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IS THE VALUE ADDED TAX NATURALLY PROGRESSIVE?

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Abstract

A broad based consumption tax, such as a value added tax, is generally considered to be a regressive tax. This conclusion, however, has not taken into account the fact that in developing countries the commodities on which poor households spend most of their income, even if they are included in the legal tax base, are administratively impractical to tax. This paper employs a rich data set on household incomes and expenditures for the Dominican Republic. The data set covers 2042 goods and services purchased by households of different income and consumption levels. It also contains information on the type of establishment from which the items were purchased. With this information we estimate the effective rate of tax that has been paid on each item purchased by households. These estimations include the effect of the different rates of the tax compliance across households with different expenditure levels. The results of the study show that the burden of the current VAT in the Dominican Republic is progressive over all the quintiles of household expenditure. Furthermore, if the base of the VAT is made comprehensive, the estimated incidence of the burden of the VAT is still progressive over all the quintiles household expenditure.

Keywords: Value Added Tax, incidence, compliance.
JEL Codes: H22, H26

Is the Value Added Tax Naturally Progressive?[1]

1.0 Introduction

A broad based value added tax on consumption is generally considered to be a regressive tax. The hypothesis is that because the poorer households spend a greater proportion of their income on consumption they are also likely to pay a higher average rate of tax as compared to higher income households. This may sound reasonable, however, very little empirical work has been done to date see if the actual value added taxes paid on the goods and services consumed by households with different levels of income confirms or rejects this hypothesis.

At present, there are more than 130 industrial and developing countries in the world who have adopted the value added tax (VAT) as a general consumption tax. The issue of the potential regressively of the tax is often a serious concern of policy makers, especially in the course of broadening the tax base as part of a tax reform. This concern has recently been raised in the Dominican Republic. In their version of a VAT, called the "Tax on the Transfer of Industrialized Goods and Services" (ITBIS), there are a number of goods and services that are specifically exempted.[2]

To improve the efficiency of the tax system and to raise additional revenue, governments often need to broaden the base of the tax. But the general question remains how regressive would such a broad-based tax be in a developing country. In this study are we are able to empirically examine this question using the case of the Dominican Republic. The question is addressed in three steps. First, what is the distribution of the burden of the ITBIS as it was designed and implemented? Second, has the broadening of the tax base to where at is today made the burden of the VAT regressive? Third, if the base of the VAT

[1] The discussions and assistance of Magin Diaz Domingo, Hector Cury Guiliani and Andres H. Arroyo Pelaez during the completion of this study are greatly appreciated. The financial assistance provided by the Interamerican Development Bank through the Ministry of Finance of the Government of the Dominican Republic is gratefully acknowledged. Any errors and emissions are the sole responsibility of the authors.
[2] It is a consumption based tax, using the invoice credit method and collected on a destination basis.

were further broadened to the maximum that would be administratively feasible, would the VAT then be regressive?

Section II presents the arguments for the regressively of the VAT and the counter arguments. Section III discusses the tax system in the Dominican Republic, and the data sources. It then presents the empirical estimations of the tax incidence to find out if the VAT is regressive.

2.0 Regressivity versus Progressivity

The VAT in the Dominican Republic is a multi-stage sales tax applied to the sales of goods and services at all stages of the production and distribution chain. By using a credit invoice method, vendors at each stage are able to claim tax credits to recover the tax they paid on their business inputs including intermediate inputs and capital assets. As a result, the tax is in effect applied only to the value added of each vendor. The only tax that does not get credited or refunded is the tax imposed on the final consumption purchased by individuals and governments. Hence, the tax is theoretically equivalent to the retail sales tax on final consumption.

Since the tax is imposed on the destination principle, imports are taxed in the same way as domestically produced goods. As exports are zero-rated, a VAT of this type is essentially applied to goods and services consumed domestically.

