

## Redistributing Income through VAT

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### Abstract

*This article analyzes from a theoretical point of view the incidence of the value added tax on the current expenditure and income of the households when applying reduced rates and exceptions from this tax for some prevalent goods from the consumption of households with small income. The replacement of the standard VAT rate with reduced rates and exemptions for such goods reduces the regressive character of this tax related to the current income (and increases the progressivity degree of the tax in relation to the current expenditures of households), when the size and the structure of consumption remains unchanged.*

**Key words:** tax, regressive, income, expenditure

**J.E.L. classification:** H2, H3.

### 1. Introduction

For the case of a uniform value added tax rate for all goods and services subject to household consumption, the value added tax (VAT) is a proportional tax in relation to current household consumption expenditures. As current income increases, so does the savings rate while the consumption rate (the share of consumption in income) decreases. Under these circumstances, the share of the tax within income decreases at an increase of the income, VAT being regressive in relation to the current income of households. Thus, value added tax affects more strongly the households with low incomes, which devote a large amount of their current income to consumption expenditures, thus paying a larger proportion of their income as VAT revenue than households with high income.

The modification of the single VAT rate, provided that the amount of consumption remains the same, does not determine a change in the regressive character of the tax related to the income; moreover, the tax remains proportional to consumption. Instead, by introducing reduced rates or exemptions for predominant goods in the consumption of the low-income population, VAT's regressiveness in relation to current income is reduced, the tax becoming progressive in relation to consumption expenditure.

### 2. Literature Review

Some scientific papers have analyzed the incidence of the consumption taxes on the income of the population: OECD (2014, for 20 member countries), Decoster et. al. (2010, for 5 European states), Ruiz and Trannoy (2008, in France), Warren (2008, in OECD countries), O'Donoghue et al. (2004, for 12 European states), Kaplanoglou (2015, for Greece).

Particularizing, other studies have analyzed the redistributive effects of the VAT rates structure: Institute for Fiscal Studies (2011, for 9 European states), Leahy et al. (2011, in Ireland), Cuceu (2016, for Romania), Schmutz and Schaltegger (2018, for Switzerland), CPB Netherlands Bureau

for Economic Policy Analysis (2013, for 27 EU member countries), Braz and da Cunha (2009, for Portugal).

Cuceu (2016) shows that in Romania, the VAT is very regressive compared to the current incomes of households, while the percentage of money expenditures in money income decreases significantly when income is increased. The results of simulations performed for Romania are similar to the results obtained in other studies, especially with the study made by OECD in 2014 on a sample of 20 countries.

Schmutz and Schaltegger (2018), using Swiss data, show that a different VAT structure cannot make the VAT progressive regarding income (low distributional effects).

The results of the great majority of these studies show that VAT is regressive related to the current income, but this is proportional or slightly progressive in relation to the current expenditures.

The value added tax, being regressive in relation to the current income of households, is considered a socially unfair (antisocial, anti-distributive) tax (Cuceu, 2008).

### 3. The Reduced Rates and Exemptions – Instruments for the Redistribution of Income

In order to reduce VAT regressivity in relation to income, there exists the possibility of applying reduced VAT rates and exemptions for certain predominant goods within the consumption of low-income population. The introduction of reduced rates and exemptions for such goods makes the tax progressive in relation to consumption expenditures.

Two situations are put under discussion in what follows: the first scenario uses a standard VAT rate and a reduced rate for some predominant goods in the consumption of low-income households, and the second scenario uses a standard VAT rate and some exemptions for goods that predominate in the consumption of low income households.

We further group households within two categories: poor households and rich households, and we use the following notations:

$V_1$  = the income of poor households;

$V_2$  = the income of rich households;  $V_2 > V_1$ ;

$V = V_1 + V_2$  = total income;

$C_1$  = consumption expenditures of poor households;

$C_2$  = consumption expenditures of rich households;

$C = C_1 + C_2$  = total consumption;

$T_1$  = the taxes paid by poor households;

$T_2$  = the taxes paid by rich households;

$T = T_1 + T_2$  = total taxes.

**Scenario 1** – The standard VAT rate ( $t$ ) and a reduced rate ( $r$ ) applicable to some goods and services that prevail within the consumption of low income households.

