

**International Studies Program  
Working Paper 07- 11  
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Combining “Simplified”, Income,  
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# *How Should Individuals Be Taxed? Combining “Simplified”, Income, and Payroll Taxes in Ukraine*

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## **Abstract:**

Individuals in most all countries face a wide range of direct taxes on their income, especially variants of the individual income tax and payroll taxes. For the income tax, attempts are often made to reduce the compliance and administrative costs of the tax by using “presumptive” or “simplified” methods, in which the tax liability is determined indirectly from some simple indicators that are more easily measured than the “true” tax base itself. However, when a “simplified” income tax is combined with other direct taxes on individuals, the ways in which these taxes interact, their combined effects on revenues, resource allocation, and income distribution, and the appropriate design of the overall system of these taxes remain unresolved – and unexplored – issues. This paper examines these issues, focusing on the experience of Ukraine. A simple computable general equilibrium model is used to quantify many of the effects of the “system” of simplified, income, and payroll taxes.

**Keywords:** Simplified tax system, hard-to-tax, computable general equilibrium model.

*JEL Classification:* H220, H240, H260, H300, H550.

## 1. Introduction

Individuals in most all countries face a wide range of direct taxes on their income, especially variants of the individual income tax (IIT) and payroll taxes. For the IIT, attempts are often made to reduce the compliance and administrative costs of the tax (among other reasons) by using “presumptive” or “simplified” methods in which the tax liability is determined indirectly from some simple indicators that are more easily measured than the “true” tax base itself. However, when a “simplified” income tax is combined with other direct taxes on individuals, the ways in which these taxes interact, their combined effects on revenues, resource allocation, and income distribution, and the appropriate design of the overall “system” of these taxes remain unresolved – and largely unexplored – issues. This paper examines these issues, focusing on the experience of Ukraine and using a simple computable general equilibrium model to quantify many of the effects of the system of payroll and income taxes.

The use of simplified methods of taxing individuals is increasingly discussed but sparingly applied, at least on a very wide scale. Income tax systems in most countries, especially developed countries, are typically a *global* income tax. A global tax combines income from all sources into a single aggregate measure, adjusts this aggregate measure for such items as personal exemptions and deductions, and then applies a single rate or a graduated rate structure to determine the tax liability.<sup>1</sup> However, despite the predominance of global income tax systems in developed countries, the U.S. General Accounting Office (1996) provides evidence that thirty-four countries employ variants on simplified income tax systems in which individuals

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<sup>1</sup> In contrast, in a *schedular* income tax each of the main sources of income is subject to a separate tax, whose rates may differ across income types. Typically, the separate components of income are not taxed at graduated rates and personal exemptions and deductions are not allowed. See Goode (1984) for further discussion of income tax systems. For more general discussions of the administrative dimension of taxation, see Goode (1981) and Bird and Casanegra de Jantscher (1992).

are not required to file end-of-year returns.<sup>2</sup> Such “no-return” or “final withholding” tax systems vary significantly, but many share some common characteristics. Most all countries with simplified taxes use employer withholding on wages and salaries. Also, interest, dividend, and capital gains incomes are often exempt or only lightly taxed; even when these incomes are taxed, interest and dividend incomes are often taxed at a flat rate, with the tax withheld by the financial institution or the company. Finally, the unit of taxation in such systems is the individual.<sup>3</sup>

The use of a simplified tax system is motivated in large part by the desire to simplify tax compliance for individual taxpayers, especially the so-called “hard-to-tax” taxpayers.<sup>4</sup> Such simplified systems are not limited to transition or developing countries, but are sometimes found in many advanced countries, at least in some form (Bird and Wallace 2004).

Even so, the various effects – on resource allocation, income distribution, tax collections, and so on – of such simplified income tax systems are almost completely unknown. Further, simplified income tax systems clearly interact with the regular income tax, as well as with other taxes that fall on individuals, especially payroll taxes. The ways in which all of these taxes on individuals interact, the combined effects of this “system” of taxes, and the design of these taxes in their entirety are even more uncertain. It is this basic issue that we examine here; that is, how should individuals be taxed in an environment in which simplified income taxes, regular

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<sup>2</sup> These countries include: Argentina, Austria, Chile, Colombia, Costa Rica, the Czech Republic, the Dominican Republic, Ecuador, Egypt, Germany, Hungary, Indonesia, Iran, Ireland, Japan, Kenya, the Republic of Korea, Luxembourg, Malawi, Mexico, Morocco, the Netherlands, Nigeria, Panama, Papua New Guinea, Peru, Poland, Romania, the Russian Federation, South Africa, Tanzania, Turkey, Uganda, and the United Kingdom.

<sup>3</sup> See also Tanzi and de Jantscher (1987) and Gale and Holtzblatt (1997) for a discussion of simplified income tax systems.

<sup>4</sup> In a related vein, many countries have introduced simplified tax systems for selected agents and activities, typically small businesses and individual entrepreneurs. In addition to a reduction in compliance costs, the introduction of these systems is driven in part by the desire to create a favorable environment for small-scale activities. See Engelschalk (2005).

individual income taxes, and payroll taxes all are imposed on individuals? We focus in particular on the experience of one country, Ukraine.

Our analysis indicates that the current “system” of simplified taxes, income taxes, and payroll taxes in Ukraine has some significant effects and some severe weaknesses. Given these findings, we suggest several reform options, all of which are intended to rationalize this now disjoint “system” of taxes along the usual dimensions of taxation.

## **2. Taxation of Individuals in Ukraine**

### **2.1. An Overview of Ukraine Tax System**

It is helpful to start with a brief overview of taxation in Ukraine. The level of Ukraine consolidated government tax collections from all sources, including payroll taxes, income taxes, and other sources, is given in Table 1 for the years 2000 to 2005. Table 2 shows the Ukraine tax structure, or specific tax collections as a percent of total consolidated government tax collections. These tables indicate a fairly sustained increase in overall revenues, both in levels and as a percent of GDP, with a slight decline in 2004 due largely to reform of the individual income tax. They also indicate that the increased revenues have been driven largely by increases in income tax and payroll tax collections, or more broadly by an increase in the tax burden on labor.<sup>5</sup>

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<sup>5</sup> In 2005 VAT collections also surged, mainly due to the curtailment of exemptions and also to increased VAT collections on imports of oil from Russia, which previously were not collected,

Table 1. Ukraine Tax Collections, 2000-2005 (as percent of GDP)

