

**Tax Rates, Tax Revenues
and
Economic Growth**

by

Gerald W. Scully

Senior Fellow

National Center for Policy Analysis

Bradley Fellow

Heritage Foundation

NCPA Policy Report No. 159

March 1991

ISBN #0-943802-62-8

**National Center for Policy Analysis
12655 North Central Expressway, Suite 720
Dallas, Texas 75243
(972) 386-6272**

Executive Summary

Prior to the 1980s, most people assumed that if governments *raised* tax rates they would collect more total revenue from taxpayers. We now have dramatic evidence from the United States that a *decrease* in tax rates can lead to larger revenues:

- During the 1980s, the highest income tax rate was reduced from 70 percent to 28 percent.
- As a result, the share of income taxes paid by the top 1 percent of income earners grew from 18 percent in 1981 to 27 percent in 1989.

This study investigates the international relationship between tax rates and tax revenues. Based on an econometric analysis of taxes in 103 countries, we conclude that:

- On the average, governments collect the highest possible revenue when they take about 43.2 percent of gross domestic product (GDP) in taxes.
- If governments try to take a larger share of private sector income, the tax base will shrink so much that total tax collections will actually go down.
- For specific taxes, governments collect the highest amount of revenue when tax rates equal 22.5 percent for the income tax, 12.5 percent for the sales tax and 13.2 percent for taxes on international trade.

Many countries attempt to impose marginal tax rates much higher than the rates which maximize government revenue. These countries damage their economies and often collect very little revenue in return. For example:

- In the mid-1980s, all taxes on labor income combined (income tax plus payroll tax plus sales taxes) produced a marginal tax rate on labor of 95 percent in Argentina, 90 percent in Peru and 60 percent or higher in Brazil, Mexico and Ecuador.
- As a percent of GDP, however, taxes actually collected were quite modest — only 12.7 percent in Argentina, 8.8 percent in Peru and 9.3 percent in Mexico.

Between 1985 and 1989, the worldwide average highest marginal tax rate fell from 55.5 percent to 46.7 percent, reflecting a desire of governments to increase revenue and reduce the harmful effects of high tax rates. Yet the highest marginal tax rate in most countries is still twice as high as the rate that would maximize government revenue. It appears that almost every country could increase tax collections by continuing to lower the highest tax rate.

Tax rates affect not only government revenues, but also economic efficiency and economic growth. Some government spending (for example, on infrastructure) may actually improve a country's economic efficiency and stimulate economic growth. But beyond that level, higher tax rates divert resources from the private sector, encourage the waste of resources through tax avoidance and channel resources into the less productive underground (or informal) economy.

This study examines the international growth rates for 103 countries between 1960 and 1980. We find that:

- On the average, countries reach their maximum economic growth rates when they take no more than 19.3 percent of GDP in taxes.
- The economic growth rate tends to reach zero and then become negative once taxes consume more than 45 percent of GDP.
- The specific rates that maximize economic growth are an income tax rate of 11.9 percent, a sales tax rate of 4.6 percent and trade taxes equal to 9.4 percent.

Countries that try to increase government revenues at the expense of economic growth expose their citizens to a form of double taxation. People pay once through direct taxes and again through a lower standard of living caused by lower economic growth. For example:

- A country that chooses a tax rate of 43.2 percent (to maximize revenue) rather than a tax rate of 19.3 percent (to maximize economic growth) will see its growth rate plunge from 2.4 percent per year to 0.4 percent, on the average.
- The burden of the "growth tax" (causing a lower standard of living) exceeds the amount of the direct tax in only 20 years.
- After 40 years, a country that maximizes economic growth will have almost the same government revenues as a country that tries to maximize tax collections, and its citizens have more than three times as much aftertax income.

These results have strong implications for policymakers. Virtually every country in the world could increase government revenue and economic growth by reducing its highest marginal tax rates. After a period equal to an average person's work life, countries which choose tax rates to promote economic growth will have just as much government revenue and their citizens will have three times as much aftertax income as countries which choose tax rates in order to maximize tax revenues in the short run.

Introduction

Following the example of tax cuts and tax reform initiated in the United States by the Reagan Administration, almost every country in the world has lowered its highest marginal tax rate or expressed a strong interest in doing so. One survey found that:¹

"In recent years, most countries have lowered their highest tax rates."

- Between 1985 and 1989, 55 of 86 countries lowered their highest tax rates, while only two countries raised their highest tax rate.
- On the average, the highest tax rate fell from 55.5 percent to 46.7 percent for the 86 countries over the five-year period.

This study provides statistical evidence on the effects of tax rates on government revenues and economic growth. The principal findings are that by lowering their tax rates most countries could increase their total tax revenues and virtually all countries could increase their economic growth rates.

The Relationship Between Tax Rates and Tax Revenues

Prior to 1980, most people (including most economists) assumed that if governments raised tax rates, they would collect more total revenue from taxpayers. The Reagan tax revolution and the empirical studies it prompted radically changed thinking about taxes in the United States and elsewhere.

We now know that an increase in tax rates can lead to smaller total tax collections and vice versa. For example, in the United States, there has almost always been an inverse relationship between the highest income tax rate and income tax payments made by the wealthiest taxpayers:

"When the highest tax rate is lowered, government revenues almost always go up."