The proposition that the VAT is regressive is based on the observation that the VAT is a tax on consumption, and the poor tend to consume a larger proportion of their incomes than do the higher income groups. This can be expressed in the following manner:

(1) $C_p/Y_p > C_r/Y_r$

where Y_p and Y_r are income of the poor and the rich group, respectively; C_p and C_r are the consumption of the poor and the rich group. If “t” stands for the VAT rate on consumption, then the following relationship holds:

(2) $tC_p/Y_p > tC_r/Y_r$

Hence, the VAT must be regressive because the poor has paid more tax as a percentage of their income. For this result to come about, four conditions must hold: first, the savings of the higher income groups today will not be consumed by these people on taxable goods and services in the future; second, all goods subject to VAT are taxed equally; third, the poor spend the same proportion of their total expenditures on taxable consumption goods as do higher income families; and a 100 percent of the consumption taxes are passed through to final consumers[3].

The counter arguments as the follows: First, most of the savings undertaken today will be used to pay for consumption in the future when the people either retire or suffer a temporary loss of income. These future expenditures will be subject to the VAT; hence, it is not correct to say that current savings avoids the VAT.[4] If the rate of return from savings is equal to the discount rate, the present value of the future VAT payments on savings will be equivalent to the VAT that would have been paid if all of the current income was now consumed. The same relationship holds even if there are bequests in which future generations consume the savings of prior generations. Alternatively, if bequests are being made as a result of altruistic motivations, the bequests should be removed from the lifetime income of the giver.[5]

Second, in developing countries and also in some developed ones, the VAT is actually levied on only about 50 to 70 percent of the total value of goods and services consumed.[6] Some goods and services are taxed at almost full rates while other items avoid taxation at

[3] Examples of such studies that apply these assumptions and find sales taxes to be regressive are Musgrave, Richard, Karl Case, and Herman Leonard, "The Distribution of Fiscal Burdens and Benefits", Public Finance Quarterly 2, (1974), pp. 259-311. Pechman, Joseph A., "Who Bears the Tax Burden?" Washington, D.C.: Brooking Institution, 1985. Brashares, Edith, Janet Speyrer , and George Carlson, "Distribution Aspects of a federal Value-Added Tax", National Tax Journal 41, (1988), pp.154-174.

[4] James M. Poterba, Review of "Who Bears the Lifetime Tax Burdens?", National Tax Journal, Vol. 44, No. 4, (1993), pp. 539-42.

[5] For a fuller discussion of the impact of bequests on the incidence of the VAT see Gilbert E, Medcalf , "Value –Added Taxation: A tax whose time has come?", The Journal of Economics Perspectives, Vol. 9, No. 1, (Winter, 1995), pp 121-140.

[6] Liam Ebrill, Michael Keen, Jean-Paul Bodin, and Victoria Summers (2001), "The Modern VAT, International Monetary Fund, Washington D.C. pp41.

the retail level. Some obvious examples are expenditures on health, education and social services. As a consequence, the purchase prices of these items will have a lower proportion of VAT content than goods and services which are subject to VAT at all stages of their production and distribution chains.

Third, the poor tend to purchase a larger proportion of goods and services from the informal retail sector where the goods are either not taxed at all, or are more lightly taxed. In such countries, the higher income households purchase goods and services in retail outlets that are likely to fully comply with the tax rules. As a result, the share of consumption subject to VAT for higher income households tends to be greater than that for the poor.

The value added tax in the Dominican Republic will be examined empirically to study the incidence of the value added tax when we allow compliance patterns to vary across households with different levels of expenditure. To date the studies of the distribution of the tax burden have usually assumed that the consumption of the same goods and services are taxed at the same effective rate of VAT for households at different income levels.[7]

3.0 Analysis of Distribution of Tax Burden

From the point of tax compliance and tax administration, it is not cost effective for the authorities to attempt to tax must small retail outlets and markets in either the countryside or in the poor districts of cities. Furthermore, no country in the world is able to effectively tax the sales of farmers, except for large commercial farmers. This means that for the poor, must food items are not taxed at all, unless they are imported. Following Engel's Law, the poor spend a larger proportion of their income on the consumption of food than do their there better off cousins. Due to practical tax administration reasons basic food items are virtually never fully tax, hence, the poor will end up bearing a smaller amount of the VAT in proportion to income than will those that are better off. This is not just a phenomenon unique to the Dominican Republic, but is the normal or

