Solving the Impossible Trinity of Consumption Taxes
Personalized VAT

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Abstract
This document proposes a solution to the Impossible Trinity of the progressiveness of a consumption tax, which require a broad base, a uniform rate and relief for the poorest taxpayers. The proposal consists of extending the tax base of the Value Added Tax and compensating the poor with a transfer. The authors suggest adopting the instruments used to target and deliver benefits which have been successfully applied for 15 years in the new generation of Latin American social programs, such as the conditioned cash transfers.

This article is a part of a broader body of work which its authors are conducting on tax policies and equity.

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1. **Introduction**

The consolidation of democracy has gone hand-in-hand with the improvement of macroeconomic management in Latin America. Both elements have allowed these countries to take advantage of the more favorable international environment of the past decade in making the fight against poverty and extreme poverty and inequality a priority when designing public policy.

In spite of this, an analysis of the equity of fiscal policy finds that its’ distributive impact in terms of expenditure and revenue is not very important in the region (Barreix, Roca and Villela, 2006 and Barreix, Bès and Roca, 2009). Greater progress has been made in the design of public social expenditure programs and specifically those addressing the intergenerational transmission of poverty through human capital investment in individuals that are part of the lowest-ranking deciles on the income distribution scale.

More modest progress is seen in the design of tax policy and, oftentimes, the tax system is blamed on the prevailing inequality in the region. In particular, VAT is often mentioned due to the regressive nature which characterizes indirect taxes. Although we dismiss this as an over-simplification, we believe that tax design could be improved in order to deal with the challenge posed by inequality in the region, which leads the global ranking in this area. Moreover, we consider that this improvement can be carried out by asserting the core role which VAT performs in a modern tax system by adopting instruments used to target and deliver benefits which have already been successfully applied for 15 years in the new generation of Latin American social programs, such as the conditioned cash transfers.

This document is organized as follows: Section Two examines the characteristics of the Value Added Tax, its’ impact on equity and the challenge posed by the *Impossible Trinity of Consumption Taxes*. Section Three analyzes different responses, introduced at a

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2 The authors would like to thank Juan Carlos Benítez for his help in preparing the statistics and Delenise Lettieri Vidal for the initial edition of this document. Valuable feedback and contributions by Juan Diego Trejos, Jordi Prat, Fernando Velayos and Eugenia Saini, who was also in charge for the final edition of the document is gratefully acknowledged. Of course the authors are solely responsible for any errors in this study.
practical and theoretical level in order to mitigate VAT regressivity. In Section Four, we present a simulation on 'VAT Personalization' for Costa Rica and Uruguay. Finally, Section Five presents a summary of findings and conclusions.

2. **Value-Added Tax (VAT)**

Since its introduction in France in 1954 as a tax on consumption, the value added tax was adopted by most countries. The United States is the only developed nation and one of the few countries in the world which does not apply it. VAT’s capability of generating significant and stable revenue is determined by its tax base, it is levied on total consumption, which represents over 70% of a modern economy’s GDP. It is precisely its broad base which ensures its elasticity to economic activity and its neutrality in regard to savings and among taxable products.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Tax Pillars</th>
<th>As a % of GDP –Average 2010/2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Revenues</td>
<td>OECD (1) 35.1</td>
<td>Latin America (2) (3) 23.2</td>
</tr>
<tr>
<td>VAT</td>
<td>6.9 (6)</td>
<td>6.7</td>
</tr>
<tr>
<td>Income Tax</td>
<td>11.5</td>
<td>5.1</td>
</tr>
<tr>
<td>Businesses</td>
<td>2.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Individuals</td>
<td>8.6</td>
<td>1.3</td>
</tr>
<tr>
<td>Remainder</td>
<td>7.4</td>
<td>6.6</td>
</tr>
<tr>
<td>Social Security</td>
<td>9.3</td>
<td>4.8</td>
</tr>
</tbody>
</table>

(1) Excludes Chile, Mexico and Turkey. (2) Includes public and private social security, mainly health and pensions, and net revenue from public entities collected through the exploitation of natural resources. (3) Includes Chile and Mexico. (4) Includes Barbados, Belize, Jamaica and Trinidad & Tobago. (5) Includes Turkey and is comprised of 40 countries from Eastern Europe (14), Africa (10) and Asia (16). (6) Includes U.S. Sales Tax.

Table 1 summarizes the composition of tax collection in different groups of countries. The high participation of VAT in tax collection is independent of a country's level of development allowing us to state that VAT is one of the core pillars of any modern tax system.

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3 The remaining two are the income tax system and those which tax work in order to finance the social security system. See Barreix and Roca (2007).
2.1 VAT Characteristics and its Role in a Modern Tax System

VAT is structured as a consumption tax in most countries where it is applied. Although there are several ways to calculate tax liability, conceptually, it arises from the difference between the amount collected on the sale of an item or a service (tax debit) and the amount paid in the purchases associated with the production of said item or service (tax credit). The latter includes capital assets employed in the production of the sold item. Goods and services are taxed in the country in which they are consumed, which is known as destination principle. Consequently, imports are taxed upon entering a country while exporters are refunded what they have paid for that tax in the purchase of inputs. The characteristics of VAT favor a centralized administration something most countries have adopted.

In contrast to other consumption taxes (e.g. retail sales tax or excise taxes), the VAT is a multi-stage tax since the amount is determined throughout the transaction chain until the good or service is eventually purchased by a consumer. This aspect of how the tax is designed facilitates compliance as it opposes the interests of taxpayers in successive transactions insofar as the benefit in underestimating sales of an item is pitted against the benefit of overestimating the value of the purchase of the same article by the buyer. While this characteristic of VAT discourage non-compliance it cannot prevent it, and it reaches significant levels in some countries. The countries which have been most successful in managing this tax have dedicated significant resources towards analyzing the supporting documents for transactions (electronic invoicing system).

