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THE ELEMENTS THAT INFLUENCING TAX PERFORMANCE IN TURKEY

TÜRKİYE'DE VERGİ PERFORMANSINI ETKİLEYEN UNSURLAR

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ABSTRACT

It can be said that tax evolved in the history of humanity, with the need of people to live together with social developments. Particularly due to the social developments, the increase in the collective needs and diversity necessitated the existence of tax. The political authority that determines the taxation process, uses the power it holds in the budgeting of the taxes. It is important if this power is used in accordance with the non-financial objectives of the tax as well as the original purposes. At this stage, tax performance values and tax effort values for a country are important indicators of the success of the taxation process. The aim of this study is to identify the basic components influencing the financial and economic performance in terms of tax in Turkey and to determine the status covering the 1975- 2014 period. In this period; the effects of savings, tax burden and bureaucracy on tax performance were determined.

KeyWords: Tax Performance, Tax Effort, Tax Burden

ÖZ

Verginin insanlık tarihinde, insanların birlikte yaşama ihtiyacıyla birlikte ortaya çıktığı, toplumsal gelişmeler ile birlikte geliştiği söylenebilir. Özellikle toplumsal gelişmelerin de etkisiyle kolektif ihtiyaçlardaki artış ve çeşitlilik, verginin varlığını zorunlu kılmıştır. Vergilendirme sürecini belirleyen siyasal otorite elinde bulundurduğu gücü, tahsil ettiği vergilerin bütçe içerisinde harcanması aşamasında da kullanmaktadır. Bu yetkinin vergilerin asli amaçları yanında mali olmayan amaçlara da uygun olarak kullanıp kullanmadığı önem arz etmektedir. Bu aşamada bir ülke için vergi performansı değerleri ve vergi gayreti değerleri, vergileme sürecinin başarısının önemli birer göstergeleri olmaktadır. Türkiye açısından vergi performansını etkileyen temel mali ve ekonomik bileşenlerin tespitini hedefleyen çalışmada, 1975- 2014 dönemini kapsayan durum belirlenmeye çalışılmıştır. Söz konusu dönemde vergi performansı üzerinde; tasarrufların, vergi yükünün ve bürokrasinin etkisi tespit edilmiştir.

Anahtar Kelimeler: Vergi Performansı, Vergi Gayreti, Vergi Yükü

1. INTRODUCTION

Tax is defined as income or wealth of the society's individuals in order to fulfill the public services that the state is obliged to fulfill in the procedures, principles and proportions stated in the laws (Edizdoğan et al., 2013: 220). It is clear that taxation is the major source of budget especially in developing countries so taxation policy has always been an important fact for augmenting revenue. Taxation provides the government to finance public services and contribute to economic growth, alleviate poverty. For the realization of these objectives, tax system should comply with the principles of transparency and fairness.

Taxation objectives determined by decision-makers and tax collection capability of governments are directly linked to each other. Accordingly, the government's success in using the tax potential and achieving its tax objective will depend on some micro and macro indicators. For all that taxes are an integral part of a social contract as well as effective functioning of the state. This social contract is between

states and citizens. The process of taxation has served as a bridge by providing dialogue between states and citizens.

Tax performance is defined as providing the highest level of tax capacity by taking into consideration the optimal combination of justice and efficiency criteria (Rakıcı and Aydoğdu, 2017: 222). There are two basic measures of tax performance, one of the main issues of the study: tax capacity and tax effort. Tax effort by Pehlivan (2014); the tax capacity is expressed as the proportional relationship between the tax revenues actually collected and the importance of tax performance is emphasized in terms of taxation countries. The tax performance expressed here means that the potential for taxation is to be achieved to a great extent, and it is not necessary to collect more public revenue by keeping tax rates high, but to use the country's current tax potential

2. THE LITERATURE FRAMEWORK

The concept of tax performance is evaluated with the concept of tax capacity. When the taxable capacity of a country is estimated, this means that the expected tax yield is estimated. In the empirical studies in which key determinants such as tax effort, tax burden, and tax performance were used, it was tried to determine the relation of these components with each other or with macro economic variables. Especially, per capita GDP and the level of openness have positively influenced the main components of taxation, namely tax burden, tax effort and tax capacity.

Stotsky and WoldeMariam (1997), studied on tax performance with panel data from 30 countries. In their empirical study the time was period 1990-95. They found that per capita GDP and export share in GDP are positively significantly associated with tax revenue performance. They also calculated tax effort index that shows which countries having high tax-to-GDP ratios.

