistribución del ingreso en Costa Rica. Mimeo BID. Noviembre. Washington D.C., BID.

WORLD BANK (2004). Inequality in Latin America and the Caribbean. Breaking with history? World Bank: Latin American and Caribbean Studies.

WORLD BANK (2009). Conditional Cash Transfers. Reducing Present and Future Poverty. Washington, D.C.

APPENDIX

Table A

VAT Deciles according to household income					
1. Progressivity	Bolivia (1)	Colombia	Ecuador	Peru	Venezuela
Effective tax rate/Income (percent)					
1st -	6.98	10.80	4.59	29.70	6.43
2nd -		8.56	4.15	13.30	7.16
2nd +		5.39	4.89	5.80	8.77
1st +	8.00	4.71	5.15	4.30	9.47
Gini Income before VAT	0.556	0.537	0.408	0.535	0.423
Quasi-Gini of VAT	0.547	0.469	0.445	0.358	0.473
Kakwani (when < 0 => regressive; when > 0 => progressive)	-0.009	-0.068	0.038	-0.177	0.050
2. Redistribution	Bolivia	Colombia	Ecuador	Peru	Venezuela
Gini Income after VAT	0.557	0.541	0.406	0.547	0.427
Transfer of 50 percent- to 50 percent+ (or from 50 percent+ to 50 percent-)	-0.05 percent	-0.20 percent	0.09 percent	-0.60 percent	-0.22 percent
Losers	2 and 3	1 to 6 and 9	9 and 10	1 to 8	10
Memo: VAT revenue (as percent of GDP)	5.6	6.3	6.4	4.9	4.7
(1) Quintiles					
<i>Source: Barreix, Roca and Villela (2006)</i>					

Table B

VAT Deciles according to household consumption					
1. Progressivity	Bolivia (1)	Colombia	Ecuador	Peru	
Effective tax rate/Consumption (percent)					
1st -	6.83	4.73	3.78	6.50	
2nd -		4.57	4.11	6.90	
2nd +		5.14	6.31	7.60	
1st +	7.68	5.93	7.57	6.70	
Gini Expenditure before VAT	0.472	0.518	0.346	0.470	
Quasi-Gini of VAT	0.481	0.564	0.452	0.455	
Kakwani (when < 0 => regressive; when > 0 => progressive)	0.009	0.046	0.106	-0.015	
2. Redistribution	Bolivia	Colombia	Ecuador	Peru	
Gini Expenditure after VAT	0.471	0.515	0.339	0.471	
Transfer from 50 percent- to 50 percent+ (or from 50 percent+ to 50 percent-)	0.04 percent	0.15 percent	0.33 percent	-0.06 percent	
Losers	5	10	9 and 10	4 to 9	
Memo: VAT revenue (as percent of GDP)	5.6	6.3	6.4	4.9	
(1) Quintiles					
<i>Source: Barreix, Roca and Villela (2006)</i>					

Table C
VAT – Deciles According to Individual Income

1. Progressivity	Costa Rica (2004)	Dominican Rep. (2004)	El Salvador (2006)	Guatemala (2000)	Honduras (2005) (*)	Nicaragua (2001)	Panama (2003)
Effective tax rate/Income (percent)							
1st -	5.4	8.8	24.0	20.2	10.2	8.6	4.4
2nd -	4.2	5.5	15.2	9.1		5.1	1.7
2nd +	3.5	3.0	7.0	5.4		3.4	1.2
1st +	3.0	2.0	6.5	4.9	5.0	3.4	1.4
Gini Income before VAT	0.5770	0.5106	0.5034	0.5957	0.5697	0.5963	0.6364
Quasi-Gini of VAT	0.4920	0.3258	0.3626	0.4601	0.4800	0.5028	0.5472
Kakwani (if < 0 => regressive; if > 0 => progressive)	-0.0850	-0.1847	-0.1408	-0.1356	-0.0897	-0.0935	-0.0892
2. Redistribution							
Gini Income after VAT	0.5801	0.5156	0.5167	0.6034	0.5747	0.5998	0.6375
Reynolds – Smolensky	-0.0031	-0.0050	-0.0133	-0.0077	-0.005	-0.0035	-0.0011
Losers	1 to 9	1 to 9	1 to 7	1 to 8	Quintiles 1 to 4	1 to 9	1 to 5 and 10
<i>Memo: VAT revenue (as percent of GDP)</i>							
	4.9	3.9	7.0	4.8	6.2	6.4	1.6
<i>(*) Quintiles</i>							
<i>Source: Barreix , Bès and Roca (2009)</i>							