[7] An example of a carefully done study of the incidence of the VAT that uses current expenditure as a proxy for permanent income but does not adjust for the compliance rate across households in different expenditure deciles is Jonathan Haughton (2005), An assessment of Tax and Expenditure Incidence in Peru, Unpublished Manuscript, Suffolk University and the Beacon Hill Institution for Public Policy.

natural characteristic of the collection of the VAT and the consumption pattern of most poor people in virtually every country in the world.

3.1 The Current Tax System

The ITBIS in the Dominican Republic was introduced in 1983, one of the first VATs implemented in the Caribbean region. In 1998, the legislation specified the types of goods and services whose sale were subject to tax at 8 percent.[8] It included the sale of goods and a wide range of services, but also contained a number of exemptions. [9]

When goods and services were not listed as taxable, they were to be regarded as being tax exempt under the VAT. This created a tax loophole. In 2001, the tax rate was raised from 8 percent to 12 percent and a number base broadening measures were taken.[10] The law was changed to provide a detailed description of specific goods and services that were to be exempted based on tariff commodity codes. If the goods or services were not specified in the tax code as exempt commodities, they were to be taxable. The legislation has clearly become much tighter than before and the tax base broadened, especially in the services area.

3.2 The Data

The 1998 Household Expenditure and Income Survey conducted by the Central Bank of the Dominican Republic provide a rich body of information for the evaluation of the distribution of the burden of the VAT across households in the Dominican Republic.[11] It is a national stratified sample of households. The sample was extracted from 10 districts,

[8] Horwath, Sotero Peralta & Asociados Members of Horwath International and Russin, Vecchi & Heredia Bonetti L.L.P., *Tax Code of the Dominican Republic*, Title III on the Tax on the Transfer of Industrialized Goods and Services, (October 1997).

[9] At the same time, the law also specified a list of exempt goods and services, including unprocessed food, water, coffee, salt, sugar, books, newspapers, and paper for newspaper; petroleum and its derivatives; fertilizer, seeds and animal food; fungicides, herbicides, insecticide; match; and soap, detergents; toothpaste; services related to education, health, culture, transport, financial services other than insurance, personal care; electricity, water; and residential rent.[9]

[10] There is a threshold for small businesses for filing the ITBIS tax. For those who carry out commercial activities with gross sales less than RD$2 million a year, they are outside of the system and are, therefore, not required to register or to collect ITBIS from their customers.

[11] Dominican Republic, Department of National Accounts and Economic Statistics, *National Household Survey of Expenditures and Incomes, October 1997 to September 1998*, (July 1999).

classified by National District Urban, National District Rural, Santiago Urban, Santiago Rural, Cibao Urban, Ciabo Rural, Southwest Urban, Southwest Rural, Southeast Urban, and Southeast Rural. The total sample contains complete data on 4,774 households, extracted from the total population of 1,919,064 households. Each sample had its own sample weight so that the national expenditures and incomes by different types of classification can be made accurately.

In the survey, households were asked for their annual expenditures on goods and services by commodity as well as by establishment beginning in October 1997 for the period of one year. The commodity breakdown was very detailed consisting of 2,042 items.[12] Based on the nature of goods and services consumed, the amount spent on some items were captured daily in the survey questionnaire while others were recorded on a monthly, quarterly, or even annual basis. The classification of establishment where households purchased their goods or services was also detailed. This information allows for an estimation to be made of the tax compliance of households. It identified 337 places where items could be purchased. These establishments include public institutions, supermarkets and services, companies such as telephones, banking, insurance, and airlines. A distinction is made between stores that issue invoices, stores that do not issue invoices, neighborhood stores, street, vendors street markets, and so on. It is this sales point information that enables one to determine accurately whether the VAT on goods or services was actually paid or not when the item was purchased.

