THE EFFECT OF TRADE OPENNESS AND INCOME ON THE SIZE OF A GOVERNMENT

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Abstract

This paper examines the effect of trade openness and per capita GDP on the size of government for Turkey and South Korea by means of ARDL approach to co-integration. We use different proxies to measure the size of government because not all measures of government size are appropriate to be employed in the estimates. Among the three (four) different measures of government size of Korea (Turkey), only one for each country has a co-integrating relationship with openness and per capita GDP. Long run coefficients suggest that per capita GDP has a positive and significant effect on the government sizes for Turkey and Korea, implying the validity of the Wagner's law. However, while openness has a negative effect on government size for Turkey, it has a positive effect for Korea. Our results clearly highlight the importance of choosing an appropriate proxy for government size to reach robust and consistent results.

Keywords: government size, trade openness, bounds testing approach, ARDL, South Korea, Turkey.

1. Introduction

Government size, generally measured as government expenditures as percentage of GDP, has remarkably increased in many countries especially after 1970s. This increase is not only limited to developed countries. Some developing countries have also experienced a considerable increase in the government expenditures over time. For example, this ratio increases from 11.5% in 1960 to 26.1% in 2013 for Turkey, and from 18.6% in 1970 to 30.2% in 2011 for South Korea.

The determinants of government size have been extensively examined for a long time. In this context trade openness and economic development have attracted much interest from researchers. There is almost an agreement that both trade openness and economic performance can have a positive effect on government size. The relationship between trade openness and government size is first discussed by Cameron (1978, pp. 1249-1250), but developed and extended from a different perspective by Rodrik (1998, pp. 997-998) who argues that trade openness has a positive impact on government size due to higher exposure to external risk, called compensation hypothesis in the literature. The other possible determinant suggested by Wagner (1883, pp. 1-15) states that the government size or expenditure rises with the level of income and development, known as the Wagner's law or hypothesis.

This paper examines the effect of trade openness and per capita GDP on the size of government for Turkey and South Korea by means of ARDL approach to co-integration. There are two main reasons for us to restrict our analysis to only these two countries. First, these two countries were relatively similar in terms of some economic indicators, such as per capita income and the size of government, in 1960-1970s among OECD member countries. But they differed economically as the time passed, and now South Korea is a developed country, whereas Turkey is an emerging economy. It is clear that during the period examined South Korea has had a higher growth rate and openness level than Turkey even though these two countries have experienced a significant rise in the government size in the period observed. Openness and income growth seem to initiate very different mechanisms in these countries. Since there is a considerable increase in the government size, per capita GDP and trade openness in both Turkey and Korea, our analysis can be very helpful to reveal the relationship among these variables by means of time series methods. As pointed out by some studies, such as Islam (2004, p. 996), analyses utilizing time series approach would be more helpful to shed light on the subject in question. Secondly, although we also thought to enlarge our sample by including some OECD countries similar to Turkey in some aspects, such as Mexico, we could not obtain a long enough dataset for the government total expenditures, the best proxy for government size regarding the matter in hand in our opinion, to perform robust econometric analysis.

Our results imply the importance of using a proper proxy for government size. We also found that per capita GDP has a positive and significant effect on government size for both Turkey and Korea in the long run while it has a negative impact for Korea in the short run. However, trade openness has a negative (positive) effect in

Turkey (Korea) whereas its impact is significant in the short run only for the Turkish case. There are two unique contributions to the relevant literature in this study. First, to employ several different proxies of the government size is vitally important because not all measures of government size are appropriate to be used in the estimates. The other contribution is that, while testing the Wagner's hypothesis for Turkey and Korea, we consider the impact of trade openness on the nature of the relationship between per capita income and government size.

This paper is organized as follows: section 2 reviews the literature, section 3 presents the dataset and unit roots tests, section 4 describes the empirical methodology and reports estimation results, and finally, section 5 concludes.

