THE TWIN DEFICITS HYPOTHESIS: NEW EVIDENCE FROM GIIPS ACCOUNTING FOR STRUCTURAL SHIFTS IN CAUSAL LINKAGES [1]

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ABSTRACT

This study re-examines the dynamic causal link between government budget and current account deficits for five highly indebted European countries: Greece, Ireland, Italy, Portugal and Spain (GIIPS) with newly developed econometric techniques. Utilizing first Toda – Yamamoto causality analysis and then its Fourier approximation to consider structural shifts, this study asks whether accounting structural shifts plays a role on these causal linkages. The results reveal that considering structural shifts is important for the relationship between fiscal and current account imbalances of the GIIPS. The findings of analysis that does not consider structural changes indicate that the twin deficit hypothesis is supported through Keynesian Hypothesis (for Spain) or Current Account Targeting Hypothesis (for Greece and Portugal) but also Barro-Ricardo Equivalence Theorem is acknowledged for Ireland and Italy. On the other hand, the causality analysis that account for structural changes show that current account targeting hypothesis is supported by all countries, except Ireland.

Anahtar Kelimeler: *Fiscal deficit, Current account defici, Twin deficits, Structural breaks, Causality analysis.*

JEL Sınıflandırması: *C22, E6, F32.*

İKİZ AÇIK HİPOTEZİ: YAPISAL KIRILMALARIN DİKKATE ALINDIĞI NEDENSELLİK ANALİZİ İLE GIIPS ÜLKELERİ İÇİN YENİ KANITLAR

ÖZET

Bu çalışmada, oldukça yüksek borç yüküne sahip beş Avrupa ülkesi: Yunanistan, İrlanda, İtalya, Portekiz ve İspanya (GIIPS) için bütçe açığı ve cari açık arasındaki dinamik nedensellik ilişkileri yeni ekonometrik teknikler kullanılarak yeniden analiz edilmektedir. Öncelikle Toda-

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Yamamoto nedensellik testi ve sonrasında bu yöntemin yapısal kırılmaları dikkate alan yaklaşım tekniği kullanılarak yapısal kırılmaların dikkate alınmasının nedensellik bağlarında bir rolü olup olmadığı incelenmektedir. Sonuçlar, yapısal kırılmaların dikkate alınmasının, GIIPS ülkelerinin mali ve cari dengesizlikleri arasındaki ilişki açısından önemli olduğunu ortaya koymaktadır. Yapısal kırılmaları ihmal eden nedensellik analizi bulguları, İspanya için Keynesyen Hipotezi'nin, Yunanistan ve Portekiz için Cari Denge Hedefleme Hipotezi'nin ve son olarak İrlanda ve İtalya için Barro-Ricardo Hipotezini'nin geçerli olduğunu göstermektedir. Diğer taraftan yapısal kırılmaları dikkate alan nedensellik analizi sonuçları ise Cari Denge Hedefleme Hipotezi'nin İrlanda dışındaki tüm GIIPS ülkeleri için desteklendiğini göstermektedir.

Key Words: *Bütçe açığı, Cari açık, İkiz açıklar, Yapısal kırılmalar, Nedensellik analizi.*

JEL Classification: *C22, E6, F32.*

1. INTRODUCTION

Economists mostly consider the size of the budget deficits and current account deficits as the most crucial indicators of macroeconomic stability of countries. For that reason, the twin deficit hypothesis has taken considerable attention from researchers both theoretically and empirically since it provides important policy implications to overcome economic imbalances.

The views on the theoretical links between fiscal deficits and current account deficits can be classified under four main categories. The first one, commonly known as '*Keynesian Hypothesis-Mundell-Fleming Model*' contends that an increase in budget deficits leads to an increase in domestic interest rates which in turn invites foreign capital and that appreciates the nominal exchange rates, resulting in with deterioration in the current account deficit. Thus, according to this view, the one-way causality runs from the fiscal deficit to the current account deficit.

In contrast to the above, the second hypothesis which is referred to as '*Current Account Targeting Hypothesis-CATH*' claims that if the government aims at eliminating the current account imbalances, it may apply for fiscal policy instruments which in turn will worsen fiscal deficits. Consequently, to the proponents of this hypothesis, there is a one-way causal relationship running from the current account deficit to the fiscal deficit.

The third one is traced back to the work of Barro (1974) which is usually referred to as '*Barro-Ricardo Equivalence Hypothesis-BREH*'. This view argues that if government stimulates economy

by increasing debt-financed government spending, net foreign borrowing or current account deficit remains unchanged, because nonmyopic citizens increase private savings instantaneously in order to pay for expected future tax increase that will be used to pay back the debt. Therefore, advocates of this hypothesis supports that there is not any causal relationship between fiscal deficit and current account deficit.