	2000	2001	2002	2003	2004	2005
<b>TOTAL REVENUES</b>	33.3	33.2	35.7	35.9	35.0	41.3
VAT	5.6	5.1	6.0	4.7	4.3	8.1
Other taxes on goods and services	3.0	3.6	3.9	4.1	4.3	4.3
Taxes on international trade	0.9	1.0	1.0	1.4	1.5	1.6
Personal Income tax	3.8	4.3	4.8	5.1	3.8	4.1
Payroll taxes	6.8	7.2	7.9	7.9	8.4	9.3
Enterprise Profit Tax (CIT)	4.5	4.1	4.2	5.0	4.7	5.6
Property and land taxes	0.8	0.8	0.8	0.8	0.7	0.6
Other taxes	2.8	1.8	1.7	1.6	1.5	1.4
Total Tax Revenues	28.2	27.9	30.3	30.6	29.2	35.0
Non-Tax Revenues	5.1	5.3	5.4	5.3	5.8	6.3

Source: Ukraine Ministry of Finance.

Table 2. Ukraine Tax Structure, 2000-2005 (as percent of total tax collections)

	2000	2001	2002	2003	2004	2005	Average 2000-2005
<b>Consumption Taxes</b>	40.3	36.9	37.4	34.2	34.8	41.5	36.7
Value-added Tax	19.8	18.2	19.7	15.4	14.7	23.8	17.5
Excise Taxes	4.7	4.7	6.0	6.4	6.6	5.6	5.7
Other Taxes on Goods and Services	15.8	14.1	11.7	12.3	13.4	12.0	13.5
<b>Labor Taxes</b>	37.5	41.3	42.0	42.5	41.9	37.9	41.1
Income Taxes	13.4	15.4	15.8	16.5	13.1	11.7	14.8
Payroll Taxes	24.1	25.9	26.2	25.9	28.8	26.2	26.2
<b>Capital Taxes</b>	22.2	21.7	20.6	23.4	23.3	20.6	22.2
Profit Tax	16.1	14.5	13.7	16.2	16.0	15.0	15.3
Export Taxes	0.0	0.0	0.0	0.4	0.7	0.4	0.2
Resource Extraction Taxes	1.2	1.8	1.6	1.6	1.7	2.2	1.6
Property Taxes	2.9	2.8	2.6	2.5	2.3	1.9	2.6
Other	2.0	2.6	2.6	2.6	2.6	1.2	2.5
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Ukraine Ministry of Finance.

For some basis of comparison, Ukraine tends to rely more heavily on income (individual and corporate) taxes and on payroll taxes than most other countries; indirect taxes for Ukraine are also slightly higher than the international average of countries (Alm and Lopez-Castano 2005).

## 2.2. Payroll Taxation

Ukraine has four separate social insurance programs, each of which has its own separate set of contribution rates and collection machinery. These programs are unemployment insurance, temporary disability insurance, pension insurance, and industrial accident insurance. The tax rates in these four programs are given in Table 3.

*Table 3. Ukraine Tax Rates in Social Insurance Programs (as percent of wage income)*

<b>Contributions<sup>a</sup></b>	<b>Pension Insurance</b>	<b>Unemployment Insurance</b>	<b>Temporary Disability Insurance<sup>b</sup></b>	<b>Industrial Accident Insurance</b>	<b>Total</b>
<b>Employer</b>	31.8	1.3	2.9	1.5 <sup>c</sup>	37.5
<b>Employee</b>	1.0 / 2.0 <sup>d</sup>	0.5	0.5 / 1.0 <sup>e</sup>	---	2-3.5
<b>Total</b>	32.8 – 33.8	1.8	3.4 – 3.9	1.6	39.5- 41

<sup>a</sup> These are rates as established in the 2006 Budget of Ukraine.

<sup>b</sup> This represents an average weighted rate. The rate the employer pays varies from 0.66 percent to 13.6 percent depending on the degree of hazardous risk level.

<sup>c</sup> This comes from a rate of 0.5 percent for wages below the subsistence threshold and 0.1 percent for wages above the subsistence threshold.

<sup>d</sup> This includes sickness, maternity and funeral insurance. The average total rate for the pension fund alone is 33.8 percent of wages.

<sup>e</sup> This includes a rate of 1.0 percent of monthly gross taxable income under Hrv 150 and a rate of 2.0 percent of monthly gross taxable income over Hrv 150.

Sources: World Bank (2006), Ministry of Finance, Ministry of Labor, and 2006 Budget of Ukraine.

Note that these social insurance contributions are charged only on the first Hrv 4,100 of employment income per month, a ceiling that is set in the annual budget law. In total, the combined tax rate for all programs often exceeds 40 percent and can be as large as 50.6 percent (depending on the risk of industrial accident), the vast bulk of which is the employer's share. Government officials estimate that the average payroll tax rate for all programs is 38.7 percent.

These payroll tax rates in Ukraine are comparable to, if somewhat higher than, the levels in OECD countries (Alm and Lopez-Castano 2005). In particular, the levels of tax rates for the employer's share of the programs are significantly higher in

Ukraine than the employer's share in most other countries. These burdens are largely felt by workers in the formal, or legal, sector of the economy who are subject to employer tax withholding on their wages.

These payments finance a wide range of benefits, although the link between individual contributions and individual benefits in Ukraine is very weak. For example, unemployment insurance finances unemployment benefits to unemployed individuals and their dependents, benefits to unemployed individuals who participate in job training programs, funeral benefits that are paid to survivors in the event of the death of an unemployed individual; payments also finance various job training programs and job placement services. Temporary disability insurance funds benefits for maternity, child birth, child care, and funeral (excluding those for pensioners, the unemployed, or survivors) benefits, in addition to temporary disability benefits. Industrial accident insurance finances a wide range of benefits intended to ameliorate the effects of industrial accidents and occupational diseases, which lead to income losses due to health problems. The main component of the Ukraine social insurance system is pension insurance, which covers all non-working age retirees, invalids, and survivors. These individuals receive pension payments, supplements, compensatory payments, and various additional pension benefits.