- Between 1921 and 1926, the highest tax rate fell from 73 percent to 25 percent. Although the tax rates of people earning more than \$100,000 (1929 dollars) fell by almost two-thirds, their share of total federal income tax revenue rose from 28 percent to 51 percent.²
- In 1963 when the top tax rate was 91 percent, the top 5 percent of taxpayers paid 35.6 percent of all income taxes. In 1965, when the top rate had been lowered to 70 percent, the top five percent of taxpayers paid 38.5 percent of all income taxes.³

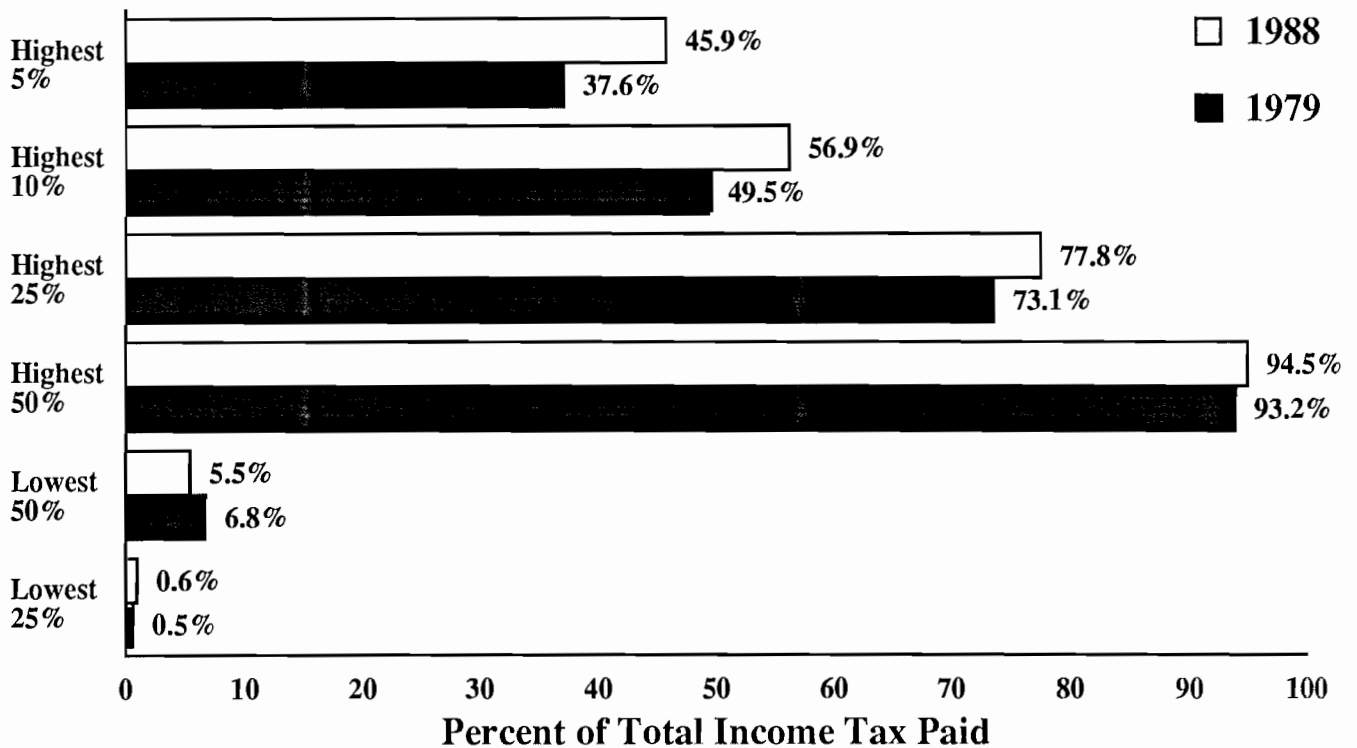
"When the top U.S. tax rate was reduced from 70 to 28 percent, the share of taxes paid by the top 1 percent of taxpayers grew from 18 to 27 percent."

- This pattern was repeated during the 1980s. Although the highest income tax rate was reduced from 70 percent to 28 percent (for the wealthiest taxpayers), the share of taxes paid by the top 1 percent of income earners grew from 18 percent in 1981 to more than 27 percent in 1988.⁴

Moreover, this pattern is not confined to the richest taxpayers. As Figure I shows, the share of tax payments increased for every high-income group over the past decade, even though tax rates were reduced.

FIGURE I

Percent of Federal Income Taxes Paid



Source: Tax Foundation.

"There has always been a negative relationship between capital gains tax rates and capital gains revenue."

Similarly, there has almost always been an inverse relationship between capital gains tax rates and capital gains revenues:⁵

- From 1968 through 1978, bracket creep caused a steady rise in the maximum tax rate on capital gains. Yet the amount of revenue the federal government collected from the tax was almost one-half its 1968 level by 1970 and did not regain the 1968 level until 1976.
- Following a 1978 reduction in the maximum capital gains tax rate, federal capital gains revenues rose steadily from \$9.1 billion in 1978 to \$12.5 billion in 1980.
- Following the 1981 cut in the maximum capital gains tax rate from 26.67 percent to 20 percent, capital gains revenues almost doubled in four years — rising from \$12.7 billion in 1981 to \$24.5 billion in 1985.

Why the Tax Base Changes as Tax Rates Change

Even where there is a positive relationship between tax rates and government revenue, the tax base changes when tax rates change. For example, the wealthy have enormous discretion over how, when and whether to realize income. At high tax rates, they can convert taxable income into fringe benefits or other business expenses. High tax rates cause people to work less, save less and invest less as well.⁶

"In Peru, almost half the population works in the informal sector, producing 38 percent of Peru's GDP."