Eltony in his study in 2002; developed the index values of the tax effort between 1994 and 2000 in terms of Arab countries and underlined that a successful public bureaucracy with the value of GNP per capita could affect the tax effort index values. Also export, inflation rate, interest rate are the main components of taxation. Some of the main articles we can see that the growth trend of the economy has affected the tax effort and tax capacity. Karnik and Raju (2015) in their empirical study of India using 10 years of data calculated the tax effort for various tax types and found that corruption and corruption in the public sector reduced the efficiency expected from taxation.

Arif and Rawat (2018) suggested that good governance has a positive and significant impact on tax revenue collection, by affecting the tax administration especially in developing countries,. In this context, they underlined the need for strategies to improve governance quality and reduce corruption. For this reason, countries need to implement some tax reforms, such as combating corruption and more importantly, increasing the tax base rather than increasing tax rates. Lotz and Morss (1967), in their analysis with data from 72 countries, stated that per capita GNP and openness level affect the basic components of taxation, namely tax burden, tax effort, tax capacity positively. Similar results were found by Stotsky and Asegedech (1997) and found that the export size and per capita income variables had a positive effect on the tax effort. Piancastelli (2001: 16) studied comprehensive update of the measurement of the tax effort in both developed and developing countries. He found that both the GNP per capita and trade ratios, are significant results for the full sample of 75 countries. So we can say that per capita income and the ratio of trade to GDP are positive strong determinants of tax revenue according to his study.

In a study by Berksoy Turkey in 1984, there is an evaluation of tax capacity measurements in developing countries, and also the tax assessment model is evaluated. A similar study in 2008 by Dursun with the period of 1990- 2006, he calculated the tax capacity in Turkey and has determined that the tax charged under the country's capacity. This is generally accepted that there are two main components of taxation which are tax administration and tax system reforms. These elements are significant and responsible on reducing corruption and tax evasion with increasing the efficiency of revenue collection.

We can see that in general, the governance quality of developing countries is weaker. This situation also affects the tax administration and results in lower tax revenues in budget. Especially in recent years, there are literature studies on the relationship between governance quality and tax structure, tax system and administration. From these studies, it can be seen that, countries with low corruption and good governance have some common characteristics. For example; freedom, financial transparency, effective and independent judicial system, financial discipline, stable economic policies. When the studies made in the literature, especially the focus on the main determinants of tax capacity, have not examined the relationship

bureaucracy with actual tax effort and other institutional determinants that can be regarded as the literary contribution of the designed work for Turkey.

In this direction, the relationship between bureaucracy, exports, actual tax burden and savings will be examined by taking into account the calculation of tax performance (collection and accrual rates) in terms of tax revenues in 1975-2014 time period.

3. THE SCOPE OF THE RESEARCH

Tax performance in a country may be closely related to certain financial and economic characteristics, primarily to the success of the tax system. An increase in tax performance is desired, which is important with its contribution to the financial function of taxation. In the present study, certain financial and economic indicators were scrutinized. Dependent and independent variables included in the dataset were compiled using official Revenue Administration Directorate, Ministry of Development, and Under-secretariat of Treasury statistics.

In the present study 1975- 2014 (40 years) dataset for Turkey was used and the analysis was conducted with E-views 9.0 software. Information on the variables is presented in the table. In order to test the causality between the series, it was first necessary to test the series for stationary. However, it was observed that several macroeconomic series were not stationary. Due to the fact that the series were not stationary, the problem of spurious regression is experienced (Granger and Newbold, 1974: 111-120). The mean and variance of the non-stationary series, however, change over time. In order to render a non-stationary time series stationary, it is necessary to take the difference of this variable. A variable whose difference should be taken x times in order to make the series stationary is expressed as I(x).

One way of testing for stationary is the unit root test. To determine this condition, Augmented Dickey Fuller Unit Root Test (Gujarati, 1999: 718-719), which is commonly used for the determination of the stationary in econometric models, was conducted on the variable series in the model. The cointegration test is required to understand whether the non-stationary time series can be tackled with level values. However, in order to perform this test, when the differences of the variables are taken at the same level, they should become stationary, in other words their integration levels should be the same.

The methods proposed by Engle and Granger, and Johansen and Juselius are commonly used to determine the cointegration between the series. The long-term correlation between the series can be determined by the Johansen-Juselius method using the two-likelihood test statistics; the maximum eigenvalue (λMax) and the trace statistics (λTrace). Cointegration analysis can reveal whether economic variables that are considered to be correlated move in concert in the long run.

After the causality was determined between the variables, a correlation analysis was performed to demonstrate the correlations between the two variables. The objective of correlation analysis is to determine how the dependent variable changes with a change in the independent variable. Correlation coefficient (r) could vary between -1 and +1.