According to the Ministry of Labor and Social Policy of Ukraine/Pension Fund of Ukraine, the entire social insurance system in 2004 covered 22.8 million insured individuals, including 13.5 million pensioners, with payments of Hrv 46.6 billion (or 13.5 percent of GDP). Projected payments for 2005 are significantly greater, at 71.2 billion (or 16.4 percent of GDP). The largest single component is pension insurance at Hrv 61.1 billion, which alone represents 15.3 percent of GDP in 2005; temporary disability insurance is projected at Hrv 5.2 billion (for over 6 million

recipients) followed by unemployment insurance (Hrv 2.8 billion and 3 million recipients) and industrial accident insurance (Hrv 2.1 billion and 300,000 recipients). There is widespread concern about the continued financial viability of the overall public pension system, given especially the very low ratio (roughly one) of contributors to recipients.

These payroll taxes are all imposed on largely the same base (e.g., payrolls). However, each program has its own tax rates, each program taxes payrolls in similar but slightly different ways, each is administered by a separate agency, and each has its own system of registration, enforcement, and remittances. Even aside from any concerns about the tax burden on labor in the formal sector of the Ukraine economy, the separate administrative machineries are wasteful and duplicative. Many of the same functions are performed by the government agencies that administer the separate programs, but there seems to be very little coordination across these agencies.

### 2.3. The Individual Income Tax and the Simplified Tax System

Like nearly all countries, Ukraine imposes an individual income tax (IIT). Also like many countries, Ukraine attempts to simplify the compliance burden on some specific types of taxpayers by the use of a “Simplified Tax System” (STS). The use of a STS for some taxpayers is broadly consistent with the use of presumptive methods of income taxation for these taxpayers, in which “...the ‘desired’ base for taxation (direct or indirect) is not itself measured but is instead inferred from some simple indicators that are more easily measured than the base itself” (Ahmed and Stern 1991; ). Presumptive methods are used for a variety of reasons (Tanzi and de Jantscher 1987): to reduce the compliance costs on taxpayers by making it easier for these taxpayers to compute their tax liabilities, to simplify tax administration by

removing some taxpayers (usually those with small tax liabilities) from the tax rolls and be providing more obvious and more direct measures of tax liabilities, to improve tax equity by providing more objective indicators of tax assessment, to reduce corruption by eliminating official discretion in assessing tax liabilities, to encourage taxpayers to keep better accounts in order to provide documentation that may reduce their presumptive tax liabilities, and to improve incentive effects when, say, income above the presumptive level is not subject to taxation.

Individual Income Taxation. Individuals in Ukraine are in principle subject to an individual income tax whose base is their worldwide (or global) income. Income subject to the tax is broadly defined, and includes such standard items as wages and salaries, income from the sale of property, rental income, dividends, interest, royalties, investment income, inheritance, and gifts; benefits in kind are in principle included as well. State pensions, state insurance payments, and state subsidies are legally exempt. Against this taxable income base individuals are allowed various deductions, such as charitable donations, educational expenses, medical expenses, and life and insurance premia; there are also allowances for low income individuals, single mothers, widows and widowers, war veterans, the disabled, and victims of the Chernobyl accident. On this base Ukraine now imposes a flat rate tax rate of 13 percent; previously, there was a progressive rate structure with rates ranging from 10 to 40 percent. Most income tax revenues are collected by employer withholding. According to the Ministry of Finance, there are about 20 million taxpayers, although only about 2 million actually file a tax return because only individuals whose taxable income exceeds some threshold established annually by the government are required to file a return.

Simplified Tax System. Some types of individuals, mainly “entrepreneurs”, may opt to be taxed under a Simplified Tax System (STS), rather than under the individual income tax. The STS was established by Presidential Decree in 1998, and became fully in effect in 2000. There are different procedures for individuals and for (small) businesses. The *eligibility requirements* for the STS are:

- Individual entrepreneurs (or physical persons) subject to the individual income tax may elect to be taxed under the STS if their “turnover” does not exceed Hrv 500,000 and they do not have more than 10 employees, or if their turnover does not exceed Hrv 119,000 and they do not have more than 5 employees.
- Businesses (or legal entities) may elect to be taxed under the STS if their turnover does not exceed Hrv 1,000,000 and they do not have more than 50 employees. They are also required to keep regular accounts and records.

The *structural features* of the tax also differ for physical persons and for legal entities:

- Physical persons in the STS are taxed at rates that differ by activity and that are established by local councils (and so that may differ across jurisdictions), within the range of Hrv 20 – 200 per month.
- Legal entities in the STS are exempt from the company and the individual income tax and also from the various payroll taxes. If the taxpayer elects to register for the value-added tax (and so pays the VAT), then the legal entity is taxed under the STS at a 6 percent rate on turnover; if the taxpayer elects not to register for the VAT, then the taxpayer is taxed under the STS at a 10 percent rate on turnover.

Recall that the tax rate in the (regular) individual income tax is 13 percent; the tax rate in the company tax is 25 percent. Even aside from the impact of STS election on other taxes, it is immediately apparent that there is a strong incentive to elect to be taxed under the STS. See Table 4 for a summary of the STS.

*Table 4. Taxonomy of the Simplified Tax System in Ukraine*

<b>Options</b>	<b>Subject of Taxation</b>	<b>Eligibility Criteria</b>	<b>Base</b>	<b>Tax Rate</b>
Unified Tax	Legal entities (firms)	Annual gross (last 12 months) turnover does not exceed UAH 1,000,000; firm does not have more than 50 employees.	Gross Turnover	6%; but not exempt from VAT. 10%; exempt from VAT.
	Physical persons or “individual entrepreneurs” (individuals)	Annual gross turnover (last 12 months) does not exceed UAH 500,000; entrepreneur does not have more than 10 employees.	Gross Turnover	6%; but not exempt from VAT 10%; exempt from VAT
Fixed Tax	Physical persons (individuals)	Annual turnover (last 12 months) does not exceed UAH 119,000; do not have more than 5 employees.	---	Patents vary from UAH 20-200 per month.
Other (Trade patents, fees and permits)	Levied on legal entities and individuals.	Small firms as assessed by local governments (LG)	---	Various amounts (assessed by LG)

Source: World Bank (2006).

The number of individuals and business opting for the STS has increased dramatically in the last several years. Tables 5 and 6 give some information on the numbers of physical persons and legal entities in the STS, and their tax payments from 2002 to 2005; see also Figure 1. Note that there are two other simplified tax systems. Some small traders are eligible to use a “patent”, if their annual gross revenues from entrepreneurial activities do not exceed Hrv 1 million in the 12 months preceding the granting of the patent, denoted as the “Special Trade Patent”. There is also a simplified system for some agricultural activities if sales do not exceed 50 percent of gross revenues, denoted as the “Fixed Agricultural Tax”.

