

Distribution of the VAT Burden in Poland by Income Group and Demographic Characteristics

Michał Myck and Monika Oczkowska, CenEA
April 2015

The Value Added Tax (VAT) is the main source of revenue for the public budget in Poland. Though issues regarding VAT rates or tax settlement mechanisms are brought into the public debate in Poland on a regular basis, little is still known on the distribution of the VAT burden among Polish households. In this brief, we analyze the VAT relation to household income, consumption and demographic structure in Poland. We find that the VAT burden is inversely related to income, with the bottom ten percent of the population paying on average 16.3% of their income in VAT and the top income group paying only 6.8%. Larger households, such as those with children, pay about 11%-15% more VAT due to higher spending. However, as a result of different spending structures, the additional VAT burden of families with children is independent of the number of children and only marginally dependent on their age. These differences in the tax burden should be taken into consideration in the current debate on the possibility of unifying the VAT rates in Poland.

The Value Added Tax (VAT) is the most important source of revenue for the public budget in Poland. In 2013, revenues from VAT constituted 41% of total government revenue and 47% of government's tax revenues. Thus, in Poland, just as in many other countries, an efficient and well-functioning design of the system of the tax on goods and services is a key element of future economic growth and welfare of households (see Crawford et al., 2010 for detailed discussion). Indeed, the public debate about VAT rates and implementation practices has been very active in Poland during recent years. However, little is known about the distributional aspects of the VAT in Poland.

In this brief, we present the analysis of the distribution of the VAT burden among Polish households by their demographic and income characteristics. The analysis presented below is based on the Polish microsimulation model

SIMPL. Data used in the analysis comes from the 2012 Polish Household Budget Survey (PHBS), a regular annual survey conducted by the Polish Central Statistical Office. The analysis has been conducted as part of CenEA's pre-election project financed by the EEA Funds. Detailed results can be found in the CenEA microsimulation report "VAT in household expenditures" available online (Myck et al., 2015).

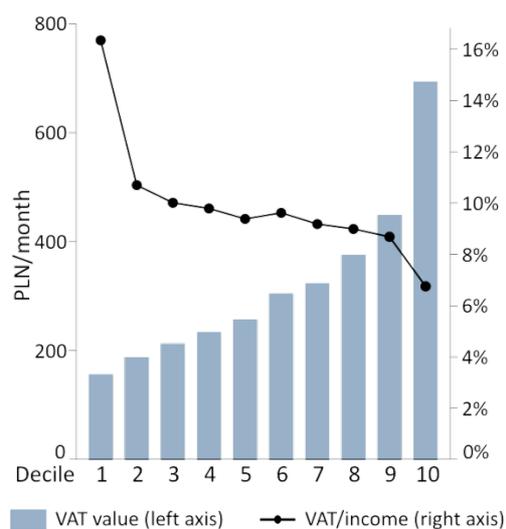
VAT Burden and Household Income

The standard VAT tax rate in Poland is 23% but the tax system includes two reduced rates. A 5% rate principally covers unprocessed foodstuffs and books, while an 8% rate is levied on processed food, medical equipment, transportation and cultural services. In export

and intra-Community transactions a 0% rate is used, and VAT tax exemptions apply to a selected set of services (medical and financial services, education) and to small-scale enterprises.

Figure 1 presents the average VAT burden assigned to household expenditures in the PHBS by income deciles in monthly absolute values and in proportion to disposable income. Naturally, since the VAT burden very strongly relates to the level of expenditure, which in turn is highly correlated with disposable income, the absolute level of the VAT burden grows with the level of income. For example, while households from the lowest income decile pay on average 155,90 PLN (38 EUR) of VAT per month, households in the top income decile pay on average almost 4.5 times as much (693,20 PLN; 170 EUR). In proportion to income, however, the VAT burden of the poorest 10% is highest at 16,3% of disposable income, and declines with income to 10,7% for the second decile and 6,8% in case of the richest 10% of the population.

Figure 1. Level of Direct VAT Burden by Income Decile

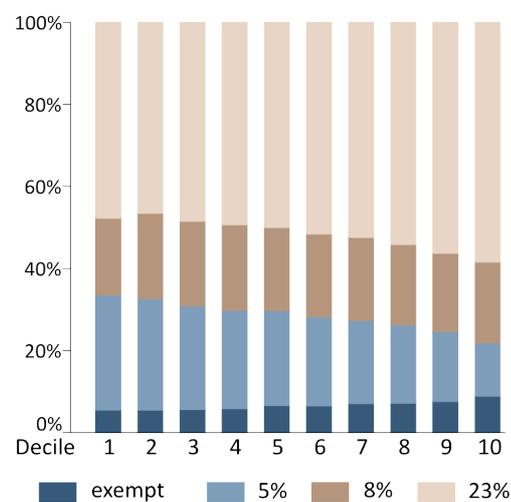


Source: Myck et al. (2015).