Table D
VAT – Deciles According to Individual Consumption

1. Progressivity	Costa Rica (2004)	Dominicana (2004)	Guatemala (2000)	Honduras (2005) (*)	Nicaragua (2001)	Panama (2003)
Effective tax rate/Consumption (percent)						
1st -	3.1	2.3	4.3	4.0	1.9	0.6
2nd -	3.6	2.6	4.6		2.3	0.8
2nd +	5.1	3.0	6.2		4.1	1.3
1st +	5.6	3.0	6.8	8.8	4.6	1.7
Gini Expenditure before VAT	0.4831	0.4085	0.4633	0.4590	0.4990	0.4831
Quasi-Gini of VAT	0.5408	0.4462	0.5370	0.5610	0.6086	0.6045
Kakwani (when < 0 => regressive; when > 0 => progressive)	0.0577	0.0377	0.0737	0.1020	0.1096	0.1214
2. Redistribution						
Gini Expenditure after VAT	0.4801	0.4073	0.4587	0.4510	0.4946	0.4814
Reynolds-Smolensky	0.0030	0.0012	0.0046	0.0080	0.0044	0.0016
Losers	8 to 10	8 to 10	9 and 10	Quintil 5	9 and 10	8 to 10
<i>Memo: VAT revenue (as percent of GDP)</i>						
	4.9	3.9	4.8	6.2	6.4	1.6
<i>(*) Quintiles</i>						
<i>Source: Barreix , Bès and Roca (2009)</i>						

Table E
VAT – Deciles According to Individual Income

1. Progressivity	Chile (2003)	Paraguay (2000-01)	Uruguay (2005-06)
Effective tax rate/Income (percent)			
1st -	35.31	18.3	21.6
2nd -	19.66	5.7	12.7
2nd +	12.88	4.8	7.6
1st +	8.79	4.6	6.5
Gini Income before VAT	0.5791	0.5578	0.4995
Quasi-Gini of VAT	0.4493	0.4608	0.3914
Kakwani (when < 0 => regressive; when > 0 => progressive)	-0.1298	-0.0906	-0.1081
2. Redistribution	Chile (2008)		
Gini Income after VAT	0.5968	0.5514	0.5096
Reynolds – Smolensky	-0.0178	-0.0046	-0.0101
Losers	1 to 9	1 to 7	1 to 7
<i>Memo: VAT revenue (as percent of GDP)</i>	7.4	6	8.6
<i>Source: Barreix ,Bès and Roca (in preparation)</i>			

Table F
VAT – Deciles According to Individual Consumption

1. Progressivity	Chile (2003)	Paraguay (2000-01)
Effective tax rate/Consumption (percent)		
1st -	15.58	2.9
2nd -	15.29	3.3
2nd +	12.19	5.6
1st +	13.70	6.1
Gini Expenditure before VAT	N/A	0.4376
Quasi-Gini of VAT	N/A	0.5251
Kakwani (when < 0 => regressive; when > 0 => progressive)	N/A	0.0875
2. Redistribution		
Gini Expenditure after VAT	N/A	0.4327
Reynolds-Smolensky	N/A	0.0048
Losers	N/A	N/A
<i>Memo: VAT revenue (as percent of GDP)</i>		6
<i>Source: Fuente: Barreix ,Bès and Roca (in preparation)</i>		

BID – Serie de Equidad Fiscal / IDB – Series on Fiscal Equity

1. Equidad Fiscal en Centroamérica, Panamá y República Dominicana
Alberto Barreix, Martén Bès y Jerónimo Roca

<http://biblioteca.programaeurosocial.eu/PDF/Fiscalidad/Fiscal9.pdf>

2. Equidad Fiscal en los Países Andinos
Alberto Barreix, Luiz Villela y Jerónimo Roca

http://www.comunidadandina.org/public/libro_EquidadFiscal.pdf

Fiscal Policy and Equity: Estimation of the Progressivity and
Redistributive Capacity of Taxes and Social Public Expenditure in the
Andean Countries

http://www.iadb.org/intal/aplicaciones/uploads/publicaciones/i_INTALITD_WPPRE_2007_VillelaBarreix.pdf

3. Equidad Fiscal en Brasil, Chile, Paraguay and Uruguay-Estudios preliminares
Alberto Barreix, Martén Bès y Jerónimo Roca

<http://www.eurosocialfiscal.org/uploads/documentos/centrodoc/6449893fc621b9dbdf16df6e7a3ca293.pdf>

4. El IVA Personalizado / Personalized VAT
Alberto Barreix, Martén Bès y Jerónimo Roca

http://www.eclac.org/ilpes/noticias/paginas/1/41751/alberto_barreix_El_IVA_Personalizado_BID_EurosocialIEF_2010_doc.pdf