Table 5. STS Tax Payments by Type of Taxpayer

	2002	2003	2004	2005 <sup>a</sup>
<b>Legal Entities</b>				
Number of taxpayers (in thousands)	115.6	133.2	133.2	129.0
Revenues (in Hrv millions)	844.6	1173.4	1362.3	503.5
<b>Physical Persons</b>				
Number of taxpayers (in thousands)	427.0	540.0	602.4	653.4
Revenues (in Hrv millions)	660.0	901.0	1078.0	908.7
<b>Special Trade Patent</b>				
Number of Patents	360,000	382,000	371,000	377,159
Revenues (in Hrv millions)	260.0	246.0	245.0	191.0
<b>Fixed Tax</b>				
Number of taxpayers	210.2	220.6	225.6	229.4
Revenues (in Hrv millions)	322.9	366.4	512.4	497.7

<sup>a</sup> Data are for through 1 July 2005.

Source: Ukraine Ministry of Finance.

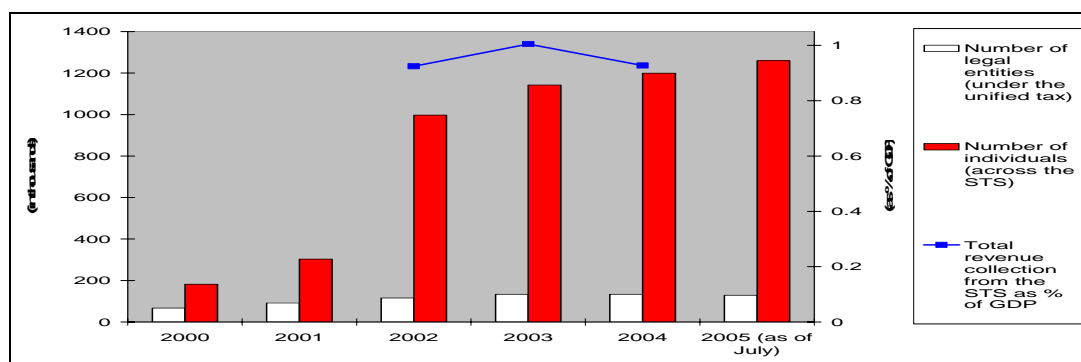
Table 6. Distribution of Physical Taxpayers in the STS by Annual Receipts

Annual Receipts (in Hrv)	2002	2003	2004	2005 <sup>a</sup>
From 0 to 2,400	173,765	162,227	148,541	188,230
From 2,400 to 7,200	56,421	72,355	73,369	82,157
From 7,200 to 55,000	113,767	163,902	188,158	199,482
From 55,000 to 100,000	26,292	41,043	52,297	57,047
From 100,000 to 200,000	25,035	40,458	53,046	55,305
From 200,000 to 300,000	11,853	20,294	28,227	15,769
From 300,000 to 400,000	7,736	13,974	20,456	4,436
From 400,000 to 500,000	10,895	23,446	34,506	3,447
Over 500,000	1,089	2,251	3,800	813
Total	426,853	539,950	602,400	606,686

<sup>a</sup> Data are for the first 6 months of 2005.

Source: Ukraine Ministry of Finance

Figure 1. Registrants and Revenues in the Simplified Tax System, 2000-05



Source: World Bank (2006).

### **3. Some Issues in Ukraine Taxation of Individuals**

#### **3.1. Incentives in the STS versus the Regular Income Tax System**

Given the much lower burden of taxation in the STS relative to the regular income tax system, there is a very large incentive for individuals and businesses to elect to participate in the STS. For example, consider an individual with a turnover at the threshold of Hrv 119,000. If this represents annual taxable income, then this individual would pay a regular income tax (at a tax rate of 13 percent) of Hrv 15,470; the maximum tax burden under the STS is Hrv 200 per month, or Hrv 2400. For an individual at the Hrv 500,000 threshold, the incentive to elect the STS is even greater (or Hrv 65,000 versus Hrv 2400).

Of course, one goal of the STS is to reduce the burden on small taxpayers. However, this means that the compliance cost of taxes should be reduced and not necessarily that the overall tax burden must be reduced. Indeed, the overall tax burden under the two alternative regimes should be broadly similar, in order to avoid creating artificial incentives to enter the STS purely to avoid paying one’s taxes.

Aside from the strong incentive to opt for the STS (whether legally justified or not), the STS further distorts incentives facing taxpayers in several significant ways. First, individuals and firms at the threshold have an incentive to fragment their operations in order to meet the requirements, and such purely tax-driven fragmentation is inefficient. Second, there is a major “notch” problem facing taxpayers. Consider a legal entity with turnover of exactly Hrv 1 million or exactly 50 employees. An increase of 1 unit in either turnover or employees would generate an enormous increase in tax liability, as the taxpayer must legally move into the regular tax system, thereby paying the regular income tax as well as the value-added

tax and all of the payroll taxes. These disincentives for growth in turnover or in employment are also economically inefficient.

One feature of the STS that may have some positive incentive effects is the lumpsum aspect of the tax on physical persons. Individuals face a fixed payment that ranges from Hrv 20 – 200 per month. This tax burden does not change with the level of economic activity (e.g., the marginal tax rate is zero), so that it does not create any disincentive for individuals to expand their activities.

### 3.2. Thresholds

Like most presumptive tax systems, the Ukraine STS has thresholds based upon turnover and upon employee size, and only individuals and legal entities that do not exceed these thresholds are eligible for STS status. The establishment of appropriate levels for these thresholds is a crucial design feature. A threshold that is set too high will undermine the regular tax system because too many agents will opt for the reduced rate of taxation in the STS; a threshold that is set too low will fail to achieve the goal of simplification for many small taxpayers, thereby imposing compliance costs on many for whom the intent was to make their tax calculations much less burdensome.

In Ukraine, it is widely believed by government officials that the thresholds have in fact been set far too high. For example, recall that for individuals (or physical persons) the number of employees can be as high as 10 (if their turnover does not exceed Hrv 500,000) or as high as 5 (if their turnover does not exceed Hrv 119,000; legal entities may have as many as 50 employees (if their turnover does not exceed Hrv 1,000,000). The turnover limits are also quite high, especially the Hrv 500,000 threshold for individuals, an amount roughly 20 times the average wage level of Hrv

25,000 in Ukraine. These are extremely high thresholds, especially for legal entities, and likely include viable and ongoing enterprises that are fully capable of being taxed under the regular tax regimes. There is little question that many entrepreneurs and, especially, legal entities are in the STS even though they likely keep detailed financial records and are fully capable of paying the regular income tax. There is also no connection between thresholds under the STS and those for the VAT. Businesses that are required to register under the VAT seem capable of paying the regular income tax.