3.3 Current or Lifetime Incidence of the VAT

Individuals tend to make their highest incomes during their middle years of life, but earn less in the early stage of their careers as well as in retirement. Using annual income to measure the regressively of VAT becomes problematic since the tax incidence of a particular individual at a particular point in time would be quite different from an estimate made over his lifetime.[13] For example, retired people may have little income but

[12] It may be noted that direct taxes such the annual income tax were not included as an expenditure in this report. As a result, the total household expenditures used in this report are approximately two percent less than the figure published by the Central Government.

[13] See, e.g., George N. Carlson and Melanie K. Patrick, "Addressing the Regressivity of a Value-Added Tax", National Tax Journal, Vol. 42, No.3 , (September 1989).

be making much larger expenditures through the use of past savings. A proper measure of the distributional burden of the tax should be the ratio of the present value of the taxes paid over the life of individuals to the present value of their lifetime earnings. Although this may be conceptually sound, it is difficult to do in practice.[14]

People tend to try to maintain their past level of consumption over time in the face of changes in current income caused by temporary fluctuations of income caused by illness, unemployment or retirement. Thus, current household expenditures are a better measure of the permanent or long run income of a household as compared to the observed household income for the period.[15] In this paper, annual household expenditure instead of annual income is employed as the base for measuring the distributional burden of the VAT.

Following this approach the households were first ranked by quintile for the country as a whole according to the value of their annual consumption on goods and services. Each quintile contains approximately 383,813 households.[16] The average annual household expenditures increased from RD$16,074 for the first quintile to RD$190,237 for the top quintile. The top quintile of households shows the greatest dispersion in terms of their annual household expenditures.

For the purpose of this study, the households are grouped into four areas, the National District (the Santa Domingo region), Rest Rural, and Rest Urban. The distribution of these households is shown in Table 1. It shows a greater proportion of households with expenditures in the top quintile live in the National District as compared to the households living in either the Rest Urban or in the Rest Rural areas.

(Table 1 about here)

[14] Erik Caspersen and Gilbert Metcalf, "Is a Value Added Tax Regressive? Annual Versus Lifetime Incidence Measures", National Tax Journal, Vol. 47, No. 4, (December 1994), pp. 731-46.
[15] Gilbert Metcalf, "Lifecycle vs. Annual Perspectives on the Incidence of a Value Added Tax", Tax Policy and the Economy 8, (1994), pp. 45-64.
[16] The reason for the slight deviation of this figure across quantities is due to a small number of households which could belong to either side of a quintile.

3.4 Estimation of Tax Compliance by Household

It is important to recognize the fact that even if a commodity is subject to the VAT, the tax may not be levied or collected on some of its final sales. Examples include most street sales and sales made in farmers markets. This is legal when the annual value of sales from a business is less than the small business threshold. Nor are the full amounts of taxes collected from other establishments such as neighborhood stores or other stores that do not issue invoices. This is quite common especially in the rural areas of the Dominican Republic where the informal economy dominants. In these areas most taxes are not collected. These goods include not only those produced by the vendors themselves but also those purchased from wholesalers or other manufacturers. In the latter case, when the good was produced or sold the tax is likely levied and collected by the manufacturer or wholesaler. At some stage in the distribution chain some enterprises might be too small or the tax administration is incapable of collecting the tax. In the case of the Dominican Republic, transport services are exempt under the VAT and, thus, both the retail and transportation margins would escape the tax if it is not collected at the retail stage.