4. ECONOMETRIC METHOD AND FINDINGS

The present study was conducted to determine the impact of financial variables that affect the general budget tax performance in Turkey between 1975 and 2014. Therefore, for our analysis, we estimate the following model:

$$TP = \beta_0 + \beta_1 B + \beta_2 TB + \beta_3 EXP + \beta_4 SV$$

where;

TP = Tax performance (General budget tax revenues collection / accrual rate)

B = Bureaucracy (non-interest public expenditures / GDP)

TB = Actual Tax Burden (Tax revenues / GDP)

EXP= Export (Export as dollar values)

SV= Saving (Domestic savings / GDP)

In order to estimate the Equation 1 above, it is necessary to investigate whether the variables included in the model contained unit roots over time using the Enhanced Dickey-Fuller (ADF) test.

Table 1: ADF Unit Root Test Results

VARIABLES	***Augmented Dickey- Fuller Test Statistics***	
	No trend (p)	With trend (p)
(Level) log TP	0,519	0,084
(Level) log B	0,878	0,621
(Level) log TB	0,946	0,703
(Level) log EXP	1,000	0,331
(Level) log SV	0,481	0,617
( ) log TP △	***0,000****	***0,010****
( ) log B △	***0,000****	***0,000****
( ) log TB △	***0,000****	***0,000****
( ) log EXP △	***0,001****	***0,000****
( ) log SV△	***0,000****	***0,002****

*unit root contains at 1% level

Unit root test results demonstrated that all variables included unit roots based on their levels and were not stationary. The PP test results and the ADF test results for the series that became stationary after the first differences were taken demonstrated the above-mentioned finding. Hence, the HO hypothesis (series is not stationary) was accepted. The stationary was obtained when the first degree differences were taken, thus I(1) was accepted.

4.1. Determination of the Optimum Lag Length

In the determination of the lag length required for the border test, the lag length maximum was accepted as 4, and the 2nd lag with the smallest AIC and SC values among the lag lengths was selected.

Table 2: VAR Lag Order Selection Criteria

Lag	LR	FPE	AIC	SC	HQ
0	NA	4.36e-09	-5.062561	-4.844869	-4.985814
1	278.9911	1.58e-12	-13.00125	***-11.69510****	***-12.54077****
2	***41.13668****	***1.35e-12****	***-13.23207****	-10.83747	-12.38786
3	22.71550	2.19e-12	-12.96241	-9.479348	-11.73447

*indicates lag order selected by the criterion.

Johansen Cointegration Test was conducted after determination of the optimum lag length.

4. 2. Cointegration

It is necessary to determine whether the variables are co-integrated after it was determined that the series were integrated at the first degree. The cointegration test investigates whether there was a long-term correlation between the series.

Table 3: Johansen Coentegration Test

(Max. Eigenvalue Test)				
H0 hypothesis	HA hypothesis	Eigenvalue Test	Critical Value	Prop
r=0	r=1	32.1666	38.331	0.2152
r=1	r=2	29.1998	32.1183	0.1091
(Trace Test)				
H0 hypothesis	HA hypothesis	Trace Test	Critical Value	Prop
r=0	r=1	120.899	88,8038	***0.000***
r=1	r=2	88.7331	63.8761	***0.001***

Trace statistics are more powerful when compared to the max eigenvalue statistics (Kasa, 1992, Serleties and King, 1997). Thus, the presence of a long-term correlation between the series is accepted (since p<0,05, no cointegration hypothesis i.e., H0 is rejected). As a result, it was determined that there was cointegration between the series.

4. 3. Short-term Correlation: Correlation Between the Variables with Vector Error Correction Model (VECM)

The next step after the determination of long-term correlation between the series is the identification of causality and direction of the causality between the series. Granger (1988) suggested that standard Granger causality would not be valid when the variables were co-integrated, and the causality analysis error correction model (ECM) should be utilized. The error correction model was developed for this purpose and used to distinguish between short term dynamics and long term equilibrium of the variables and to determine short term dynamics.

Engle and Granger (1987) demonstrated that error correction mechanisms can be written if there is a long-term correlation between the variables in their study. Thus, it was suggested that a deviation in the long-term balance can be corrected. Correction of deviations is provided by error correction term (ECT) in regression. Thus, Granger test causality vector error correction model (VECM) was used to analyze the time series in the study.

In the error correction model, the coefficients of the independent variables with lagged values, the significance of the standard F-statistic, or the significance of the error correction variable t statistic indicate the presence of causality. In error correction models, one-lagged version of the error terms is included in the model.

