Does "Revenue-led Spending" or "Spending-led Revenue" Hypothesis Exist in Turkey?

Eyup DOGAN
Ph.D. Student, the John E. Walker Department of Economics, Clemson University, Clemson, South Carolina, 29634, USA
E-mail: edogan@clemson.edu
Phone: (001) 864-207-0671

Abstract

This study aims to find the direction of linkage between government expenditure (GE) and its revenue (GR) applying econometrics in time-series techniques covering the annual data over the period of 1924 and 2011. The final result of this study exerts that there is unidirectional causality running from GE to GR, and supports spending-led revenue hypothesis. In detail, ADF unit root test indicates that both time-series data are non-stationary at their levels, but become stationary series at their first differences. The Johansen co-integration test shows that long-run equilibrium exists between GE and GR, and the effect is statistically and economically significant. Granger causality test exhibits that there is a unidirectional causality from government expenditure to government revenue.

Key Words: Government Spending, Government Revenue, Causality.

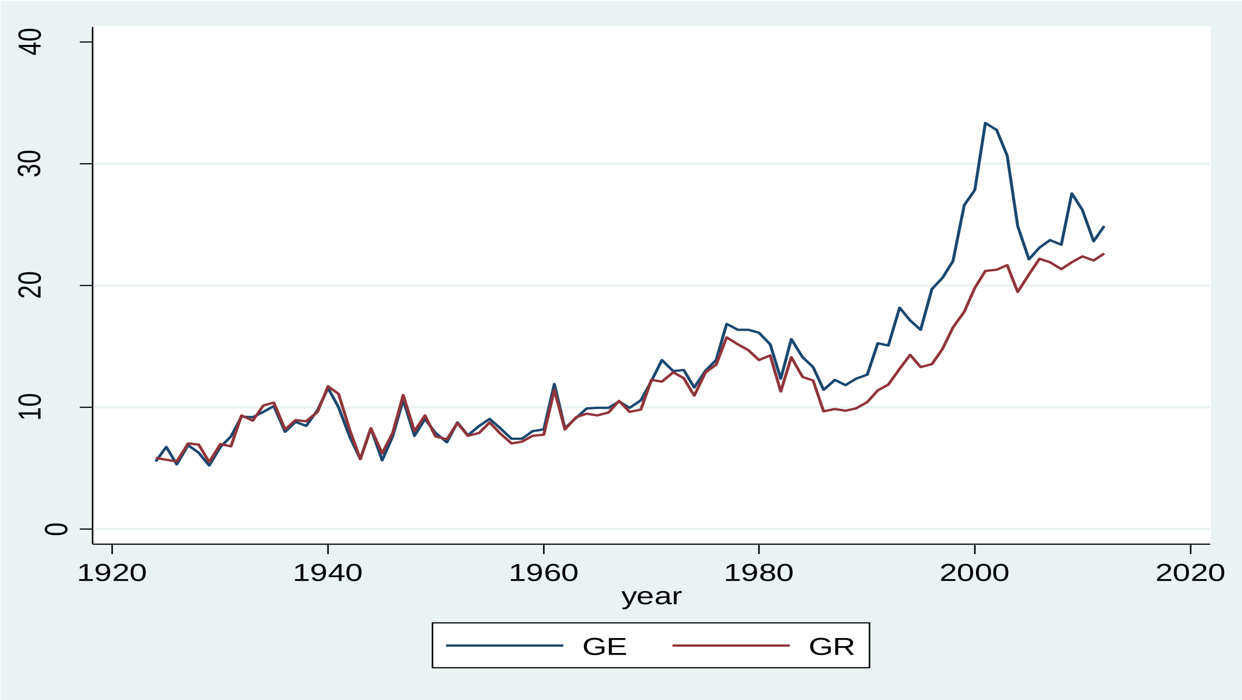
JEL Code: C22, H10, H50

1) Introduction

Many papers have been devoted to deal with concerns in public finance for many years. The debate on the causality between government spending and its revenue still exist to date. The difference between government expenditure and its revenue broadly refers to either budget deficit or budget surplus depends on the sign of the subtraction. If the government experiences a budget deficit in the current year, the economy will intuitively deteriorate caused by the reduction in national savings, investments, economic growth, and etc. in further periods. Taha and Loganathan (2008), and Woldde and Rufael (2008) find that large budget deficits cause the undeveloped and the developing countries to worsen their economic activities. The presence of extreme budget deficits in Turkey has created the issues of interest to the sustainability of forthcoming deficits (Gunaydin (2003)), and on how deficits affect monetary policies and inflation stabilization programs (Ozatay (1997); Tekin-Koru and Ozmen (2003)). Kuismanen and Kamppi (2010) prove that the decisions on fiscal policies have significant impacts on the economic indicators of Finland over the period of 1990-2007. Hence, the government should either reduce government expenditures or increase government revenues, through which mostly increases in tax-collection in order to balance its budget, and promote its economic performances for the next years.