As is the case with any tax, collection is determined by the rate and the tax base. Administrative streamlining recommends the application of a single rate, supplemented by

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4 Some institutional arrangements are different. Among these are the cases of Brazil, where VAT is a tax assignment of the states and Germany, where the administration of the tax is carried out by the intermediate level (Länder), which then shares revenue with the federal government. In Canada, VAT is a tax assignment of the federal government. The Canada Revenue Agency collects VAT taxes throughout the country with the exception of Quebec, where the service is provided by the provincial tax administration.

5 See Keen and Smith (2007) and IMF (2011).
a 0% tax on exports. However, concerns with tax regressivity determine that the general rate applied to most goods and services is supplemented by a list of exempt items in order to encourage their consumption. In addition to equity concerns, many goods and services are excluded from the tax base due to issues of administrative complexity. Many food and medical products, agricultural production and most services, including financial services are among noteworthy examples.

![Figure 1](image)

The impact of the exclusion of goods and services from the VAT tax base and tax evasion is reflected in the productivity of the tax, which is defined as the ratio between the tax collection as a percentage of the GDP and its rate. Figure 1 presents an estimate of VAT
productivity for Organization of Economic Cooperation and Development (OECD), Latin American and Caribbean countries. The average value of VAT productivity in these countries is 0.43 while the average rate is 17% and no clear relationship exists between both variables. In 70% of these countries VAT productivity is within the 0.30 to 0.50 range, highlighting the loss in revenue.

2.2 VAT and Equity

The regressivity attributed to consumption taxes in general and to VAT in particular is due to the fact that it does not take an individual’s ability to pay into account. This is clear if we take an individual’s income as a welfare indicator when we conduct an analysis on the distributive impact of VAT. In this case, we verify the tax regressivity because the lowest-ranking deciles spend a greater percentage of their income in paying this tax than the higher-ranking deciles.

Table 2 examines the regressive nature and redistributive impact of VAT from the revenue perspective for Central American countries, Panama and the Dominican Republic. We can see that the effective tax rate is greater for the lowest two deciles of income distribution than for the two top-ranking deciles. This provides an expected result: a negative value for the Kakwani indicator due to the fact that the tax payment is distributed with greater equity than income in the population (the Quasi-Gini value of VAT is lower than the Income Gini before VAT).

It is not unusual to find an analysis explaining the income concentration of a country with a high VAT participation in its tax structure. At the bottom of Table 2, we can see how VAT affects income concentration in the aforementioned countries. As we can see, although the Reynolds-Smolensky indicator reflects the concentrating effect of the tax on income, the fact is that the intensity of the phenomenon is quite modest, and changes are only observed after the third decimal point.

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6 This result is reversed when consumption is used as a welfare indicator. In this case, tax payment is concentrated in the higher-ranking deciles due to the fact that they are the ones which consume the most in absolute terms (see Annex I). Table 5 differs from Table 2 in that Consumption instead of Income was used as the Welfare indicator.
This should not be a surprise since the distributive impact must be measured on fiscal policy as a whole and not solely on taxes and much less so on only one of them regardless of its’ significance. This is so due to the fact that the relatively regressive impact of a tax can be neutralized and even reversed by targeting expenditures of goods, services and income transfers in the lower-income segments of the population. An example of a progressive fiscal framework is the one presented by Goñi et al (2008) for a group of European countries. However, this is not the only possible result. Frequently the size and/or targeting of the expenditure does not reverse regressive tax structures, so the fiscal policy does not contribute to improving income distribution in a country. This is the result we arrived at for Central American countries, Panama and the Dominican Republic (Barreix, Bès and Roca, 2009). Ultimately the progressive or regressive nature of a country’s fiscal policy is an empirical matter that reflects a society’s political consensus.
A more intuitive manner to present the VAT/Equity dilemma is offered in Figure 2. In it, the Human Development Index (HDI) is contrasted with VAT rates applied in OECD and Latin America and the Caribbean countries. The HDI is a multi-dimensional index created by the United Nations for 169 countries measuring the welfare of the population (see UNDP 2010). The index’s maximum value is 1 and the highest-ranked country, Norway, scores 0.938. The highest-ranked Caribbean country is Barbados, with a score of 0.788, which ranks 42nd worldwide. Chile is the Latin American country with the highest score, 0.783, ranking 45th. As we can see in Figure 2, there is not a defined relationship between human development and VAT, measured through its rate.

2.3 The Impossible Trinity of Consumption Taxes

Despite the arguments regarding the preceding paragraphs, many tax systems have attempted to mitigate VAT regressivity through the introduction of multiple rates, the exclusion of goods and services from the tax base and/or a combination of both. The universal nature of
these interventions does not distinguish among taxpayers with the purpose of improving the targeting of beneficiaries in order to favor the lower-ranking deciles. In short, these measures are equivalent to a generalized subsidy which mostly favors the richest sectors of the population at a high cost for public finances.

Thus, a challenge is posed in the design of tax policy, which we can call the impossible trinity of consumption taxes. In the words of Ainsworth (2006 b) “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.” We will examine different alternatives in order to resolve the challenges of the impossible trinity of consumption taxes in the following pages.

3. Responses to VAT Regressivity

Different solutions will be presented in this section for the problem of VAT regressivity through actions on the tax base, tax rates, taxpayer relief or a combination of these three variables. We call the first one the Universal Solution because, to a certain extent, it has been adopted by most tax systems in the world. We will subsequently present the approaches implemented by Japan and Canada for this problem and, then, two theoretical proposals will be presented – the one by Ainsworth (2006 a) and ours.