High tax rates also affect the tax base for the not-so-rich. In the presence of high tax rates, people increasingly conduct their economic activities in the "underground," "black market" or "informal" sector of the economy — where they escape official scrutiny and costly government regulations as well as high taxes.

The most extensive research on the informal economy has been done in Peru. Under the direction of Hernando De Soto, researchers at the Instituto Libertad y Democracia (Institute of Liberty and Democracy) estimate that:⁷

"The informal sector produces 38.5 percent of Argentina's GDP."

- About 48 percent of the working age population is involved in the informal economy.
- The informal economy accounts for 61 percent of all man-hours worked and 38 percent of Peru's gross domestic product.

The informal economy is a thriving, bustling marketplace. It has developed despite numerous legal obstacles, with virtually no access to credit and no foreign aid. Overall, it assembles cars, manufactures precision tools, builds furniture and repairs buses. For example, in Lima, the informals carry on 90 percent of the clothing construction business, 75 percent of furniture construction, 60 percent of housing construction and 95 percent of public transportation.⁸

Peru is not alone. The informal economy is a general phenomenon throughout the less developed world, although rigorous estimates of its size have been made in only a few countries. Using different methodology from that used in Peru, the Instituto de Estudios Contemporaneos (Institute for Contemporary Studies) in Argentina estimates that 38.5 percent of Argentina's gross domestic product is produced by the informal economy, where more than half of Argentina's working population has its principal job.⁹

Just as there are black markets in goods and services, there are also black markets in currency. In Argentina, the government actively manipulates exchange rates to influence foreign trade and domestic production and as a source of revenue. The controls are so extreme that an enormous black market in dollars has developed. Even though few Argentine citizens have investments in the United States, the Institute for Contemporary Studies estimates that:¹⁰

- The total value of dollars in Argentina is approximately equal to the total value of Argentine currency.
- Put another way, the typical Argentine is holding one dollar for every dollar's worth of australes.

"To make black market exchanges, the typical Argentine is holding one U.S. dollar for every dollar's worth of australes."

In Venezuela, researchers at the Instituto de Libertad y Democracia (Institute for Liberty and Democracy) have estimated the size of the informal economy in that country. According to their estimates:¹¹

"Most Latin American countries impose high marginal tax rates and collect very little revenue."

- The Venezuelan informal economy grew from less than 3 percent of non-oil GNP in 1973 to more than 20 percent in 1985.
- Currently, the informal economy provides income to more than 42 percent of the country's labor force.

In general, the worst possible tax system is one which imposes very high marginal tax rates and collects very little revenue. The high marginal tax rates wreak havoc on the private sector economy, and if tax collections are low government gets very little benefit in return for the harm it causes. Yet as Tables I and II show, this is precisely the tax structure in most Latin American countries. For example,¹²

- In the mid-1980s, all taxes on labor income combined (income tax plus payroll tax plus sales taxes) produced a marginal tax rate on labor of 95 percent in Argentina, 90 percent in Peru and 60 percent or higher in Brazil, Mexico and Ecuador.
- As a percent of gross domestic product, however, taxes actually collected were quite modest — only 12.7 percent in Argentina, 8.8 percent in Peru and 9.3 percent in Mexico.

If one ignores sales taxes and focuses on the direct taxes on labor income, the differences are even more striking:¹³

- Before the 1989 tax reform, Argentina's personal income tax rate reached 45 percent and its social security tax rate is still 46 percent; yet the amount of revenue Argentina collects from both these taxes was only 3.5 percent of Gross Domestic Product (GDP).
- Peru's personal income tax rate reaches 45 percent and its payroll tax rate is 36 percent; yet the amount of revenue Peru collects from both these taxes in only 1.1 percent of GDP.

In Latin America, high marginal tax rates are not reserved for the rich. They fall on workers whose earnings are very modest. For example, in many Latin American countries marginal tax rates are 50 percent or higher on annual incomes as low as \$5,000. Moreover, the practice of imposing high marginal tax rates on modest incomes is a fairly recent phenomenon. Prior to 1961, for example, Mexico did not even have a progressive income tax.¹⁴

"In Latin America, high marginal tax rates are imposed on people with modest incomes."

TABLE I

Maximum Tax Rates in Latin America in the 1980s¹

	<u>Personal Income</u>	<u>Social Security</u>	<u>Sales</u>	<u>Marginal Tax on Labor²</u>	<u>Corporate Profits</u>
Argentina	45%	46%	18%	95%	33%
Bolivia	10	13	10	18	NA
Brazil	50	10	17-30	61	6-35
Chile	50	21	20	60	37
Colombia	30	1	10-25	36	31
Ecuador	55	19	10	79	22-30
Mexico	55	8	15-20	63	39
Peru	45	36	6-90	90	35
Venezuela	45	8	1	46	50

"Argentina had a 45 percent income tax and a 46 percent social security tax — yet revenues equaled only 3.5 percent of GDP."

Source: Alan Reynolds, "The Case for Radical Tax Reform in Latin America," in John Goodman and Ramona Marotz-Baden, *Fighting the War of Ideas in Latin America* (Dallas, Texas: National Center for Policy Analysis, 1990), Table II, p. 238. Original Source: Price Waterhouse.

