

Flat Income Tax Reforms

Pablo Saavedra
with contributions from
Anton Marcincin and Juraj Valachy

A number of countries in Europe and Central Asia (ECA) have implemented so-called flat income tax reforms since the mid-1990s, with Estonia taking the lead in 1994.¹ These reforms vary significantly from country to country, and none of them represent a literal flat tax on all sources of income. Some countries have implemented a flat rate only on the personal income tax (PIT), others have complemented that with rate and exemption changes on the corporate income tax (CIT) but at a different rate level, and yet others have implemented a flat (or proportional) rate at the same level for the PIT and the CIT. The publicity stemming from this reform has led to similar proposals and debate in other ECA countries, including Poland, Slovenia, the Czech Republic, and Hungary. This chapter explores the experience of ECA countries in undertaking flat tax reforms and the effects of such reforms in three areas: (a) revenue collection, (b) tax structure, and (c) tax compliance.

The Flat Income Tax

A flat income tax can be defined as one that levies a flat rate (that is, a proportional rate) on all sources of income of individuals and businesses, but avoids double taxation. For the PIT, this reform provides

an alternative to the more common progressive schedule of rates, whereby higher income brackets are taxed at higher rates and a variety of exemptions and deductibles are available to reduce the tax liability. In the case of the CIT, a flat tax reform focuses on curtailing the loopholes and exemptions that this tax tends to build up over time and establish a single proportional rate for all kinds of businesses.² This reform typically affects many aspects of an economy, including revenue collection, tax compliance, administrative costs, economic efficiency, investment behavior and productivity, labor supply, and income distribution.

Proponents commonly put forward several arguments in favor of flat rate income tax reform, claiming that it

- reduces the complexity of the tax system and thus administrative costs;
- creates incentives—through lower and simpler rates and clearer rules—for accurate reporting of income and consequently higher compliance by taxpayers;
- lowers marginal tax burdens, creating incentives for investment and saving;
- reduces inefficiencies in the economy by avoiding double taxation and reducing tax-induced distortions in investment behavior (see box 8.1); and
- promotes labor force participation, including for individuals in higher income brackets that may also have higher skills.

For every argument there is a counterargument, however. Some claim that allowances and tax credits compromise the simplicity of such reforms and complicate their administration, offsetting the positive effect of flat rates. It is also clear that investment and savings behavior may depend on economic drivers that go well beyond this limited reform. Furthermore, the effects of taxes on labor markets are difficult to pin down, particularly given high rates of evasion and poor data quality. In addition, detractors point particularly to the negative effects that flat tax reforms are likely to have on equity, although this argument is also often contested (see boxes 8.1 and 8.3).

Flat Income Taxes in ECA

The transition agenda during the early 1990s focused primarily on macroeconomic stability and core structural reforms such as privatization. Detailed issues of tax design tended to be off the radar screen, but they began to gain attention in the mid-1990s when the Baltic

BOX 8.1**Efficiency and Equity Considerations of Flat Tax Reforms**

Both economic efficiency and income distributional effects are core concerns for policy makers. Moreover, equity and efficiency arguments may imply trade-offs in tax design. With regard to efficiency, income taxes are considered critically important in affecting individuals' or firms' decisions on investment, saving, and labor. The less a tax affects economic behavior, the better it is for efficiency. In theory, a flat rate across all types of income should have less of an effect on the investment and saving decisions of economic agents than a tax with highly differentiated rates on various types of income. A flat rate is also thought to minimize the practice of tax arbitrage—the shifting of tax liability from a higher-taxed to a lower-taxed category of income. It can be designed to avoid the double taxation of income, for example, once at the corporate level and a second time when dividends are received by shareholders, which not only raises the overall tax burden but can also distort investment financing options of firms. With regard to labor supply and its quality, low tax rates and less progressive tax structures may tend to increase the participation of highly skilled individuals, particularly if labor supply is highly elastic. However, proportional rates may negatively affect labor participation by low-income groups if mechanisms are not in place to exempt these individuals at least partially from the tax.

Flat taxes are often criticized, however, on equity grounds. Taxpayers with the same level of income (no matter the source) may bear the same tax burden (horizontal equity), but richer taxpayers—who have greater “ability to pay”—do not bear a heavier burden in proportional terms than poorer ones (vertical equity). However, the vertical equity of a flat tax system can be enhanced through the use of tax-free allowances, which remove the poorest from the tax net. Moreover, it can also be argued that vertical equity is enhanced by closing loopholes and removing exemptions, particularly because higher-income taxpayers (typically comprising more sophisticated taxpayers that perform tax planning) typically take more advantage of the loopholes in the system (and may thus pay less tax than lower-income taxpayers, even in progressive tax systems). Moreover, equity needs to be analyzed from a broader fiscal perspective because the public expenditures financed through the tax system can be highly progressive, making the public budget an instrument of redistribution overall.

Source: Author.

countries—led by Estonia in 1994 and soon followed by Lithuania (1994) and Latvia (1995)—implemented flat rates on income taxes. Attention waned once again during the Russian and Asian crises of the late 1990s, but the reform captured worldwide attention with the Russian Federation's implementation of a flat rate on personal income in 2001. Other ECA countries followed, most prominently the Slovak Republic and Ukraine in 2004 and Georgia and Romania in 2005. The

flat tax reform has gained increasing attention among scholars and policy makers around the world, as countries in Eastern Europe and the Caucasus have moved to implement different variants of this reform (figure 8.1).

None of the variants in ECA is a “flat tax” in its most theoretical shape, however. The reforms in ECA countries have focused on flat (or proportional) rates for the PIT and a flat rate on the CIT, although some countries (such as Ukraine and Russia) have not aligned their PIT and CIT rates at the same level, and some have focused only on the former and not the latter. Moreover, the reforms have often introduced tax-free allowances or special deductions for certain categories of individuals.

The flat tax rates applied to the PIT and CIT vary significantly across countries that have undertaken these reforms. The lowest rate for the PIT is 12 percent in Georgia, followed closely by Ukraine with 13 percent.³ On the other end are the Baltic countries: Lithuania introduced a rate of 33 percent, Latvia a rate of 25 percent, and Estonia a rate of 26 percent. Russia has the highest CIT rate, with a combined rate up to 35 percent.⁴ Other countries with high CIT rate are Ukraine and,

FIGURE 8.1
Flat Tax Reforms in ECA



Source: World Bank Staff; map provided by the World Bank's Map Design Unit.

again, the Baltic countries (see table 8.1). Four out of the nine countries that implemented variations of this reform—Estonia, Romania, Serbia and Montenegro, and the Slovak Republic—have a flat rate at the same level for the PIT and the CIT. The other five— Georgia, Latvia, Lithuania, Russia, and Ukraine—have different rates for these two taxes.⁵

The large differences in rates from country to country may reflect in part the timing of the reform. The Baltic countries implemented this reform in a time of tight fiscal constraints in the mid-1990s, and the danger of having an unmanageable drop in revenues pushed the governments toward higher rates. The other countries, particularly the latecomers that implemented the reforms from 2004 onward, enjoyed more buoyant growth rates in their economies and better fiscal balances at the time of implementation.

Differences in rates selected during reforms also reflect the pre-reform rate schedules, revenues collected from each bracket, and overall effective tax rates. Comparing the rates selected by each country with its own former progressive rate schedule is helpful in understanding the intended goals of policy makers. In addition, looking at the former rate schedules helps to visualize the potential gains in simplicity that arise from a flat rate, particularly with the PIT (see table

TABLE 8.1
Personal Income and Corporate Income Tax Rates, by Country

Country	Personal income tax rate	Year of personal income tax reform	Current corporate income tax rate (%)	Future rate change plans
Estonia	23	1994	23 (26)	Government plans to reduce personal and corporate income tax rates to 20% by 2009. The corporate rate was recently reduced from 26% to the current 23%.
Lithuania	27	1994	15	The personal income tax rate was reduced from 33% to 27% in 2006, and a further reduction to 24% is expected for 2008.
Latvia	25	1995	15	The corporate rate was lowered from 19% to the current 15% in 2003.
Russian Federation	13	2001	30 (35)	The post-reform rate was not strictly a single rate tax. Some types of income were taxed through both personal income taxes and a unified social tax.
Serbia	14	2003	14	There are discussions about further decreasing this rate.
Ukraine	15	2004	25	Ukraine increased the personal rate from 13% to 15% in 2007. There are plan to reduce the corporate rate gradually starting in 2009.
Slovak Republic	19	2004	19	n.a.
Georgia	12	2005	20	n.a.
Romania	16	2005	16	n.a.