3.1 The Universal System

Most of the tax systems in the world have adopted a common response to offset VAT regressivity, which we call Universal Solution. The first step for this intervention consists of identifying goods and services with a significant weight on the consumption basket of lower income individuals and/or those items whose consumption is considered to be of social interest. The classic examples are food and health services, education, transportation and even publications in some countries. The next step is to eliminate them from the tax base (exemptions) and/or introduce several rates (which are lower than the general rate or even 0% tax rate) and apply them to the set of aforementioned goods and

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7 The Impossible Trinity is a trilemma in international economics which states that it is impossible for a country to adopt a fixed-exchange rate, free movement of capital and independent monetary policy simultaneously.
services. These kinds of interventions have a *universal* character due to the fact that they benefit all consumers, regardless of their income levels.

The Universal Solution is a blunt response to the problem posed by VAT regressivity. Its bluntness stems from the fact that tax relief measures implemented through multiple rates and exemptions from the tax base mostly benefit, in *absolute* terms, those who consume the most, i.e. those who belong to the higher-ranking deciles of income distribution. The universal character of tax intervention does not allow for the targeting among taxpayers *and; thus, focus on people who require tax relief*, i.e. the two lowest-ranking deciles of the population. Ultimately, VAT exemption is the equivalent to a non-targeted subsidy.

This situation can be viewed in Table 3 where consumption distribution by deciles in Uruguay’s economy is presented. This is representative with what occurs in Latin American and Caribbean countries. Goods and services are grouped in this Table according to how they are treated in VAT legislation. We see that, regardless of whether goods or services are taxed at the basic or minimum rate or if they are tax exempt, consumption is concentrated in the three wealthiest deciles of the population.

This poses what can be called the ‘error of inclusion’ regarding VAT exemption and it stems from the fact that between 55% and 65% of consumption in the three categories of goods and services is made by deciles 8 to 10. Thus, the paradox of the attempt to provide relief to the poorest deciles through universal measures (tax exemption for goods and services) ends up benefiting individuals who receive the highest income the most. An additional negative indirect effect also occurs as these measures reduce tax revenue which could have been allocated to financing social public expenditures targeted to the poorest deciles.
The Universal Solution is relatively easy to implement from a tax policy point of view. However, this simplicity disappears from the VAT management point of view, creating problems which will become greater the more complex the framework of exemptions and multiple rates on goods and services is and the weaker tax administrations are. At the same time, the cost of taxpayer compliance increases.

3.2 The Japanese Solution

As we saw in the previous section, the Universal System identifies goods and services considered as being of social interest and, then, it introduces multiple tax rates and/or exemptions on the tax base in order to reverse VAT regressivity. This causal chain is reversed in the design of the Japanese VAT. In Japan, the starting point is identifying the population which will receive tax relief and in a second step this population will be exempted from VAT when it consumes a specific and limited set of goods and services.

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This section is based on Ainsworth (2006 c)
According to Ainsworth (2006) and Beyer and Ishimura (1993), the goods and services which are sought to be eliminated from the tax base of the Japanese consumption tax are grouped into 13 categories and two modalities: universal and localized. Within the universal modality is the lending and transfer of land, the transfer of financial assets, interest paid on loans and on public and private bonds and insurance policies, mail stamps, most government services, goods linked to childbirth, burial and cremation services and goods used by individuals with physical disabilities.9

The distinctive feature of the five remaining categories of targeted goods and services which Ainsworth calls “surgical” is that it affects specific groups of beneficiaries, who were explicitly identified in the legislative procedure. The first category of goods and services refers to medical treatments but they only benefit individuals who receive those benefits defined in a limited set of laws. The result of the exemptions is that medical services are taxed when individuals are not “protected” by these laws, i.e. individuals whose income is above a certain threshold as well as foreigners10.

The remaining four “surgical” categories are social services delivered at homes, text books and educational services and home rentals. The exemptions of the remaining goods and services are ruled by concepts which are analogous to those of medical treatments mentioned in the previous paragraph. In all cases it is stated that exemptions will solely apply to individuals defined in the legislation which governs the provision of these services.

The result of VAT implementation in Japan is that individuals who consume the same good or service face a different tax cost if the legislation has identified them as being tax relief beneficiaries or not. This requires that tax policy identify the consumer population which will benefit from each good and service which is sought to be exempted. One of the examples proposed by Ainsworth (2006) serves as an example of the second requirement, which is imposed on tax administration. Tax treatment of VAT originating in the sale of a

9 These goods are defined in the supplementary decrees to the Consumption Tax Law.
10 Health Insurance Law, People’s Health Insurance Law, Seamen’s Health Insurance Law, National Civil Servants Mutual Aid Association Law, Elderly Law and Private School Employees Mutual Aid Law.
dictionary will be different if it is purchased by a high school student, a university student or by a student enrolled in a vocational college in a course lasting less than a year.

The design of the Japanese VAT avoids the loss of VAT collection associated with the Universal System as it does not benefit individuals that do not require tax relief. However, it is clear that the specificity of the goods and services and of the beneficiary population identified in the tax legislation introduces a complexity in tax administration. It also requires a society with a high degree of social cohesion regarding the compliance of said legislation. A final negative aspect is its intrusive character stemming from the need to ensure that the tax exemptions associated with determined consumptions will only benefit the population segments identified in the population.

3.3 The Canadian Solution

Canadian VAT has a uniform rate and exemptions for goods and services with a big weight on the consumption basket of low income individuals. The classic examples of these exemptions are food and medical products. As a usual, exports are taxed at 0%.