A related issue is that there is no apparent mechanism by which taxpayers “graduate” to the regular tax system, except when they exceed the thresholds. In many countries, there is a limit on the number of years that a taxpayer can participate in a STS. However, there do not appear to be such graduation provisions in Ukraine.

Finally, any threshold must be revised periodically in light of changed economic circumstances (e.g., inflation, economic growth). However, the Ukraine thresholds have apparently not been adjusted since their enactment. (Of course, thresholds should first be rationalized before any subsequent adjustments are made.)

### 3.3. Targeting

Related to the thresholds in the STS is the targeting of the STS. Only entities that are genuinely “small” entities, with limited capacity to keep and maintain accounting records, should be eligible for the simplified tax system. However, the benefits of the STS in Ukraine can be enjoyed by individual entrepreneurs and businesses that have access to sophisticated financial record keeping. Such entities should clearly be taxed under the regular income tax system, but at present they remain eligible for the STS.

### 3.4. Complexity

Despite its name, the simplified tax system is in fact fairly complex, given the wide range of options that are presented to entrepreneurs and businesses. Recall that there are four components to the STS: the tax on physical persons, the tax on legal entities, the special trade patent, and the agriculture (of fixed) tax. Recall also that the tax on individuals is set by local councils, and varies by occupation and by location. Recall finally that legal entities that elect to register for the value-added tax face the standard compliance burdens associated with the VAT. Such complexity defeats the main purpose of any STS: to reduce the compliance costs on small-scale taxpayers.

### 3.5. Income Tax Collections

It is not possible to determine whether income tax revenues actually collected under the STS represent additional revenues (e.g., revenues that would not have been collected in the absence of the STS) or revenues that merely displace income taxes that would have been collected under the regular income tax regime. If the existence of the STS leads agents who would otherwise participate in the shadow economy (and so who would otherwise have not paid any income taxes) to opt for the STS, then their tax payments represent new, additional income tax revenues. Indeed, this possibility is one of the arguments in favor of a simplified system. However, if agents merely switch from the regular to the simplified tax system, then total income tax collections decline, even though revenues for the STS will be positive. It is not possible to know which of these effects is more important, although it seems more likely that the net impact of the STS on income tax revenues is negative.

### 3.6. Relation to Other Taxes

Even so, the impact of the STS on the revenues of other taxes is almost certainly negative. As noted earlier, legal entities under the STS are not liable for any of the payroll taxes, so that the STS has a significant negative impact on payroll tax collections. If legal entities opt not to register for the value-added tax – as most all firms choose to do – then VAT revenues will also be negatively affected by the STS. Even aside from this latter revenue impact, firms that opt out of the value-added tax break the chain of transactions in the VAT, thereby destroying for many enterprises the paper trail of invoices that is central to VAT enforcement.

### 3.7. Legal Eligibility for the STS and its Enforcement

As noted earlier, there are significant incentives for taxpayers to elect the STS rather than the regular tax system, even if they do not meet the legal qualifications. However, according to government officials, there is no verification that those taxpayers who elect to be taxed under the STS are in fact legally eligible for such participation. This suggests that the enormous increase in the number of STS participants has been generated by the illegal migration of taxpayers to the lower cost simplified tax system. Government officials believe that perhaps as many as 50 percent of all participants (individuals and firms) are fraudulently in the STS.

There are also apparently legal, though largely artificial, methods by which individuals can become eligible for STS participation. One tax avoidance scheme involves an individual changing his or her status from an “employee” (who is subject to income tax withholding by the employer) to an “individual entrepreneur” (who is taxed at the far lower rates under the STS). Relatedly, a business may pay fees for services to an individual who may be an employee of the firm but who changes his or

her status so as to register under the STS. Also, a business may pay fees for services to an individual registered under the STS, who in turn repays a portion of these fees to the business in a form that does not constitute taxable income for the business. The business deducts the fees, and the individual receiving the fees is not taxable on the (net) amount received.

### 3.8. Fairness

There is little doubt that the STS contributes to horizontal and vertical inequities in the tax system. Individuals and firms with equal “true” income are taxed very differently if one is subject to the regular tax system and the other is in the STS. Similarly, a high income individual in the STS may pay significantly lower taxes than someone with a much lower “true” income if the latter individual faces the full force of the regular income tax system. Employees subject to income tax withholding by their employer seem particularly likely to be treated unfairly relative to those in the STS because wage earners have little recourse other than to pay the regular individual income tax.<sup>6</sup>

## **4. Some Effects of the “System” of Taxes: A General Equilibrium Analysis**

As argued in section 3, the interaction of the regular individual income tax, the payroll taxes, and the simplified tax system has significant effects on incentives and, through these incentive effects, on a wide range of economic variables. To examine fully these economic effects requires a general equilibrium model. In this section we present a simple general equilibrium model, and we use this model to quantify many of the effects of this “system” of taxes.

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<sup>6</sup> Note, however, that these differences in income are likely to be capitalized into factor returns, as individuals move between differentially taxed sectors to equalize net-of-tax returns. This factor movement is discussed in section 4.

Consider a highly stylized economy in which there are three sectors, a sector in which labor (as well as capital) is subject to the full rates of payroll and income taxes, a sector that is for the most part legally exempt from taxation due either to explicit exemption from taxation or to the low effective rates of taxation under a STS, and a sector that is legally subject to full taxation but that illegally escapes all taxes because activities there are hard-to-tax (e.g., the shadow economy or an informal sector). If labor is mobile between these three sectors, then the imposition of payroll and income taxes in the taxed sector will cause labor to respond by moving to the untaxed sectors. This movement will affect the wage of labor, the return to other factors of production, and the prices of consumer products. It will also influence the allocative effects of the taxes and the revenues that are collected.

