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Interaction effect between government tax revenues and metropolitan municipality of Ahvaz revenue study

Ali falahati[1], Mohsen bashiri khozestani[2], Somayeh alipourfard[3*]

1. Associate Professor Department of Economics, Razi University,Kermanshah, Iran.
2. Administrative and Finance Ahwaz municipal,Ahwaz,Iran.
3. Econometric PhD student, Razi University,Kermanshah, Iran, Ahwaz municipal income expert, Ahwaz, Iran.
Corresponding Author email: alipoorfardsomayeh@gmail.com

Abstract: Municipalities in many countries around the world, has a key role in the economic development of cities and making decisions about many aspects of the city's economy has been transferred to municipalities. Municipalities that are mainly responsible for serving the people and producing of goods and public service needed in the city, are dependent on sources of income for covering their costs. Thus, astudy of the affecting factors of Municipal revenue sources, especially tax resources are essential. Economically taxes are considered as one of the most relevant national and local government revenue sources. While Taxes are financing resources, they are being considered as an efficient tool to implement economic policies. For this reason, an efficient tax system is essential for the continuation of national and local governments. The lack of a proper tax systemnot only will lead toan absence of the above advantages, but also a reduction in social welfare and purchasing power of citizens and thereby reducing the revenues of municipalities. So it cannot be said that increasing governmenttax revenues are not necessarily leading to an increase in municipal revenue. This article will investigate the interactions between tax revenues with municipal revenues of Ahvaz by a VAR model. The results of this study show that the increase in tax revenues, leads to decreased revenues of Ahwaz Municipality.
Keywords: incomeMunicipality, tax income, exchange rate, AhvazMunicipality

Introduction

Municipalities as the operational levelmanagement inpublic sectororganizationsneed special financial resources. Municipalities are responsible for a wide range of tasks and to perform these tasks, they designed different programs and projects into practice. Implementation of these programsand projects will require financial resources. A lack of Continuous and sustainablefinancial resources will disrupt municipality,financial planning and budget and by following this process, current funding sources will not be accountable for growing municipal costs regarding services in the coming years. Therefore, study of the effective factors on municipal income is very important. One of the major macroeconomic variables is a tax which has major effects on Ahwaz municipal income. Tax revenues through municipal contributionsfrom this source of income and also disposable income of citizens after taxation and purchasing power and their demand for municipal services areeffective.
This article is trying to reviewthe interactionsof government tax revenues on Ahvaz MetropolitanMunicipalityrevenues.

The necessity ofresearch

The cost of buying or selling a unit offoreign moneyto the country currency is called the exchange rate. Internal and external equations have a special role in determining the exchange rate and also the power ofnational currencyand the value of its equityare crucial issues in today's world economic relations. In recent years, the study of currency fluctuations effects on relative prices of the economyhas a great importance in economic literature. The results show that Money supplyandinterest rates onforeign

currencyand the general price level are among thefactors thataffect the value ofthe exchangerateand the expectedrateof futurevariables.Increasing in Domestic money supply and the growingforeign interest rate will raisethe domestic price levelandthenominal exchange rate. And it leads to risingcostsandthe less willingness ofmanufacturerstoproduce. And by reducing production and increasing domestic prices and reduced purchasing power of people, will effect on municipal revenues (Department of Economic Affairs).
Taxesare the most commonandthe most importantfinancialresourceforthe provision ofpublic funds andoneof the most effectivetoolsof government fiscal policy. The governmentcan servemanysocial servicesandwelfare toitspeopleandgive necessary direction to manyeconomic and socialactivities .The taxes have severaleffects and each tax basealsohasamaximumcapacitythat can be exceededdue to theaccelerationin the reduction ofeconomic activity, so it will reducetax revenues.

Taxesare as follows

1. theindirect taxes,which will take place by withdrawing fromthe incomeandassets ofpeopleindirectly and by increasing the prices of commoditiesandservices.
2. Thedirect taxes, which its mainsources are incomeandassets ofnatural and legal personsandwill be receiveddirectlyfromthem.

