

EXCISE TAXES IN UKRAINE: SOME OPTIONS FOR REFORM¹

This note describes Ukraine's current system of excise taxes and discusses ways in which these taxes could be adjusted to make this revenue source more equitable and efficient. After a period of experimentation with a wide variety of different excise tax bases, Ukraine now imposes a traditional battery of excises on the purchases of alcoholic beverages, tobacco, jewelry and petroleum products. In 2000 these taxes represented 4.6 per cent of total revenue and 1.3 per cent of GDP. In the 2002 budget excise tax revenues are estimated in the amount of 1.23 per cent of GDP. By comparison, the Value-added Tax (VAT) generated about 20 per cent of total revenue in 2000.

Table 1 below displays the rates, revenues and estimated base of each of the excises in 2000.

Table 1. Excise Tax Revenues, Rates and Bases-Ukraine, 2000

Excise	Revenues (millions,UAH)	Nominal Rate	Estimated Base (millions)	Effective Rate (%)
Spirits	778.4	16UAH/liter	48.6 liters	136.5
Wine	101.1	.8UAH/liter	126.3 liters	18
Beer	136.8	.14UAH/liter	977.1 liters	28.4
Alcoholic Drinks	1016.3	.88UAH/liter	1152.2 liters	31.8
Tobacco sticks	453.6	10UAH/1000	44.7 1000 sticks	67.3
Jewelry	20.2	55%	36.8 UAH	
Petroleum	362.4	81.6UAH/liter	4.4 tons	12.4
Gasoline		218UAH/liter		
Other oil products		109UAH/liter		
Diesel fuel		54.4UAH/liter		

All excise tax rates, apart from that for jewelry, are specific, measured in Euros per unit of output and then converted into units of domestic currency (UAH). According to the VAT legislation, VAT is imposed on the excise inclusive product price. Effective tax rates, shown in the last column, are calculated as a percentage of producers' prices. Although spirits have the highest effective tax rate, the weighted average rate on alcoholic beverages as a group is less than that on tobacco products. The lowest effective tax rate, barely over 12 per cent, is found on petroleum products.

By international standards, Ukraine's excise rates are relatively low. In Russia, for example, gasoline taxes are four times higher and, in Poland, six times. Ukrainian authorities have defended the application of low rates by consistently arguing that higher rates would encourage rampant evasion and threaten current collection levels.

Reform of Ukraine's Excise Tax Rates: the Policy Framework

Is it possible to alter the current structure of excise rates and make this part of the tax system more attractive to policymakers? Presumably, if a tax rate reform reduced both income inequality and the efficiency costs of taxation it would have some appeal for policymakers as these considerations normally define the quality of a country's tax system. The task then is to identify tax rate reforms that would satisfy these twin requirements of less inequality and less inefficiency.

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Reducing Income Inequality

The analytical tool used to detect tax reforms that reduce income inequality is a concentration curve. A concentration curve measures the cumulative consumption of a commodity against the cumulative distribution of income when incomes are ordered from lowest to highest. The data describing a concentration curve can be obtained from the information provided by a household income and expenditure survey.

Different commodities typically exhibit different concentration curves. It can be shown that if the curve for one commodity lies entirely below that for another commodity it is possible to reconfigure excise tax rates in a way that will lead to less income inequality and, at the same time, keep total excise tax revenue unchanged. This proposition is most easily illustrated with the aid of a simple numerical example.

Consider a hypothetical economy consisting of just four individuals, labeled as 1, 2, 3 and 4. When ranked according to their income size, individual 1 is poorest, 2 the next poorest, 3 has more income than 2 and 4 is the richest. Next, assume these four individuals consume two products, A and B, that are both subject to an initial excise tax of 2 UAH per unit. Total consumption by this group is 100 units in each case and total revenues are therefore 200 UAH for each commodity. Finally, assume that there is uniform per capita consumption of commodity A while, for commodity B, consumption per capita increases with per capita income. This assumption ensures that the concentration curve for commodity B lies completely beneath the concentration curve for commodity A.

All of the forgoing assumptions are embodied in Table 2 below, which portrays the initial tax burden situation prior to a tax rate reform.

Table 2. The Initial Distribution of Tax Burdens

Individual	Cumulative Income (%)	Cumulative Spending on A (%)	Cumulative Spending on B (%)	Excise on A	Excise on B	Total Excises
1	10	25	10	50	20	70
2	30	50	25	50	30	80
3	60	75	50	50	50	100
4	100	100	100	50	100	150
Total	-	-	-	200	200	400

As can be seen from Table 2, all individuals face the same tax burden on commodity A, despite the fact that, by assumption, income levels differ. Such a distribution of tax burdens is referred to as regressive. For commodity B, on the other hand, the pattern of tax burdens is progressive since, for example, individual 4 who receives 40 per cent of total income pays 50 per cent of the taxes collected from this commodity. For both taxes taken together, however, the pattern of tax liabilities is nearly proportional since individual 4 with 40 per cent of total income pays 37.5 per cent of total excises.