Finally, the fourth view, known as '*Feldstein-Horioka Puzzle',* is based on the work of Feldstein and Horioka (1980) which find high correlation between domestic saving and investment despite the lack of full capital mobility for OECD countries. This evidence is later interpreted as if countries finance their investment mainly from domestic savings, fiscal deficit and current account deficit are expected to move together. Therefore, this view argues that a bi-directional causal link may exist between these two deficits.

On the empirical side, the relationship between fiscal deficit and current account deficit is also ambiguous. This lack of consensus may be due to different sample groups as well as different empirical methodologies that have been used. A great deal of previous studies has focused on developed countries (e.g. mostly US), but after the 2008 financial crisis some of the European Union countries (Greece, Italy, Ireland, Portugal and Spain-GIIPS), who have experienced large debt-to-GDP ratios, also attracted the attention of the researchers.[2] In these countries, both the fiscal deficit and the current account deficit have increased considerably, and both deficits have started to recover together after 2011.[3]

The first systematic analysis of the GIIPS countries, Algieri (2013) employed both the standard Granger causality test and the Toda & Yamamoto (TY) methodology for each individual country. He reported evidence in favor of the *'Barro-Ricardo Equivalence Hypothesis'* which implies no clear nexus between fiscal and current account balances. Later on, for example Trachanas and Katrakilidis (2013) using Gregory and Hansen (1996) cointegration test with one structural break confirmed the *'Keynesian Hypothesis'* for all GIIPS countries, except Italy. They also examined the asymmetric linkages between these two deficits and showed that fiscal deficit decreases have a larger impact on current account deficits but not vice versa. More recently, using ARDL cointegration methodology Litsios and Pilbeam (2017) provide further evidence in favor of the *'Keynesian hypothesis'* for Greece, Portugal and Spain.

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[2] For more detailed information on the fiscal and trade balances of these countries see, Algieri, 2013.
[3] See more details in Appendix.

To the best of our knowledge, the previous empirical works on GIIPS countries employ either different cointegration tests or standard or one sharp break Granger causality tests and do not take into account structural breaks in the gradual form. The sharp break assumption of the dummy variables approach requires a priori knowledge of the number and dates of breaks. However, in practice, it is rather difficult to know the number, dates and form of breaks and moreover economic series may contain multiple smooth breaks at unknown dates. For these reasons, this paper aims to contribute to the existing literature by using and comparing the results of both a no shift model and then a model with gradual structural shifts. I first employ the Toda-Yamamoto (1995) (TY) approach and furthermore Fourier Toda-Yamamoto (Fourier TY) approach which is proposed by Nazlioglu et al. (2016). By this way, it may help one to better understanding for the causality mechanism of the twin deficits and it also provides new information about to what extend taking into account structural shifts in Fourier form plays a role on determining the causal linkages.

The rest of this study is structured as follows. The following section presents a summary of the empirical literature. The third section describes the Toda and Yamamoto and Fourier Toda and Yamamoto methodology. The fourth section explains the data and reports the empirical findings. The last section concludes.

2. AN OVERVIEW OF THE EMPIRICAL LITERATURE

The extensive and growing empirical literature produce mixed evidence due to the result of differences in methodology and data sets, see Table 1. A substantial part of the empirical literature has analyzed the twin deficits hypothesis by utilizing causality testing procedure without considering any structural breaks in this relationship. Earlier studies applied Standard Granger Causality test and supported the bidirectional causal link (e.g. Darrat, 1988; Abell, 1990) or unidirectional causality from fiscal deficit to the current account deficit (Bachman, 1992; Vamvoukas, 1999). Some other studies analyzed the causality relationship between these two deficits by utilizing Toda & Yamamoto (1995) methodology which may be applicable whether the variables may be stationary, integrated of an arbitrary order or cointegrated of an arbitrary order. For example, Kouassi et al. (2004) found that there is a unidirectional causality running from fiscal deficit to current account deficit for Israel, a unidirectional causality running from current account deficit to fiscal deficit for Korea and a bidirectional relation for Thailand but no causal link for the developing countries. Utilizing the same methodology, Kim and Kim (2006) also confirmed the validity of the Current Account Targeting Hypothesis for Korea. More recently, Xie and Chen (2014) applied Emirmahmutoglu and Kose (2011) causality test for the OECD countries which

takes into account the cross-sectional dependency across the members in the panel. They showed mixed results for different countries which lead to different policy implications. Marinheiro (2008) recognized implicitly that there is a structural change in this relationship and divided the sample into two periods for Egypt. He found that while there is not any causal link in the first sub-sample, it emerges a Granger-causal relationship from the current account deficit to the fiscal deficit in the more recent sub-sample. More recently, Helmy (2018) re-examined this topic for Egypt during the period 1975-2014 and supported again the evidence of Current Account Targeting Hypothesis. The missing part of the previous causality literature in this topic is that, to the best of our knowledge, structural breaks have not yet been taken into consideration in the analyzes. On the other hand, the previous unit root and cointegration analysis for the twin deficit hypothesis addressed the issue of structural breaks in the series of these variables.