To be more precise, let a stylized economy be divided into three sectors: a fully taxed sector that produces output (denoted  $X$ ), a sector ( $Y$ ) that is legally exempt from (most) taxation, and a sector ( $Z$ ) that is legally subject to taxation but that illegally escapes taxation; for simplicity, assume that sector  $Y$  is legally exempt from all taxes. Demand for each output is a function of relative prices, and all agents (including government) are assumed for simplicity to have the same average and marginal propensity to consume each commodity (e.g., there is a single “representative” consumer). Each good is produced under competitive conditions with a production function that depends upon the amount of capital ( $K$ ) and labor ( $L$ ). Capital and labor are assumed to be fixed in supply to the entire economy; they are also assumed to be perfectly mobile among the three sectors. Because of perfect mobility, net factor returns must be equalized across sectors, where factor returns are assumed to be adjusted for the presence of any risk premia that may exist in the untaxed sectors. Since capital and labor in sectors  $Y$  and  $Z$  are assumed to be untaxed

due either to legal avoidance or illegal evasion, there are only two taxes: a tax on capital ( $T_K$ ) and a tax on labor ( $T_L$ ) in the taxed sector  $X$ ; the only other tax that might be imposed is a tax on consumption of  $X$ , a tax that is equivalent to an equal-rate tax on capital and labor in  $X$ . As discussed above, the taxation of labor (and capital) in only some uses creates an incentive for resources to flow from the taxed sector ( $X$ ) to the untaxed sectors ( $Y$  and  $Z$ ).

The full set of equations is available upon request, and these equations are calibrated with data that capture the main characteristics of the Ukraine economy, so that its numerical solution can then be used to examine the economic impacts of changes in tax rates. It is this computable general equilibrium model that forms the basis for much of the following analysis of the economic effects of the income, payroll, and simplified taxes.<sup>7</sup>

#### 4.1. Tax Base Erosion

It is widely suspected that the existence and structure of the income and payroll taxes (in combination with the STS) gives both an incentive and an opportunity for individuals to escape the payment of taxes. There are several avenues that are available to individuals. One avenue is to move from the formal sector to the

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<sup>7</sup> Some other relevant features of the computable general equilibrium model are as follows:

- the representative consumer maximizes a CES utility function that depends upon consumption of each of the three goods and upon labor supplied to each of the three sectors, with own- (compensated) elasticities of demand that are equal and with cross- (compensated) elasticities of demand that equal one another;
- the incomes of labor and capital are taxed in sector  $X$ , are untaxed in sector  $Y$ , and face the risky prospect of detection and fines in sector  $Z$ , with the expected penalties on labor and capital in sector  $Z$  equal to the product of the probability of detection and the tax-plus-penalty rate;
- the production function in each sector is a linearly homogeneous CES function;
- equilibrium imposes conditions of zero-profit, market clearance, and income balance.

The model is solved under a variety of assumptions about the magnitude of the (compensated) own elasticity of demand for sector  $X$  (0, -1/2, or -1), the elasticity of substitution between capital and labor in the three sectors (0, -1/2, or -1), the expected penalty on labor and capital in sector  $Z$  (0.34 and 0.4 on labor, 0.50 and 0.67 on capital), and the size of sector  $Z$  (e.g., 25 and 50 percent of the size of the combined sectors  $X+Y$ ), where sector  $X$  is assumed to be three times the size of sector  $Y$ . The equivalent variation is used as the measure of welfare change.

untaxed informal sector of the Ukraine economy.<sup>8</sup> Another avenue is outright evasion of the legally due tax liability; indeed, there is a widespread perception that compliance with the income and payroll taxes, especially by the self-employed, is very low. Still another, and legal, method of avoidance is for individuals to elect to be taxed under the STS. As discussed earlier, taxpayers who elect to be taxed under the STS are not required to pay the social insurance taxes.

Measuring the actual extent of this erosion via avoidance and evasion, and the associated revenue loss, is obviously quite difficult because there is little if any systematic information for Ukraine by which this notion can be tested. Ukraine government officials have suggested that the revenue loss due to evasion of the payroll programs themselves may be at least one-half of the actual collections from the programs, but this seems largely a guess, even if an informed one; officials make a similar estimate for the loss of IIT revenues. Econometric estimates of the revenue loss from evasion of all tax sources suggests that the revenue loss from both income and payroll taxation may be slightly more than one-third of potential revenues, an estimate that is still quite large but that is somewhat less than that suggested by Ukraine officials (Alm, Martinez-Vazquez, and Schneider 2004).

Our general equilibrium analysis suggests that taxes on the fully taxed formal sector ( $X$ ) reduce the size of the formal sector by somewhere between 5 and 12 percent, depending mainly upon the elasticity of demand for formal sector output, with most of the resources moving into the legally exempt sector ( $Y$ ). The resulting revenue loss also ranges from 5 to 12 percent.

These massive amounts of legal and illegal erosion compromise many dimensions of the fiscal system of Ukraine. Most obviously, base erosion leads to a

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<sup>8</sup> See Bird (1992) for an analysis of the impact of labor taxes on employment in the formal and informal sectors.

loss in revenues, thereby affecting taxes that compliant taxpayers face and public services that citizens receive. Erosion creates misallocations in resource use when individuals and firms alter their behavior to evade or avoid their taxes and contributions. Its presence requires that government expend resources to deter noncompliance, to detect its magnitude, and to penalize its practitioners, even though these government enforcement activities seem infrequent and ineffective in Ukraine. Erosion alters the vertical and horizontal equity of taxation in unpredictable ways. Individuals with the same “true” level of income may pay very different amounts in taxes if some avoid/evade and others do not; individuals with different levels of “true” income may pay similar amounts of taxes even though their abilities to pay may differ greatly; and unless tax evaders are caught, evaders pay fewer taxes than honest taxpayers. Tax base erosion may contribute to feelings of unfair treatment and disrespect for the law, creating a self-generating cycle that feeds upon itself and leads to even more evasion. All of these results represent costs to the fiscal system of Ukraine.

#### 4.2. Tax Incidence

In their entirety, the income and payroll taxes generate substantial revenues. Because these revenues must ultimately be paid by someone, they have a significant impact on the distribution of income; that is, who bears the burden of the taxes?

Economists have devoted much attention to the question of tax incidence.<sup>9</sup> Although there is wide agreement about the incidence of some taxes, such as excise or individual income taxes, the incidence of other taxes remains controversial. The crucial variable on payroll tax incidence is the degree of responsiveness of labor to a

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<sup>9</sup> For example, see Fullerton and Metcalf (2002).

change in its wage, or its elasticity of labor supply. If labor is fixed in supply to the taxable sector – or if its supply elasticity is zero – then labor will be unable to avoid bearing the full burden of the programs. Conversely, the more responsive is labor to a wage change, the more will the tax burden be shifted elsewhere.