After consultations with government officials and private sector businessmen the 337 types of establishments were grouped into nine categories: companies, stores that generally issue invoices, supermarkets, public institutions, neighborhood stores, streets, street open markets, others, and not specified. The first four categories generally issue invoices while the remainder does not. For goods sold in the last five categories, we estimate the proportion of trade and transportation margins embodied in the retail price of goods by commodity based on the input-output tables constructed by the Department of National Accounts of the Central Bank of the Dominican Republic. With this information, and the assumption that consumption taxes are fully passed forward in higher prices, a tax coefficient matrix was constructed to reflect the approximate content of the VAT in a good or service that was subject to tax when it were purchased from an establishment of a particular type. For example, a toy will be fully taxed when it is purchased at supermarkets the tax coefficient is equal to 1.00. However, if a toy is taxed at the manufacturer level but sold at the neighborhood store, the coefficient for the good

purchased at the neighborhood store would become 0.65.These tax coefficients are than multiplied by the statutory rate of VAT for the commodity or service.

The survey covered in total 2042 goods and services. For determining their taxation status the 2042 items in the survey were, grouped into 10 commodity categories including food; clothing; housing and utilities; furniture, textiles, household equipment, and maintenance; health; transportation; entertainment; education; hotels, bars, and restaurants; and other diverse goods and services. Each of these categories of goods could be purchased through several different distributional channels. The tax coefficients are constructed for each group of commodities as reported in Table 2 by the type of establishment through which the goods or services were sold.

(Table 2 about here)

3.5 The Simulation Results of Various Tax Scenarios

Three tax scenarios are used to analyze the tax incidence of the VAT. The first scenario is the 1998 tax system where our main source of information is the household expenditure survey of 1998. The second scenario analyzes the incidence of the tax system during 2005 after the base of the VAT was broadened by legislation in 2001. The third scenario begins with a massive base broadening of the VAT, and then the incidence of the VAT is estimated.

A. The 1998 Tax System

The statutory VAT rate in the Dominican Republic was 8 percent in 1998. When the rate is multiplied by the tax coefficients, the result reflects the effective tax rate on the specific items of expenditure.

Each of the 2042 commodity items is first identified as taxable or exempt from tax. The tax coefficient matrix, and the tax rates are then applied to each of the household expenditures by category according to where they were purchased. The result is the estimated amount of VAT paid by the households on their purchases. The VAT payments are then aggregated across households by quintile for each of the major expenditure items. Table 3 shows the effective tax burden borne expressed as a percentage of the average household expenditures by quintile, by region, and for the nation as a whole.

The overall effective rate of the VAT as estimated from the household expenditure survey was 2.52 percent in 1998. This is almost equal to the actual average effective rate of the tax, of 2.57 percent of consumption expenditures that is estimated using macro-economic data obtained from the national accounts. The latter was calculated by dividing the total VAT revenues collected in the Dominican Republic by value of total household consumption expenditures for the same year.[17] The closeness of the effective tax rate obtained from the household expenditure survey to the overall effective rate estimated from national accounts data indicates that it is a representative sample of the total household consumption expenditures in the economy.

(Table 3 about here)

The 2.52 percent effective tax rate implies that in 1998, only 31.5 percent of the potential VAT tax revenue on household consumption expenditures were actually collected. For the nation as a whole, the average effective tax rate of the VAT on consumption in 1998 was 1.48 percent for the lowest quintile of households and rose to 2.82 percent for the top quintile (Table 3). The progressivity rose from the first quintile to the second quintile as the effective tax rate increased from 1.48 percent to 1.81 percent. A similar observation was found between the second and the third quintile (1.81 percent versus 2.13 percent), between the third and the fourth quintile (2.13 percent versus 2.57 percent) and between the fourth and the top quintile (2.57 percent versus 2.82 percent).

[17] The amount of the total vat paid was by households calculated by subtracting the taxes paid by governments, foreign tourists, and non-resident Dominican visitors from the total VAT collections in the country in order to get the actual tax incidence by residents in the Dominican Republic.

It is interesting to note that the top quintile of households paid almost twice the effective rate of VAT per unit of expenditures than did the bottom quintile of households. When comparing the degree of increase in the tax burden between quintiles of households, it rose by 22.3 percent, 17.7 percent, 20.7 percent and 9.7 percent. The smaller increase in the effective tax rate from the fourth to the top quintile of households may be expected because the richer households in both of these quintiles tend to shop relatively more in the formal markets and pay VAT taxes according to what is specified in the law.