Sources: World Bank country reports; IMF staff reports.

Note: n.a. = Not applicable.

8.2), as discussed further below. However, in selecting rates, policy makers have tended to overlook existing payroll taxes, which share a significant portion of their base with the PIT. This disjointed rate policy and the problems it may generate are discussed further below (see also chapter 9).

A key feature of flat rate income tax reforms in ECA countries is the existence of allowances and deductibles, which is a departure from the pure form of a flat income tax. The simplest way to set an allowance is to establish a threshold below which income is free of tax regardless of any characteristics of the taxpayer. However, as with rates, allowances and deductibles vary significantly across countries in ECA that have implemented the reform.

The level of allowances increased in most countries with the move to flat tax structures, but to different degrees. In the Slovak Republic, for example, the level of allowances almost doubled in real terms, and new tax credits were introduced to enhance progressivity (see table 8.3 and box 8.2). Ukraine also increased the level of allowances significantly but narrowed their focus. Previously the allowance was granted independent of any individual characteristics,⁶ but after the reform it could only be claimed for the education expenses of

TABLE 8.2
Rates and Rates Schedule Before and After Reform

Country	Flat personal income tax rate for the year after the reform	Schedule of rates (by income bracket) before the reform, or top rate
Georgia	12	Up to GEL 200 = 12% GEL 201 to 350 = GEL 24 + 15% of the amount in excess of GEL 200 GEL 351 to 600 = GEL 46.5 + 17% of the amount in excess of GEL 350 Over GEL 600 = GEL 89 + 20% of the amount in excess of GEL 600 The presumptive tax varies from GEL 10 to GEL 150 monthly based on the type of activity and the size of the population where the enterprise is located.
Russian Federation	13	Below 3,168 rubles: 0% 3,168 to 50,000: 12% 50,000 to 150,000: 20% Above 150,000: 30%
Slovak Republic	19	Income range, rate on the rate + fixed amount Sk 0–Sk 90,000: 10% + Sk 0 Sk 90–Sk 180,000: 20% + Sk 9,000 Sk 180,000–Sk 396,000: 28% + Sk 27,000 Sk 396,000–Sk 564,000: 35% + Sk 87,480 Sk 564,000 and more: 38% + Sk 146,280
Estonia	26	Top personal income tax rate in 1993: 33%
Latvia	25	Regressive schedule starting at 25%
Ukraine	13	Top tax rate 40% (see Section D) [[AU: Section D of what?]]
Romania	16	Progressive tax from 18% to top rate of 40%

Sources: World Bank various country reports; Ivanova, Keen, and Klemm (2005) for Russia; IMF staff reports; World Bank World Tax Database.

Note: 1.78 Georgian GEL = US\$ 1; 27.20 Russian rubles = US\$ 1; 129.69 Slovak Sk = US\$1; all average exchange rates for 2006.

TABLE 8.3

Personal Income Tax Allowances and Credits Before and After Reform in the Slovak Republic, 2003 and 2004

Allowances and credits	2003 (before reform)	2004 (after reform)
<i>Allowances</i>		
Taxpayer	Sk 38,760 (Sk 48,000 if handicapped)	Sk 80,832
Spouse	Sk 12,000 if had no income	Sk 80,832 minus spouse's income
Old age pensioners	Sk 0 (Sk 8,400 if partially disabled; Sk 16,800 if disabled)	Sk 0
Dependent child	Sk 16,800 (Sk 22,800 if handicapped)	Sk 0
<i>Tax credits</i>		
Dependent child	Sk 0	Sk 4,800 only if parent's annual gross income exceeds 6 times minimum wage (minimum wage is Sk 36,480)

Source: Ministry of Finance, Slovak Republic.

Note: 29.69 Sk = US\$1. (average exchange rate for 2006).

dependent children (although this has become more complicated since the reform with added allowances. Overall, countries that have set higher proportional rates for the PIT have also tended to be more generous with allowances. At the other extreme, Georgia eliminated allowances completely, which went hand in hand with a very low flat rate of 12 percent.

Revenue Effects of Flat Tax Reforms

Although the behavior of tax revenues varied across countries after the implementation of reforms, on average the reforms do not appear in and of themselves to have had a significant impact on revenues, whether positive or negative (see annex 8A, which presents a cross-country empirical analysis of this reform). This is line with findings for other countries where the reform itself seems to have had little to do with revenue mobilization performance (see box 8.3 on the evaluation of Russia's flat tax reform performed by Ivanova et al. [2005]). In addition to other variables in the country's economy, a variety of design variables affect revenue outcomes, including the rates and allowances established. Figure 8.2 shows how collections in personal and corporate income taxes evolved in the first two years after reforms in selected countries.

Changes in revenue collection reflect in part the goals pursued by policy makers with the reforms. In most cases, policy makers did not want revenues to decline dramatically, and thus rates and allowances were selected in some countries to have a neutral revenue effect and in others to allow a manageable drop in collections as a way to

BOX 8.2**The Distributional Impact of Tax and Social Benefit Reforms in the Slovak Republic**

Since 2002, the Slovak Republic has implemented an extensive package of social and structural reforms driven by an increased emphasis on employment and competitiveness. Before the reforms, the Slovak Republic had an effective but fiscally unsustainable safety net, with a high tax wedge that created barriers to job creation and discouraged individuals with low earning potential from actively seeking employment. To address these problems, the government simultaneously reformed its tax and transfer systems in 2004, introducing a flat PIT at 19 percent (reduced from previous rates of 10–38 percent) and reducing its average transfers by 16 percent. The reduction of the PIT rate was accompanied by a substantial increase in deductions and tax credits to reduce the tax burden for households with lower incomes and higher numbers of dependent children.

A recent World Bank report examined the distributional and poverty impacts of the combined tax and social transfer reforms. The study found that the combined effect of the reforms of the tax and benefits regime was to increase the disposable income of the majority of households that were entitled to benefits. The only households that suffered a decline in disposable income were those with three or more children in which all of the adults were unemployed and thus entitled to a higher schedule of benefits before the reform, and even then the maximum potential loss was limited.

The fact that the combined overall effect on poverty was positive despite a 16 percent reduction in transfers means that the effect of the PIT reform itself was highly positive. Indeed, without the benefit reduction the tax reform would have reduced poverty by as much as 17 percent. The Slovak tax system became more progressive after 2004, and the poorest households benefited most from the tax reform. This shows that it is possible to increase the progressivity of the tax system by introducing a flat tax rate with a simultaneous change in the structure of deductible items and tax credits.

Source: World Bank 2005c.

reduce overall and marginal tax burdens. In 1994 Lithuania introduced a proportional rate of 33 percent—the highest marginal PIT rate in the country's rate schedule before the reform—and revenues actually went up as a result (Keen, Kim, and Varsano 2006). Russia also set its flat rate to avoid significant revenue losses in the short term. Close to 90 percent of Russian taxpayers had been in tax brackets with rates below the flat rate established by the reform in 2001, and about 60 percent of PIT collections had come from the 12 percent rate bracket.⁷

BOX 8.3**Russia's Flat Tax Reform**

In 2001, Russia unified its progressive marginal rates for the PIT, from the previous 12, 20, and 30 percent rates to a single rate of 13 percent. In the following year, revenue from the PIT increased by 46 percent (about 26 percent in real terms) and by one-fifth relative to GDP. This successful revenue performance attracted much attention and triggered emulation of the reform in Eastern Europe. In 2005, Ivanova, Keen and Klemm used individual and household-level panel data from the Russian Longitudinal Monitoring Survey to examine the impact of Russia's tax reform on tax revenue and compliance.