It is a fact that Turkish governments have mostly preferred to increase government expenditure such that it has been gradually gone up since 1924. There are many determinant factors, such as increase in unemployment rate, total number of government employees, government investment (i.e. airports), population growth, might intuitively cause an ascending growth in the expenditure of Turkish government; however, a huge increase in government earnings attracts our attentions, as in the Graph 1, the total government expenditure as a share of gross domestic product (GE) is reported as 5.53% in 1924, 9.89% in 1964, 17.12% in 1994, and 24.89% in 2012, while the ratio of total revenue of Turkish government to gross domestic product (GR) is reported as 5.82%, 9.45%, 14.28%, and 22.61 in the same years, respective (General Directorate of Budget and Fiscal Control of Ministry of Finance (2013)).

Graph 1: Government Expenditure and Government Revenue in Turkey (1924-2012)



The connection between GE and GR has indeed been an empirically debatable deal in the literature of public finance for several years. These empirical studies have mixed results that vary from country to country, and time to time for the same country. There are typically four main possibilities: increase in GR causes GE to go up, known as "revenue-and-spend" hypothesis; rise in GE leads to more revenue, called as "spend-and-revenue" hypothesis; they affects each other mutually, revealed as "fiscal synchronization" or "two-way causality" ; no-causality exists between variables, commonly known as "fiscal neutrality". Among the earlier works, Peacock and Wiseman (1961) test the connection between government spending and earning in the United Kingdom, and support spend-led revenue hypothesis, whereas Manage and Marlow (1986) supports fiscal synchronization between government spending and earning in a study of Federal governments, and Blackley (1986) supports the revenue-led spend hypothesis, and Baghestani and McNown (1994) endorse, fiscal neutrality, none of the tax-led spend, the spend-led revenue, and fiscal synchronization hypotheses appear for the United States federal government during the quarterly period of 1955-1989.

Several papers have empirically and theoretically proved different views in different kind of researches besides the earlier works. Darrat (1998) exposes that increase in government earning negatively effects its expenditure in a case study of Turkey, covers the annual period of 1967 and 1994. Mithani and Khoon (1999) state that an increase in the volume of spending causes the tax collection to go up, in a case study of Malaysia. Abu Al-Foul and Baghestani (2004) perform time-series techniques and their finding show that there is a one-way relationship between tax-collection and GE in a case of Egypt and Jordan. Narayan (2005) examines seven Asian countries, and find unidirectional causality from government

spending to tax revenue despite the author does not observe an existence of long-run relationship between the variables using “Bound” testing model. Antoni et al. (2006) study the connection between GE and GR for a sample of ASEAN-5, and exert that higher spending leads to a jump in revenues. Narayan and Narayan (2006) examines a set of countries employing the Granger causality test and conclude the presence of tax-led spend hypothesis for Mauritius, El Salvador, Chile and Venezuela, whereas Haiti experiences a spend-tax hypothesis. They also provide the proof of no-relation for Peru, South Africa, Guatemala, Uruguay and Ecuador. Taha and Loganatham (2008) find a long-run and two-way causality relationship between direct and indirect tax revenues and expenditure of Malaysian government using vector autoregression techniques and causality tests over the period of 1970-2006. Wahid (2008) runs Granger causality test to investigate the tie between GR and GE in a case of Turkey, and exerts the spending-revenue causality, in other words, an increase in spending of Turkish government raise its revenue through more tax-collection. Konukcu-Onal and Tosun (2008) reveal two-way causality running between GE and GR for the Kyrgyz Republic and Kazakhstan. Aisha and Khatoon (2010) investigate the causality direction between government expenditure and revenue in Pakistan, and exert spend-led-revenue hypothesis. Payne et al. (2008) study the stability of budget deficits, and the tie between GE and GR for Turkey over the years of 1968 and 2004, and expose long-run relationship and one-way causality running from revenue to expenditure. Jalil (2012) does not find a causality running between the revenue and spending of Penang government. Petanlar and Sadeghi (2012) find a positive long-run and one-way causality relationship between oil revenue and government expenditures (revenue-led-spend) using P-VAR analysis in a work of oil exporting countries in the years of 2000-2009. Saysombath and Kyophilavong (2013) exhibit unidirectional causality running from spending to revenue, which implies spend-led revenue hypothesis for the Lao PDR, using autoregressive distributed lag combined with the Granger causality within a vector error correction framework during 1980-2010.
This paper aims to examine the causal linkage between government expenditure and government revenue of Turkish government applying the time series techniques, namely ADF unit root test, Johansen co-integration analysis, vector error correction mechanism (VECM), and Granger causality method. The relationship between the variables for the case of Turkey has not been recently examined and widely studied. To the best of our knowledge, this paper is the first that explores the presence of causality relationship between GE and GR in Turkey in a very long period, and supports the spend-led revenue nexus in contrast to the findings of Darrat (1998) and Payne et al. (2008).