The novelty of the Canadian solution lies in a transfer which provides relief to targeted taxpayers and partially reverses the impact of the tax. The amount transferred is based on marital status, the number of members in a family and the taxpayer’s income. Transfer payments are made quarterly and are managed by the Canada Revenue Agency, the organization responsible for the management of Canadian taxes as well as payments of the federal government’s social programs.\(^\text{11}\)

The Canadian system adopts a mixed approach, combining the core elements of the Universal System with transfers to taxpayers according to the three stated parameters. Tax base exemptions as well as transfers reduce tax revenue. The system is relatively simple from the perspective of implementation as it focuses on exemptions yet complex regarding the identification of the eligible beneficiaries.

\(^{11}\) The transfer is called *Goods and Services Tax Credit* as Canada’s VAT is called the *Goods and Services Tax*. [http://www.cra-arc.gc.ca/bnfts/gsthst/gstc_pymnt09-eng.html](http://www.cra-arc.gc.ca/bnfts/gsthst/gstc_pymnt09-eng.html)
The first requirement is a database with reliable information regarding individuals, their income and the composition of families. In Canada, this is possible due to the high degree of formality of economy. This is reflected in the quality of information available to the Canada Revenue Agency. This has allowed for the development of a highly reliable information system which very few developed countries have. Unfortunately, it is precisely the existence of informality, ranging from 40% to 60% of the population in emerging economies, which makes it difficult to adopt a similar targeting mechanism in these economies.

### 3.4 Digital VAT

Ainsworth (2006 a) examines the alternative of combining a VAT with characteristics similar to those which prevail in most European Union countries with an important dose of technology, which he then calls Digital VAT (D-VAT in the original proposal). While the proposal was intended for the United States, which does not apply the VAT, its interest lies in that it addresses the challenge posed by tax regressivity with the massive use of technology with the purpose of individualizing consumption and, thus, ‘personalizing’ VAT.

In Ainsworth’s proposal, invoicing, filing of returns and tax collection is performed in real time, requiring the use of computer systems which would be developed by companies providing Certified Transaction Technology. Exemptions from this technological requirement would be businesses invoicing below a certain threshold. The proposed system would be complemented with a biometric ID card, which would exempt the holder from the tax at the moment of the transaction, with minimum risk of fraud. Purchases made by beneficiaries who receive these cards would be applied a 0% tax rate, i.e. they would not accumulate VAT payments from preceding stages. In Ainsworth’s proposal, this happens in real time in each transaction.

This proposal’s main requirement is a massive investment in information systems, something which would be only attainable by developed countries. Furthermore, although there is experience in the operation of all of the components of this system in an
individually, there is no experience in the comprehensive operation of all of the components in millions of transactions in real time.

Finally, the use of a Digital VAT card also poses problems regarding invasion of privacy of Orwellian dimension, significantly greater than those pointed out for the Japanese solution discussed in Subsection 3.2. The problem regarding individual privacy stems from the fact that the system would allow each purchase made by beneficiaries of the tax exemption, the price and number of each item purchased, the place and time they were made to be known by the tax administration as it would be a requirement for auditing the tax.

3.5 Personalized VAT. The Possible Trinity.

In this section, we present our proposal to solve the impossible trinity of consumption taxes, focusing on the three challenges the problem poses – the identifying the individuals to whom to provide tax relief, adopting an objective criterion to determine the amount of that relief and of a mechanism to deliver tax relief. In the following subsection, we will briefly review other criteria to compensate the VAT burden.

3.5.1 Solving the Impossible Trinity

The starting point of our proposal is to generalize the tax base. The only exemptions which will be kept are those which make sense from the tax administration’s point of view and/or those cases which are necessary in order to ensure consistency in the tax treatment of similar concepts.

The typical example is financial intermediation services, which are exempt due to the technical impossibility in accurately allocating VAT for the services which the financial intermediary provides to its depositors and lenders. This is due to the fact that the combination of the saver’s and lender’s flow of services does not permit clear VAT allocations as is in the case of unidirectional flows, whether they are sales between businesses in different sectors – for instance, from the agricultural to the industrial or
commerce sector (vertical flow), or between companies in the same sector (horizontal flow).

Another example of administrative difficulty is that regarding rentals, which are exonerated from the base because of the difficulty in controlling a significant number of unregistered individuals. This exemption would not be justified if an efficient collection manner could be carried out. Expenses in health and education services are eliminated from the VAT base in order to equalize the treatment of investment in physical assets with human capital development in a consumption-based VAT.

The second item in our proposal consists of unifying the tax rate. This recommendation is consistent with best practices and fundamentally responds to the need to simplify the tax administration and obtain greater neutrality\textsuperscript{12}. Regarding the rate level, it must be based on each country’s fiscal design. As was pointed out in Figure 1, there is a significant variability in the VAT rates that countries apply, from a minimum of 5% in Canada to the rates surpassing the 20% mark in Argentina, Brazil and Uruguay and in some European countries\textsuperscript{13}.

The third element of our VAT personalization proposal refers to the provision of tax relief implementation for those individuals whom are to be benefited. This requires two kinds of actions: determining the amount of relief to be granted and identifying the individuals who will be awarded this relief.

Regarding the first issue, we suggest estimating the incidence of VAT generalization on the consumption basket of individuals that should be provided with tax relief, in our view those that belong to the lowest deciles in terms of income. A decile cut-off is chosen and the amount of tax relief to be granted is determined. In the simulation we are presenting in this study, the relief will be equal to the amount of VAT which would be paid by the decile if the tax base included the consumption basket identified in the Household

\textsuperscript{12} However, it must be pointed out that Personalized VAT can be implemented with multiple rates.