This study drew several important lessons applicable to other countries considering adopting similar reforms. The authors found that the reform itself did not drive the growth of PIT revenues. In fact, PIT payments, as well as the combination of PIT and social insurance payments, fell for all groups except those initially paying at low tax rates and basically unaffected by the reform. Rather, they found that lower tax rates increased compliance and improved the reporting of income. Compliance for the individuals who benefited most from the reform (higher-income taxpayers) increased by 18 percentage points (from 52 percent to 70 percent), while it remained unchanged for the individuals who were unaffected by the rate change (lower-income individuals whose taxes before the reform were levied at rates below the flat rate established by the reform).

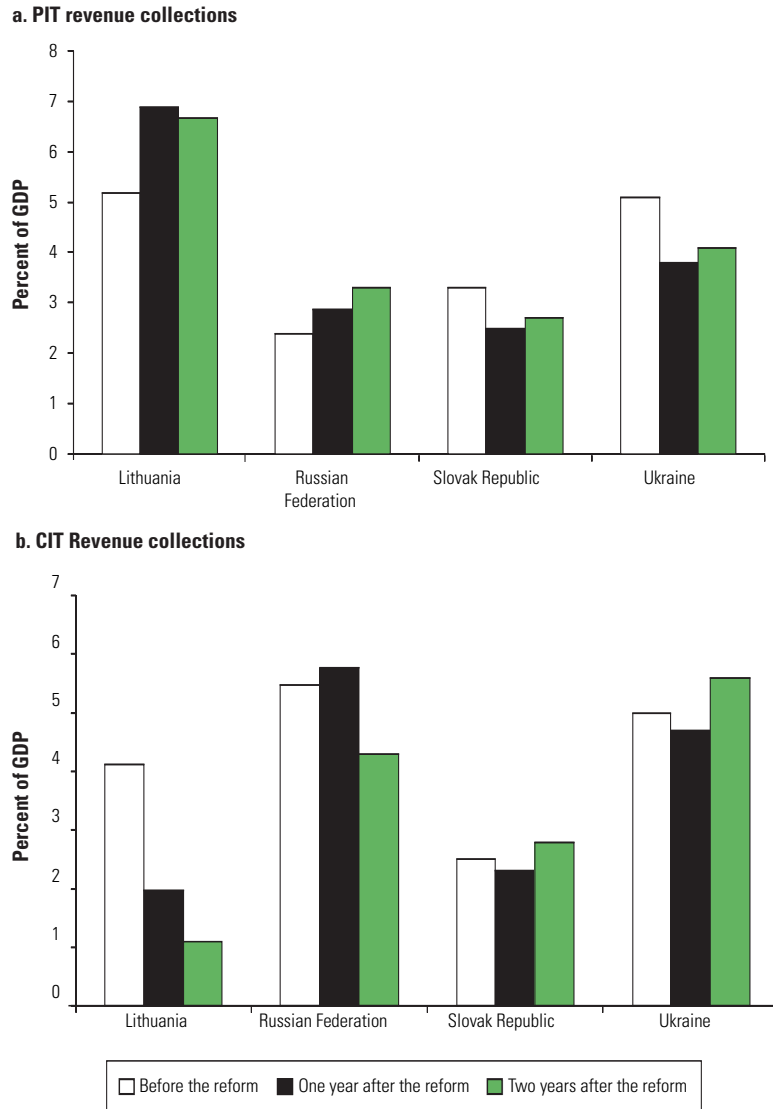
This study concludes that Russia's tax reform did not "pay for itself" because tax payments by most income groups actually fell. The authors attribute the postreform increase in PIT revenue to improved compliance and conclude that, although the improvement in compliance could be credited to the flat tax reform, it might also reflect the impact of strengthened tax administration undertaken about the same time. Other developments unrelated to the tax reform, including real wage growth, strong energy prices, and wider structural reforms, also played a role.

Source: Ivanova, Keen, Klemm 2005.

One of the Slovak Republic's goals with its reform was to reduce the overall tax burden and the high marginal income tax rates, but in a fiscally prudent way. In the first year of implementation, PIT revenues dropped by 0.8 percent of GDP (table 8.4). However, the overall number of returns increased, including for the self-employed, leading to a small increase in PIT revenues in 2005.

CIT collections before the reform stood at 2.5 percent of GDP. CIT collections dropped to 2.3 percent of GDP in 2004, the first year of the reform, but soared to above the prereform level in 2005. This turnaround occurred despite a reduction in the CIT rate from 25 to 19 percent, a reduction in the tax on capital gains from 36.3 to 19.0

FIGURE 8.2
Changes in PIT and CIT Revenue Collection in Selected Countries



Source: World Bank; Bank staff calculations.

percent, and the elimination of the tax on dividends (formerly taxed at 15 percent). A key reason for the revenue increase was the expansion in the tax base resulting from the elimination of exemptions. The Slovak Republic went further than most other countries in closing tax loopholes (box 8.4) as it reduced tax rates.

TABLE 8.4
Tax Collections in the Slovak Republic, 1993–2005

Indicator	1993–99	2000	2001	2002	2003	2004	2005
Total personal income							
tax revenues (Sk million)	---	31,839	34,623	37,115	39,594	33,379	39,805
% of GDP	3.7	3.4	3.4	3.3	3.3	2.5	2.7
% of general government	16.4	16.9	19.2	18.0	18.2	14.6	14.6
Total corporate income							
tax revenues (Sk million)	26,351	21,728	29,760	30,639	31,265	41,463	
% of GDP	4.6	2.8	2.1	2.7	2.5	2.3	2.8

Source: Act on Income Tax No. 595/2003 and 366/1999.

Note: 29.69 Sk = US\$1. (average exchange rate for 2006).

Ukraine also wanted to reduce high marginal tax rates, acknowledging that revenues might fall in the short term. Fiscal authorities expected that PIT revenues would drop by about 0.5 percent of GDP during the first year of the reform (2004) but would fully recover in 2005. PIT revenues actually fell by 1.3 percent of GDP in the first year, significantly more than anticipated. Revenues recovered in 2005 to 4.1 percent of GDP, but remained below the prereform level by 1 percentage point of GDP (see figure 8.3). CIT revenues remained at almost the same level during the first year and grew further in 2005, despite the rate reduction from 30 to 25 percent in 2004. As in the Slovak Republic, the drop in the CIT rate was offset by closed loopholes. Overall tax revenues dropped from 30.6 to 29.2 percent of GDP and then surged to 35 percent of GDP in 2005. This surge was driven by buoyant collections of the value added tax (VAT) (which explains 66 percent of the surge), the recovery of PIT and CIT, and increases on labor taxes (primarily resulting from real wage growth).

Changes in Tax Structure

In both Ukraine and the Slovak Republic, the flat tax reforms led to a shift toward greater reliance on indirect taxes. However, the reasons were different in the two countries. In Ukraine, the balance between direct and indirect taxes changed only slightly in the first year of reform, because the drop in PIT and CIT collections was partly compensated for by a small increase in payroll taxes. The change in the tax structure was more prominent in 2005 because of increasing revenues from the VAT. In the Slovak Republic, a marked shift from direct to indirect taxation occurred in the first year of the reform and

BOX 8.4**PIT and CIT Loopholes Closed in the Slovak Tax Reform**

The following special treatments, applying to both the PIT and the CIT base, were abolished:

- Income of taxpayers in farming, forestry, and water management
- Income from yields on government bonds and securities denominated in foreign currency, and from yields from mortgage debentures
- International grants
- Operational revenues of small-scale power plants and environmentally friendly equipment

In the CIT, several tax exemptions and concessions were abolished:

- Tax exemptions of income from business activities of colleges, high schools, primary schools, and educational establishments
- Tax concessions on selected research and development activities
- Tax concessions for creating jobs for partially disabled persons (Sk 10,000 for each) and for severely disabled persons (Sk 24,000) when the enterprise was not subject to a reduced CIT rate

In the PIT, the following exemptions were abolished:

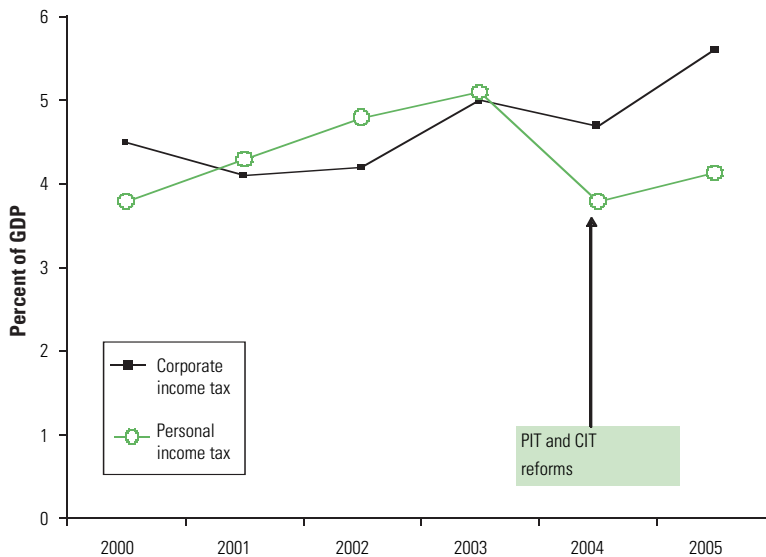
- Supplementary pension insurance paid by the employer
- Several allowances (total allowances reduced from six to three)
- 10 percent tax rate on use of the Social Fund
- Revenues from sale of securities (previously exempt if three years between purchase and sale, or if annual revenues did not exceed Sk 50,000)
- Income of members of military missions working abroad and paid in foreign currency
- Income paid by health care institutions to blood and biological materials donors
- Earned interest on deposits in construction saving societies, and on state aid

Source: Ministry of Finance, Slovak Republic.

Note: Average exchange rate in 2006 was US\$1 = 29.69 Sk.

accelerated further in 2005 (see figure 8.4). The overall tax burden went down, but the burden of direct taxes proportionally more. Such a shift in tax structure was an explicit policy goal, and the Slovaks increased the rates of indirect taxes—the VAT and excises taxes—to protect against revenue declines from the move to a flat income tax. Cross-country regression results also confirm that the reform brings a change in tax structure through a shift away from direct taxes toward indirect taxes (annex 8A)

FIGURE 8.3
Tax Collections in Ukraine, 2000–05



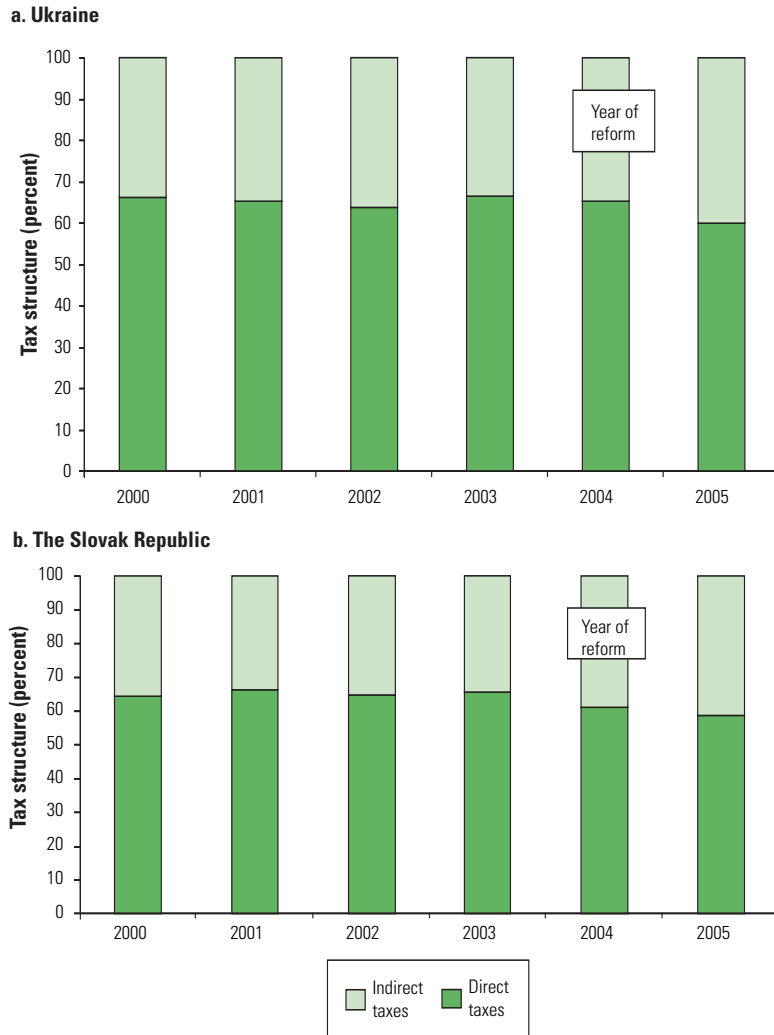
Sources: Ministry of Finance, Ukraine; Bank staff calculations.

Simplicity and Compliance

Improved simplicity and compliance are two main selling points of flat rate income taxes. Results from cross-country analysis suggest that compliance seems to be affected positively by the reform when CIT and PIT have the same flat rate (annex 8A). The extent to which flat rates simplify the system depends in part on other features of the reform, including changes in deductibles and allowances. In the Slovak Republic, both the definition of the tax base and the tax rate structure were simplified significantly for individuals and legal entities, and the increased simplicity was acknowledged as very positive by both local taxpayers and foreign investors. The fact that the number of self-employed tax returns increased by 14.6 percent in the first year of the reform is further evidence of increased simplicity and compliance (table 8.5).

Ukraine had a progressive tax rate structure before the reform (see table 8.6). The brackets were adjusted for inflation once a year in each annual budget law on an ad hoc basis, and even the rates applied to each bracket were subject to change. This produced an unstable environment for taxpayers. Greater simplicity and certainty were two

FIGURE 8.4
Changes in Tax Structures in Ukraine and the Slovak Republic



Sources: Ministry of Finance, Ukraine; Ministry of Finance, the Slovak Republic; Bank staff calculations.

of the successes of the reform in Ukraine. Despite some added complexity in the verification process for claimed allowances,⁸ the reform brought about lower PIT compliance costs for taxpayers and their employers. Before the reform, an individual had to fill out an independent declaration in every workplace and for every additional source of independent income, and the taxpayer had to add up all income on a separate form and send all of the forms together to the

TABLE 8.5

Increase in Number of Personal Income Tax Returns after Reform in the Slovak Republic

	2000	2001	2002	2003	2004
Number of tax returns, self-employed	375,235	383,788	375,399	389,453	446,206
Year-over-year change, percent	--	2.3	-2.2	3.7	14.6

Sources: Ministry of Finance of Slovak Republic, Tax Office of Slovak Republic, Bank Staff calculations.

TABLE 8.6

Ukraine Personal Income Tax Rates and Income Brackets Before and After Reform, 2003 and 2004

Tax rate before reform (2003)		Tax rate after reform (2004)
		19 percent
<i>Income range</i>	<i>Tax rate + fixed amount</i>	
Sk 0–Sk 90,000	10 percent + Sk 0	
Sk 90–Sk 180,000	20 percent + Sk 9,000	
Sk 180,000–Sk 396,000	28 percent + Sk 27,000	
Sk 396,000–Sk 564,000	35 percent + Sk 87,480	
Sk 564,000 and more	38 percent + Sk 146,280	

Note: 29.69 Sk = US\$1. (average exchange rate for 2006).

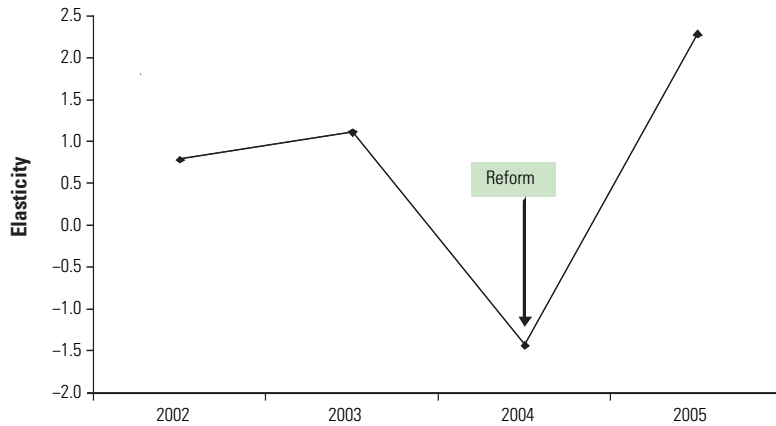
State Tax Service to determine tax liability. The rate assigned to each taxpayer had to be updated annually in all of the taxpayer's workplaces for the calculation of tax withholding. Following the reform, only one form is needed to determine tax liability, and income taxes can be withheld at source at the single rate. The benefits of increased simplicity can hardly be overstated, particularly given Ukraine's very poor international ranking on compliance costs (World Bank 2006c).