2) Data

The data used in paper are the total government expenditure as a share of gross domestic product (GE) and the total revenue of Turkish government as a share of gross domestic product (GR) over the period of 1924 and 2012 in 89 pairs of observations. The data are drawn from an official website of Turkey, General Directorate of Budget and Fiscal Control of Ministry of Finance of Republic Of Turkey, and reported as a percentage rate in Appendix A.

3) Methodology and Results

The link between government expenditure and government spending is stated as,

$GE_t = \pi_1 + \pi_2 GR_t + \zeta_t$
and

$GR_t = \pi_1 + \pi_2 GE_t + \eta_t$

where the GE and the GR represent for government expenditure and its revenue respectively. The ζ and η are normally distributed error terms.

3.1) Unit Root

It is first required to estimate the stationary of variables before examining the co-integration method and causality analysis. The purpose of employing the unit root test is to empirically investigate whether a time-series contains a unit root. If it has a unit root, it is called as non-stationary; otherwise, it is considered as stationary. A stationary variable is observed when the mean, variance, and auto-covariance of the time-series are constant along time (Enders, 2004). When the time-series variables are non-stationary, Granger and Newbold (1974) state that there may be a spurious regression which has a high R^2 (goodness of fit) and coefficients seem to be statistically significant although these series are indeed unrelated, and the results are without any economic meaning.

One of the most common and popular methods is Augmented Dickey-Fuller (ADF) unit root test (Dickey and Fuller (1979)) in order to conclude whether the series are stationary or not. ADF test takes the following form (1);

$$\Delta X_t = \alpha + \beta X_{t-i} + \sum_{i=1}^{k} \lambda i \Delta Xt - i + \gamma T + \varepsilon_t \qquad (1)$$

The ADF unit root method is used to finalize whether there is a unit root in X_t, namely ratios of government expenditure and revenue to gross domestic product. In the equation, ε_t is a normally distributed white noise error term, T represents for a deterministic time trend, X_{t-1} is the lagged values of the variables. Additionally, α β, λ, and γ are the estimated coefficients, and ΔX_{t-i} are the lagged values of the parameters. Optimal lag length is found upon Said and Dickey (1984) suggestion, $k = N^{1/3}$, where N is the number of the observations and k is the right lag length. One of the important steps is determining the appropriate lag length (k) for the test process because of two reasons; (1) if 'k' is too small some serial correlation can be left in the errors and the test will be biased, (2) if 'k' is too large the ability of the test is reduced. This implies that the optimal lag length is approximately 4 in this ADF test as the data have 89 pair of observations.

Percentage values of the observations, GE and GR, are first used in ADF test in order to attempt to obtain stationary series. The null hypotheses in Table 1 are that GE has a unit root in the first case and GR has a unit root in the second case, and the alternative hypotheses are that GE or GR has no unit root, respectively. Both the z-scores and p-values specify that both of them have unit roots, because we fail to reject the both null hypotheses at 5% level of significance as they fall within the acceptance interval. Therefore, they are said to be non-stationary.