2. Literature review

Cameron (1978, pp. 1249-1250), who is the first to point out the positive effect of trade openness on government size by drawing attention to the substitution between external and internal goods, mentions as a possible role for the government to lessen the vulnerabilities of an open economy. However, Rodrik (1998, pp. 997-1032) examines this relationship in a more comprehensive way and makes it a popular idea. He highlights the role of government in providing insurance as a response to higher external risks arising from greater trade openness as the driving force for the relation and shows that this is not restricted to only developed countries but also holds for other ones. In other words, trade openness associated with higher volatility leads to an increase in the government size as the government tries to alleviate the effect of higher income volatility. Epifani and Gancia (2009, pp. 629-630) suggest that openness can have a positive effect on government size mainly through two factors: terms of trade externality and higher demand for insurance. The former is related to lowering the cost of domestic taxation while the latter is associated with increasing public transfers due to higher risks arising from the greater openness.

There are many studies trying to explain empirically the relationship between trade openness and government size, especially since 1990s. Some studies lend evidence for a positive relationship between trade openness and government size. In an influential study, Rodrik (1998, p. 998) reports a positive correlation between trade openness and government size for a large sample of countries and initiates a new literature. Alesina and Wacziarg (1998, pp. 305-306) provide some evidence for the positive relationship between the openness and size of government transfers, and point out the importance of the size of the countries. However, Ram (2009, pp. 213-218), using data for more than 150 countries, presents some evidence against the argument of Alesina and Wacziarg (1998, pp. 305-306). He reports a positive and significant effect of openness on the size of government and determines that openness has a negative effect on per capita GDP. In a comprehensive study, Shelton (2007, pp. 1230-1231), using data for a large sample of countries, finds a positive relationship between government size and trade openness but provides only a limited evidence for the risk mitigating role of the government size on social protection mechanisms such as so-

cial transfers and public employment. Epifani and Gancia (2009, pp. 631-646) report a strong and positive relationship between openness and government consumption for 143 countries while per capita income has a negative effect. Lin, Li and Sim (2014, pp. 783-808) conclude that trade openness has a positive effect on government size, measured as government consumption expenditures, for small developing countries. Also, Abounoori and Ghaderi (2011, p. 170), for MENA countries, and Shahbaz, Rehman and Amir (2010, p. 114), for Pakistan, report a positive relationship between trade openness and government size.

However, using the bounds testing approach to co-integration, Islam (2004, p. 996) finds that a significant relationship exists for only the US and Canada but not for Australia, England, Norway and Sweden. He reports a negative (positive) relationship between openness and government size for the US (Canada) while a positive relationship between per capita GDP and government size is found for all countries examined. Molana, Montagna and Violato (2004, pp. 2-3), using time series data for 23 OECD countries, do not find any strong evidence for the positive relation for the majority of the countries examined but some weak evidence is reported for a few countries. Garen and Trask (2005, pp. 533-534), using non-budgetary items, conclude that the government size is larger in less open economies. But, they report a positive relationship using the government expenditure as a measure of government size for 96 countries. They also point out the importance of controlling per capita GDP that has a positive impact when examining the effect of openness on the government size.

A number of studies fail to find a positive relationship between the government size and openness. For example, Liberati (2007, pp. 215-247) for 16 developed countries, Benarroch and Pandey (2008, pp. 157-159), using panel data for 96 countries, Benarroch and Pandey (2012, pp. 239-241), using disaggregated data for 119 countries, conclude that openness does not have a positive impact on the size of government. Moreover, Benarroch and Pandey (2008, pp. 239) report a negative casual effect running from government size to openness. Aydogmus and Topcu (2013, pp. 321-322), using data for Turkey over the period 1974-2011, fail to find any effect of openness on the government size. Similarly, Aregbeyen and Akpan (2013, pp. 31-41) report a negative effect of the openness on government expenditure for Nigeria, while per capita income has a positive one.

According to the Wagner's hypothesis or law, when the income level in a country rises, more public service is demanded and supplied resulting in an increase in the size of government or public sector relative to the economy over time. Some explanations are put forward in order to explain the channels through which an increasing income level or economic growth can exert an effect on the government size. For example, Henrekson (1993, p. 407), based on Wagner's views, summarizes three main reasons in explaining the increase in government size: a well-functioning economy needs more protective and administrative public services as a country develops, a growing income leads to an increase in the income elastic government expenditures,

and, finally, economic development and technological progress cause a government to be more involved in the economy on efficiency grounds.