¹Note: The data in Table I and Table II are from the mid 1980s — *before* income tax rates were cut from 48 percent to 10 percent in Bolivia and from 56 percent to 30 percent in Colombia, and before the 1989 tax cuts which reduced the highest income tax rates to 40 percent in Mexico, 35 percent in Argentina and 25 percent in Brazil.

²Estimate. Adjusted for income caps and deductibility of social security. Assumes only half of estimated average sales tax is the marginal burden, because of exemptions. Employer contributions to social security are assumed to be borne by employees.

International Evidence on the Revenue Maximizing Tax Rate

The amount of income taken in the form of taxes varies radically among countries around the world. On the high end, total taxes collected in Sweden in 1988 were equal to 56.8 percent of Sweden's gross domestic product (GDP). In Denmark, taxes are equal to 50.8 percent of GDP. The lowest levels are among less-developed countries, which typically have total tax collections between 15 percent and 22 percent of GDP.

TABLE II

Major Taxes as a Percent of GDP in the 1980s

	<u>Personal Income</u>	<u>Social Security</u>	<u>Sales</u>	<u>Corporate Profit</u>	<u>Trade</u>
Argentina	0.1%	3.4%	8.8%	.01%	1.9%
Bolivia	0.7	NA	2.7	0.4	2.2
Brazil	0.1	7.6	11.3	1.1	0.8
Chile	3.1	3.3	13.3	2.3	1.4
Colombia	1.3	1.9	4.0	1.6	2.3
Ecuador	NA	NA	2.2	2.3	4.0
Mexico	2.6	2.4	5.3	3.1	2.7
Peru	0.4	0.7	7.7	3.6	5.1
Venezuela	0.8	1.1	1.4	14.1	2.0

Source: Alan Reynolds, "The Case for Radical Tax Reform in Latin America," John Goodman and Ramona Marotz-Baden, *Fighting the War of Ideas in Latin America* (Dallas, Texas: National Center for Policy Analysis, 1990), Table I, p. 237. Original Source: Vito Tanzi in David Newberry and Nicholas Stern, *The Theory of Taxation for Developing Countries* (Oxford: World Bank, Oxford University, 1987), p. 210.

This study reports on the relationship between taxes collected and tax rates (total taxes divided by GDP). The statistical estimate was based on data from a sample of 103 countries in 1980. The statistical methods and results are described in Appendix A. The relationship between a country's tax rate and total tax revenue is shown in Figure II. As the figure shows:

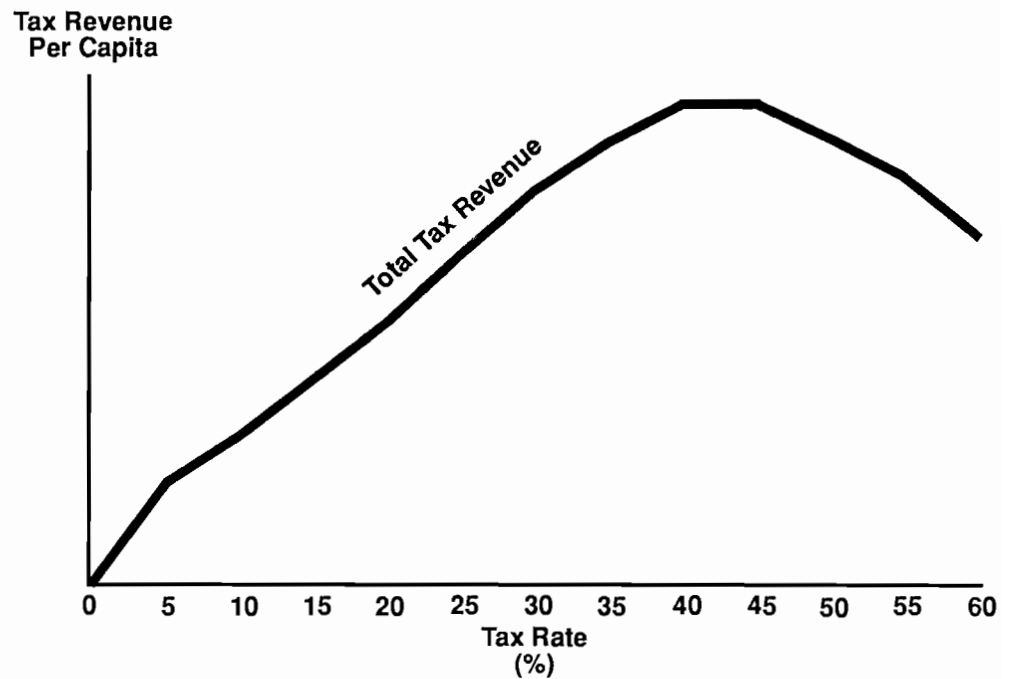
- On the average, the international revenue-maximizing tax rate is 43.2 percent.
- This means that at tax rates higher than 43.2 percent governments could actually raise more revenue by lowering their tax rates.

Table III shows average tax rates for selected developed countries in 1988. Note that a number of countries have a tax rate in excess of 43.2 percent. Our analysis suggests that Denmark, the Netherlands, Norway and Sweden would collect more revenue at lower rates.

"Peru had a 45 percent income tax and a 36 percent payroll tax—yet tax revenues were only 1.1 percent of GDP."

"On the average, countries collect the most revenue when taxes are no higher than 43.2 percent of GDP."

FIGURE II
Tax Rates and Tax Revenue



"At higher tax levels, the tax base shrinks so much that revenue declines."