These differences in the level of the VAT burden by income group have their source principally in the level of total expenditure in

relation to income. This is because the structure of expenditure with respect to the VAT rates results in an increasing average rate of VAT by income deciles with respect to the total level of expenditure. As we can see in Figure 2, in all income groups the highest proportion of expenditures is subject to the standard rate. Expenditure with a 23% VAT burden constitutes 47.8% of total expenditure of the poorest 10% of the population and grows to 58.5% for the top income decile. The share of household spending on goods and services assigned to the middle rate of VAT (8%) is largely independent of income, and constitutes about 20% of the total expenditure in all income groups. On the other hand, the share of food articles subject to the 5% reduced VAT rate steadily decreases with income from 28.0% in the bottom group to 12.9% in the top income group.

Figure 2. Proportion of Household Expenditure by VAT Rate and Income Decile



Source: Myck et al. (2015).

Who Pays More and Who Pays Less VAT?

The distributional picture presented above is complemented by a detailed analysis of the relationship between the VAT burden and household demographic compositions to shed some light on the recent policy debate in

Poland regarding the role of indirect taxes with respect to the system of government support of low income families, in particular those with children. Selected regression results on the relationship between the level of the VAT burden and household composition are presented in Table 1. We distinguish a number of demographic characteristics, such as the number of adults, the number of adults aged 60 years or more, and whether there is a lone parent in the household. Finally, we also control for the number of children in the household and the number of children by age group. Results are interpreted with respect to the omitted demographic category, i.e. a single adult aged <60 years. For results of other specifications see Myck et al. 2015.

The first thing to note – comparing specifications (1) and (2), is that the household composition is very strongly correlated with income. Controlling for the level of disposable income (in specification 2) has a substantial effect on the estimated coefficients on all demographic variables, and significantly reduces the degree of correlation between household size and the VAT burden. Still, however, in specification (2) we do find that, even if controlling for income, larger households – those with two or more adults, pay about 15-16% more VAT compared to single adult households. Similarly, households with children pay about 11% more VAT compared to those without children, but the level of VAT does not increase with the number or age group of children. It is also noteworthy, that households with individuals aged 60+ pay 9-11% less VAT and households with lone parents – about 7% less.

The lack of a strong monotonic relationship between the number of children and the level of VAT is to some extent surprising and raises questions on how larger households manage their expenditures. One potential hypothesis, for which we find evidence in specifications (3) and (4), is that though larger households actually spend a higher proportion of their income, they allocate their expenditures differently and spend more on goods and

services subject to reduced VAT rates. To address this question, we regress the VAT burden on the same set of household structure controls and total household expenditure (specification 3) and additionally look at the correlates of spending on food and housing (specification 4).

Table 1. Level of the VAT Burden and Household Consumption in Relation to Household Structure and Income

Dependent variable:	(1) log(VAT)	(2) log(VAT)	(3) log(VAT)	(4) log(expX)
HH demographic structure:				
2 adults	0.546***	0.161***	0.026***	0.118***
3 or more adults	0.668***	0.151***	0.000	0.243***
1 person 60+	-0.235***	-0.091***	-0.002	0.097***
2 or more persons 60+	-0.137***	-0.109***	-0.038***	0.107***
Lone parent	-0.207***	-0.071***	0.009	0.032***
Children in HH:				
First child	0.238***	0.106***	0.012	-0.035**
Second child	0.026	0.011	0.005	-0.001
Third child	-0.132***	-0.019	0.019	0.000
Fourth child	-0.095	-0.037	0.002	-0.004
Number of children by age groups:				
0-2 y.o.	0.065*	-0.013	-0.011	0.032**
3-6 y.o.	-0.002	-0.057*	-0.041***	0.027*
7-12 y.o.	0.045	-0.001	-0.019*	0.049***
13-17 y.o.	-0.024	-0.009	-0.021**	0.082***
Other controls:				
Controlling for disposable income	NO	YES	---	---
Controlling for total expenditure	---	---	YES	YES
Constant	5.113***	4.261***	3.676***	5.062***
Observations	27580	27580	27580	27431
R ²	0.262	0.607	0.935	0.717

Notes: * - $p < 0.10$, ** - $p < 0.05$, *** - $p < 0.01$

expX – expenditure on food and housing

Income and total expenditure included as a fifth degree polynomial; HHs with incomes lower or equal to 0 and farmer households excluded.

Source: Myck et al. (2015).

The results clearly indicate that the structure of household consumption changes significantly as the number of children (and in fact also adults) in the household grows. The higher the number of children, the lower is the level of VAT burden, *conditional on total consumption* (this result is more apparent in specifications without controlling for age groups as shown in

Myck et al. 2015). This implies, that in households with more children the share of household expenditure spent on goods and services subject to reduced VAT rates is higher. Interestingly, the expenditure structure is also strongly associated with the age of children. In particular, the VAT burden is lower among households with pre-school children, which relates primarily to VAT-exempt childcare expenditure.