Several versions of Wagner's hypothesis are developed in order to examine the relationship between well-being and government size. Although a detailed review of the vast literature testing the Wagner's law for different countries or time periods is clearly beyond the scope of the present study, we briefly mention only some studies. Many studies such as Chang (2002, p. 1168) for Taiwan, South Korea, Japan, United Kingdom and the US, Akitoby *et al.* (2006, pp. 908-919) for 51 developing countries, Thorton (1999, p. 413) for six European countries, Islam (2001, p. 509) for the US, Chow, Cotsomitis and Kwan (2002, pp. 1671-1677) for the UK, Furuoka (2008, p. 33) and Tang (2009, p. 9) for Malaysia, Kumar, Webber and Fargher (2012, p. 607) for New Zealand, Antonis, Constantinos and Persofoni (2013, p. 457) for Greece, Ono (2014, pp. 3524-3531) for Japan, provide a supporting evidence for the Wagner's hypothesis. However, some studies, among them are Ram (1987, pp. 194-204) for more than 100 countries, Ansari, Gordon and Akuamoah (1997, p. 543) for three African countries, Karagianni, Pempetzoglou and Strikou (2002, p. 107) for 15 European countries, Dogan and Tang (2006, pp. 49-55) for five South Asian countries, Magazzino (2010, pp. 25-26) for 27 EU countries, Henrekson (1993, p. 413) for Sweden, Narayan, Nilesen and Smyth (2008, p. 297) for the Chinese provinces, Durevall and Henrekson (2011, p. 708) for Sweden and the UK, Afzal and Abbas (2010, p. 12) for Pakistan, Babatunde (2011, p. 2847) for Nigeria, Kesavarajah (2012, p. 1) for Sri Lanka, report mixed, contradictory or unsupportive results. Cheng and Lai (1997, p. 11) present a bi-directional relation between the government expenditure and growth for South Korea. Using Turkish data, Halicioglu (2003, p. 129) does not find a strong evidence for the Wagner's hypothesis. On the other hand, Mohammadi, Cak and Cak (2008, pp. 94-106) conclude that the Wagner hypothesis holds for Turkey. Recently, Oktayer and Oktayer (2013, p. 284) argue that when a third variable, such as inflation rate, is added to the empirical model, a long run relationship between the real income and non-interest government expenditures exists. Unlike these studies, we control openness when testing Wagner's law for Turkey and Korea.

3. Data and unit root tests

We use the government total expenditures (GTE), government final consumption expenditures (GFC) and government consumption share (GCS) as proxy for the government size for both Turkey and South Korea. Since the government non-interest expenditure (GNE) data is available for Turkey, this is utilized as well. Trade openness (OPN) is measured as the sum of total exports and imports. The central government total expenditures and government non-interest expenditures data for Turkey come from the Turkish Ministry of Finance. The government total expenditures data for the South Korea is from the OECD. Data for the government final consumption expenditures, GDP, trade openness and per capita GDP (PCG) are taken from the World Bank, while the government consumption shares are from the Penn World

Tables. Fiscal variables and openness are used as a percentage of GDP. All variables are in logarithms. Dataset covers the period 1960-2011 and 1970-2011 for Turkey and South Korea, respectively. However, the non-interest government expenditure data for Turkey is available only over the period of 1975-2013. Except for the government non-interest expenditures, we use the same period for each country in order to make our results comparable. In other words, since it is important to see how our findings could change depending on the proxy or measure for the government size, we use the same time period even if there is slightly longer dataset available for some variables.

We first investigate the stationarity of the variables by means of Augmented Dickey-Fuller (ADF) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests. Results are summarized in Table 1.