Table 1: Augmented Dickey-Fuller Unit Root Tests

a) Government Expenditure

Augmented Dickey-Fuller test for unit root Number of obs = 84

	Test Statistic	Interpolated Dickey-Fuller 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-0.637	-3.532	-2.903	-2.586

MacKinnon approximate p-value for Z(t) = 0.8624

b) Government Revenue

Augmented Dickey-Fuller test for unit root Number of obs = 84

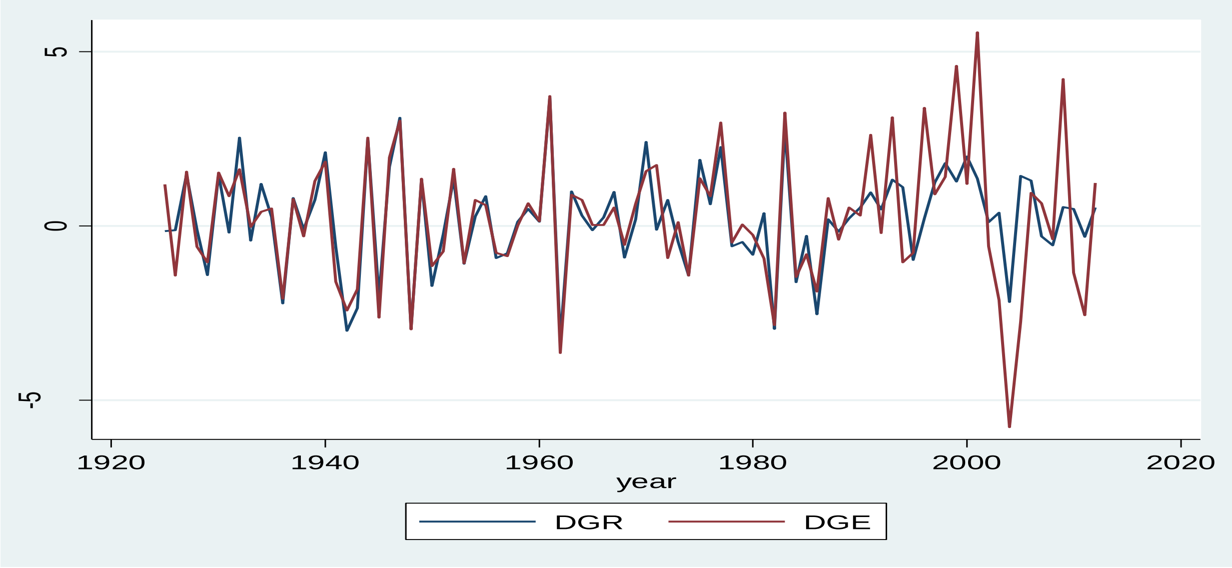
	Test Statistic	Interpolated Dickey-Fuller 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	0.164	-3.532	-2.903	-2.586

MacKinnon approximate p-value for Z(t) = 0.9702

When a time-series is resulted to be non-stationary, the most common option is taking the first difference of the variable to attempt to have a stationary series. The first differences of GE and GR are implemented in ADF test, accordingly.

As shown in the Graph 2, the pairs of observations are mean-reverting behavior, and have constant variances over time. This implies that the series are likely to become stationary. The null hypotheses in Table 2 are that first difference of GE (DGE) has a unit root and first difference of GR (DGR) has a unit root in latter case, and the alternative hypotheses are that neither DGE nor DGR has a unit root, in order.

Graph 2: First Differences of GE and GR for Turkey (1924-2012)



Since the p-values for Z (t) are smaller than 5%, the null hypotheses of having unit roots are rejected for both series. Therefore, they become stationary and are integrated in order one, I(1).

Table 2: ADF Unit Root Tests

a) First Difference of Government Expenditure

Augmented Dickey-Fuller test for unit root Number of obs = 83

	Test Statistic	Interpolated Dickey-Fuller 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-5.584	-3.534	-2.904	-2.587

MacKinnon approximate p-value for Z(t) = 0.0000

b) First Difference of Government Revenue

Augmented Dickey-Fuller test for unit root Number of obs = 83

	Test Statistic	Interpolated Dickey-Fuller 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-5.203	-3.534	-2.904	-2.587

MacKinnon approximate p-value for Z(t) = 0.0000

Tari (2005) reveals that two or more time-series data may be co-integrated if they are integrated in the same order. This co-integration implies that these variables at their levels do not cause a spurious regression result, and the results are economically meaningful. Thus, co-integration specification is applied for GE and GR as both of them are found as I (1).