The consumption of the population is expressed as follows:

$$C_1 = C_{1t} + C_{1r};$$

$$C_2 = C_{2t} + C_{2r};$$

$$C = C_t + C_r;$$

$$C_t = C_{1t} + C_{2t};$$

$$C_r = C_{1r} + C_{2r};$$

$$\frac{C_{1r}}{C_1} > \frac{C_{2r}}{C_2} \Leftrightarrow \frac{C_{1t}}{C_1} < \frac{C_{2t}}{C_2},$$

where:

$C_{1t}$  = the consumption of poor households taxed at the standard rate;

$C_{1r}$  = the consumption of poor households taxed at the reduced rate;

$C_{2t}$  = the consumption of rich households taxed at the standard rate;

$C_{2r}$  = the consumption of rich households taxed at the reduced rate;

$C_t$  = the total consumption taxed at the standard rate;

$C_r$  = the total consumption taxed at the reduced rate.

The value added tax may be determined as follows:

$$T_1 = C_{1t} \times t + C_{1r} \times r;$$

$$T_2 = C_{2t} \times t + C_{2r} \times r;$$

$$T = C_t \times t + C_r \times r.$$

Under these circumstances, it's mathematically proven that:  $\frac{T_1}{C_1} < \frac{T_2}{C_2}$ , which means that the

value added tax is progressive relative to the consumption expenditures. In this case:  $\frac{T_1}{T} < \frac{C_1}{C} \Leftrightarrow$

$$\frac{T_2}{T} > \frac{C_2}{C}.$$

If we refer to household income, the value added tax may find itself in one of the following hypothetical situations: regressive, proportional or even progressive in relation to income.

In this case, VAT regressivity with respect to the income can be reduced (the progressivity of the tax related to expenditures is increased) by increasing the standard tax rate, by reducing the reduced rate and/or by replacing the reduced rate with exemptions.

**Scenario 2** – The standard rate ( $t$ ) and exemptions for some goods and services that prevail in the consumption of low income households.

The consumption of the population could be expressed as follows:

$$C_1 = C_{1t} + C_{1s};$$

$$C_2 = C_{2t} + C_{2s};$$

$$C = C_t + C_s;$$

$$C_t = C_{1t} + C_{2t};$$

$$C_s = C_{1s} + C_{2s};$$

$$\frac{C_{1s}}{C_1} > \frac{C_{2s}}{C_2} \Leftrightarrow \frac{C_{1t}}{C_1} < \frac{C_{2t}}{C_2},$$

where:

$C_{1t}$  = the consumption of poor households taxed at the standard rate;

$C_{1s}$  = the consumption of poor households exempt from taxes;

$C_{2t}$  = the consumption of rich households taxed at the standard rate;

$C_{2s}$  = the consumption of rich households exempt from taxes;

$C_t$  = the total consumption taxed at the standard rate;

$C_s$  = the total consumption exempt from VAT.

The value added tax paid by households is:

$$T_1 = C_{1t} \times t;$$

$$T_2 = C_{2t} \times t;$$

$$T = C_t \times t.$$

Under the previously considered hypotheses, the value added tax is **progressive in relation to the consumption expenditures**:  $\frac{T_1}{C_1} < \frac{T_2}{C_2}$ . Furthermore:  $\frac{T_1}{T} < \frac{C_1}{C} \Leftrightarrow \frac{T_2}{T} > \frac{C_2}{C}$ .

Regarding the incidence of the tax upon the income, there exist three hypothetical situations: **a regressive, a proportional or even a progressive tax in relation to income.**

The modification of the single VAT rate does not determine a change in the regressive character of the tax with respect to income or of its progressivity related to consumption, as long as the size of consumption remains the same.

*Table no. 1 The effects of modifying VAT rates upon the regressive character of the tax related to current income (when the size and the structure of consumption don't modify)*

| <b>Initial situation</b>   | <b>Modifications</b>  | <b>Effects over Tax Regressivity</b> |
|--|---|--------------------------------------|
| Standard rate  | The introduction of reduced rates and/or exemptions (instead of the standard rate) for some goods and services that prevail within the consumption of low income households               | Decline                              |
| Standard rate<br>+<br>reduced rates for goods and services that prevail within the consumption of low income households  | Increase of the standard rate   | Decline                              |
|  | Decrease of the standard rate   | Increase                             |
|  | Increase of the reduced rates   | Increase                             |
|  | Decrease of the reduced rates   | Decline                              |
|  | The replacement of reduced rates with the standard rate   | Increase                             |
|  | The replacement of reduced rates with tax exemptions  | Decline                              |
| Standard rate<br>+<br>tax exemptions for goods and services that prevail within the consumption of low income households | The introduction of reduced rates and/or exemptions (instead of the standard rate) for some supplementary goods and services that prevail within the consumption of low income households | Decline                              |
|  | The change of the standard rate   | No effect                            |
|  | The replacement of exemptions with the standard rate  | Increase                             |
|  | The replacement of exemptions with a reduced rate   | Increase                             |
|  | The introduction of reduced rates and/or exemptions (instead of the standard rate) for some supplementary goods and services that prevail within the consumption of low income households | Decline                              |

*Source:* Authors' processings.