These error terms must also be stationary at their levels. In the test of the error terms with ADF test, the p value is 0.035. In other words, error terms are stationary at level values. The new regression equation that included the error correction model and the logarithms of the series is presented in the table below:

Table 4: Error Correction Model Estimation Results

Dependent variable (Δ) log TP	Coefficient	Std. Error	t-statistics	Prob.
(Δ) log B	-0,17870*	0,050	-3,557	***0,001***
(Δ) log TB	0,248*	0,044	5,610	***0,000***
(Δ) log EXP	-0,0033	0,004	-0,688	0,495
(Δ) log SV	0,0856*	0,032	2,611	***0,013***
λ**	-0,338*	0,115	-2,922	**0,006**
C	4,114*	0,163	25,215	0,000
R^2	0,425			
Adjusted R^2	0,338			
DW	1,487			
AIC	-4,945			
F-statistics (prob)	***0,001****			

*Meaningful at 5% level

**In the error correction model, the error term coefficient is in the range of -1 to 0, and it should be meaningful. The coefficient of the error term indicates how much of the previous year's equilibrium distortion has improved in this period, and 33% of a unit error corrects the next period.

The significance of the estimated parameter reveals the presence of a linear correlation between the variables in the short term. The estimated error correction term (ECT_{t-1}) that corrects the deviations in the short term, was 0.33. This value that negative value as expected. This statistically indicated that the coefficient was significant. In the short term, tax performance is positively and significantly affected (p = 0.001) by its lagged value. This indicated that there was a significant correlation between tax performance and actual tax burden, bureaucracy and domestic savings both in the current period and in the lagged period. This correlation was negative with bureaucracy, and positive with actual tax burden and domestic savings.

DlogTP= 4,114+ 0,248*DlogTB- 0,178*DlogB+ 0,085*DlogSV- 0,338*u(-1)

(D: first level difference)

Thus, it could be concluded that both actual tax burden and the bureaucracy affect tax performance in the short term. This effect was 25% for the actual tax burden, i.e. a unit increase in the tax performance was dependent on a 25% increase in actual tax burden when the other variables were constant.

It can be stated that the bureaucracy had an effect on tax performance, however this effect was negative, and the coefficient was low (17%). Furthermore, since there was negative correlation between these

variables, although the coefficient was low, it can be stated that the increase in bureaucracy reduced the tax performance.

Domestic savings, on the other hand, had a very low impact on tax performance, however this effect was positive. This effect was about 1% for domestic savings, thus a unit increase in tax performance was dependent on a 1% increase in domestic savings when other variables are constant. The economic variable effective on tax performance in Turkey was the domestic savings; an increase in domestic savings would improve the tax performance. The financial variables include the size the public sector and the total tax burden. Since the growth of public sector, that is, the increase in public expenditures, reduces the tax performance, preference of an economic structure where the public sector is small could lead to a positive impact on tax performance. Furthermore, the increase of tax revenues within total public revenues increases the tax performance. Thus, the increase in public revenues by reducing the informal economy and increasing the tax awareness would directly affect the success of the tax system, hence the tax performance.

5. CONCLUSION

Many studies that are related with exploring the impact of different variables on tax effort or tax performance assume that there are determinants seen in most developing countries. The literature provides us with some initial sign regarding the identification and tax performance behavior of specific country groups. The effectiveness of tax system and tax administration based on some economic variables such as economic growth, GDP per income, development process, economic and also politic stability therefore directly or indirectly.

In this study, in order to identify the reasons for the changes of the tax performance in Turkey the impact on tax performance of some basic variables was examined. In the short term, tax performance is positively and significantly affected ($p = 0.001$) by its lagged value. According to this result that there was a significant correlation between tax performance and actual tax burden, bureaucracy and domestic savings both in the current period and in the lagged period. This correlation was negative with bureaucracy, and positive with actual tax burden and domestic savings. . This effect was 25% for the actual tax burden.

When we look for the bureaucracy It can be stated that it had an effect on tax performance, however this effect was negative, and the coefficient was low (17%). The other variable was domestic savings that had a very low impact on tax performance, however this effect was positive. This effect was about 1% for domestic savings, thus a unit increase in tax performance was dependent on a 1% increase in domestic savings when other variables are constant.

The domestic savings can be taken as economic variable effective on tax performance in Turkey. As financial variables, the size the public sector and the total tax burden can be taken. Since the growth of public sector means that the increase in public expenditures, reduces the tax performance. Furthermore, the increase of tax revenues within total public revenues increases the tax performance. Thus, the increase in public revenues by reducing the informal economy and increasing the tax awareness would directly affect the success of the tax system, hence the tax performance.

As a result, tax burden increases tax performance with the result of this regression. The fact that tax burden in developed countries is higher than in developed countries explains this situation. This situation has a direct relation with the per capita income level in to these countries. According to the findings of literature, there is a statistically significant and positive relationship between tax burden and GDP per capita in the long run. The country is wealthier due to economic growth and development process. And this process will improve life standards and economic preferences as well as the power of tax payment.

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