Among three areas, the households in the National District had the highest effective tax rate at 2.65 percent. This rate can be compared to the other urban areas (2.59 percent) and the rural area (2.13 percent). In terms of the degree of progressivity, the VAT was clearly progressive within each of the areas examined, especially in the rural area where the top quintile of households paid more double the rate of VAT on average on their expenditures as compared to the bottom quintile of households. This is due to the fact that in the rural areas, the lowest quintile of households shopped to a greater degree in the informal markets and to a greater extent purchased goods that were exempt from the VAT. The top quintile of households living in the rural areas bought from establishments where the payment of VAT was required and they purchased the same types of goods that were being bought by their urban counterparts. In the case of the National District, the degree of progressivity was somewhat reduced between the top and the bottom quintile of households. This is because the very poor in the National District made more of their purchases from establishments where taxes were collected than did their rural counterparts.

From the survey data it is clear that once we take into consideration the different rates of tax compliance of households at different expenditure levels we find that the incidence of the VAT is progressive with respect to the level of expenditures.

B. The 2005 Tax System

The VAT was amended in 2001 in such way that the base of the tax was system legislatively broadened, although a number of goods and services still remain exempt. Using the same 1998 household expenditure data the matrix of tax coefficients was adjusted to reflect the legislative changes. The overall effective tax rate was estimated to have been increased from 2.52 percent to 2.72 percent for the nation as a whole, if the statutory tax rate were kept at 8 percent, and the patterns of household expenditures not altered.[18] However, the VAT rate was also raised from 8 percent to 12 percent in 2001, hence, the effective tax rates by quintile and by commodity were proportionally increased by 50 percent.

(Table 4 about here)

Looking closely at the issue of regressivity, Table 4 shows that the tax system after the reduction in exemption and the rate increase is more progressive than the 1998 tax system (i.e., the increase in the effective tax rate is 103 percent versus 90 percent). This is due to the fact that more services are now taxed and they are consumed more by the higher income households.

3.6 Alternative Estimates for the Effective Tax Rates

In the above analysis we used household expenditures as a proxy for the permanent income of the household. Another way to measure permanent income is to estimate the average income of all the households within a given expenditure quintile. In other words, by calculating the average income of all the households within each quintile the temporary high and temporary low changes that effect the current incomes of individual households should cancel each other out. In the same manner the average VAT paid per household is also calculated for the households within each of the expenditure quintiles.

[18] The proportion of trade and transportation margins in retail price by commodity is also assumed not to be changed.

Now the average household income of all the households with each expenditure quintile is used as the base to measure tax regressivity. The effective tax rate is the expressed as a ratio of the average amount of VAT paid per household in each expenditure quintile to the average household income of the same cohort of households. One would expect that the effective tax rates to be lower than those estimated on the basis of expenditures, because average income will include the average amount of current saving made by the households within each group.[19]

(Table 5 about here)

The simulation results are summarized in Table 5 for three tax scenarios as well as for the three regions of the country. The results for all regions show that the degree of progressivity is even stronger than when annual household expenditure is used as the bas is for measurement. For example, the effective tax rate based on average income for the highest quintile of households is 3.2 and 3.4 times as high as the effective tax rate of lowest quintile of households for 1998 and 2005, respectively. In contrast, when calculating the effective tax rates based on the value of household expenditures the VAT rate paid by the household in the top quintile was only 1.9, and 2.0 items large as the effective tax rate paid by those in the lowest quintile for 1998 and 2005, respectively. It would appear that the savings of the poor as a proportion of permanent income is even higher than the savings rate out of permanent income for the better off households in the Dominican Republic.[20]

3.7 Progressivity and Base Broadening

At this point it is clear that the incidence of the current VAT in the Dominican Republic is progressively distributed. The pattern, however, could come entirely from the particular items that have been chosen to be included in the base of the tax. To isolate the impact that the unequal compliance rate has on the distribution of the incidence of the tax we carry out a simulation assuming the broadest possible legislated tax base that could be

[19] The results appear to suggest that the proportion of household income that is saved was as high as 30 percent in 1998.