A quick analysis shows that growth in PIT and CIT collections in the Slovak Republic in 2005 (the second year of the reform) was driven by factors beyond growth in wages and GDP, respectively. Figure 8.5 shows changes in nominal PIT collections with respect to changes in nominal wages in the economy and changes in nominal CIT collections with respect to nominal GDP growth (at factor prices). These elasticities⁹ are calculated for the year before the reform, 2004 (the first year of the reform), and 2005. Elasticity (ϵ_t) greater than one indicates that PIT (or CIT) revenues grew faster than the tax base in period t , while elasticity ϵ_t less than one indicates the opposite. Elasticities above one signal, even if rudimentarily, some improvement in compliance in the absence of policy changes (that is, changes in tax base or rate, or both). Because policy changes did occur with the reform in 2004, the elasticities for 2004 do not reveal much about compliance. However, the elasticities for 2005 (the second year of the reform) are good indicators because no sig-

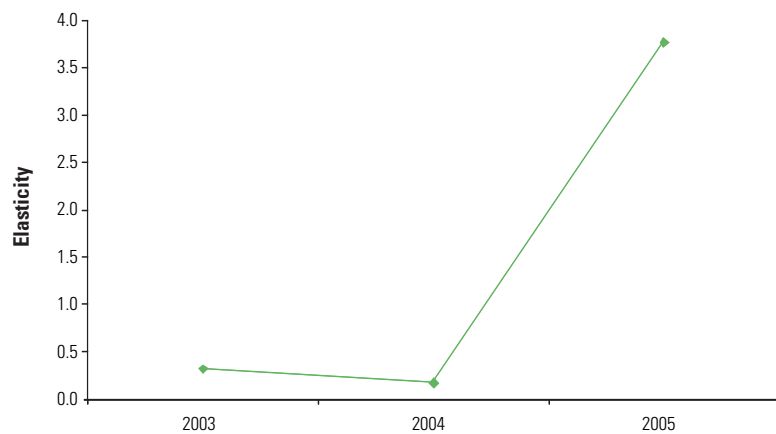
FIGURE 8.5

Slovak PIT and CIT Revenue Elasticities, 2002–05

a. PIT revenue elasticity to wages



b. CIT revenue elasticity to income



Sources: Ministry of Finance, the Slovak Republic; Bank staff calculations.

Note: PIT revenue elasticity to wages is calculated as $\epsilon_t = (\% \Delta \text{PIT collection}) / (\% \Delta \text{TaxBase}(\text{wages}))$.

Note: CIT revenue elasticity to income is calculated as $\epsilon_t = (\% \Delta \text{CIT collection}) / (\% \Delta \text{TaxBase}(\text{GDP}_p))$.

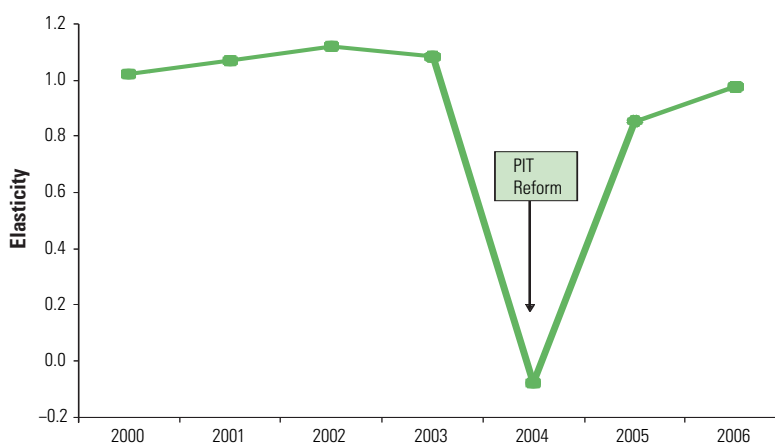
nificant change in rate or base took place that year. In fact, the elasticities for both PIT and CIT for 2005 are well above one, signaling that collection increases in that year were driven by factors beyond wage growth in the economy (for the PIT) and GDP growth (for the CIT)—most likely higher compliance.

Improvements in compliance are not as evident in Ukraine. The PIT reform was undertaken partly with the hope of providing an adequate incentive for taxpayers and their employers to report income

accurately and thus to improve compliance and revenues for the government. Even though the government anticipated a drop in collections in 2004, it expected to reach prereform collection levels in 2005 and continue to expand revenues over the medium term. However, two years after the reform, PIT revenues were close to prereform levels. Figure 8.6 shows changes in nominal PIT collections in Ukraine with respect to changes in nominal wages in the economy. Lower rates in 2004 led to falling PIT collections, which explains the downward line in 2004. Collections recovered in 2005 and 2006 (projected), but the elasticities for these two latter years were still below one, suggesting that wage growth was driving the revenue increases rather than improvements in compliance.¹⁰

Several factors have inhibited improvements in compliance in the PIT in both the Slovak Republic and Ukraine. First, the high consolidated rates of payroll taxes (see chapter 9)¹¹ discourage PIT reporting because both taxes share almost the same base (in both the Slovak Republic and Ukraine). The link between payroll taxes (contributions) and pension benefits is weak, almost nonexistent in Ukraine, which also diminishes the incentives to report income accurately. Employers and employees may enter into collusion to set the “take-home pay” for the employee, which is composed of a registered

FIGURE 8.6
Ukraine PIT Revenue Elasticity with Respect to Wages, 2000–06



Sources: Ministry of Finance, Ukraine; Bank staff calculations. Data for 2006 are Bank staff estimates based on January–September performance.

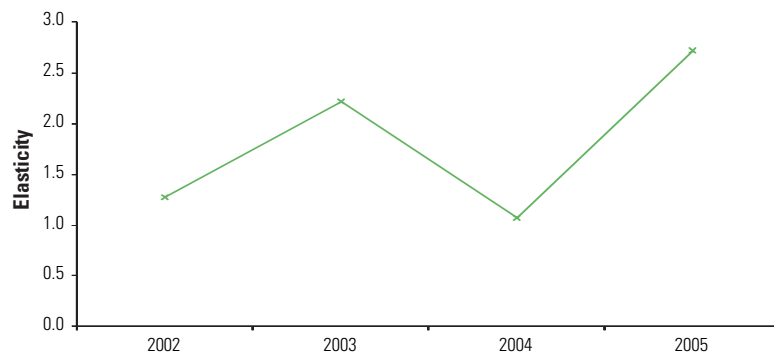
Note: PIT revenue elasticity to wages is calculated as $\epsilon_t = (\% \Delta \text{PIT collection}) / (\% \Delta \text{Tax Base}(\text{wages}))$.

amount that appears in the books to establish tax liability and a portion that is paid in cash and is not registered in the books. This practice is particularly common in countries in the Commonwealth of Independent States, and the key driver in these agreements is the high rate of payroll taxes (see chapter 9). Moreover, tax liability under the Simplified Tax System¹² in place in Ukraine is considerably lower than the rate for the PIT (and CIT) or for payroll taxes. Thus, taxpayers have been migrating to this system through evasion and avoidance schemes, thereby undermining the bases of all major taxes, including the PIT and the CIT.

The CIT in Ukraine, however, has shown good performance that can be attributed to improved compliance. Figure 8.7 shows elasticities of CIT collections with respect to GDP (at factor prices) in the pre-reform and postreform periods. After the drop in elasticity in 2004 (a consequence of the rate change), the elasticity in the second year (2005) rises to a level well above that before the reform. The behavior of these elasticities indicates that collections are driven by factors other than growth in the tax—presumably improvements in compliance. However, this result may also be influenced by the continued growth in foreign direct investment that began before the reform.