By introducing reduced rates or exemptions (instead of the standard rate) for some predominant goods and services within the consumption of low income households, the fiscal pressure (the weight of the taxes within the income) for all households is reduced, but the reduction of fiscal pressure in relative terms is more important for low-income households (if the size and structure of consumption doesn't change). Thus, VAT is less regressive with respect to the income than for the case of applying the standard tax rate to the entire consumption (the ratios  $\frac{T_1/V_1}{T_2/V_2}$  and  $\frac{T_1}{T}$  become smaller).

The introduction of reduced VAT rates and exemptions (instead of the standard tax rate) for goods and services that prevail within the consumption of low-income population determines a significant decrease of tax regressivity in relation to the income, if the structure of consumption differs significantly among varying income households.

#### 4. Conclusions

A single VAT rate applicable to the entire consumption leads towards a proportionality of the tax in relation to current expenditures and towards its regressivity in relation to current household incomes. The replacing of the standard VAT rate with reduced rates or exemptions for some predominant goods in the consumption of low-income households leads towards a progressivity of the tax related to consumption expenditures and it reduces the regressivity of VAT in relation to the current household income (if the size and the structure of consumption doesn't change). The same effect is achieved if the reduced rate is replaced by tax exemptions for goods and services that prevail within the consumption of low-income people.

The usage of diminished VAT rates and exemptions may ensure an efficient redistribution of the society incomes only if the structure of consumption differs significantly on income ranges.

#### 5. References

- Braz, C., da Cunha, J.C., 2009. The Redistributive Effects of VAT in Portugal, Banco de Portugal, *Economic Bulletin* 15(4), pp.71-86.
- CPB Netherlands Bureau for Economic Policy Analysis, 2013. *A study on the economic effects of the current VAT rates structure*, TAXUD/2012/DE/323.
- Cuceu, I., 2016. The Distributional Effects of Value Added Tax, *Ovidius University Annals, Economic Sciences Series*, Volume XVI, Issue 2, 2016, pp.450-454.
- Cuceu, I., 2008. Taxa pe valoarea adăugată: impozit antisocial?, *Studii și Cercetări economice*, Cluj-Napoca: Alma Mater Publishing House.
- Decoster, A., Loughrey, J., O'Donoghue, C., Verwerft, D., 2010. How regressive are indirect taxes? A microsimulation analysis of five European countries. *Journal of Policy Analysis and Management*, 29, pp.326–350.
- Institute for Fiscal Studies, 2011. *A retrospective evaluation of elements of the EU VAT system*, Report prepared for the European Commission, TAXUD.
- Kaplanoglou G., 2015. Who Pays Indirect Taxes in Greece? From EU Entry to the Fiscal Crisis, *Public Finance Review* 43(4), pp.529-556.
- Leahy, E., Lyons, S., Tol., R.S.J., 2011. The Distributional Effects of Value Added Tax in Ireland. *The Economic and Social Review*, Vol. 42, No. 2, Summer, pp.213–235.
- O'Donoghue, C., Baldini, M., Maltovani, D., 2004. Modeling the redistributive impact of indirect taxes in Europe: An application of EUROMOD. *EUROMOD Working Papers*, EM7/01.
- OECD/Korea Institute of Public Finance, 2014, *The Distributional Effects of Consumption Taxes in OECD Countries*, OECD Tax Policy Studies, No. 22, OECD Publishing.
- Ruiz, N., Trannoy, A., 2008. Le caractère régressif des taxes indirectes: les enseignements d'un modèle de microsimulation, *Economie et Statistique*, No. 413, pp.21-46.
- Schmutz, F., Schaltegger, Ch.A., 2018. *Progressive VAT? The redistributive effects of VAT rate differentiation*, Zenodo, DOI 10.5281/zenodo.1422789, Sep 20, 2018.
- Warren, N., 2008. A review of studies on the distributional impact of consumption taxes in OECD countries. *OECD Social, Employment and Migration Working Papers*, No. 64.