Much, though not all, of the empirical work in developed countries concludes that labor supply is almost completely inelastic, so the standard conclusion in nearly all applied incidence studies is that labor bears the full burden of any payroll tax. However, estimates of the labor supply elasticity in transition and developing countries suggest that labor supply is not completely inelastic.<sup>10</sup> One possible channel of labor supply response is migration. Of greater importance in Ukraine is the fact that only labor in certain sectors of the economy is taxed: labor can largely escape the burden by moving to the untaxed or uncovered sectors, such as the informal sector or the self-employed sector. An important avenue of escape here is electing to be taxed under the simplified tax system, since taxpayers in the STS do not have to pay the payroll taxes. These avenues of escape suggest that labor may be able to shift some of the payroll burden to other groups, even though the precise magnitude of the shifting is unknown.

The general equilibrium model is used to examine the incidence of the taxes. Various numerical simulations of the model indicate that an increase in the tax rate on labor is shifted in part to capital (given that the taxed sector is assumed to be capital intensive) and in part to consumers of the taxed product (given that the labor tax increases the relative price of the taxed good). Even so, the main burden of any tax on labor (between 72 and 81 percent) is borne largely by labor in the form of a lower net-of-tax wage, which likely makes the overall burden of taxation regressive.

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<sup>10</sup> See Alm and Lopez-Castano (2005) for a comprehensive discussion of these studies.

### 4.3. Allocative Effects

The income and payroll taxes also affect the efficiency of resource use, or the excess burden of taxation. A widely used measure of welfare change is how much income consumers would require to achieve the same level of utility as in the simulation with a policy change (e.g., the *equivalent variation*). We use this measure of consumer welfare change to quantify the excess burden due to the avoidance and evasion of income and payroll taxes. In all cases, the existence of a hard-to-tax sector (e.g., the informal sector *Z*), in combination with a legally untaxed sector (e.g., sector *Y*, due to the STS) generates a large excess burden, somewhere between 5 and 16 percent of taxes and between 2 and 4 percent of formal sector output. These estimates are especially sensitive to the compensated elasticity of demand for the taxed good. They are also sensitive to the various elasticities of substitution in production.

### 4.4. Sectoral, Occupational, and Employment Effects

Closely related to the incidence and the allocative effects of the income and payroll taxes are their sectoral, occupational, and employment effects. The assumption that it is mainly workers in the formal sector of the Ukraine economy who bear the burden of the taxes does not allow for any shifting of the burden of taxes via adjustments in wages and other prices. As noted earlier, the existence of sectors to which resources may move to avoid the taxes means that these taxes drive a wedge between the returns to factors of production in the different sectors. If labor is mobile, then labor will respond to an increased tax in the formal sector by moving between the sectors until the net-of-tax return across the three sectors is equalized. This movement will affect the wages of labor in the three sectors, raising wages in the formal sector as labor flows from this sector and reducing wages in other two sectors

as labor moves into these sectors. There will also be an impact on the returns to other factors and on product prices, as well as an impact on the overall unemployment rate in the economy.

Fully identifying these impacts requires a more detailed general equilibrium model of the economy than the one outlined earlier, one that allows for unemployment and that distinguishes labor types. However, there is some related work for other countries. For example, Alm and Lopez-Castano (2005) use a general equilibrium model of Colombia, in which the economy is divided into four sectors (farming, urban/informal, urban/unskilled, and urban/skilled) and which is calibrated with data from the 1999 social accounting matrix for Colombia. They find that the high rates of labor taxation lead to an overall increase in the number of unemployed workers, but also to an increase in employment in the informal sector. They also find that maintaining the level of expenditures of the programs financed by the taxes but changing the method of their finance to alternative revenues sources (e.g., deficit finance, company taxation) increases overall employment and formal sector employment.

#### 4.5. The Revenue Effects of Payroll Rate Reductions

Of central issue in current discussions of Ukraine payroll programs is the potential effect of payroll tax rate reductions on tax revenues. There are several ways of examining this issue. The simplest approach makes use of a basic accounting identity, in which tax revenues  $R$  are equal to the product of the tax rate  $t$ , the number of individuals subject to the payroll taxes  $N(t)$ , and the value of the associated wage base  $W(t)$ , so that  $R = t \cdot N(t) \cdot W(t)$ . Both  $N(t)$  and  $W(t)$  are assumed to be functions of (among other things) the tax rate, to reflect the likelihood that changes in the tax

rate affect the payroll tax base. The proportional change in revenues is then simply  $\Delta R/R = \Delta t/t + \Delta N/N + \Delta W/W$ , so that the proportional change in revenues equals the sum of the proportional changes in the individual components. Recognizing that the number of individuals and the value of the wage base each depends upon the tax rate, the proportional change in revenues can also be written as  $\Delta R/R = \Delta t/t (1 + \varepsilon_{N,t} + \varepsilon_{W,t})$ , where  $\varepsilon_{N,t}$  is the elasticity of the number of taxpayers with respect to the tax rate and  $\varepsilon_{W,t}$  is the elasticity of the wage base with respect to the rate. Both elasticities will be negative in value because a reduction in tax rates will increase both  $N$  and  $W$ .

Now suppose that the payroll tax rates are reduced by, say, 50 percent. In the absence of any change in the tax base, payroll tax revenues would fall, also by 50 percent. However, conversations with numerous government officials suggest that both  $N(t)$  and  $W(t)$  will respond to the rate reductions. If each variable increased by, say, 25 percent (or an elasticity in each case of  $-1/2$ ), then overall revenues would be unchanged by the rate reduction. If the elasticities are greater than  $-1/2$  (in absolute value), then revenues would actually increase. More generally, if the sum of the absolute values of the two elasticities exceeds unity, then a rate reduction would increase tax revenues.

The relevant issue then becomes the magnitude of the elasticities. There is no information on these elasticities. However, evidence for other types of responses in other countries suggests that elasticities in excess of  $1/2$  (in absolute value) are extremely unlikely.