3.2) Co-integration Test

Co-integration broadly refers that one or more linear combinations of time-series data are stationary although they are individually non-stationary at their levels (Dickey et al. (1991)). In other words, the series are concluded as co-integrated when two or more series are individually integrated in the same order but some linear combination of them have lower order of integration. Granger and Newbold (1974) show that a probable existence of co-integration must be taken into account when a method is selected upon testing a hypothesis with respect to the relationship between two non-stationary variables.

Among several other methods, Johansen ML co-integration test (Johansen (1988, 1991)) is commonly employed to pin down whether non-stationary data are co-integrated. The Johansen multivariate co-integration test involves the proof of relationships between the variables, takes the vector auto-regression (VAR) specification as in equation (2):

$$\Delta \ln Y_t = \sum_{i=1}^{k} \Gamma i \, \Delta \ln Yt - 1 + \Pi \ln Yt\text{-}i + \varepsilon_t \quad (2)$$

where Y_t represents n*1 vector of I (1) variables, namely GE and GR. Parameter Γ and Π represent for n*n matrix of coefficients to be tested. All we need to know is that if the rank (r) is zero, there is no co-integrating relationship. If the r is one there is one co-integrating relation, if it is two there are two and so on. When there is a presence of co-integration between two time-series, they have a long-run relation and cannot move too far away from each other (Please see Graph 1).

Table 3: Johansen ML Co-integration test

Johansen tests for cointegration

Trend: constant — Number of obs = 85

Sample: 1928 - 2012 — Lags = 4

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	14	-285.44256	.	16.1542	15.41
1	17	-277.80545	0.16448	0.8800*	3.76
2	18	-277.36543	0.01030		

This test is based on maximum likelihood estimation and two statistics: maximum eigenvalue (K_{max}) and a trace-statistics (λ_{trace}), where the λ_{trace} statistic tests the null hypothesis that r is equal to zero (no co-integration) against a general alternative hypothesis of r>0 (co-integration). The K_{max} statistic tests the null hypothesis that the number of co-integrating vectors is r co-integrating vectors versus the alternative of r+1 co-integrating vectors. Result of Table 3 exhibits that the null hypothesis of no co-integration is rejected for rank of zero at 5% level of significance since trace statistic is bigger than 5% critical value, whereas the null hypothesis of “1 co-integrating equation” versus “2 co-integrating equations” cannot be rejected at 5% level of significance as trace statistic is smaller than 5% critical value. So, finding of Johansen co-integration test leads us to move vector error correction mechanism (VECM).

3.3) Vector Error Correction Mechanism

When the time series data are co-integrated by a common factor (co-integrating vector) it is not possible to use a standard Vector Autoregression (VAR) method. So, one has to account for this relationship and use a Vector Error Correction Mechanism (VECM) which adjusts both short run changes in variables and deviations from equilibrium. We shall make sure of that the estimated coefficient of ‘equation one’ in

VECM is negative and statistically significant in order to confirm VECM is a correct method to follow up. The negative sign guarantees that deviations in the short-run make the long-run equilibrium exist.

Table 4: The Result of VECM

Vector error-correction model

Sample: 1928 - 2012		No. of obs	= 85
		AIC	= 6.936599
Log likelihood = -277.8054		HQIC	= 7.133099
Det(Sigma_ml) = 2.365157		SBIC	= 7.425129

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_GR	8	1.39023	0.1715	15.94168	0.0432
D_GE	8	1.95494	0.0575	4.698976	0.7892

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
D_GR						
_ce1						
L1.	-.285428	.1215383	-2.35	0.019	-.5236386	-.0472173
GR						
LD.	-.3165124	.1752287	-1.81	0.071	-.6599543	.0269295
L2D.	.0353436	.1796585	0.20	0.844	-.3167806	.3874679
L3D.	.1807425	.1729188	1.05	0.296	-.158172	.519657
GE						
LD.	.0494016	.1338712	0.37	0.712	-.2129811	.3117844
L2D.	-.078239	.1352362	-0.58	0.563	-.3432971	.1868192
L3D.	-.1974397	.1346661	-1.47	0.143	-.4613805	.066501
_cons	.0156268	.1830295	0.09	0.932	-.3431044	.374358
D_GE						
_ce1						
L1.	.0180794	.1709075	0.11	0.916	-.3168932	.353052
GR						
LD.	-.3520308	.2464071	-1.43	0.153	-.8349799	.1309183
L2D.	-.0334817	.2526364	-0.13	0.895	-.5286399	.4616765
L3D.	.2374016	.2431589	0.98	0.329	-.2391811	.7139842
GE						
LD.	.1582539	.1882501	0.84	0.401	-.2107095	.5272173
L2D.	.0662622	.1901696	0.35	0.728	-.3064633	.4389878
L3D.	-.1472387	.1893679	-0.78	0.437	-.5183929	.2239156
_cons	.2467072	.2573766	0.96	0.338	-.2577417	.7511561