\textsuperscript{13} It only corresponds to the Federal Government’s rate. Some provinces add to that rate a surcharge rate which is applied on the same tax base, giving rise to the Harmonized Sales Tax (HST).
Survey. The resulting amount is transferred to the individuals to whom we are seeking to provide relief them from VAT.

We must highlight that the term ‘Personalized’ stems from the fact that the proposal seeks to compensate the tax impact on the consumption of an average person belonging to the decile which we are seeking to provide tax relief. This proposal rules out conducting a detailed monitoring of the consumption of individuals in order to apply the tax to particular goods and services in order to discourage their consumption. This consumption monitoring would constitute an unjustified intrusion into the intimacy of people in general and, in particular, of society’s poorest segments. The suitable instrument to discourage the consumption of a good or service which has negative externalities is the excise tax, which should be applied without discriminating among social sectors\(^{14}\). Furthermore, a monitoring of consumption of products for each beneficiary would impose a significant cost to the tax administration due to the amount of transactions to be supervised.

Unlike programs which are universal in nature, the second step of VAT Personalization requires identifying the program’s beneficiaries (i.e. those individuals to whom the tax relief will be awarded). The identification of beneficiaries of public programs poses challenges and is generally susceptible to corruption which frequently develops into a patronage system in developing countries. The acknowledgement of the role of informality in limiting access to social security benefits led the new generation of Latin American social aid programs to make a huge effort in terms of targeting beneficiaries. The valuable experience accumulated over the past 15 years in conditional cash transfer programs includes successful examples of targeting such as those in Brazil, Chile, Mexico and Uruguay. The use of this knowledge in the execution of other social programs is something which is more or less widespread in these countries\(^{15}\). Unfortunately this knowledge has

\(^{14}\) This is the case of alcoholic beverages and tobacco products. A subsidy should be applied when policy warrants increasing consumption.

\(^{15}\) The World Bank elevates it to the category of ‘institutional capital’ in the countries where the system is correctly implemented. See World Bank (2009).
not been taken into consideration in the design of tax policy and we consider that it is one of the elements which make the Personalized VAT proposal feasible.

Targeting requires defining eligibility parameters and, registering beneficiaries. Self-selection is combined with the verification that candidates comply with said eligibility parameters by the organization in charge of managing the program. This is a complex activity where mistakes can be made which include individuals who do not comply with the requirements in order to receive the benefit and the exclusion of people who indeed should have been included. The details of the methodology of identification and monitoring vary among countries in the region, which have successfully developed proxy means testing instruments in which a thorough statistical analysis is conducted comparing the information of the beneficiary population with that of household survey data, field visits, cross-checking information on eligibility requirements with the ones on transfer conditionality and so forth.

Benefit delivery has become significantly simplified through the use of available technology. In this area, we propose that benefits be delivered through crediting an e-card in the amount equivalent to the monthly VAT incidence of the consumption basket of the cut-off decile. The e-card will allow purchases to be made in shops and to withdraw credited funds through the banking network. The region’s conditional cash transfer programs which have been using this system for several years now. Even before these programs, Argentina’s tax administration (AFIP) has implemented electronic VAT returns for a decade and the mechanism was extended to social programs. For its part, the Dominican Republic successfully implemented a similar procedure for awarding a grant to consumers of liquefied gas in 2008. This subsidy is limited to this specific energy source and is included as another item on the electronic card which credits funds to each beneficiary of the Solidarity Program (conditional cash transfers).

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16 This solution is easily applicable in urban environments. However, it can pose challenges in rural environments lacking the presence of a banking system and an adequate link of businesses with the payment network. However, Latin America’s accelerated urbanization limits this problem to specific regions within the countries.
This proposal has several advantages. First of all, mainstreaming the VAT tax base increases revenue, a part of which is transferred to the groups to be benefited. Secondly, VAT mainstreaming facilitates tax management and, at the same time, stimulates formality in economic activity through the use of e-payment. Likewise, the amount to be reimbursed follows an objective criteria (i.e., the tax incidence in the consumption basket of the cut-off decile) and is not invasive regarding the beneficiary’s consumption decisions. Finally, the proposed technology, both regarding how to determine the benefit amount (in this case, VAT reimbursement), the identification of the beneficiaries and the delivery mechanism, is available and widely used in most of the countries in the world.

3.5.2 Alternative Compensation Criteria

There are three major criteria in order to compensate the VAT impact. The first one is the progressive criteria and was presented in Subsection 3.5.1. In this case, the amount transferred is incorporated into an individual’s disposable income, which allows them to access a greater level of present consumption and, therefore, of welfare.

The use of the transfer changes when the second criterion, which we call pro-pension, is adopted. In this case, the resources are allocated to an individual account in order to finance a beneficiary’s pension (á la Levy 2008). The pro-pension criterion provides for future consumption and addresses one of the main shortcomings of the social security system in Latin America, i.e. the exclusion of benefits affecting the informal sector. Exclusion arises because an individual’s participation in the social security system is linked to the contributions into said system, which is the result of employer payments and funds withheld from salaries. This occurs only in a formal labor market, which is not a minor issue in Latin America, where among 40% to 50% of jobs present some degree of informality and where the exclusion of over half of the population from the pension system is not unusual.

We call the remaining criterion regressive as it consists of the reimbursement of a percentage of the monthly purchases that were made using electronic means. Its name
comes from the fact that the reimbursement will be larger the greater the consumption is and the greater the proportion of this consumption is made through electronic means. If this criterion is adopted, a limit should be established on the amount of tax reimbursed in order to counteract the regressive nature and its fiscal cost. However, assuming that VAT reimbursement generates a sufficient incentive in terms of formalizing sales, this could have a positive impact in terms of horizontal equity.