TABLE III

**Taxes as a Percent of
 Gross Domestic Product
 (1988)**

Austria	41.0%	Netherlands	46.1%
Canada	33.4%	Norway	45.5%
Denmark	50.8%	Spain	34.4%
Finland	38.3%	Sweden	56.8%
France	43.9%	Switzerland	31.9%
Germany	38.1%	Turkey	24.1%
Ireland	38.9%	United Kingdom	36.5%
Italy	38.4%	United States	28.0%

"Denmark, the Netherlands, Norway and Sweden would collect more revenue at lower tax rates."

Source: Revenue Statistics of OECD member countries, 1990.

"A government that wants to maximize revenue would choose these tax rates."

TABLE IV

Tax Rates That Maximize Government Revenue

<u>Type of Tax</u>	<u>Rate</u>
Income Taxes	22.5%
Sales Taxes	12.5%
Trade Taxes	13.2%
All Taxes¹	43.2%

¹As a percent of gross domestic product.

Source: Appendix A

The estimate of 43.2 percent applies to the total taxes collected by government. Using a similar statistical technique, we can estimate the revenue-maximizing tax rate for each of three separate types of taxes. As Table IV shows, the revenue-maximizing income tax rate is 22.5 percent. For sales taxes and trade taxes, the revenue-maximizing rates are 12.5 percent and 13.2 percent respectively. Thus, a country that wants to maximize total tax collections should choose these three tax rates.

Table IV estimates are based on *average* tax rates. They have strong implications, however, for *marginal* tax rates. In general, if the revenue-maximizing *average* income tax rate is 22.5 percent, this implies that countries with considerably higher *marginal* income tax rates can probably increase their revenues by lowering those rates.

Table V shows the highest marginal income tax rate imposed by selected countries in 1988. As the table shows, the top marginal tax rate is considerably higher than our estimate of the rate that would maximize revenue, even though most countries have already lowered their highest rate.

Taxes and Economic Growth

In principle, taxes levied by government may have both positive and negative effects on economic growth. The value of economic resources and the ability to transform resources into output are greater to the degree that property is protected, roads and harbors are provided, and domestic tranquility is insured. Taxation beyond this level may have a negative effect. In modern

TABLE V

Highest Marginal Income Tax Rate in 1989

<u>Country</u>	<u>Tax Rate</u>	<u>Country</u>	<u>Tax Rate</u>
Argentina	35%	Libya	35%
Australia	49	Luxembourg	58.8
Austria	50	Malawi	50
Bangladesh	50	Malaysia	45
Barbados	50	Malta	65
Belgium	55	Mexico	40
Belize	50	Morocco	60
Bolivia	10	Netherlands	72
Bophuthatswana	40	New Zealand	33
Botswana	50	Nigeria	55
Brazil	25	Norway	27.5
Canada	29	Pakistan	45
Channel Islands	20	Panama	56
Chile	50	Papua New Guinea	45
China	45	Paraguay	30
Colombia	30	Peru	45
Costa Rica	25	Philippines	35
Cyprus	60	Portugal	40
Denmark	72	Puerto Rico	38
Dominica	45	Senegal	60
Dominican Republic	73.1	Singapore	33
Ecuador	46	South Africa	45
Egypt	65	South Korea	63.7
El Salvador	60	Spain	56
Fiji	50	Sri Lanka	40
Finland	44	Sudan	40
France	56.8	Swaziland	45
Ghana	55	Sweden	72
Greece	50	Switzerland	11.5
Guatemala	34	Taiwan	50
Honduras	40	Tanzania	55
Hong Kong	25	Thailand	55
Iceland	28.5	Trinidad & Tobago	45
India	50	Turkey	50
Indonesia	35	Uganda	60
Ireland	58	United Kingdom	60
Isle of Man	20	United States	28
Italy	50	Venezuela	45
Ivory Coast	37.5	West Germany	56
Jamaica	33.3	Zaire	60
Japan	50	Zambia	75
Kenya	50	Zimbabwe	60
Lebanon	50	Unweighted Average	46.7
Liberia	73		

"Income tax revenues are maximized at a rate of 22.5 percent — yet most countries have tax rates more than twice that high."

Source: Compiled by Bruce Bartlett from Price Waterhouse and Coopers & Lybrand tax guides.

times, many private goods and services are provided at public expense (health care, housing, etc.), and direct income redistribution takes place on a large scale. At some level of taxation, resources employed in the public sector are less productive than in the private sector and resources escape into the informal or underground economy — which diminishes economic growth.

"High taxes slow economic growth because the public sector is less productive than the private sector."

Most less-developed countries would be far wealthier today if informal activities were carried out in the formal sector. The perpetuation of a dual economic system has had serious side effects that have discouraged economic growth. In general, credit is not allocated to the most productive investments; total investment in the economy is less; labor productivity is lower; and a defective tort system fails to make people bear the burden of costs they impose on others.

As a result of inadequate access to credit and lack of formally protected property rights, informal businesses in less-developed countries typically are under-capitalized, too small to enjoy economies of scale and thus less efficient. Researchers in Peru, for example, estimate that labor productivity in the informal economy is only one-third that of the formal sector.

The implication of this finding is that the economic gains to Peru would be huge if the informal economy were legalized. There unquestionably would be substantial increases in labor productivity and a consequent boost in the country's output of goods and services. For example, according to the Institute of Liberty and Democracy in Lima:

- If labor productivity in the informal economy were increased to the level of the rest of the economy, Peru's gross domestic product (GDP) would increase by 54 percent.
- Over time, Peru's annual rate of economic growth would increase by as much as 200 percent.