A considerableshare ofindirect taxesin the composition ofgovernment tax revenuesand considering thepossibility offurthertax transferring onthistypeoftaxes andtheir unclear impacthas causedthe improperrole of indirect taxesin the control ofinflationandthe toolforoptimizinginvestmentsby the Government.(Zandi,1990)
Mostdeveloping countries were associated withdeepinequalitiesinwealthdistribution, consumptionandincomeandtheir economic structureshavesufferedfromhigh inflationandlack of capital. Oneofthe best ways tocompensate for theinequalityand optimal allocation of resources isappropriatetaxpolicies. (Yazdi, 2000)

On the other hand, the taxresourceswhich meantaxableactivitieswill stretchtowards taxrate; thismeansthat the reducingandincreasing tax ratesaffect activities and income. This causes an increasing on earnings and thus national and local government tax revenues by changing tax rates.
The value-added taxis the most common taxthat the governmentand municipalitieswillreceive for their funding.VATisaconsumption tax, which will be received inimportchain, productionanddistributionaccording to the percentage ofthe value of goodsand included services.This tax was first designed byvon Siemensin 1951,toovercome thefinancial problemsof Germany.VAT is an indirect tax,whichtheconsumer will pay it withthe purchase valueof goodsand servicesand the recipientis required todeposittheamount oftaxesto the state treasury.Since the seller haspaidsuch a taxon his initial purchase, but he is not aconsumer, he has the right to deduct his total pay value addedtaxfrom his total received value added tax and pay therest of ittothe government.
Accordingto what was said aboutthegovernmentrevenuesand the impact oftax ratesonactivities level and tax revenues andwith regard to themunicipalities' shareofvalue added taxrevenues, includingAhvaz municipality and also the effect of changing exchange rate on theproducer level of activities,investigating the interactions between government tax revenuesandexchange rates andrevenues of Ahwaz Municipalityseemsnecessary.

Determining non-optimaltax rateslead to reduced purchasing power of citizenswhich this will follow by decreasingthemunicipality'srevenuesthroughnon-paymentof municipal services,on the other handnon-optimaltax rates lead to reducing the level ofgenerating activities and the reduction ofmunicipality'srevenues.Increasing in government tax revenuesdue tothe adoption ofnon-optimalratesmay bereducethe level of activityandeconomicgrowth in the long term, but in the short termmay belead to atemporary increasemunicipality'srevenues through themunicipalities'shareofvalue added tax.Thus,a study of the amountandimpact of thesefactorsonmunicipality'srevenuesis essential.

Experimental studies background

In a research, HassanZadehandKhosro Shahi(2011) studythe model of efficientfundingprovidedtomunicipalitiesin large cities, according to social justice they stated that theneglectofthisissuewill cause thecitizens' deprivation whocannot paytaxesforusing producedgoods and services.In order toresolve thisproblem, they offered a localtaxesprogressive toolandgovernmentgrantsfinancial assistancetomunicipalities.

In a research, AkbariandmuezzinJamshidi(2011) studythevalue added taxas a source of a stable income forthe managementof cities.In this research, by a fluctuationdescriptive study ofmunicipalities'revenue sources, they found theincomevalue added tax position and level

onmunicipalities'revenue sources.The results showed that the value added taxcouldconstitutea significant share ofmunicipalities'revenue source.

Mehreganandcolleagues(2011) examined the interaction between governmenttax revenuesandmunicipality ofTehran income in the form of VARandpaymentintegration model.This research resultsshowedthat the increase in government revenuesleads todecrease intherevenuesof Tehran municipality.