4. Estimation of the VAT Personalization Proposal

This section examines the simulation of the VAT Personalization exercise carried out for the cases of Costa Rica and Uruguay. These countries were chosen due to elements which we believe contributed to a successful implementation of the proposal. In this sense, an extension of the tax base was considered a significant improvement on current VAT design, mainly in Costa Rica, while the changes in the rate represent an improvement in the case of Uruguay. Additionally, social and economic parameters (per capita GDP, institutional capability, equity in income distribution, poverty and extreme poverty, etc.) allow us to foresee improvements in terms of equity as a result of changes we are proposing in the design of the tax.

We present a similar exercise in another study (Barreix, Bès and Roca 2010). In that study the magnitude of the compensation of the lower-ranking deciles was equal to the increase in VAT paid as a result of the extension of the tax base on an individual’s consumption basket (i.e. not by the total amount of VAT paid by that decile as was presented in subsection 3.5.1). Additionally, our initial analysis was carried out in eight countries, which allowed for a high degree of variability in terms of country characteristics allowing us to isolate the elements which would allow us to anticipate a successful implementation of the proposal.

This exercise opted to estimate a Slutsky-type compensation, a transfer of the collected tax, without carrying out any sort of social engineering associated with the use of these
transfers\textsuperscript{17}. The results of this estimate allow us to quantify the impact of the reform proposal in terms of collection, eliminating the benefits for the medium and higher-ranking deciles benefitted by tax base exemptions for ‘promoted’ goods and services. Finally, the exercise allows us to estimate impacts on income distribution impact, poverty and extreme poverty.

4.1 Applying Personalized VAT in Costa Rica

The VAT applied in Costa Rica is characterized by a relatively high number of goods and services which are exempt from the tax base, as well as from a relatively low rate when compared to regional standards. Furthermore, approximately 8% of the GDP is taxed at 0%. In the simulation presented in this study work the rate remains at 13%, and the tax base is generalized with the exception of a few goods and services – education, health, public transportation, financial services, and the sale and leasing of real estate property.

The proposed exercise is revenue-neutral, as all of the increase stemming from the elimination exemptions from the tax base is transferred to the population’s three poorest deciles.

Table 4 reflects the transfer of the entire increase in VAT collection produced from generalizing the tax base. The transfer changes the distribution of the tax payment by each decile. As can be seen, the four poorest deciles contributed to approximately 12.1% of the total VAT collection before the reform. This percentage is negative after the reform as a result of the transfers. Neutrality in collection terms requires that the contribution of the remaining deciles increase, and these higher tax payments are made by higher income individuals.

\textsuperscript{17} The core idea of Slutsky compensation is the ‘elimination’ of the income effect stemming from price changes observing the change in the group of optimum consumption goods and services as a result of the substitution effect. This differs from the compensation proposed by Hicks, where the consumer is paid the exact amount required to attain a set of goods and services which will keep him/her on the same indifference curve (utility level stemming from consumer preferences for the different ways a consumption basket is set up) before taxes. Slutsky has the advantage that being able to purchase the same set of goods and services seems to be more easily applicable than the determination of utility levels.
The results of the reform are highly positive in terms of income distribution which is reflected in the drop of 3 percentage points in the Gini coefficient. This improvement is also seen in the reduction of poverty and extreme poverty of 23.7% and 30.4% respectively.

4.2 Applying Personalized VAT in Uruguay

The current VAT design in the Uruguayan tax system divides the tax base into three categories of goods and services, those which are taxed at a basic rate (22%), a minimum rate (10%) or are tax exempt in order to promote their consumption. This study’s proposal consists of unifying the rate at 19%, with the exception of health services, which would be maintained at the current minimum 10% rate. Additionally, the tax base would be generalized with the exception of a few goods and services: education, gasoline (which is already taxed with a high excise tax), financial services, and the sale and leasing of real estate properties.

The transfer benefits individuals who have fallen below the poverty line, i.e. those belonging two the three lowest-ranking deciles. Extreme poverty is concentrated in the bottom two deciles, and in this proposal they would receive a transfer equivalent to 2.8 times the incidence of VAT in consumption basket of the third-ranking decile. Individuals belonging to the third decile receive a transfer equal to 1.75 times the incidence of VAT on their consumption basket.

As can be seen in Table 5, almost 75% of the increase in VAT collection stems from the mainstreaming of the tax base and the virtual unification of the rate. While tax revenue will increase as a result of the Personalized VAT proposal, this reform could also be designed so as to be revenue neutral.
Table 4

<table>
<thead>
<tr>
<th>1. Increase in VAT Collection and Transfer</th>
<th>Costa Rica</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current</td>
<td>Reform</td>
</tr>
<tr>
<td>Increase in VAT Collection - %</td>
<td>0</td>
<td>15.3</td>
</tr>
<tr>
<td>Transfer/Increase in VAT Collection - %</td>
<td>100</td>
<td>74.6</td>
</tr>
<tr>
<td>Transfer/Collection Current VAT - %</td>
<td>33.9</td>
<td>11.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Who pays the Net VAT? (*)</th>
<th>Current</th>
<th>Reform</th>
<th>Change</th>
<th>Current</th>
<th>Reform</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 4 deciles</td>
<td>12.1</td>
<td>-12.8</td>
<td>-24.9</td>
<td>15.4</td>
<td>7.4</td>
<td>-8.1</td>
</tr>
<tr>
<td>5 to 6 deciles</td>
<td>13.9</td>
<td>19.8</td>
<td>5.9</td>
<td>15.1</td>
<td>17.0</td>
<td>1.9</td>
</tr>
<tr>
<td>7 to 8 deciles</td>
<td>19.4</td>
<td>26.8</td>
<td>7.4</td>
<td>23.0</td>
<td>25.4</td>
<td>2.4</td>
</tr>
<tr>
<td>9 to 10 deciles</td>
<td>54.6</td>
<td>66.2</td>
<td>11.6</td>
<td>46.4</td>
<td>50.2</td>
<td>3.8</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>0.0</td>
<td>100.0</td>
<td>100.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