"High tax rates also encourage the growth of the less productive informal economy."

In this study we report on an estimate of the relationship between tax rates and economic growth. Economic growth is measured by the compound growth rate in per capita real domestic product over the period 1960 to 1980. The tax rates are the average rates existing in 1980. The statistical methods and results are described in Appendix A.

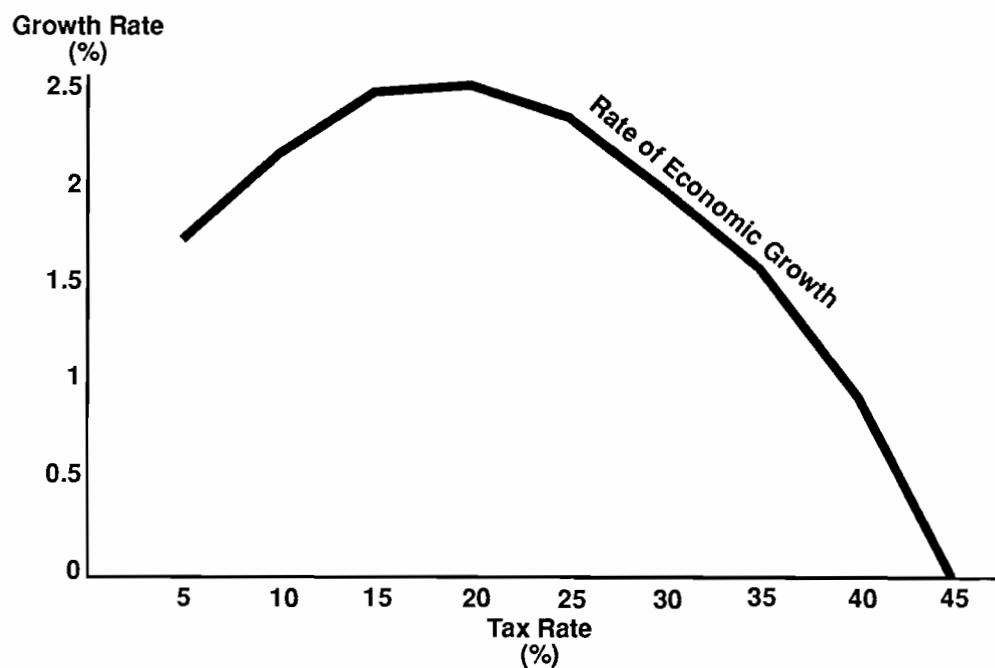
The relationship between the rate of economic growth and the average tax rate is depicted in Figure III. As the figure shows:

- On the average, economic growth reaches a maximum when government takes no more than 19.3 percent of gross domestic product in taxes.
- Moreover, economic growth slows to zero at a tax rate of about 45 percent and becomes negative at higher tax rates.

The estimate of 19.3 percent applies to the total taxes collected by government. Using a similar technique, we can estimate the growth-maximizing tax rate for each of three separate types of taxes. As Table VI shows, the growth-maximizing income tax rate is 11.9 percent. The growth-maximizing rates for sales taxes and trade taxes are 4.6 percent and 9.4 percent, respectively.

FIGURE III

Tax Rates and Economic Growth



"Most countries will maximize their growth rate if taxes are no more than 19.3 percent of GDP."

TABLE VI

Tax Rates That Maximize Economic Growth

"The income tax rate that maximizes economic growth is only 11.9 percent."

<u>Type of Tax</u>	<u>Rate</u>
Income Taxes	11.9%
Sales Taxes	4.6%
Trade Taxes	9.4%
All Taxes ¹	19.3%

¹As a percent of gross domestic product.

Source: Appendix A

Calculating the Growth Tax

Because the tax rate that maximizes tax revenue exceeds the tax rate that maximizes economic growth by a large factor, governments tend to grow to levels that reduce the potential future income of their citizens. On the basis of the empirical estimates produced in this study, any public sector larger than about 19 percent of GNP imposes a "growth tax" on its citizens.

"If countries attempt to maximize tax collections, people will pay a 'growth tax' — resulting in a lower standard of living."

Consider a hypothetical country with a real per capita income of \$1,500 — the average for all countries in 1980. As Table VII shows, if the country adopts a tax rate of 19.3 percent, it will have an annual growth rate of 2.4 percent. Aftertax real per capita income in 1980 will be \$1,211. On the other hand, if the country adopts the revenue-maximizing tax rate of 43.2 percent, the economic growth rate will be only 0.4 percent. Assuming all of the other relevant factors remain constant over the period, by the year 2000 the low-tax policy will produce a per capita income of \$2,396 (in 1980 dollars) and an aftertax income of \$1,934. By contrast, in the high-tax policy will produce a per capita income of \$1,618 and aftertax income of only \$919. Compare the welfare of the citizens of this hypothetical nation under the two tax policies:

- Under a high tax rate, people not only pay nearly \$700 in taxes in the year 2000, they also have an additional loss of income of \$778 in income because of the effect of the taxes on economic growth.
- These citizens actually pay the direct tax of \$700 plus the growth tax of \$778, a total tax equal to $\$1,477/\$1,618 = 91$ percent!
- By the year 2020, people under the low tax rate have three times as much aftertax income and government has almost the same amount of revenue as would have occurred with the higher rate.