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	1	221.6679	0.0000

Identification: beta is exactly identified
Johansen normalization restriction imposed

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_ce1						
GR	1	.	.	.	.	.
GE	-.7695056	.0516845	-14.89	0.000	-.8708054	-.6682059
_cons	-2.38358	.	.	.	.	.

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The table 4 indicates that the coefficient of ‘equation one’ is -0.79, and statistically significant at 5% level of significance. Besides, VECM works and any short-term fluctuations between the time series of GE and GR cause to a stable long run relationship since the value of coefficient lies down between zero and minus one. Referring to Ghatak (1998) definition, nearly 79% of disequilibrium is “corrected” each year. Granger (1988) proves that there must be Granger-causality in at least one direction if two series are co-integrated at their levels. So, the further step is Granger causality test to examine the direction of causality between GE and GR.

3.4) Granger Causality

Granger (1988) exposes that the Granger causality test is a statistical hypothesis test to specify whether a time-series is useful in explaining another time-series. This method is acceptable and usable if the variables are either stationary or co-integrated non-stationary data, written as following,

$$lnGR_t = \alpha_1 + \beta_1 lnGR_{t-1} + \beta_2 lnGR_{t-2} + \ldots + \delta_1 lnGE_{t-1} + \delta_1 lnGE_{t-1} + \ldots + \varepsilon_{1t} \quad (3)$$
$$lnGE_t = \alpha_2 + +\gamma_1 lnGE_{t-1} + \gamma_2 lnGE_{t-1} + \ldots \lambda_1 lnGR_{t-1} + \lambda_2 lnGR_{t-2} + \ldots + \varepsilon_{2t} \quad (4)$$

where ε_{1t} and ε_{2t} are white noise error terms , and β, δ, γ ,λ are the coefficients which tell us how much past values of the variables explain the current value of either series. In general, the null hypothesis is that variable X does not Granger cause variable Y. In our example there are two null hypotheses: government expenditure does not Granger cause government revenue, and government revenue does not Granger cause government spending. The null hypothesis of no Granger causality cannot be rejected if and only if no lagged value of an explanatory variable is existed in the regression (2) and or in the regression (3).

Table 5: Granger Causality Test

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
GE	GR	.09692	1	0.756
GE	ALL	.09692	1	0.756
GR	GE	16.057	1	0.000
GR	ALL	16.057	1	0.000

The result in Table 5 reveals that we reject the null hypothesis that government expenditure does not Granger cause government revenue, whereas we fails to reject that GR does not Granger cause GE at 5% significance level. Thus, it appears that there is a unidirectional causality running from spending to earning.

4) Summary and Conclusions

This study attempts to reveal the direction of linkage between government expenditure (GE) and its revenue (GR) applying econometrics in time-series techniques covering the annual data over the period of 1924 and 2011. The final result of this study exerts that there is one-way causal effect from GE to GR, and supports spending-led revenue hypothesis as opposed to the results of Darrat (1998) and Payne et al. (2008). In detail, ADF unit root test indicates that both time-series data are non-stationary at their levels, but become stationary series at their first differences. The Johansen co-integration test shows that long-run equilibrium exists between GE and GR, and the effect is statistically and economically significant. Granger causality test exhibits that there is a unidirectional causality from GE to GR. Therefore, policy makers in Turkish government shall give more attention to the question of how much they can increase government earning in order to sustain the increase in government spending because this paper finds that Turkish government spends first, and finances its expenditure later.

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http://www.bumko.gov.tr/?_Dil=2, General Directorate of Budget and Fiscal Control of Ministry of Finance.