(*) Net VAT: Mainstream VAT minus the Transfer

<table>
<thead>
<tr>
<th>3. Income Distribution</th>
<th>Current</th>
<th>Reform</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gini</td>
<td>0.5801</td>
<td>0.5481</td>
<td>-0.0320</td>
</tr>
<tr>
<td>1 to 4 deciles</td>
<td>9.2</td>
<td>10.1</td>
<td>-0.2</td>
</tr>
<tr>
<td>5 to 6 deciles</td>
<td>10.8</td>
<td>10.6</td>
<td>-0.2</td>
</tr>
<tr>
<td>7 to 8 deciles</td>
<td>17.5</td>
<td>17.2</td>
<td>-0.3</td>
</tr>
<tr>
<td>9 to 10 deciles</td>
<td>62.5</td>
<td>62.1</td>
<td>-0.4</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Extreme Poverty</th>
<th>Current</th>
<th>Reform</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of extremely poor individuals</td>
<td>239,216</td>
<td>166,418</td>
<td>-72,798</td>
</tr>
<tr>
<td>% extremely poor individuals</td>
<td>5.6</td>
<td>3.9</td>
<td>-30.4%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Poverty</th>
<th>Current</th>
<th>Reform</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Poor Individuals</td>
<td>989,251</td>
<td>755,817</td>
<td>-233,434</td>
</tr>
<tr>
<td>% of Poor Individuals</td>
<td>23.2</td>
<td>17.7</td>
<td>-23.7%</td>
</tr>
</tbody>
</table>

(*) After Current VAT (**) Income- Generalized VAT – Transfer
The impact of transferring the increased tax collection on income distribution is summarized in Table 4. The first four deciles contribute to about 15.4% of total VAT collection before the reform, and then a bit less than half of that percentage after it. About 77% of this reduction would be provided by the top four deciles, reflecting the concentration of income and consumption among these sectors in society.

Although the Gini coefficient is reduced by almost a full percentage point, the improvement in poverty and extreme poverty is quite asymmetrical. The number of extremely poor individuals is reduced by almost 80% as a consequence of the transfers to the lowest-ranking deciles of the population while the number of poor people – once the extreme poor are taken out of the equation – is reduced around 5% at the end of the exercise. Thus, the increase in collection, equal to 1.5% of GDP, has a significant impact in terms of reducing extreme poverty but its impact is more modest in terms of poverty.

5. Conclusions

The modernization of tax systems over the past few decades in developing countries strengthened VAT as a pillar of tax collection, enabling trade and excise taxes to be reduced and in some cases eliminated. At the same time, the growing concern with inequality in developing countries, has led to the examination of the role of fiscal policy in general, and tax policy in particular, in creating this problem and in its possible contribution towards solving it.

Conventional wisdom explains Latin American inequality to a large extent on the regressivity of its tax system due to the weight of indirect taxation. A closer analysis indicates that the impact of the region’s tax systems is not very relevant in terms of income distribution. This means that whether they concentrates or redistributes income, in no case does the Gini index on income distribution change significantly after taxes. More intuitively, there is no significant change in the total income participation of winners and losers as a consequence of the region’s tax systems.

Overall, the general conclusion for the tax system can be extended to the redistributive impact of Social Public Expenditure and in some cases its progressivity. However, coinciding the literature, this does not stop us (Barreix, Bès and Roca 2009) from finding that the redistributive
The impact of Social Public Expenditure in Central America, Panama and the Dominican Republic is about 4.4 times higher than the tax system. What happens is that fiscal policy does not play an important redistributive role. This leads us to believe that action should be taken on the amount of resources as well as the design of the tax systems and of Social Public Expenditure if we wish to build societies with a smaller number of poor people and greater equality.

Generalized subsidies present significant ‘leaks’ that end up favoring the highest income individuals which do not require these benefits. Therefore, a fiscal shortfall scenario suggests replacing generalized subsidies with others which target lower-income individuals. Effectiveness in design requires paying attention the levels of informality under which economies in the region operate, and which disproportionally affect the three poorest deciles in the population.

The analytical consensus which targeting has is significantly greater among social public expenditure analysts than among their tax policy counterparts. In the specific case of VAT, the traditional recommendation has been to attain the broadest tax base and the greatest uniformity in tax rates accepted by the political system as well as ignores distributive considerations in the design of the tax in order to avoid the fiscal cost as well as the technical difficulties posed when implementing compensations (Tait 1988). Although the validity of the distributive concern is not questioned, this consensus underscores the fact that they are better addressed by public expenditure than by tax policy.