These findings are confirmed in specification (4) where we find a strong correlation between food and housing expenditure and household demographic composition. Compared to single adult households, the level of spending on food and housing is 12% higher in households with two adults and 24% higher for bigger households. Food and housing expenditure is also 10% higher in households with adults aged 60+. The relationship between food and housing expenditure and children strongly depends on the age of children.

Overall, the results confirm that larger households spend a higher proportion of their incomes and as a result pay more VAT. The relationship is, however, not monotonic in household's size since households economize their consumption by focusing to a large degree on "basic" expenditure categories that happen to be subject to reduced rates of VAT. Higher expenditure in households with children, conditional on income, necessarily implies lower savings which may on the one hand reflect the process of life-cycle optimization, but on the other may point towards increasing consumption needs in households with different demographic structure, especially with children (see e.g. Banks et al., 1994).

Conclusion

The VAT burden is determined by the level and structure of household expenditures, both of which are strongly associated with the level of household income and household

composition. Polish households on average pay about 10% of their disposable income in VAT included in the prices of goods and services. With respect to income the Value Added Tax in Poland is regressive, with households in the lowest income decile paying on average 16.3% of their income in VAT, whereas top income group paying only 6.8%.

As compared to single-adult household, the VAT burden in households with more adults is about 15% higher. Households with children pay about 10% more VAT than those without children. VAT difference between households with and without children is independent of their number and is only marginally related with their age. This is a result of a change in the spending structure of families with more children, who spend more on goods subject to reduced VAT rates. A similar pattern can be observed for households with adults aged 60+, who pay 9-11% lower VAT amounts compared to younger households, largely due to a higher proportion of expenditure on food consumption and housing.

The debate at the national and the European level concerning major reforms of the VAT system needs to address the distributional implications of any potential changes in the degree of differentiation of tax rates. There is growing evidence that a single rate system would be beneficial on a number of efficiency grounds. A single rate VAT structure would limit distortions in the consumption and production processes, would make monitoring of the system easier, and would reduce incentives for tax avoidance (see Crawford et al., 2010). Under a budget neutral scenario, unifying the VAT rates would, however, increase the burden on poorer and larger households, and it seems that any successful approach to such a reform needs to take these considerations into account.

▪

References

Banks, J., Blundell, R., Preston, I. (1994). Life-cycle expenditure allocations and the consumption costs of children, *European Economic Review* 38, 1391-1410.

Crawford, I., Keen, M., Smith, S. (2010). Value Added Tax and Excises. In: Dimensions of Tax Design: The Mirrlees Review. J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles, J. Potreba (eds.). *Oxford University Press*: 276-372.

Myck, M., Kundera, M., Najsztub, M., Oczkowska, M. (2015). VAT in household expenditures: effects of recent changes and distribution of the tax burden. *CenEA Pre-election Report* (published in Polish).

Michał Myck

Center for Economic Analysis
(CenEA)

mmyck@cenea.org.pl

<http://www.cenea.org.pl>



Michał Myck is Director and Member of the Board of CenEA. He previously worked at the Institute for Fiscal Studies (1999-2004; International Fellow 2005-2011) and at the DIW-Berlin (2005-2013) where he is currently a Research Fellow in the Public Economics Department. Since 2005 he has been the Polish Country Team Leader for the Survey of Health, Ageing and Retirement in Europe (SHARE). He is a Research Fellow at IZA Bonn.

He received his B.A. (First Class) in Philosophy, Politics and Economics at the University of Oxford (1997) and an M.Phil. degree in Economics at the University of Oxford (1999). In March 2006 he received his Ph.D. degree at the University of Warsaw.

His work is currently centred on modelling of labour market behaviour, the relationship between health and employment, the effectiveness of welfare to work programmes, and the structure of personal taxes and benefits. He published in such journals as

Journal of Health Economics, *Labour Economics*, *Oxford Bulletin of Economics and Statistics*, *Economics of Transition*, *Fiscal Studies*, *Oxford Review of Economic Policy* and *Review of Economics of the Household*.

Monika Oczkowska

Center for Economic Analysis
(CenEA)

moczowska@cenea.org.pl

<http://www.cenea.org.pl>



Monika Oczkowska works at CenEA as a senior research economist since March 2012. As the Polish Country Team Operator for the SHARE project, she is responsible for data management, questionnaire development and launch of the wave 6 of SHARE in Poland. She's also part of CenEA social exclusion project based on SHARE data. She takes part in work on microsimulation analysis of the Polish tax-benefit system with particular focus on the visualization of the results. She manages SHARE website for Poland together with CenEA website and facebook profile.

She received an MA degree in Economics, with specialization in financial analysis and business valuation in 2012 at the University of Szczecin. Before CenEA she worked for a consulting company, where she was involved in projects on evaluating local enterprises.