[20] The importance of household savings for the poor has the recognized by those during research into the demand for financial services by low income households (Wisniwski, 1998).

assumed to exist in the Dominican Republic. Furthermore, because we have no information on the distribution of taxable versus non taxable sales made in bars and restaurants we assumed the full rate of VAT would be collected in all bars and restaurants. However, we know that the types of bars and restaurants frequented by the lower income groups never charge value added tax. This assumption will exaggerate the regressively of the VAT.

In the base-broadening scenario, we assume that the VAT exemption list only includes live animals, unprocessed food, a short list of essential drugs prescribed by doctors, deposit-taking financial services, and some rural services such as education and health services provided by public sector institutions. There is virtually no country in the world that has attempted to tax this list of exemptions. In addition, gas and diesel oil is exempt because it is subject to excise taxes. The exemption of gas and oil from the VAT probably makes our measurement of the incidence of the tax less progressive, but the estimation of the ultimate distribution of the VAT or motor fuels is a complex exercise.

The simulation is carried out for a statutory tax rate of 12 percent and the effective tax rates of VAT are estimated by quintile and region of the country as presented in Table 6. The result is still that the VAT has a burden that is distributed progressively even if the base of the VAT is legislatively made as broad as good tax policy would dictate.

(Table 6 about here)

For the whole country the effective tax rate would rise from 4.58 percent of average expenditures in the lowest quintile to 6.58 percent in the highest quintile. For the rural areas the effective tax rate rises from 4.36 percent for the poorest quintile to 6.13 percent in the highest quintile. Even for the National District (Santa Domingo) the effective tax rate that starts at 4.91 percent of expenditures in the bottom quintile increases in each successive quintile to becoming 6.52 percent for households in the highest quintile of expenditures. The simulations were also carried out expressing the estimated VAT payments as a percentage of the average income of households in each quintile. As in the previous case the effective tax rates are more progressively distributed.

4.0 Concluding Remarks

In this paper, we have shown that the current VAT in the Dominican Republic is very progressive. The analysis is detailed and thorough, in the sense we examine carefully whether the tax is levied and indeed collected by vendors in the economy. In prior studies of the incidence of the VAT the assumption has been made that when the tax law is enacted specifying a rate of tax on a particular good and service then that rate of tax is collected an all sales of the item. No differentiations are made between sales to poor or well off households. This, however, is not the case in reality, especially in a developing country such as the Dominican Republic.

Using the current consumption as a proxy for the lifetime income, the effective tax rate for the nation as a whole in 2005 increases from 2.32 percent for the first quintile of households to 4.72 percent for the top quintile of households. The degree of progressivity may differ across regions of the country, but the nature of progressivity of the tax system is very clear. If annual household income instead of household expenditure is used as the base for measurement, the degree of progressivity is be even grater.

The reason for the progressivity of the VAT is due to the normal way that any tax is administrated and complied with. Except for such items as cigarettes (Poterba, 1989) it is entirely natural for the tax administration not to put much effort into the collection of indirect taxes from small shops and open markets where the cost of tax collection is likely to be greater than the VAT revenues collected. Yet these are the establishments where the lower income households do most of their shopping, and where the goods and services they want to purchase are sold.

What is surprising that this pattern of the progressivity of the distribution of the burden of the VAT holds up almost as strong in a large modern city such as Santa Domingo as it does in the countryside. This evidence indicates that the variation in the degree of tax compliance across households of different income levels is a very fundamental determinant of the distributive burden a VAT, and a factor that until now researchers have not adequately considered.

Table 1
Distribution of Households by Quintile and Area*
(Numbers of Households)

Quintile	National District	Rest Rural	Rest Urban	Total
1	67,288	203,504	113,500	384,292
2	88,732	157,414	137,302	383,448
3	120,641	121,961	141,514	384,116
4	141,969	86,017	155,461	383,447
5	198,530	52,785	132,446	383,761
Total	617,160	621,681	680,223	1,919,064

Sources: Dominican Republic, the Department of the Central Bank, *National Survey of Household Expenditures and Incomes, 1998*.

