Measuring the Effect of Goods Exemptions on the Gini Coefficients and the Degree of Regressiveness of Value Added Tax; A Comparison between the Value Added Tax Low of 2008 and its Amendments in 2020

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Abstract

Value-added tax is a type of consumption tax that encourages investment and production by strengthening savings incentives. However, its regressiveness nature is a weakness of this type of tax, and because of the higher tax burden imposed on low-income deciles, it has adverse effects on income distribution. In the face of this problem, two approaches have been adopted in the countries implementing the VAT system; the first is to exempt the group of goods that have a high share of low-income households' spending baskets, and the second is to design a multi-rate tax system so that luxury goods and services are subject to higher tax rates. Iran is also one of the countries that, by focusing on the first approach, exempted a number of goods and services from the VAT law approved in 2008 and expanded the scope of these exemptions in the recent amendments approved by the parliament in 2020. In the present article, using household income-expenditure data in 1397, the effect of applying each of the above tax structures on the degree of regressiveness and Gini coefficient has been evaluated. The findings of the article indicate that first of all, the implementation of the value added tax structure approved in 2008 reduces the intensity of the tax burden of rural income deciles, but does not have much effect on urban income deciles. Secondly, the extension of exemptions in the amendment approved by the parliament in 2020 compared to the previous law in 1387, not only does not help improve the severity of the regressiveness of VAT, but also increases the tax burden on all income deciles of urban and rural households. Third, exemptions do not have a significant effect on the Gini coefficient and cannot improve income inequality. Given that expanding the scope of exemptions has virtually no role in reducing income inequalities, it is recommended that while limiting the scope of exemptions, a logical framework for exemptions be designed.

Keyword: Value Added Tax, Tax Exemption, Degree of Regressiveness, Gini Coefficient, Product by Product Input-Output Table.

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1. Introduction and the purpose of research

A value-added tax is a type of consumption tax that encourages investment and production by strengthening savings incentives. However, the most critical weakness of any consumption tax system, including value-added tax, is the "regressive" nature of this type of tax, which means that as a person's income increases, the share of tax paid on her income decreases (Burman and Slemrod, 2013). One way to deal with this problem is to exempt a group of goods with a high share in the basket of low-income households. By focusing on this approach, Iran is one of the countries that exempted several goods and services from the VAT law approved in 2008 and expanded the scope of these exemptions in the recent amendments approved by the parliament in 2020. In the present article, using household income-expenditure data in 1397, the effect of expanding the scope of exemptions on the degree of Regressivity and Gini coefficient has been evaluated.

A review of domestic research reflects the numerous studies published by researchers on calculating the inflationary effects of value-added tax (mainly using general equilibrium models) and distributive effects (often through econometric models). However, only one article by Milani et al. (2017) calculates the tax burden of different income deciles of urban and rural households and estimates the severity of VAT Regressivity during the pilot implementation period of the law has been done.

The innovation aspect of the present article in comparison with the study of Milani et al. (2017) can be proposed in at least three dimensions; "Using a newer and larger input-output table," "Using the latest Household Income-Expenditure Surveys," and "Providing a comparison between the effects and consequences of the implementation of the latest amendments approved by the parliament in 1399 compared to the law of 1387".

2. Statistical bases and research methodology

In this article, three statistical bases have been used; First, "Make and absorption tables of 1390" published by the Statistics Center of Iran in 1397, which is the basis for calculating an input-output table with dimensions of 155 goods (or product) in 155 goods (product) assuming a Fixed Products Sales Structure Assumption. Second, "Detailed results of household Income-Expenditure Surveys in 1397". Using this statistical base, parallel with the detailed input-output Table provides a more accurate picture of each income decile's "tax burden." Third, "Summary data of household Income-Expenditure Surveys in 1397," which makes it possible to calculate the "average income of each income decile."

- Calculate tax burden, degree of regressivity and Gini coefficient

The following three steps have been taken as follows to calculate the tax burden, the degree of regressivity, and the Gini coefficient.

Step 1: Calculate the symmetric input-output Table (product by product)

Step 2: Calculate the total tax paid in the exempt goods using the products' cost structure extracted from the first area of the input-output Table through relation (1).