A slightly more complicated framework generates the same conclusion. Suppose that the equilibrium level of some tax base (e.g., the wages of workers subject to the labor taxes) depends upon the supply and the demand of this tax base. Then it is straightforward to show that the tax rate that maximizes the tax revenues

collected from this tax base is  $t_{Maximum} = (\varepsilon_S - \varepsilon_D)/(-\varepsilon_D (1 + \varepsilon_S))$ , where  $t_{Maximum}$  is the revenue-maximizing tax rate,  $\varepsilon_S$  is the elasticity of supply of the tax base, and  $\varepsilon_D$  is the elasticity of demand, where both elasticities are assumed to be constant, and where  $\varepsilon_S \geq 0$  and  $\varepsilon_D \leq 0$ . Again, the crucial issue for the impact of any tax rate reduction is the magnitude of the elasticities. It is only when the elasticity of demand for the tax base exceeds -1 (in absolute value) that there is any chance that a reduction in tax rates will increase revenues.

The general equilibrium model discussed earlier also gives the same conclusion. For reasonable values of the various elasticities, values that approximate estimates derived from empirical work on these behavioral responses, it is never the case that a decrease in the tax rate on labor increases tax revenues. The typical result is that a reduction in the labor tax rate generates some increase labor in the taxed sector, but that this increase in labor (and the corresponding increase in labor tax revenues) is not nearly sufficient to offset the loss in revenues from the rate reduction. Indeed, for plausible values of the parameters, a reduction of, say, 10 percent in the labor tax rate reduces tax revenues in most scenarios by 5 to 9 percent. It is only when the various elasticities (especially the elasticities of substitution between labor and capital in the various sectors and the elasticity of demand for sector  $X$ ) are extraordinarily high – and in excess of most all elasticities estimated from empirical work – that revenue simulations give the result that a reduction in the labor tax rate increases labor tax revenues. Recall also that the stylized model assumes that labor (as well as capital) is perfectly mobile across the taxed sector, the legally untaxed sector, and the evasion sector. When factor mobility becomes less than perfect, the possibility that a reduction in the tax rate increases tax revenues becomes even less

likely. The results from other general equilibrium analyses generate similar conclusions (e.g., Fullerton 1982; Alm and Lopez-Castano 2005).

## **5. Conclusions: Problems and Reform Options**

The current system of payroll taxes in Ukraine has some significant weaknesses. The tax rates of the payroll-based programs are somewhat high by international standards, especially the share of the total tax rate borne (statutorily) by the employer. There is much in the separate administration of the programs that is wasteful and duplicative. Many of the same functions are performed by the respective government agencies or ministries that administer the programs, but there seems to be virtually no coordination among these institutions. From the perspective of employers, there is also much that is costly and cumbersome to comply with in the payment of the taxes and contributions, due to the complexity of the separate programs, the duplicative nature of their administrations, and the burden on employers to collect nearly all revenues via employer source withholding. The programs create economic distortions, as individuals adjust their behavior to avoid or evade paying the taxes and contributions; an especially significant inefficiency arises from the intersectoral distortion. The bases of the programs have been substantially reduced by evasion. This has led to large, but largely unknown, revenue losses, perhaps as much as one-third to one-half of the revenues actually collected. The programs introduce substantial horizontal inequities, between individuals who work in the formal taxed sector and those who work in the untaxed sector, between taxpayers who are able to elect to be taxed under the simplified tax system (and so who are not subject to the payroll taxes), and between those who evade and those who do not. Finally, the programs introduce vertical inequities due to the somewhat regressive distribution of tax and contribution burdens.

Similarly, the individual income tax, together with the payroll taxes and simplified tax system, also has some serious limitations. The STS creates huge incentives for individuals to be taxed under the STS, even if they are not legally eligible for this tax treatment. The STS also distorts taxpayer decisions by giving them an incentive to fragment their operations in order to fall below the thresholds, and by discouraging taxpayers right at the thresholds from increasing either turnover or employment. This situation has productivity implications (e.g., losing economies of scale). The turnover and employee thresholds are extremely high, and the thresholds have not been adjusted to reflect the changing economic environment. The STS is not in fact all that simple. Its compliance burden on truly “small” taxpayers can be quite significant. The STS most likely has led to a loss in income tax revenues. It has also reduced collections from the payroll taxes and from the value-added tax, and it has reduced the self-enforcing capability of the VAT. There is apparently no government verification that individuals and businesses that participate in the STS actually meet the legal requirements. Finally, the STS introduces substantial horizontal and vertical inequities. Individuals who must pay the regular income tax via employer withholding seem especially likely to face a heavy tax burden.

Given these findings, there are several avenues of reform, which mainly involve steps to rationalize this now disjoint “system” of taxes, to integrate each payroll tax with the others (and with the individual income tax), to increase the collection efficiency and to decrease the administrative costs of the programs, to lessen the distorting effects of the high marginal tax rates, and to improve the horizontal and vertical equity of the entire system of labor taxation:

- Substitute a single unified payroll tax system for the four separate programs that currently exist, involving a single unified tax rate and a single collection agency.
- Reevaluate turnover thresholds of legal entities, so as to ensure that only “small” taxpayers are eligible for the STS. The threshold for legal entities should be linked directly to the VAT threshold (or Hrv 300,000).
- Reevaluate the threshold for individuals. This threshold should be set at 2-3 times the average annual wage in the country.
- Limit eligibility criteria of individuals allowed in the STS to avoid abuses. Professionals and consultants should be excluded.
- Adjust the thresholds for inflation and other changing economic circumstances.
- If legal entities are allowed to continue in the STS, remove the current payroll tax exemption. A firm that employs as many as 50 employees should be capable of withholding payroll contributions.
- Improve enforcement of the STS. There must be some official verification that individuals and firms who participate in the STS are in fact eligible for participation. There must also be an attempt to reduce purely artificial accounting schemes that allow STS participation.
- Increase the amount of administrative penalties (e.g., fines) for violations in both the STS and social insurance contributions.
- With any base expansion, consider a corresponding reduction in tax/contribution rates

More broadly, appropriate reforms require that the many ways in which these different methods of taxing individuals interact as a single system must be considered. In this regard, we believe that it is likely that many countries will have increasing difficulties imposing a broad-based, global income tax. Instead, the most suitable form of taxation is likely to be one characterized by a schedular approach to taxation of each separate member of the family unit, in which each of their main types of income flows (e.g., wages and salaries, dividends, interest, rent) is subject to separate rate schedules that may be but are not highly graduated. Such a less ambitious scope for taxation of individuals may well be better able to achieve the goals of equity, efficiency, and revenue adequacy.

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