Research Methodology

The Vector model (VAR)

The Vector model (VAR), is presented bySims(1980). Sometimes, it is possible thatthe economictheoryhas not the necessary power todeterminethe relationshipbetween variables.In such a situation, using VARmodelscanberemedied. Anders (2004) states that theVARmodelprovides adirectmethodto forecastregardless ofhow thevariables in the model will affect other variables. VAR model mathematical representationis as follows:

$$Y_t=A_1Y_{t-1}+\ldots+A_py_{t-p}+Bx_t+e_t \quad (1)$$

Where Y_t is a vector with k components of endogenous variables, x_t is a vector with d components of exogenous variables, A_1, ...,A_p and b are matrices of coefficients which should be estimated. Finally, e_t is a vector of transformation that may be simultaneously correlated, but they have no correlation with their own lagged values and variables on the right side. Since only lagged values of the endogenous variables appear on the right side of equations, the problemof synchronization will not appear and the ordinary least squares OLS method provides compatibility estimates. In the standard VAR model, in general the disorders are shown by correlations at the same time. This makes the system response to changes in a variable;answered all those variables that are correlated with that variable. However, correlation at the same time will resolve by anorthogonalprocessofCholsky. (Farzanegan and Marquardt, 2009)

The main tool used to estimate VAR models are the impulse response functions (IRFS). IRFS will allow us to obtainthe dynamic shock effects on a specific variable on other macroeconomic variables. Through IRFS we can showthe size and statistical significance of the available variables in the model to increasing the size of a variable standard deviation shock. (Sadeghi and Shawwal pour, 2010)

Integration test

Since in the estimated autoregressive models, stationary variables of the model are necessary and also due to the fact that there is useful information in the variable level, which will be lost by differencing, so the co-integration should be examined variables. The concept of integration in the 1980s was presented to solve stationary problems and the possibilities to study the long-term relationships between non-stationary variables were provided.In this study, we used Johansen and Juselius testing and two statistic largest eigenvalues and effect test, for finding a long-term relationship between the variables under investigation.in the test of special value, respectivelythe null hypothesis of not existing the co-integration, relation and against the existence of a stacked relationship and existing the co-integration relation in front of two stacked relationship and etc. will be tested.in effect test also hypothesis of not existing the co-integration relation in front of existing the co-integration and existing of one or less than one stacked relation in front of two stacked relation and etc. will be tested(Nofresty,1999).

Model estimation

In this study, regarding statistical analysis and doing econometric methods, the 7.1 eviews software has been used and for examining the relationship between government tax revenues and exchange rate with Ahvaz municipality'sincome, the VAR techniques (VAR) is being used.

The variables which are used in the model are as follows:

LR: natural logarithm of municipality's revenues in Ahvaz

LT: the natural logarithm of government tax revenues

LA: natural logarithm of exchange rate

The model of this study has been estimated for the period of 1M2007-12M2014.

Study of static variables

For studying the static variables in this article augmentedDickey-Fuller test which is considered one of the most authentic static tests, is used and by comparing Dickey-Fuller statistics and critical values of MacKinnon, we Study the status of variables.

Table1.The test results of model static variables fromaugmented Dickey- Fuller's unit root test

First differences		level		Variable name
4.69-	augmented Dicky Fuller	0.60	augmented Dicky Fuller	LR
2.89-	MacKinnon critical value at the level of 0.05	2.89-	MacKinnon critical value at the level of 0.05	
8.52-	augmented Dicky Fuller	1.45	augmented Dicky Fuller	LT
2.89-	MacKinnon critical value at the level of 0.05	2.89-	MacKinnon critical value at the level of 0.05	
9.88-	augmented Dicky Fuller	0.02	augmented Dicky Fuller	LA
2.89-	MacKinnon critical value at the level of 0.05	2.89-	MacKinnon critical value at the level of 0.05	

Source: research calculation

The stationary of variable results show that all variables under investigation areplaced in the non-stationary level and became stationary after one differencing.

Cointegration test

In this study Johansen and Juselius testing andtwo largest statisticseigenvalues and effect test, is used for finding long-term relations between the variables under investigation. If this statistic in significant levels of interest is greater than the critical value, the null hypothesis that there is no long-run relation between variables can be rejected , and subsequently, the hypothesis thatimplies the existence of up to one long-term relationand up to two long-term relations and... will be investigated. According to this test result in the table (2) and (3), both statistics effect and maximum special value of existing a long-term relationshipis being approved at the confidence level of 95% between variables of the model.