Tax administrations do not appear to have contributed to better compliance after the reform in either Ukraine or the Slovak Republic. In Ukraine, the revenue authorities (both the State Tax Administration [STA] and the four social insurance funds) have followed a slow

FIGURE 8.7
Ukraine CIT Revenue Elasticity with Respect to GDP, 2002–05



Sources: Ministry of Finance, Ukraine; Bank staff calculations.

Note: CIT revenue elasticity to income is calculated as $\epsilon_t = (\% \Delta CIT_{collection}) / (\% \Delta TaxBase(GDP_{tp}))$.

pace in their modernization. Despite increases in revenues over two years since reform, the STA continues to impose high compliance costs and is weak in core areas such as taxpayer registration, compliance monitoring, and audit. Additionally, the collection of PIT and payroll taxes by the STA and the four different social insurance funds, respectively, is poorly coordinated. The Slovak STA also imposes high compliance costs on taxpayers according to international comparisons. The recent World Bank Doing Business Survey (World Bank 2006c) ranks both Ukraine and the Slovak Republic near the bottom on this issue—lower than any other EU-8 country except Hungary). A proposal to consolidate and strengthen tax administration was put forward with the tax reform, but political resistance was strong and consolidation never took place.

A positive aspect of the Slovak Republic's reform was the communication campaign. This campaign was geared to counter political opposition and address public concerns, and it may have helped encourage compliance as well. From an early stage, the government team in charge of the reform involved a variety of stakeholders, including private sector representatives, nongovernmental organizations, and academics, in discussions to create a consensus on the objectives and, later, on specific features of the reform. The government was very transparent and allowed several think tanks to participate in the process of estimating the fiscal impact of the reform and to present their results in jointly organized seminars and conferences. Journalists and the general public had ready access to relevant information, including through a specially designed Web site. Communication through the mass media was constant and helped to create support in the general population and the business community.

Conclusions

Flat tax reforms have been widespread in ECA and in general appear to have had positive effects on simplicity and compliance. They have not as a rule led to either revenue collapse or revenue surges. Rather, the revenue impacts have generally depended on the goals of the reform and design features of the tax, such as the tax rates selected. If collections dropped more than expected during the first year of the reform, they typically improved thereafter, reflecting either growth in tax bases or improved compliance (or both). Several countries with a high tax burden on the economy aimed the reform at reducing the burden of direct taxes (as well as the overall tax burden), and in such cases manageable reductions in real collections may even have had

positive implications for competitiveness and growth in the economy. A shift away from direct toward indirect taxes was noticeable in most cases analyzed. In some countries, such as the Slovak Republic, this was a conscious policy decision and is likely to have a positive influence on economic growth (as discussed in chapter 3).

The experiences with flat income tax reforms in ECA point to several lessons. First, the key objectives of the reform should be clearly articulated before turning to specific design issues. In the rush to implement the apparently successful reforms of other countries, governments may overlook their core objectives. There are different objectives for this type of reform, such as improving compliance, broadening the tax base, bringing simplicity to the system, mobilizing higher or lower revenue, reducing the tax burden in the country, and shifting the tax burden from direct to indirect taxation; some of these objectives run counter to each other. Clear objectives should drive design features, such as rates, allowances, tax credits, and the like, as well as other parallel reforms needed.

Second, if revenue neutrality is one of the goals of the reform, tax policy in other areas may need to be adjusted as a safeguard against some drop in revenues in the PIT and CIT. If, in parallel, another goal is to shift the burden away from direct taxes and toward indirect taxes, tax policy and administration for the VAT and excises should be strengthened before or in tandem with a flat income tax reform.

Third, a comprehensive curtailment of income tax loopholes and ad hoc exemptions is essential to expand tax bases and prevent undue revenue loss with flat income tax reforms. Countries that closed loopholes and reduced exemptions had greater success with simplification, compliance, and revenue collection.

Fourth, success in expanding the PIT tax base and improving PIT compliance depends in part on complementary reforms in social insurance and contributions. Payroll taxes have almost the same base as the PIT in most countries in ECA, and high marginal rates of payroll taxes (social insurance contributions) can be a major obstacle to improved PIT compliance after the reform.

Fifth, modernization of tax administration is a key complementary institutional reform. Simultaneous reforms in tax administration will complement policy changes in helping to achieve the goals of the reform (whatever they may be) with fewer fiscal risks.

Sixth, allowances are critical to the achievement of equity goals. Allowances have proven to be an important safety net for lower-income taxpayers and have enhanced the equity of flat tax reforms. It is important to evaluate trade-offs carefully and set allowances at

appropriate thresholds. Allowances should be kept simple, however, to avoid administrative complexity.

Seventh, the timing of the reform is critical. Governments have been able to avoid unmanageable revenue losses by implementing tax reforms during times of strong growth and sound fiscal frameworks.

Finally, communicating the reform, its goals, and its characteristics, and obtaining consensus from all stakeholders is important for success. Informing the public is critical for PIT and CIT reforms and can help to reduce political obstacles. For the CIT, a highly publicized campaign on the benefits of transparency and the need to close loopholes can help counter industry lobbyists who may argue against elimination of exemptions for certain industries.

Annex 8A Cross-Country Analysis of Flat Tax Reform

Data and Variables

Type of variables	Specific variable	Source
Dependent	Revenue collection (PIT, CIT) as % of GDP	Study database and IMF GFS
	Revenue structure: direct taxes/total tax revenue; and indirect taxes/total tax revenue	Study database and IMF GFS
	Tax compliance proxy	BEEPS
Institutional	Tax administration quality	BEEPS and CPIA
	Corruption (several measures including corruption in tax administration)	BEEPS, CPIA
	Other business climate variables	BEEPS
Economic and business cycle (other controls)	Per capita GDP, and change in per capita GDP	WDI, LDB
	Per capita GDP growth	WDI, LDB
	Foreign direct investment	WDI, LDB
	Inflation	LDB
	Real wage growth	EBRD, ILO

Note: BEEPS = Business Environment and Enterprise Performance Survey; CPIA = Country Policy and Institutional Assessment; EBRD = European Bank for Reconstruction and Development; GFS = Government Finance Statistics; ILO = International Labour Organization; LDB = Live Database; WDI = World Development Indicators.

Methodology

To analyze the effects of this reform on compliance, revenue mobilization, and tax structure, this study used first differencing methods and the method of difference-in-difference estimations (D-in-D) with extensions (a brief description is presented below). This latter method helps in evaluating a policy reform implemented by a group of countries in a sample that also includes countries without the reform. This

panel contains a treatment group of countries (that is, countries that have implemented a flat rate income tax reform) and a control group of countries that have not implemented the reform inside and outside ECA; this latter group is the counterfactual group of countries.¹³

Assume a model:

$$Y_{it} = \beta_0 + \alpha_i + \gamma_t + \beta_1 R_{it} + \varepsilon_{it} \quad (\text{Eq 8A.1})$$

where Y_{it} is a policy outcome indicator (that is, tax revenues, tax compliance, tax structure); β_0 is a common intercept term; α_i is a country-specific intercept term (fixed effect); γ_t is a time-specific intercept term; β_1 is the impact of a policy on Y_{it} where $R_{it} = 1$ if the policy is in place, $R_{it} = 0$ otherwise.