Table 1: Stationarity Test Results

Turkey				
	ADF Test (t values)		KPSS Test (t values)	
Variable	Levels	1st Differences	Levels	1st Differences
GTE	-3.475***	-9.591*	0.072	0.155
GNE	-2.346	-8.138*	0.170**	0.155**
GFC	-2.1	-6.560*	0.101	-
GCS	-4.431*	-	0.089	-
PCG	3.449***	-8.155*	0.067	-
OPN	-3.493***	-6.836*	0.125***	0.044
South Korea				
	ADF Test (t values)		KPSS Test (t values)	
Variable	Levels	1st Differences	Levels	1st Differences
GTE	-2.703	-7.389*	0.188**	0.087
GFC	-3.004	-7.069*	0.131***	0.062
GCS	-1.555	-5.547*	0.166**	0.062
PCG	-0.523	-5.758*	0.186**	0.077
OPN	-1.855	-5.595*	0.133***	0.157**

Notes: i) The choice of optimal lag length for ADF tests based on the Schwarz Criteria. ii) The unit root tests are performed by using models with intercept and trend. iii) *, **, and *** indicate the significance at 1%, 5% and 10% levels, respectively. iv) We do not report the unit root test results for the variables in first differences if they are stationary at 1% in levels.

As can be seen from the Table 1, we have some conflicting results regarding the stationarity of the variables. On the one hand, ADF tests suggest that we reject the null hypothesis that GTE, PCG and OPN have unit root in levels at 10% significance level and, for the case of GCS, the null hypothesis is rejected at 1% level for Turkey. However, we fail to reject the null hypothesis for GFC and GNE. On the other hand, KPSS results indicate that we fail to reject the null of stationarity for GTE, GNE, GFC and GCS and also for PCG and OPN at 1% and 5% levels, respectively. For Korea, ADF tests suggest that we fail to reject the null hypothesis for all variables in levels, while KPSS results indicate that we fail to reject the null of stationarity for GTE, GCS and PCG at 1%, and for GFC and OPN at 5% levels. According to both ADF

and KPPS tests, all variables are found stationary in first differences for Turkey and Korea. Moreover, we should point out that we fail to reject the null of stationarity for OPN in the case of Korea and for GNE for Turkey including only a constant in the first difference (not reported in Table 1) by means of KPSS test at 1% level.

4. Empirical results

Although our main focus is to examine the relationship between openness and government size, our model also tests the validity of an interpretation of Wagner's law, extensively used in the literature, for Turkey and Korea. When investigating the effect of openness on government size, one of the main control variables employed in the literature is per capita income or GDP.

Since, some conflicted results reported as to the stationarity of the variables, we employ the ARDL approach to co-integration developed by Pesaran, Shin and Smith (2001, pp. 289-326). This approach allows us to investigate the co-integration among variables regardless of they are I(1) or I(0) or a mix of them. However, they should not be I(2). Once a co-integrating relationship is found, the long run and short run coefficients are estimated. For the ARDL approach, a conditional error correction model can be written as follows:

$$\Delta GS_t = \beta_0 + \beta_1 GS_{t-1} + \beta_2 OPN_{t-1} + \beta_3 PCG_{t-1} + \sum_{i=1}^{l} \beta_4 \Delta GS_{t-i} + \sum_{i=0}^{l} \beta_5 \Delta OPN_{t-i}$$
$$+ \sum_{i=0}^{l} \beta_6 \Delta PCG_{t-i} + \varepsilon_t \tag{1}$$

where GS stands for government size, OPN for trade openness, PCG for per capita GDP, while l shows the optimal lag length, which is determined based on the information criteria such as Schwarz Criterion (SC) and Akaike Information Criterion (AIC), and, finally, ε is an error term. While determining the optimal lag length, it is important to make sure that there is no serial correlation. If the existence of serial correlation is detected, it must be removed before estimating the regressions. To deal with this issue, we add another lag until the null hypothesis of the existence of a serial correlation is rejected. Co-integration is tested by means of F statistics. If the null hypothesis, $H_0: \beta_1 = \beta_2 = \beta_3 = 0$, is rejected then we can say that there is a co-integrating relationship among the variables. Calculated F statistics must be compared to critical upper and lower bounds provided by Pesaran, Shin and Smith (2001, pp. 289-326). If F statistics are greater than the upper bound then we can conclude that a co-integrating relationship exists. We estimate Equation 1 to test whether there is a co-integration among the per capita GDP, trade openness and different alternative proxies for the size of government. Bounds testing results are reported in Table 2.