Table2. The results of the effect test to determine the number ofco-integrated vectors

hypothesisH_0	hypothesisH_1	The value of probability level at 95%	Statistics effect)trace(	Critical value (0.05 level)
r=o	r>0	0.045	24.58	24.27
r=1	r>1	0.575	4.94	12.32
r=2	r>2	0.175	2.08	4.12

Source: research calculation

Table3. The results of the maximum special value test to determine the number of co-integrated vectors

hypothesis H_0	hypothesis H_1	The value of probability level at 95%	The maximum amount of eigen statistics	Critical value (0.05 level)
r=o	r>0	0.026	19.63	17.79
r=1	r>1	0.808	2.86	11.22
r=2	r>2	0.175	2.08	4.12

Source: research calculation

In the following, according to equation (2), long-term relation is selected between the estimated model variables and the normalized vector toward first endogenous variable. As it can be seen in the selected optimal vector,all variables are statistically significant coefficients.

LR=-O.5956LT-0.7917 LA (2)

t=3.62)(t=8.92)(

The results of determining the appropriate lag length in the model

To determine the number of long-term relation with Johnson method (VAR) is necessary to first estimate VAR model variables according to vector variables so that by the resulting coefficient matrix characteristic root test , the long term relationship between variables will be determined.The first step in estimating the optimal lag model is in the VAR model. For this purpose, it is first necessary to determine a maximum interval for the test.Because of the relatively small sample size and more than threelags, will reduce the degree of freedom, the maximum two lags is being set to test. This work has been done by using

Akaike (AIC) Schwartz Bayesian (SBC) - Henan Quinn (HQC) criteria. Results of Ivano vakilianstudy (2005) showed that for a sample size of less than 120, the most suitable criterion is SBC.

Philipp and Ploberger (1994), based on simulation studies also showed that the criterion of Schwartzis generally better than Akaike criterion in the selection of lag. One of the improper effects of lags in the pattern, creating autocorrelation in the remaining sentences. In addition, the normal condition of the remaining sentence patternis influenced by this choice.

Table

Thus, according to the test results, determining the optimal lag of VAR model and based on Schwartz criteria, one lag has been chosen as a proper lag for this model.

Table4. Determining the optimal lag in the VAR model

Number of lags	SBC	AIC	HQC
0	2.266076	2.183310	2.216697
1	*0.825595-	1.156697-	*1.023118-
2	0.658792-	1.238221-	1.004458-
3	0.438920-	1.266676-	0.932728-
4	0.300340-	*1.376423-	0.942291-
5	0.42454-	1.366863-	0.832546-

Source: research calculation

Impulse response functions and variance analysis

These functions are considered as one of the tools in the study of varied dynamic movements. In These functions a shock standard deviation will be evaluated in each selected variables of the system. Using this criterion, we can determine the shock duration effect and maximum shock impact after shock happens. (Khanjari and Homayounifar, 2011)

Chart 1 shows the logarithmic response of Ahwaz municipality's revenues over the shock fromlogarithm variable tax revenues and logarithmic response of tax revenuesover the shock fromAhwaz municipality's revenues logarithmicin the size of a standard deviation for ten courses.