The objective is to compare outcomes over time between the treatment and control groups to obtain an estimate of the impact of the policy (on average). In the basic model, the treatment group is observed at two periods: postpolicy: $Y_{it} = \beta_0 + \alpha_i + \gamma_t + \beta_1$; and prepolicy: $Y_{it} = \beta_0 + \alpha_i$. The difference between the pre- and postpolicy changes can be measured as

$$\Delta^T = (\beta_0 + \alpha_i + \gamma_t + \beta_1) - (\beta_0 + \alpha_i) = \gamma_t + \beta_1 \quad (\text{Eq 8A.2})$$

Similarly, for the control group, postpolicy: $Y_{it} = \beta_0 + \alpha_i + \gamma_t$; prepolicy: $Y_{it} = \beta_0 + \alpha_i$. The difference between the pre- and postpolicy changes for the control group can be measured as

$$\Delta^C = (\beta_0 + \alpha_i + \gamma_t) - (\beta_0 + \alpha_i) = \gamma_t \quad (\text{Eq 8A.3})$$

The true impact of the policy is determined by taking the *difference in difference* between the control and the treatment groups. Therefore, the impact of the policy can be calculated by

$$\Delta = \Delta^T - \Delta^C = (\gamma_t + \beta_1) - \gamma_t = \beta_1 \quad (\text{Eq 8A.4})$$

Consistent estimates of β_1 in Eq 8A.4 can be obtained with the first difference estimator¹⁴ of Eq 8A.5:

$$\Delta Y_{it} = \gamma_t + \beta_1 \Delta R_{it} + \Delta \varepsilon_{it} \quad (\text{Eq 8A.5})$$

The D-in-D model can be extended to include other variables of interest besides the treatment R_{it} . A more general model includes a vector of regressors X_{it} and the equation to be estimated becomes

$$\Delta Y_{it} = \gamma_t + \beta_1 \Delta R_{it} + \Delta X_{it}' \xi + \Delta \varepsilon_{it} \quad (\text{Eq 8A.6})$$

Eq 8A.6 can also be used to estimate β_1 if data is available for more than two time periods (by adding a dummy variable for each time period to account for secular changes that are not being modeled), or in the event that some countries start with treatment at different time periods (Wooldridge 2002). In such cases, β_1 cannot be written as in Eq 8A.4 but its interpretation is similar: it is the change in the average value of Y due to the reform (R), all else being equal. The model used to estimate treatment effects with various time periods and differences across countries in the treatment implementation is given in Eq 8A.7:

$$\Delta Y_{it} = \gamma_0 + \sum_{t=3}^T \gamma_t d_t + \beta_1 \Delta R_{it} + \Delta X_{it}' \xi + \Delta \epsilon_{it} \quad (\text{Eq 8A.7})$$

Cross-Country Regression Results

Cross-country regressions do not point to either a decrease or increase in PIT revenues as a result of a move to a flat income tax.¹⁵ For countries that implemented flat rate PIT reforms in ECA, regardless of the type of reform and rate of the CIT (that is, the first treatment group in table 8A.1), the results are not statistically significant in any specification. The only variable that is significant at a 10 percent confidence level is real wage increases. In the countries that implemented the reform with PIT and CIT at the same rate (second treatment group in table 8A.1), there are some indications that PIT revenues tend to fall after the reform. However, these results are not robust in all specifications.

The results for changes in CIT revenues are also unclear (table 8A.2). Results were inconclusive in various different model specifications. Empirically, CIT revenues do not seem to be significantly affected by the reform. This is in line with what was observed in the country case studies, where revenue losses from reduced rates were compensated for by base expansion, particularly the closure of loopholes and exemptions. These regressions only evaluate data until 2004, so additional observations in the future may change these results.

Regression results confirm that the reform brings a change in tax structure through a shift away from direct taxes toward indirect taxes (table 8A.3). The result is highly significant in all specifications regardless of the type of flat tax reform, that is, both for reforms with a flat rate on PIT but with a different rate on the CIT and for reforms that aligned PIT and CIT rates at the same level.

The results are even stronger for the countries that aligned the flat rate at the same level for both CIT and PIT. These results are quite robust under different specifications (and robustness tests) and even

TABLE 8A.1

Effect of the Reform on Personal Income Tax Revenues

Dependent variable: PIT revenues % of GDP	Model specification (1)	Model specification (2)	Model specification (3)	Model specification (4)	Model specification (5)
Reform treatment PIT reform (regardless type of reform in CIT)	0.075 [0.453]	0.067 [0.452]	0.074 [0.458]		
Treatment if reform has same rates for PIT and CIT (FLAT)				-0.194 [0.324]	-0.676 [0.105]***
CPIA revenues efficiency		-0.025 [0.091]	-0.183 [0.164]	-0.179 [0.162]	-0.039 [0.167]
Inflation CPI					0 [0.000]*
Real wage index	0.014 [0.008]*	0.014 [0.008]	0.014 [0.009]*	0.015 [0.009]*	0.009 [0.009]
GDP growth	-0.005 [0.008]	-0.004 [0.008]	-0.003 [0.008]	-0.003 [0.008]	-0.004 [0.008]
PC GDP	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
Constant	0.13 [0.334]	0.126 [0.335]	0.124 [0.336]	0.136 [0.351]	0.329 [0.365]
Observations	213	213	213	213	195
R-squared	0.07	0.06	0.07	0.07	0.08

Source: Bank Staff estimations.

Note: CIT = Corporate income tax; CPI = Consumer Price Index; CPIA = Country Policy and Institutional Assessment; PIT = personal income tax.

* Significant at 10 percent level. *** Significant at 1 percent level. Robust standard errors in brackets.

TABLE 8A.2

Effect of the Reform on Corporate Income Tax Revenues

Dependent variable: CIT revenues % of GDP	Model specification (1)	Model specification (2)	Model specification (3)	Model specification (4)
Treatment if reform has same rates for PIT and CIT (FLAT)	-0.232 [0.197]	-0.226 [0.184]		
Treatment if CIT reform			-0.069 [0.139]	-0.078 [0.144]
CPIA revenue efficiency		-0.006 [0.106]		-0.005 [0.106]
CPIA overall	0.035 [0.189]			
GDP growth	-0.037 [0.015]	-0.035 [0.023]	-0.035 [0.023]	-0.035 [0.023]
PC GDP	0.002 [0.001]***	0.002 [0.001]***	0.002 [0.001]***	0.002 [0.001]***
Inflation CPI	0 [0.001]			
Constant	0.393 [0.477]	0.397 [0.766]	0.399 [0.764]	0.397 [0.766]
Observations	220	229	230	229
R-squared	0.18	0.18	0.17	0.17

Source: Bank Staff estimations.

Note: CIT = Corporate income tax; CPI = Consumer Price Index; CPIA = Country Policy and Institutional Assessment; PC = per capita GDP; PIT = personal income tax.

* Significant at 10 percent level. *** Significant at 1 percent level. Robust standard errors in brackets.

TABLE 8A.3

Effect of the Reform on Revenue Structure, Using Ratio of Direct Taxes to Total Tax Revenues

Dependent variable: TAX STRUCTURE 1—ratio of direct taxes/total tax revenues						
	Model specification (1)	Model specification (2)	Model specification (3)	Model specification (4)	Model specification (5)	Model specification (6)
Treatment if reform has same rates for PIT and CIT (FLAT)	-3.637 [0.439]***	-3.604 [0.505]***	-3.672 [0.582]***			
Treatment PIT reform				-3.111 [1.067]***	-3.14 [1.097]***	
Treatment CIT reform						-2.525 [1.403]*
CPIA fiscal		-0.133 [0.549]		-0.125 [0.546]		-0.129 [0.546]
Real wage index	0.003 [0.036]	0.003 [0.036]	0.002 [0.037]	0.01 [0.036]	0.01 [0.036]	0.006 [0.036]
Inflation CPI	0.001 [0.000]**	0.001 [0.000]**	0.001 [0.000]**	0.001 [0.000]**	0.001 [0.000]**	0.001 [0.000]**
GDP growth	-0.084 [0.081]	-0.08 [0.084]	-0.083 [0.082]	-0.079 [0.083]	-0.083 [0.082]	-0.084 [0.083]
PC GDP	0.003 [0.002]	0.003 [0.002]	0.003 [0.002]	0.002 [0.002]	0.002 [0.002]	0.003 [0.002]
Constant	0.221 [1.072]	0.21 [1.081]	0.217 [1.075]	0.883 [1.215]	0.894 [1.210]	0.234 [1.085]
Observations	199	198	198	198	198	198
R-Squared	0.05	0.05	0.05	0.06	0.06	0.06

Source: Bank Staff estimations.

Note: CIT = Corporate income tax; CPI = Consumer Price Index; CPIA = Country Policy and Institutional Assessment; PC = per capita GDP; PIT = personal income tax.

* Significant at 10 percent level. *** Significant at 1 percent level. Robust standard errors in brackets.

when using different ratios to evaluate changes in tax structure. Table 8A.4 shows a modified dependent variable, that is, the ratio of indirect taxes to total tax revenues. The signs on the coefficients change clearly to the opposite direction, accounting for the new relationship that the modified dependent variable imposes.