Notes: *National District includes the urban and rural areas of the District. Rest Rural refers to the Rural Santiago, Rural CIBAO, Rural Southeast, and Rural Southwest. Rest Urban refers to the Urban Santiago, Urban CIBAO, Urban Southeast, and Urban Southwest.

Table 2
Tax Coefficient Matrix by Commodity and Establishment

	Company	Store	Super -market	Public Institute	Neighborhood Store	Street	Not Specified
Food	-	1	1	-	0.70	0.70	0.70
Clothing	-	1	1	-	0.85	0.85	-
Housing, Utilities	1	1	1	1	0.70	0.70	0.70
Furniture, house equipment	1	1	1	1	0.70	0.75	0.70
Health	1	1	1	1	0.70	0.70	0.70
Transportation	1	1	1	1	0.85	0.85	0.85
Entertainment	1	1	1	1	0.65	0.65	0.65
Education	1	1	1	1	0.80	0.80	0.80
Hotel, business and restaurant	1	1	1	-	0.80	0.80	-
Other goods and services	1	1	1	1	0.70	0.70	0.70

Table 3

The Effective Tax Rates under the 1998 Tax System, by Quintile, and by Region

(Percentage)

Area	Average Rate of Tax by Quintile of expenditures					
	1	2	3	4	5	Overall Average
Rest Rural……..	1.35	1.58	1.95	2.31	2.75	1.99
Rest Urban…….	1.57	1.88	2.06	2.60	2.97	2.22
National District……	1.71	2.11	2.41	2.69	2.75	2.23
Dominican Republic…….	1.48	1.81	2.13	2.57	2.82	2.16

Table 4

The Effective Tax Rates under the Current Tax System, by Quintile, and by Region

(Percentage)

Area	Average Rate of Tax by Quintile of expenditures					
	1	2	3	4	5	Overall Average
Rest Rural……..	2.13	2.45	3.13	3.60	4.42	3.15
Rest Urban…….	2.45	2.88	3.21	4.07	4.90	3.50
National District……	2.61	3.25	3.73	4.18	4.68	3.69
Dominican Republic…….	2.32	2.80	3.35	4.00	4.72	3.44

Table 5

The Effective Tax Rates, Using Average Income Households by Expenditure Quintile as the Tax Base

(Percentage)

Area	Average Rate of Tax by Quintile of expenditures					
	1	2	3	4	5	Overall Average
Rest Rural						
A. The 1998 Tax System	0.52	0.87	1.11	1.44	1.60	1.11
B. The 2005 Tax System	0.82	1.34	1.78	2.24	2.57	1.75
Rest Urban						
A. The 1998 Tax System	0.52	0.85	1.00	1.36	1.82	1.11
B. The 2005 Tax System	0.83	1.31	1.55	2.13	3.01	1.71
National District						
A. The 1998 Tax System	0.63	1.09	1.29	1.51	1.68	1.24
B. The 2005 Tax System	0.97	1.67	2.00	2.35	2.85	1.97
Dominican Republic						
A. The 1998 Tax System	0.54	0.91	1.12	1.43	1.71	1.14
B. The 2005 Tax System	0.85	1.41	1.76	2.24	2.86	1.82

Table 6

The Effective Tax Rates for a Broad Based VAT, by Quintile, and by Region

(Percentage)

Area	Average Rate of Tax by Quintile of expenditures					
	1	2	3	4	5	Overall Average
Rest Rural……..	4.36	4.37	4.82	5.30	6.13	5.00
Rest Urban…….	4.74	4.92	5.18	5.95	6.86	5.53
National District……	4.91	5.14	5.66	6.03	6.52	5.65
Dominican Republic…….	4.58	4.75	5.22	5.84	6.58	5.39

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