Table 2: Bounds Testing Results

Turkey		
Variable	Lag Length	F Statistic
GTE	0	3.627
GFC	2	1.529
GCS	2	0.868
GNE	0	6.317**
South Korea		
Variable	Lag Length	F Statistic
GTE	0	5.6063**
GFC	0	2.662
GCS	2	1.905

Notes: Optimal lag length is selected via SC. F-statistics are compared to the critical values for k=2 in Pesaran, Shin and Smith (2001, p. 300). Critical F values for lower and upper bounds for 1%, 5% and 10% are 5.15-6.36, 3.79-4.85, and 3.17-4.14, respectively. ** show the significance at the 5% level.

Our results indicate that there are only two co-integrating relations. We find a co-integration relationship when the government total expenditures for Korea and the government non-interest expenditures for Turkey are employed as dependent variables at the 5% significance level. In other words, a co-integrating or long run relation exists among GTE, OPN and PCG for Korea and the GNE, OPN and PCG in the case of Turkey. Our results clearly show that a distinction between the government total expenditures and government non-interest expenditures should be made when the interest payments are high. Theoretically, there is no reason to expect that the trade openness and PCG lead to a rise in the interest payments as a share of GDP. Therefore, the results for Turkey are not surprising at all, since the interest payments on the government debt are very large during the 1990s and early 2000s. In the case of Korea, our results may be interpreted as an evidence for the use of a larger measure for government size. Put in different way, excluding some government expenditures, such as transfer payments, might matter. On the other hand, we do not find any co-integration for other variables implying that there is no long run relation among related variables. In other words, the OPN and PCG do not have a long run relation with GFC and GCS in the case of both countries. Finally, note that when equation (1) is estimated by using PCG as dependent variable, no co-integration is found among the PCG, GNE and OPN for Turkey and PCG, GTE and OPN in the case of Korea. This result is valid even when OPN is employed as a dependent variable.

Since we find a co-integrating relationship among GTE, OPN and PCG for Korea, and GNE, OPN and PCG for Turkey, long run coefficients are estimated and reported in Table 3.

We find that the PCG has a positive and significant effect on the GNE and GTE for Turkey and Korea, respectively. Our estimates show that a 1% increase in PCG causes a 0.27% and 0.13% rise in respective government size for Turkey and Korea. This is consistent with the expectations and empirical findings in the literature which argue that there is a positive correlation between PCG and government size. As a result,

Turkey				
Dependent Variable: GNE in ARDL (1,1,0)				
Regressors	Coefficient	Standard Error	t value	Probability
PCG	0.272	0.061	4.425	0.000
OPN	-0.345	0.093	-3.6955	0.001
South Korea				
Dependent Variable: GTE in ARDL (1,1,1)				
Regressors	Coefficient	Standard Error	t value	Probability
PCG	0.132	0.032	4.115	0.000
OPN	0.328	0.122	2.677	0.011

Notes: Model selection is based on Schwarz-Bayesian Information Criterion.

we can conclude that the Wagner's law holds for both Turkey and Korea although coefficient estimates are much smaller than unity. We conjecture that the main underlying reason may be the considerable increase in the government transfer payments for Turkey over time although a rise in the consumption expenditures or share was observed as well. We should also point out that the increase in GNE is much higher than that of GFC or GCS after 1990s. Especially after mid-2000s, a remarkable decline experienced in the interest payments, due to several favorable factors like high growth rates, enables the government to increase GNE in general and the transfer expenditures in particular for Turkey. For example, the transfer expenditures, other than the interest payments, increased by nearly 3% of GDP in 1990, to 6% in 2000 and 9% in 2012.