However, the fact that the tax system is not going to have a great impact on income distribution does not mean that we should not avoid a poor design from deteriorating said distribution even more. This is the core element of the Personalized VAT proposal – recognizing its’ central role in any tax system and improving its design in such a way that it provides relief to society’s less-favored individuals. This is achieved by using targeting and benefit delivery instruments which have been successfully applied for 15 years in the new generations of Latin American social programs, such as conditional cash transfers. Furthermore, the design proposed in this proposal not only provides tax relief to the benefitted individuals but also occurs without impairing the tax’s collection.
Finally, the application of the aforementioned targeting instruments allows us to overcome the pitfall caused by the high level of informality which characterizes most developing economies. Traditionally, this informality has limited the delivery of social services to the lower-ranking deciles due to the fact that many of these services are awarded solely to those who have contributions withheld from their paychecks. The Personalized VAT proposal allows us to overcome this limitation by including individuals who belong to the informal sector representing from 40% to 50% of the population in Latin America.

Policy Alternatives

VAT compensation has been applied in different tax systems in developed countries, and we have described the way Canada and Japan deal with this issue. However, providing tax relief for low income individuals in developing has been objected on two argumentative lines: administrative complexity regarding targeting and delivery of tax relief and the fiscal needs of these countries.

The first of these objections is addressed with the use of targeting and transfer payment mechanisms which have been adopted by conditional cash transfer programs in Latin America. These programs employ technology developed to operate in economic systems characterized by a high degree of informality. The second of these objections is addressed by understanding that tax relief is ‘financed’ by the increase in revenue originated in the generalization of the VAT base combined with the rate increase. Collection may exceed tax relief, providing for additional revenues for the government.

We believe our Personalized VAT proposal is superior to exonerating goods and services, or what is worse zero rating them on equity grounds. These reduce tax collection, complicate VAT management and transfer resources to individuals that do not need them. Redistributing with a ‘depersonalized’ VAT is not a good idea. Our estimates for Central American countries, Panama and the Dominican Republic show that one point in VAT tax expenditure yields about three
times less impact in income distribution than one point in public expenditure in a social aid program\textsuperscript{18}.

Objectivity is maintained by applying the broadest possible tax base and a uniform rate. Subjectivity in order to provide relief to individuals in need is best obtained by targeting tax expenditures as recommended by best practices. The impact on sufficiency, efficiency, equality and simplicity are the result of the application of a thoughtful design of instruments in order to generate and allocate tax resources. The most relevant limitation is provided by the institutional capability to manage VAT beneficiaries and to implement this compensation in a transparent and rapid manner (e.g. electronic means).

Lastly, this mechanism is probably valid not only for Latin America but could also be extended elsewhere due to the context of fiscal urgency which is currently affecting the wealthiest treasuries in the world. Indeed, these countries have a developed institutional framework that would allow them to assist a reduced number of (relatively) poor people and at the same time they present limited options in terms of income taxation without affecting competitiveness.

\textsuperscript{18} Barreix, Bès and Roca (2009)
### Chart 5

**VAT – Deciles According to Individual Consumption**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective tax rate/Income (in %)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poorest decile</td>
<td>3.1</td>
<td>2.3</td>
<td>4.3</td>
<td>4.0</td>
<td>1.9</td>
<td>0.6</td>
</tr>
<tr>
<td>2nd poorest decile</td>
<td>3.6</td>
<td>2.6</td>
<td>4.6</td>
<td>2.3</td>
<td>0.0</td>
<td>0.8</td>
</tr>
<tr>
<td>2nd richest decile</td>
<td>5.1</td>
<td>3.0</td>
<td>4.6</td>
<td>2.3</td>
<td>4.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Richest decile</td>
<td>5.6</td>
<td>3.0</td>
<td>6.8</td>
<td>8.8</td>
<td>4.6</td>
<td>1.7</td>
</tr>
<tr>
<td>Expense Gini before VAT</td>
<td>0.4831</td>
<td>0.4085</td>
<td>0.4633</td>
<td>0.4590</td>
<td>0.4990</td>
<td>0.4831</td>
</tr>
<tr>
<td>VAT Quasi – Gini</td>
<td>0.5408</td>
<td>0.4462</td>
<td>0.5370</td>
<td>0.5610</td>
<td>0.6086</td>
<td>0.6045</td>
</tr>
<tr>
<td>Kakwani (if &lt; 0 =&gt; regressive; if &gt; 0 =&gt; progressive)</td>
<td>0.0577</td>
<td>0.0377</td>
<td>0.0737</td>
<td>0.1020</td>
<td>0.1096</td>
<td>0.1214</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Redistribution</th>
<th>Costa Rica</th>
<th>Dominican Republic</th>
<th>Guatemala</th>
<th>Honduras</th>
<th>Nicaragua</th>
<th>Panama</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expense Gini after VAT</td>
<td>0.4801</td>
<td>0.4073</td>
<td>0.4587</td>
<td>0.4510</td>
<td>0.4946</td>
<td>0.4814</td>
</tr>
<tr>
<td>Reynolds-Smolensky</td>
<td>0.0030</td>
<td>0.0012</td>
<td>0.0046</td>
<td>0.0080</td>
<td>0.0044</td>
<td>0.0016</td>
</tr>
<tr>
<td>Losers (deciles)</td>
<td>8 to 10</td>
<td>8 to 10</td>
<td>9 to 10</td>
<td>Quintile 5</td>
<td>9 to 10</td>
<td>8 to 10</td>
</tr>
</tbody>
</table>

Memo: VAT collection (as GDP %)

<table>
<thead>
<tr>
<th>Costa Rica</th>
<th>Dominican Republic</th>
<th>Guatemala</th>
<th>Honduras</th>
<th>Nicaragua</th>
<th>Panama</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.9</td>
<td>3.9</td>
<td>4.8</td>
<td>6.2</td>
<td>6.4</td>
<td>1.6</td>
</tr>
</tbody>
</table>

(*) Quintiles

Source: Barreix, Bès and Roca (2009)
Bibliography