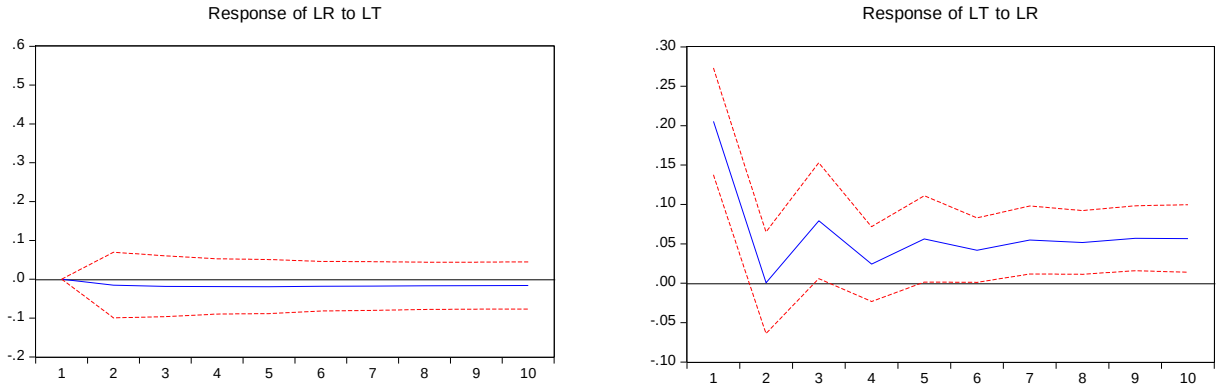

Figure 1. Impulse Response Function

As Figure 1 can be seen, the shock by the LR variable during the second and third period, will increase0.079 percent in LT variable, from the third to the fourth period resulted in a 0.024 percent reduction of LT, but from the fourth courselater, it will increase with a gentle slope and then reaches an stabilization till the end ofthe period.

The shock of the LT variable from the middle of the first period until the end of the second period, leads to 0.02% LR reduction and it will reach stability from the second period.

One of the VAR model applications is analyzingthe variance that arises after coming momentum. In this method, the forecasted error variance will be decomposed in to elements which include momentumsof each variable. In other words, this shows the percentage of change is explained by another variable.

Ahwaz municipality's revenue variance analysis in Table 5 shows that in the first period, 100 percent of the changesare related to the variable itself. In the second period,97.72 % of the changesare related to the variable itself and the rest are related to another equation variable. In the first period, Ahwaz municipality's income variable is not affected by tax revenues and the exchange rate. In the tenth period, theeffect of tax revenues has the greatest impact on the revenue of the municipality in all periods.

Table 5 . Analysis of variance for Ahvaz municipality's revenues (LR)

LA share shock	LT share shock	LR share shock	Period
0	0	100	1
1.11	1.15	97.72	2
1.58	1.30	97.11	3
2.30	1.96	95.73	4
2.69	2.58	94.71	5
3.84	2.68	93.46	6
3.83	3.77	92.38	7
4.87	3.84	91.27	8
5.82	3.90	90.27	9
5.74	4.95	89.29	10

Source:research calculation

Conclusion

Government's tax policies are Among the most important tool to finance and economic goal achievement. One of the main factors of not achieving a stable urban development isneglecting the tax issue. If taxing happens with optimal tax rates, will lead to economic growth and prosperity in the city and municipality's revenues will be increased. But if tax rates were not favorable, it will lead to lower levels of activity and purchasing power of citizens and consequently the revenues of the municipality will be reduced despite its share From the VAT.

The results of this study show that increasinggovernment tax revenues leads to decreasing Ahwaz municipality's revenues so that a shock from the government tax revenues in the middle of the first period till the end of the second period, leads to 0.02 percent reduction in Ahwaz municipality's revenues.Johansen 's co-integration model results show that one percent, increasing in government tax revenues leads to 0.5956 percent decreasingin the municipality of Ahvaz revenues.High government tax revenueswere in such a way that evenAhwaz municipal share From the VAT revenue, failed to offset its revenue declineand this municipal revenue decline can be attributed to reduced activity levels and reduced incentives for manufacturers due to the top and unfavorable tax rates and also reductionof the people purchasing power.However, the results show that increasing Ahvaz municipality revenues from the second to fourth periodwas faced with increasing and decreasing government tax revenue fluctuation but from the fourth period later it is rising with a gentle slope.

The results show that a percent change in the exchange rate leads to 0.7917percent,decreasing in Ahvaz municipality's revenue,so this shows that reduced levels of manufacturing activity and a recession in the market and reduce the purchasing power of citizens due to the high exchange rate, resulting in reduced levels of income derived from the Ahwaz Municipality.

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