The issue for tax policy is whether tax rates can be adjusted to make the group of excise tax burdens more progressive by shifting more of the overall tax burden from poor to rich individuals. Consider for example the distributive impact of dropping the excise tax rate on commodity A by one UAH and raising the rate on commodity B by the same amount so as to preserve the total amount of excise revenue collected. The results of this tax rate reform are shown in Table 3 below.

The essential feature of this reform is that it tilts the rate structure towards commodities consumed more heavily by the rich and away from those commodities consumed in greater proportion by the poor. As shown in Table 3, the effect of this tilt is to transfer income from higher to lower income individuals. In Table 3 the two poorest individuals receive an effective income transfer of 25 UAH that is paid out of the pockets of the richest individual. As a result of these income transfers the excise

tax system has become more progressive. In the post-reform situation individual 4, who claims 40 per cent of total income, now pays 44 per cent of the overall excise tax burden.

Table 3. Changes in Tax Burdens due to Rate Reform

Individual	Post-reform Excise on A	Post-reform Excise on B	Post-reform Excise Burden	Change in Excise Burden
1	25	30	55	-15
2	25	45	70	-10
3	25	75	100	0
4	25	150	175	25
Total	100	300	400	0

If the concentration curves of A and B were to intersect, a recalculation of the numbers in Tables 2 and 3 would show that the preceding rate reform would transfer income to both the poorest and richest individuals at the expense of the middle income individuals. A reform featuring these results would not have strong policy appeal.

Improving Economic Efficiency

All feasible forms of taxation impose an efficiency cost on the economy by reducing the incomes of participants in the economy in an amount greater than the amount of revenue raised through taxation. It almost always costs more than a Hryvna of income to collect another Hryvna in revenue and the difference is a measure of the efficiency loss attributable to taxation.

The size of the efficiency loss associated with any tax changes normally turns on two factors, the magnitude of the initial tax rate and the responsiveness of the tax base to a change in the tax rate. Efficiency costs are higher the greater is the initial tax rate and the more reactive is the tax base to a tax rate change. Together these two factors determine the marginal social cost of tax funds, or how much it costs the economy to raise another Hryvna of revenue.

Another simple numerical example can be developed to shed light on the concept of the marginal cost of funds (MCF) in the case of excise taxes. Suppose producers can supply a commodity to the market at a cost of 100 Hryvna and that this commodity is subject to a specific excise tax of 50 Hryvna. At the price paid by consumers of 150 Hryvna further suppose that consumers purchase initially 10,000 units of this commodity.

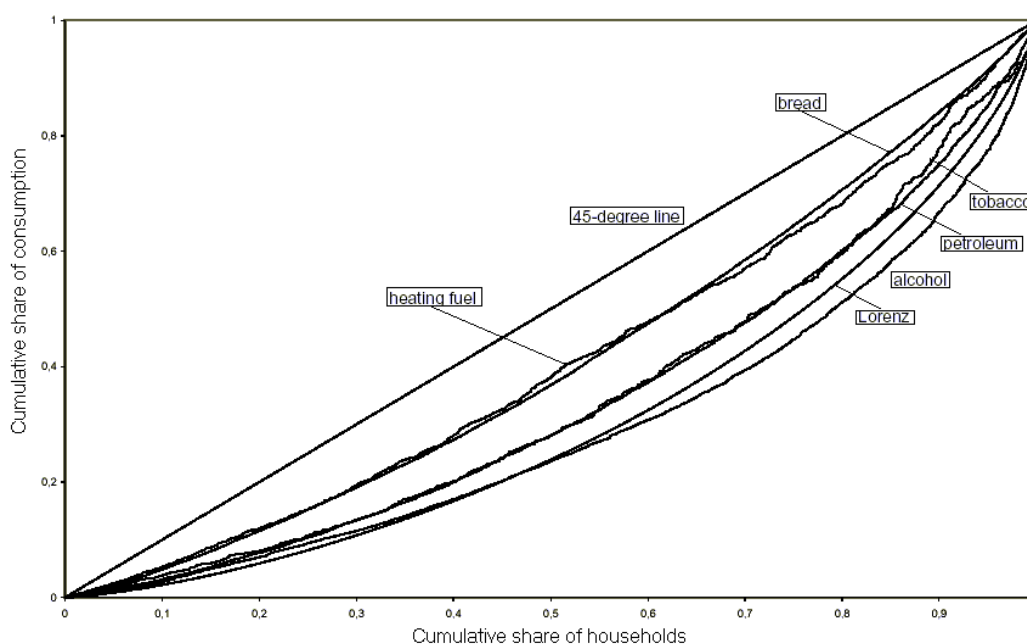
Now suppose that the tax rate on this commodity is raised to 51 Hryvna and at the higher consumer price of 151 Hryvna consumers curtail their purchases by 50 units to a new level of 9,950 units. In the first instance consumers experience an income loss equal to the extra tax imposed times the initial tax base or 10,000 Hryvna (one Hryvna times 10,000). This amount is also equal to the initial amount of revenue raised. However, as consumers curb their consumption of this higher priced commodity, revenues will fall by 50 Hryvna for every unit of reduced consumption, or, in this case, by 2,500 Hryvna (50 Hryvna time 50 units of fewer consumption). The total amount of revenue collected will only be 7,500 Hryvna. The marginal cost of funds in this case is the ratio of the loss in consumer income to the additional amount of revenue realized, or 1.33 (10,000 Hryvna/7,500 Hryvna). Thus it costs the economy 1.33 Hryvna for every extra Hryvna of revenue raised in this manner.