On the other hand, the coefficient on OPN has opposite sign for these two countries. In the case of Turkey a 1% increase in OPN causes a 0.35% decline in GNE while it leads to a 0.33% rise in GTE for Korea. The negative effect of the openness on the government size is consistent with the results of Islam (2004, p. 996) and Aregbeyen and Akpan (2013, p. 31) who also report a negative effect for the US and Nigeria respectively, but it differs from Aydogus and Topcu (2013, pp. 321-322). Using data for only the openness and the government total expenditures, Aydogus and Topcu (2013, pp. 321-322) do not find any long relation between these two variables. On the other hand, the positive coefficient on OPN for Korea is consistent with the literature. Actually, differences in the effects of openness lie in the development strategies of these two countries. Even though both Turkey and South Korea were in similar economic conditions during 1960s and 1970s, Turkish economy became substantially different from South Korean economy in the last decade. In the Turkish case, government failed to adequately support infant industries such as electronics and automotive, and did not provide necessary infrastructure for their development. The survival of these sectors have utmost importance in the economy since industries based on technological advancements have greater shares in international trade and create higher added value compared to other sectors such as agriculture or mining. Because industries that lead to more openness are left to private sector with insufficient capital and experience, openness in Turkey began to become a suppressing factor on government

size. In other words, since trade generating industries were not supported by the government in earlier periods, Turkish government size is not positively affected by the degree of openness. Indeed, its long run effect is negative in Table 3. An important factor that is effective on this result is the private sector's demand for funds as the country becomes more and more active in international trade. To establish its R&D structure, private sector competed with the government to acquire more funds from financial markets, and this fact became a main factor that prevented the government to increase its size in parallel with rising openness. On the other hand, South Korea followed an opposite policy which fosters industrial and technological development via significant government intervention according to OECD (2014, pp. 17-29). South Korean government aimed to support industries that are based on technological advancements. At the first stage, government spending focused on technological imitation process. Exporting technologically imitated products and increasing openness of the country, the South Korean government chose to increase its budget in parallel with the activity in international trade and, also, decided to shift to a second stage which Turkish government missed. As international trade and income per capita increase in South Korea, the government kept increasing its spending to continuously support the private sector, and demanded the private sector to create its R&D structure with the help of the public funds. Unlike Turkey, South Korea has applied a development strategy highly dependent on technology intense exports. As a result, government expenditures are shaped by the performances of these export oriented industries. Also, welfare stemming from international trade continued to be redistributed to the public via increases in government spending. Thus, compared to the Turkish case, there are plenty of reasons for South Korea that lead to a positive coefficient on the openness in the equation for government total expenditures.

Alternatively, the positive coefficient on the openness for South Korea can also be interpreted in a different way, supporting the idea in Garen and Trask (2005, pp. 533-551) who also point to the existence of a negative relation between the budgetary and non-budgetary government measures. Therefore, in this context, it can be argued that the non-budgetary government intervention has significantly declined in South Korea as the openness has increased. However, a negative coefficient on the openness suggests that an increase in openness leads to a decline in government expenditures, implying an increase in the non-budgetary measure of government size. But, we observe that this implication is not valid for Turkey. It is hard to convincingly argue that the non-budgetary measure of government for Turkey increases in a period that can be largely characterized by privatization programs, decline in the influence and power of state owned enterprises in economic activity, and more market friendly policies. Although it is beyond the scope of the present study, we should note that, as a middle income country, Turkey might have a bigger government size in terms of non-budgetary measures than South Korea even though the size of their budgetary expenditures, as a percent of GDP, is not substantially different. To conclude that the compensation hypothesis is vindicated, a positive effect of openness on government

size, although it is necessary, may not be sufficient because it does not necessarily mean that the government provides insurance in order to lessen the effect of external risks on the economy.

Short run results reported in Table 4 indicate that PCG has a negative and significant impact on the government size for Korea, while it does not have a statistically significant effect in the case of Turkey. Furthermore, OPN has a negative impact only for Turkey. The coefficients on the error correction terms, as expected, are significant and negative implying the existence of co-integration. The coefficients suggest that about 60% and 36% of any disequilibrium are eliminated in the short run for Turkey and Korea, respectively.