TABLE VII

How Today's Taxes Affect Future Income

<u>Policies Adopted in 1980</u>	<u>Low-Tax Policy</u>	<u>High-Tax Policy</u>
Pretax per capita income	\$1,500	\$1,500
Government revenue	<u>289</u>	<u>648</u>
Aftertax income	\$1211	\$852
Tax Rate	19.3%	43.2%
Annual growth rate	2.4%	0.4%
<u>Effects on Income in 2000¹</u>		
Pretax per capita income	\$2,396	\$1,618
Government revenue	<u>462</u>	<u>699</u>
Aftertax income	\$1,934	\$919
<u>Effects on Income in 2020¹</u>		
Pretax per capita income	\$3,827	\$1,745
Government revenue	<u>739</u>	<u>754</u>
Aftertax income	\$3,088	\$991

¹Measured in 1980 dollars.

"In the long run, governments will have more revenue if they maximize growth rather than tax collections."

Conclusion

Because of institutional differences among countries, there may also be differences in how tax rates affect the private sector. The statistical results presented in this study, however, provide compelling evidence that most countries cause considerable damage to their economies by imposing high tax rates.

Countries in which government takes more than 43 percent of national income in the form of taxes could collect more revenue by lowering their tax rates. Further, tax rates anywhere close to 43 percent have devastating effects on economic growth.

It is difficult to imagine worthwhile public sector projects that cannot be financed by 19 percent of a country's gross domestic product. Countries that limit the size of the public sector to this level have the best chance of enjoying high rates of economic growth. Moreover, in the long run, promoting economic growth results in more revenue for government than trying to collect the most possible taxes each and every year.

Gerald W. Scully

"It is hard to imagine worthwhile public projects that cost more than 19 percent of GDP."

NOTE: Nothing written here should be construed as necessarily reflecting the views of the National Center for Policy Analysis or as an attempt to aid or hinder the passage of any bill before Congress.

Appendix

Data on taxes and gross domestic product are available from International Monetary Fund government statistics. The dependent variable in the statistical estimation is the logarithm of per capita tax revenue in 1980 dollars. The independent variables are the logarithm of per capita domestic product in 1980 dollars, the tax rate, the tax rate squared, and the difference between the tax rate and expenditures as a share of gross domestic product. This last variable captures some of the effect of future tax liability. The sample size is 103 countries. All of the variables in the estimation are very highly significant (see Table A-1). The coefficients of interest are tax variables. The coefficient of the tax rate on the logarithm of tax revenue (with its standard error in parentheses) is 0.1036 (0.0019). The coefficient of the tax rate squared on the logarithm of tax revenue is -0.0012 (0.00004). Thus, as tax rates rise, tax revenue also rises but at a diminishing rate. The maximum rate is solved by dividing the coefficient of the tax rate on tax revenue by two times the coefficient of the tax rate squared on revenue. This yields $43.2 = .1036/.0024$. Thus the tax revenue maximizing tax rate is 43.2 percent. This seems rather high, but a number of countries in the world have taxes near or above this rate.

There also exist tax maximizing rates for various types of taxes. Using a similar empirical specification, we find that the tax maximizing rate for the income tax, sales tax and trade taxes expressed as a fraction of GDP are 22.5, 12.5 and 13.2 percent, respectively. A revenue maximizing government will set all tax rates to their tax maximizing levels.

The growth rate in the estimation of the relationship between tax rates and economic growth is the compound growth rate in per capita real domestic product over the period 1960 to 1980. It is calculated from the data on per capita real gross domestic product from Summers and Heston.¹ The independent variables are the growth rate in real capital per head over the same period, real gross domestic product per capita in 1980, the difference between taxes and expenditures as a share of GDP, the tax rate and the tax rate squared.

Note that the growth rate is over the period 1960 to 1980 and the tax rate is for 1980. There is a sound theoretical reason for using the end state tax rate. The period was one in which the size of government grew. The growth in government is viewed as a growth in tax liability. Presumably, people make behavioral adjustments in expectation of future tax liability.

Real gross domestic product per capita in 1980 is in the equation to adjust for convergence of growth rates. According to neoclassical economic theory, high income (capital intensive) economies grow more slowly than low income (labor intensive) economies because the marginal returns to capital are low in the former and high in the latter. In theory, capital flows to its highest valued use. In fact, capital probably has been flowing, from the high-risk, less-developed world to the safer havens in the

West. Contrary to the predictions of neoclassical theory, the high per capita income countries are growing at the faster rate.

All of the variables in the estimation are highly significant (the regression equation is presented in Table A-1). The variables of interest here are the tax variables. The coefficient of the tax rate on the growth rate is 0.1339 (0.0688). The coefficient of the tax rate squared on the growth rate is -0.0035 (.000089). The growth maximizing tax rate is 19.3 ($= .1339/.0069$) percent.

The growth maximizing tax rates for various types of taxes were also calculated. The empirical specification essentially is the same as reported above. The growth maximizing tax rates for the income tax, sales tax and trade taxes are 11.9, 4.6 and 9.4 percent, respectively. Note that, like aggregate taxes, the growth maximizing tax rates are about half that of the revenue maximizing tax rates.

¹Robert Summers and Alan Heston, "Improved International Comparisons of Real Product and Its Composition: 1950-1980," *Review of Income and Wealth*, 30, June 1984, pp. 207-262.