(1) $$(T_j = \sum_{i=1}^{155} t_i Z_{ij}^{Net})$$

In relation (1) T_j refers to the total tax paid on the inputs of exempt goods, t_i refers to the tax rate contained in the Law on Value Added Tax approved in 1387 and amendments approved by parliament in 1399. Also Z_{ij}^{Net} reflects the net products of part j from part i, which are obtained through equation $Z_{ij}^{Net} = \frac{Z_{ij}}{1+t_i}$

Step 3: Calculate the effective tax rate on exempt goods. Through relation (2).

(2) $$t_j' = \frac{T_j}{Z_j}$$

By calculating the effective tax rate of exempt goods, the tax burden of each income decile can be calculated through Equation (3).

(3) $$TB_k = \frac{\sum_{i=1}^{n} t_i E_{ki} + \sum_{j=1}^{m} t_j' E_{kj}}{Y_k} \quad , k = 1, 2, \dots, 20$$

In equation (3) TB_k is the tax burden of each of the 10 urban and rural deciles, t_i the legal tax rate for the goods included and t_j' the effective rate calculated for the exempt goods. Moreover, E_{ki} describes each income decile's amount of expenditure on each group of taxable goods and services. Also, E_{kj} shows each income decile's expenditure on tax-exempt goods and services, and Y_k shows the average income of each income decile.

After calculating the tax burden on the income deciles of urban and rural households through equation (3), the severity or degree of regressivity of the value added tax system in the form of three structures of exemption of goods and services is calculated by dividing the tax burden of the first decile into the tax burden of the tenth decile.

Structure 1: All goods are subject to VAT and no goods are exempt.

Structure 2: Some goods are covered and others are exempt from VAT according to Article (12) of the Law on Value Added Tax of 2008. Nevertheless, the hidden tax is included in the cost of production. Structure 3: Some goods are taxed according to Articles (7) and (28) of the Amended VAT Law in 1399 and others are exempted according to Article (9), but the hidden tax is included in

the cost of production. The Gini coefficient, one of the leading indicators for estimating the degree of inequality, is also calculated in each of the above three structures using equation (4).

(4) $$G = \frac{1}{2n^2\bar{Y}} \sum_{i=1}^{n} |Y_i - Y_j|$$

In this regard, n shows the number of classes, $\bar{Y}$ average income or average expenditure of the whole society, Y_i and Y_j also show the average income or expenditure of income deciles i and j.

3. Analysis of results

By dividing the average tax rate of the first decile by the tenth decile (calculated in the article), the regressivity of the VAT is obtained in three cases, the results are presented in Table (1).

Table (1). The tax burden for the total food and non-food expenses of an urban household in 1397

Income deciles	Case 1: Inclusion of all goods and services	Case 2: exemption of some items according to the law approved in 1387	Case 3: Exemption of some items according to the legal amendments approved in 1399
rural	1.1741	1.0586	1.0932
Urban	1.0776	1.0772	1.1935

According to the results of Table (1), although in the third case, for rural households the severity of regressivity is less than the first case, but compared to the law of 1387, the situation has worsened. The same observation is verified for urban households, except that the exemptions of the 1387 law do not help much improve the severity of VAT regressivity, but the 1399 law does the opposite and makes conditions more difficult for lower-income urban deciles.

Next, the question is, what is the Gini coefficient in the above three cases. Furthermore, it will be observed whether the exemptions in the law of 1387 and its extension in the decree of 1399 affected the level of inequality in society. The related results are presented in Table (2).

Table (2). Gini coefficient

Income deciles	Case 1: Inclusion of all goods and services	Case 2: exemption of some items according to the law approved in 1387	Case 3: Exemption of some items according to the legal amendments approved in 1399
rural	0.352103	.353132	.0352726
Urban	0.359962	0.359903	0.359262

The critical point that can be seen in the calculations in Table (2) is that giving exemptions (either in the law approved in 1387 or the changes applied in the parliament's 1399 resolution) cannot reduce the Gini coefficient. Hence, it does not affect income inequality.

4. Conclusion and policy proposals

This study's policy findings imply that the use of exemption tools to reduce the Gini coefficient and make the distribution of income more equitable is not very helpful. Therefore, it is recommended that the scope of the exemptions be reduced as much as possible.

Expanding the list of exempt goods and services will reduce the VAT system's efficiency, reduce government revenues, lose taxpayer information, increase the likelihood of the "cascading tax" phenomenon, and reduce the information available for income tax collection and increase tax evasion. Therefore, it is recommended that the list of tax exemptions be reviewed, taking into account this paper's results.

Reference

Burman, L. & Slemrod, J., (2013). *Taxes in America: What Everyone Needs to Know.* Oxford University Press.