Table 4: Error Correction Representation for ARDL Models

Turkey				
Dependent Variable: ΔGNE in ARDL (1,1,0)				
Regressors	Coefficient	Standard Error	t value	Probability
Constant	1.160	0.381	3.046	0.005
ecm(-1)	-0.604	0.138	-4.388	0.000
ΔPCG	-0.141	0.110	-1.281	0.209
ΔOPN	-0.208	0.067	-3.101	0.004
South Korea				
Dependent Variable: ΔGTE in ARDL (1,1,1)				
Regressors	Coefficient	Standard Error	t value	Probability
Constant	0.270	0.156	1.738	0.091
ecm(-1)	-0.358	0.090	-3.971	0.000
ΔPCG	-1.083	0.184	-5.885	0.000
ΔOPN	-0.076	0.084	-0.906	0.371

Notes: Model selection is based on Schwarz-Bayesian Information Criterion.

5. Conclusion

We examined the short and long run effects of trade openness and per capita GDP on the size of government for Turkey and the South Korea by means of ARDL approach to co-integration. We employed the government total expenditure, government final consumption expenditure and government consumption share as proxies for government size. Since the government non-interest expenditure data is available for Turkey, this is employed in the estimates. We found a co-integrating relationship among the government total expenditure, openness and per capita GDP for Korea and the government non-interest expenditure, openness and per capita GDP for Turkey. We did not find any co-integration among related variables when other proxies for the government size were used.

Our long run results indicate that per capita GDP has a positive and significant effect on the government non-interest expenditure and government total expenditure for Turkey and Korea respectively. Our results indicate that the Wagner's law holds for both countries although our coefficient estimates are smaller than unity. However, the trade openness has a negative effect in the case of Turkey while it has a posi-

tive one for Korea. A negative effect of the openness on the government size for Turkey is surprising but consistent with some results reported in the literature. Indeed, a positive effect is ex-ante expected, and it is consistent with theoretical expectations and many empirical findings. However, a positive effect does not necessarily mean that the compensation hypothesis is valid. Actually, the reason behind this difference in the long run coefficients on the openness for these two countries lies in the development strategies that Turkey and South Korea followed decades ago. Even though South Korea continuously supported export oriented industries through time, Turkey depended on domestic consumption as the main factor of the economic growth. Because of this policy on economic development, Turkey failed to continuously support export oriented and technology intense sectors via public funds and the struggle of private sector to establish its R&D structure limited government size as the competition for scarce resources increased day by day. On the other hand, the South Korean government adopted an export oriented development strategy and promoted technology intense industries for years. Increasing activities of the export oriented and technology intense industries in international trade caused South Korean government to raise its budget size to provide necessities that these industries demanded. Also, redistribution of the welfare stemming from international trade required the government to increase its expenditures. So that, government size kept growing as openness increased in South Korea.

Short run results indicate that the per capita GDP has a negative and significant impact on the government size for Korea, while it does not have a significant effect in the case of Turkey. The coefficients on error correction terms are significant and negative confirming the existence of co-integration and implying that any inherent disequilibrium is eliminated. Our results clearly highlight the importance of choosing an appropriate proxy for government size. We should also note two related points. First, when the interest payments on government debt are high, making a distinction between the government total expenditures and government non-interest expenditures would be crucial. Second, using the government consumption expenditures or share as a measure for the government size would be misleading in some cases. In other words, excluding some government expenditures, such as transfer payments, would matter when investigating the effects of both per capita GDP and openness on the size of government. Therefore, one should be careful when interpreting the findings of cross section studies. Furthermore, we think that country specific and time series studies would be more appropriate to shed light on the relationship among the size of government, per capita GDP and trade openness.

As for a policy proposal, there is nothing wrong with the idea that a government provides some insurance against external risks caused by international trade activities if related costs and benefits are calculated appropriately. In this context, on the one hand, a well-targeted and designed mechanism would contribute to increasing social welfare while enjoying the benefits of international trade. On the other hand, it should be kept in mind that this mechanism could easily lead to inefficiencies and

distortions in the economy if it is not implemented carefully. Beyond the concerns of redistribution of welfare stemming from international trade activities, the utmost important policy implication of our study is related to the development strategy that a country adopts. Turkey and South Korea followed different paths for economic development as explained above. Experiences of these two countries show that it is beneficial to have a more open economy as a strategy of development. But, this strategy should be accommodated with the increase in government size to provide necessities that export oriented industries demand.

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