Compliance seems to be affected positively by the reform when CIT and PIT have the same flat rate. The set of regressions in table 8A.5 shows as a dependent variable a proxy variable for compliance gathered from the BEEPS (see note a to table 8A.5). The results show that a flat rate at the same level for both PIT and CIT has a statistically significant positive effect on the compliance proxy. These results are robust in most specifications.

Tax administration seems to be a key factor for improving compliance because the regression results indicate that more burdensome tax administrations may deter compliance, even in the presence of this reform.

TABLE 8A.4

Effect of the Reform on Revenue Structure, Using Ratio of Indirect Taxes to Total Tax Revenues

Dependent variable: TAX STRUCTURE 2—ratio of indirect taxes/total tax revenues						
	Model specification (1)	Model specification (2)	Model specification (3)	Model specification (4)	Model specification (5)	Model specification (6)
Treatment if reform has same rates for PIT and CIT (FLAT)	4.71 [1.142]***	4.684 [1.295]***	4.715 [1.294]***			
Treatment PIT reform				2.597 [0.959]***	2.588 [0.983]***	
Treatment CIT reform						1.944 [1.302]
CPIA fiscal		0.317 [0.672]				
D.realwageindex2005	0.037 [0.048]	0.038 [0.049]	0.037 [0.048]	0.029 [0.047]	0.029 [0.047]	0.033 [0.047]
D.inflationcpi	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	-0.001 [0.000]
D.gdpgrowthannual	0.042 [0.083]	0.032 [0.084]	0.039 [0.082]	0.042 [0.082]	0.039 [0.082]	0.045 [0.083]
D.gdpperpcapconstant2000us	-0.003 [0.002]	-0.003 [0.002]	-0.003 [0.002]	-0.002 [0.002]	-0.003 [0.002]	-0.003 [0.002]
Constant	0.158 [0.982]	0.188 [0.997]	0.17 [0.996]	-0.409 [1.099]	-0.396 [1.118]	0.132 [0.984]
Observations	199	198	198	199	198	199
R-Squared	0.06	0.06	0.06	0.06	0.06	0.06

Source: Bank Staff estimations.

Note: CIT = Corporate income tax; CPI = Consumer Price Index; CPIA = Country Policy and Institutional Assessment; PC = per capita GDP; PIT = personal income tax.

* Significant at 10 percent level. *** Significant at 1 percent level. Robust standard errors in brackets.

Notes

1. Hong Kong (China) pioneered this reform over 50 years ago. A few other countries outside the ECA region, such as Bolivia (in the early 1990s), also implemented a flat rate on the personal income tax.
2. Hall and Rabushka (1983, 1985), most prominently, proposed the idea of a flat tax for the United States as a combination of a tax on wages and a tax on the cash flow of business, both at the same rate.
3. Ukraine raised the PIT rate from 13 percent to 15 percent in 2007, a measure announced in advance in 2004.
4. The rate of 30 percent (which includes federal and regional portions) can be increased by municipal “piggybacking” taxes that may raise the overall rate up to 35 percent.
5. The Slovak Republic also established its value added tax (VAT) rate at 19 percent.
6. The allowance granted to taxpayers before the reform was very simple. The first 17 Ukrainian hryvnias (5.05 Hrv = US\$1) of monthly income was free of tax and all income after that threshold was taxed under the rate schedule established. The threshold amount was established every year in the annual budget document.

TABLE 8A.5

Effect of the Reform on Compliance

Dependent variable: BEEPS question Q43a— proxy for compliance ^a	Model specification (1)	Model specification (2)	Model specification (3)	Model specification (4)	Model specification (5)	Model specification (6)	Model specification (7)
Treatment if reform has same rates for PIT and CIT (FLAT)	5.128 [1.582]***	5.101 [2.467]**	2.140 [3.363]*	2.956 [2.574]			
Treatment CIT reform					1.425 [2.389]**	-0.076 [3.403]	
Treatment PIT reform							-0.076 [3.403]
CPIA accountability	5.533 [5.696]			4.326 [5.270]		4.268 [5.415]	4.268 [5.415]
BEEPS Q54h—Tax rates as major obstacle, 1=no obstacle 4 = major obstacle				-0.405 [3.718]		-1.225 [3.456]	-1.225 [3.456]
BEEPS Q54i—Tax administration as major obstacle, 1=no obstacle 4 = major obstacle			-5.231 [3.504]*	-7.657 [2.499]**	-4.754 [4.118]	-7.543 [3.638]*	-7.543 [3.638]*
BEEPS Q54q—Corruption as major obstacle, 1 = no obstacle 4 = major obstacle					-5.22 [4.988]		
PCGDP	0.024 [0.010]			0.021 [0.009]**	0.013 [0.007]*	0.022 [0.009]**	0.022 [0.009]**
Observations	26	27	27	26	27	26	26
R-Squared	0.56	0.44	0.42	0.67	0.52	0.66	0.66

Source: Bank Staff estimations.

Note: CIT = Corporate income tax; CPI = Consumer Price Index; CPIA = Country Policy and Institutional Assessment; PC = per capita GDP; PIT = personal income tax.
* Significant at 10 percent level. *** Significant at 1 percent level. Robust standard errors in brackets.

a. The BEEPS question is as follows: "Recognizing the difficulties that many firms face in fully complying with taxes and regulations, what percentage of total annual sales do you estimate the typical firm in your area of business reports for tax purposes?"

7. Author's calculations based on a sample of 2,414 individuals in the Russian Longitudinal Monitoring Survey of the Carolina Population Center at the University of North Carolina, as described in Ivanova, Keen, and Klemm (2005).
8. The new allowance system in Ukraine did create some administrative difficulties. The new allowance works differently from its predecessor in several ways. First, the new allowance is only for deductions based on education expenses. Second, the allowance may be from zero up to the threshold established. The threshold amount is obtained by multiplying the "subsistence minimum" times 1.4. The subsistence minimum is a notional amount set by the government each year in the annual budget; this amount is above the minimum wage in Ukraine (the "minimum subsistence" level was Hrv 386.7 (5.05 Hrv = US\$1) in 2004). Because the allowance is only for education expenses, the tax administration must verify that the supporting documents (school and university

receipts) are generated by state-accredited educational institutions and for the corresponding fiscal period. Officials in the Ministry of Finance and the State Tax Administration have stated that because this process is by and large manual, its administration has added complication.

9. The elasticity of the PIT is calculated as follows:

$$\epsilon_t = (\% \Delta \text{PITcollection}) / (\% \Delta \text{TaxBase} [\text{wages}])$$

The elasticity of the CIT is calculated as follows:

$$\epsilon_t = (\% \Delta \text{CITcollection}) / (\% \Delta \text{TaxBase} [\text{GDP}_{fp}])$$

10. A similar result was found for Russia (Ivanova, Keen, and Klemm 2005). Reported wage growth has been much faster than—in some years double—GDP growth in Ukraine. It is possible that part of this rapid wage growth is really a “de-shadowing” of the economy, that is, a signal of more accurate reporting of income that had previously been concealed, and thus of improved compliance. A counterargument, however, is that wage growth in the public sector has been growing rapidly (in some years outpacing private sector wage growth), and public sector wages are rarely concealed.
11. In Ukraine, currently, the rate may reach 42 percent of wage income. The employer contribution rate alone is close to 37 percent, which covers contributions to the four social insurance funds.
12. The Simplified Tax System was established by Presidential decree in 1998 as a temporary measure to foster small business. However, its design, with high thresholds for eligibility (up to US\$200,000 in annual turnover for legal entities and US\$100,000 for individuals), no limitation on types of activity, and considerably lower tax liability than in the regular system, has created a number of problems for the tax system. It creates incentives for taxpayers to migrate out of the regular tax system, leading to vertical and horizontal inequities among taxpayers. It also generates economically inefficient choices for taxpayers, and it undermines the bases and the collection efficiency of major taxes (payroll taxes, the PIT, the VAT and, more marginally, the CIT).
13. The sample of countries includes all ECA countries in addition to several non-ECA developing and developed countries (called international comparators in this report).
14. For a detailed explanation concerning estimation of the first difference model, see Cameron and Trivedi (2005).
15. The cross-country analysis is based on time-series panel data that include 38 ECA and non-ECA countries (called international comparators in this report). The methodologies used are first-differencing and extensions and difference-in-difference estimatio