In the context of the earlier numerical example above, let MCF_A denote the marginal cost of funds for commodity A and MCF_B the corresponding cost for commodity B. If tax rates are reduced on commodity A and raised on commodity B in a revenue neutral manner, economic efficiency will be enhanced if the difference between MCF_A and MCF_B is positive. Given that the initial tax rates on the two commodities were assumed to be equal, this efficiency gain will only occur if consumers react less to the higher price of B than to the lower price of A.

Applying the Policy Framework to Ukraine's Excises

Concentration curves were obtained for the batch of excise commodities in Ukraine for the year 2000, the last year for which a household income and expenditure survey is available. In addition, for reasons that will become apparent, concentration curves were also derived for bread and heating fuel consumption, two items that are currently subsidized, as well as for aggregate consumption. Subsidized commodities can be usefully viewed as being subject to negative excise taxes. All of these concentration curves are shown in Figure I below.

Figure 1. Concentration Curves for Major Excise Goods in Ukraine, 2000



Without further reference to the exact methodology used to obtain them, the MCFs for the major excise categories have been calculated by the author in a separate study.² The results of that study indicate that the marginal cost of funds is highest for tobacco products, followed by, respectively, alcoholic beverages, petroleum products and the bundle of goods and services subject to the VAT. By and large, this hierarchy of values mirrors the pattern of effective tax rates shown in Table 1.

Combining these estimates of efficiency costs with inspection of the concentration curves above suggests that there are four potential reforms which are attractive on either efficiency grounds, equity considerations, or both:

- (i) Reform 1: Raise the excise tax rate on petroleum products and lower it on tobacco products in a revenue neutral manner. While the concentration curves for these two groups do not exactly coincide, they are very close indicating that there would be almost no equity consequences from this revision to the structure of tax rates. There would be, however, an efficiency payoff in light of the higher marginal cost of funds for taxing tobacco products.
- (ii) Reform 2: Cut the excise rate on tobacco products and raise the average excise rate on alcoholic beverages. A reform of this type promises both efficiency and equity benefits. Closer analysis of this reform reveals that the lower ninety per cent of households would gain at the expense of the top ten per cent of households.

² For an elaboration of these efficiency estimates, see Aliaksandr Amialchuk, "The Design of a Better Excise Tax System in Ukraine", MA thesis submitted to the National University of the Kyiv-Moghila Academy, 2002.

- (iii) Reform 3: Increase the VAT rate slightly and use the extra revenues to finance somewhat higher subsidies for the consumption of heating fuel and bread products. This recommendation rests on the strong likelihood that the concentration curve for aggregate consumption, labeled as the Lorenz curve in Figure 1, is a close approximation for the concentration curve that would apply to the VAT base. The small measured MCF for the VAT strengthens the force of this recommendation.
- (iv) Reform 4: Combine reforms 1 and 2 by cutting the excise tax on tobacco products and raising the excise tax on both alcoholic beverages and petroleum products. This joint reform would contribute to both greater efficiency and equity.

Other excise tax reforms that might be considered involve a tradeoff between efficiency and equity. For example, earlier expenditure survey data for 1995 and 1996 clearly show that the concentration curve for beer consumption is consistently above the one for spirits and, on equity grounds, one could make a case for reducing the excise tax on beer and raising that on spirits. However, according to the data in Table 1, the effective tax rate on spirits is significantly higher than that for beer so that on efficiency grounds there is a case to be made for reducing the excise tax on spirits and raising it for beer. Faced with the necessity to choose between competing objectives, Ukrainian tax authorities have implicitly conferred greater priority on equity concerns.