TABLE A-1

Regressions Relating Tax Revenue and Growth to the Tax Rate

<u>Independent Variables</u> ¹	<u>Log Tax Revenue</u>	<u>Growth Rate</u>
Constant	-3.1569 (69.83)	.5143 (0.61)
Log RGDP80	.9926 (180.76)	
RGDP80		.1886E-03(2.12)
Deficit	-.1459E-02 (2.09)	-.4740E-01 (1.84)
KL Growth		.5078 (9.49)
Tax Rate	.1036 (54.85)	.1339 (1.95)
Tax Rate SQ	-.1197E-02 (29.53)	-.3471E-02 (2.35)
R ² Adj.	.9992	.5860

Note: Student-t values are shown in parentheses under the coefficients.

¹RGDP = real gross domestic product in 1980; Deficit = government spending minus government revenue as a percent of gross domestic product; KL = amount of real capital per person; Tax Rate = tax revenue as a percent of gross domestic product; and Tax Rate SQ = tax rate squared.

Footnotes

¹Statistics compiled by Bruce Bartlett based on information provided by Price Waterhouse and Coopers & Lybrand tax guides. *Wall Street Journal*, August 29, 1989.

²Calculations by James Gwartney and Richard Stroup. Reproduced in Yale Brozen, "The Cost of Bad Government," National Center for Policy Analysis, NCPA Policy Report No. 122, August 1986.

³*Ibid.*

⁴Internal Revenue Service, *Statistics of Income Bulletin*, Spring 1990, Washington, DC, 1990, pp. 15-25.

⁵Based on U.S. Department of the Treasury data reprinted in Ronald Utt, "Capital Gains Taxation: The Evidence Calls for a Reduction in Rates," Heritage Foundation Backgrounder, No. 704, May 2, 1989, Table 3, p. 10. For an explanation of why the lowering of the capital gains tax rate almost always causes an increase in capital gains tax revenues, see Aldona Robbins and Gary Robbins, "Taxing Capital Gains," National Center for Policy Analysis, NCPA Policy Report No. 143, October 1989.

⁶See Lawrence Lindsey, *The Growth Experiment* (New York: Basic Books, 1990).

⁷Hernando De Soto, "The Role of the Informal Economy in Peru" in John Goodman and Ramona Marotz-Baden, *Fighting the War of Ideas in Latin America* (Dallas, Texas: National Center for Policy Analysis, 1990), p. 21. See also De Soto, *The Other Path* (New York: Harper & Row, 1989).

⁸De Soto, "The Role of the Informal Economy in Peru," pp. 23-25.

⁹Goodman and Marotz-Baden, "Editors, Introduction," *Fighting the War of Ideas*, p. 117.

¹⁰*Ibid.*

¹¹Jesus E. Rodriguez, "Marketing Ideas in Venezuela," in Goodman and Marotz-Baden, *Fighting the War of Ideas*, p. 52.

¹²Alan Reynolds, "The Case for Radical Tax Reform in Latin America," in Goodman and Marotz-Baden, *Fighting the War of Ideas*, pp. 234-239.

¹³*Ibid.*

¹⁴*Ibid.*

¹⁵De Soto, "The War of Ideas in Peru," in Goodman and Marotz-Baden, *Fighting the War of Ideas in Latin America*, pp. 30-31.

¹⁶Using the statistical equation for the growth-maximizing tax rate, the mean values of the variables, other than the tax variables, were substituted into the equation to obtain the predicted per capita real economic growth rate.

About the Author

Dr. Gerald W. Scully is Professor of Economics at the University of Texas at Dallas, and currently is Bradley Resident Scholar at the Heritage Foundation and a Senior Fellow of the National Center for Policy Analysis. He is the author of numerous scholarly books and journals.

THE NATIONAL CENTER FOR POLICY ANALYSIS

The National Center for Policy Analysis is a nonprofit, nonpartisan research institute, funded exclusively by private contributions. The NCPA originated the concept of the Medical IRA (which has bipartisan support in Congress) and merit pay for school districts (adopted in South Carolina and Texas). Many credit NCPA studies of the Medicare surtax as the main factor leading to the the 1989 repeal of the Medicare Catastrophic Coverage Act.

NCPA forecasts show that repeal of the Social Security earnings test would cause no loss of federal revenue, that a capital gains tax cut would increase federal revenue and that the federal government gets virtually all the money back from the current child care tax credit. These forecasts are an alternative to the forecasts of the Congressional Budget Office and the Joint Committee on Taxation and are frequently used by Republicans and Democrats in Congress. The NCPA also has produced a first-of-its-kind, pro-free-enterprise health care task force report, representing the views of 40 representatives of think tanks and research institutes.

The NCPA is the source of numerous discoveries that have been reported in the national news. According to NCPA reports:

- Blacks and other minorities are severely disadvantaged under Social Security, Medicare and other age-based entitlement programs;
- Special taxes on the elderly have destroyed the value of tax-deferred savings (IRAs, employee pensions, etc.) for a large portion of young workers; and
- Man-made food additives, pesticides and airborne pollutants are much less of a health risk than carcinogens that exist naturally in our environment.

What Others Say About the NCPA

"... influencing the national debate with studies, reports and seminars."

TIME

"... steadily thrusting such ideas as 'privatization' of social services into the intellectual marketplace."

CHRISTIAN SCIENCE MONITOR

"Increasingly influential."

EVANS AND NOVAK