Appendix A

year	GE	GR	DGE	DGR
1924	5.53	5.82		
1925	6.72	5.67	1.19	-0.15
1926	5.3	5.54	-1.42	-0.13
1927	6.86	7.02	1.56	1.48
1928	6.26	6.91	-0.6	-0.11
1929	5.22	5.5	-1.04	-1.41
1930	6.75	6.98	1.53	1.48
1931	7.6	6.79	0.85	-0.19
1932	9.22	9.32	1.62	2.53

1933	9.19	8.9	-0.03	-0.42
1934	9.59	10.11	0.400001	1.21
1935	10.09	10.37	0.5	0.26
1936	8	8.15	-2.09	-2.22
1937	8.77	8.95	0.770001	0.8
1938	8.47	8.86	-0.3	-0.09
1939	9.75	9.6	1.28	0.740001
1940	11.59	11.71	1.84	2.11
1941	9.99	11.11	-1.6	-0.6
1942	7.56	8.1	-2.43	-3.01
1943	5.74	5.74	-1.82	-2.36
1944	8.27	8.24	2.530001	2.5
1945	5.64	6.19	-2.63	-2.05
1946	7.61	7.88	1.97	1.69
1947	10.63	10.98	3.02	3.099999
1948	7.66	8.02	-2.97	-2.96
1949	9.01	9.34	1.35	1.32
1950	7.86	7.61	-1.15	-1.73
1951	7.12	7.37	-0.74	-0.24
1952	8.76	8.72	1.64	1.35
1953	7.69	7.63	-1.07	-1.09
1954	8.44	7.9	0.75	0.27
1955	9.03	8.75	0.59	0.85
1956	8.25	7.83	-0.78	-0.92
1957	7.38	7.04	-0.87	-0.79
1958	7.39	7.16	0.01	0.12
1959	8.04	7.64	0.65	0.48
1960	8.18	7.76	0.14	0.12
1961	11.91	11.44	3.73	3.679999
1962	8.26	8.17	-3.65	-3.27
1963	9.15	9.16	0.889999	0.99
1964	9.89	9.45	0.740001	0.29
1965	9.92	9.32	0.03	-0.13
1966	9.95	9.56	0.03	0.240001
1967	10.48	10.53	0.53	0.969999
1968	9.93	9.62	-0.55	-0.91
1969	10.56	9.81	0.63	0.190001
1970	12.13	12.22	1.57	2.41
1971	13.88	12.11	1.75	-0.11
1972	12.96	12.86	-0.92	0.75
1973	13.06	12.4	0.1	-0.46

1974	11.64	10.97	-1.42	-1.43
1975	13.01	12.86	1.37	1.889999
1976	13.86	13.48	0.849999	0.62
1977	16.82	15.74	2.96	2.26
1978	16.34	15.15	-0.48	-0.59
1979	16.38	14.69	0.039999	-0.46
1980	16.12	13.86	-0.26	-0.83
1981	15.18	14.23	-0.94	0.37
1982	12.33	11.28	-2.85	-2.95
1983	15.58	14.1	3.25	2.820001
1984	14.11	12.49	-1.47	-1.61
1985	13.3	12.2	-0.81	-0.29
1986	11.42	9.66	-1.88	-2.54
1987	12.22	9.85	0.8	0.190001
1988	11.82	9.68	-0.4	-0.17
1989	12.35	9.89	0.530001	0.21
1990	12.65	10.42	0.299999	0.53
1991	15.26	11.38	2.610001	0.96
1992	15.05	11.85	-0.21	0.47
1993	18.17	13.17	3.12	1.32
1994	17.12	14.28	-1.05	1.11
1995	16.34	13.3	-0.78	-0.98
1996	19.72	13.52	3.379999	0.22
1997	20.62	14.77	0.900002	1.25
1998	22.03	16.57	1.41	1.799999
1999	26.62	17.84	4.59	1.27
2000	27.83	19.83	1.209999	1.99
2001	33.38	21.18	5.550001	1.35
2002	32.8	21.29	-0.58	0.110001
2003	30.67	21.67	-2.13	0.379999
2004	24.9	19.49	-5.77	-2.18
2005	22.14	20.92	-2.76	1.43
2006	23.09	22.22	0.950001	1.299999
2007	23.74	21.92	0.65	-0.3
2008	23.36	21.36	-0.38	-0.56
2009	27.57	21.9	4.209999	0.539999
2010	26.23	22.39	-1.34	0.49
2011	23.66	22.08	-2.57	-0.31
2012	24.89	22.61	1.23	0.530001

**Bio: Ph.D. Student, the John E. Walker Department of Economics, Clemson University, Clemson, South Carolina, 29634, USA
E-mail: edogan@clemson.edu
Phone: (001) 864-207-0671