The earlier studies that recognized the importance of structural breaks either investigated the correspondence of the numbers and dates of breaks involved in the series or considered sharp structural breaks in the cointegration analysis. For example, Grier and Ye (2009) argued that if there is potential long-run relationship between budget deficit and current account deficit, the number of breaks and the timing of breaks in time series should accompany each other. They applied Bai and Perron (1998, 2003) multiple structural breaks model and found that both the number of breaks and the dates of breakpoints are different which implies there is no long-run connection between these two variables for the US. Bagnai (2006) and Dally and Siddiki (2009) examined the twin deficit hypothesis for the OECD countries by using Gregory and Hansen (1996) cointegration testing methodology which allows a sharp structural break in the model. They found that considering structural shifts has a substantial influence on the empirical findings and confirmed the validity of the hypothesis for a greater number of countries.

With a different point of view, Rafiq (2010) took into account the presence of structural instabilities in the data by using Time Varying Parameter-VAR model for the US. In this study, it was shown that fiscal deficit has a negative effect on current account balance, but the magnitude of this impact has been decreasing over the years. In another way, Fidrmuc (2003) applied the Johansen (1988) cointegration testing procedure that conditional on a structural break in 1989 to the 18 OECD and transition countries and divided the sample into two separate periods, 1980-1989 and 1990-2001. By this method, it was found that there is a long-run relation between fiscal deficit and current account deficit for a large number of countries for the 1980s but less evidence for the 1990s. Another strand of the empirical literature examined the cointegration relationship accounting for nonlinearity between the two series. Holmes (2011) and Ahmad et al. (2015) employed Hansen

and Seo (2002) threshold cointegration methodology and found evidence for the Keynesian Twin Deficits Hypothesis for US and African countries, respectively.

Table 1: Summary of the studies for fiscal deficit-current account deficit nexus

Author(s)	Sample	Methodology	Findings
Darrat (1988)	US 1960:1-1984:4	Granger Causality	FD ↔ CAD
Abell (1990)	US 1979:2-1985:2	Granger Causality	FD ↔ CAD
Enders&Lee (1990)	US 1947:3-1987:1	VAR system	No relationship
Bahmani&Oskooee (1992)	US 1971:1-1989:2	OLS	FD → CAD
Bachman (1992)	US 1974:1-1988:4	Granger Causality	FD → CAD
Vamvoukas (1999)	Greece 1948-1994	Granger Causality	FD → CAD
Fidrmuc (2003)	18 OECD and TC 1970:1-2001:1	Johansen (1991) CT	FD → CAD for the 1980s but less evidence for the 1990s
Kouassi et al. (2004)	20 DDC 1969-1997	Toda & Yamamoto (1995)	FD → CAD: Israel CAD→FD: Korea FD ↔ CAD: Thailand No relationship: Developing countries
Kim & Kim (2006)	Korea 1970-2003	Toda & Yamamoto (1995)	CAD → FD
Salvatore (2006)	G7 1973-2005	OLS	FD → CAD
Bagnai (2006)	OECD 1960-2005	Gregory & Hansen (1996) CT	10/22 countries FD → CAD
Kim & Roubini (2008)	US 1973:1-2004:1	VAR system	FD → CAD
Marinheiro (2008)	Egypt 1977-2003	Granger Causality	No relationship: 1977-1990

			CAD → FD: 1991-2003
Dally & Siddiki (2009)	OECD 1960-1999	Gregory & Hansen (1996) CT	13/23 countries FD → CAD
			No relationship for Canada, Germany, Sweden, Switzerland, UK and USA
Grier & Ye (2009)	US 1948:1-2005:1	Bai & Perron (1908,2003)	No relationship in the LR
Rafiq (2010)	US 1973:1-2009:1	TVP-VAR	FD → CAD and magnitude of FD shocks on CAD has fallen over the past 25 years.
Holmes (2010)	US 1960:1-2007:4	Nonlinear co-trending analysis	FD ↔ CAD
Holmes (2011)	US 1947:1-2009:4	Hansen & Seo (2002) TCT	FD → CAD
Algieri (2013)	GIIPS 1980-2012	Granger Causality and Toda & Yamamoto (1995)	No relationship
Trachanas & Katrakilidis (2013)	GIIPS 1971-2009	Gregory & Hansen (1996) CT and Schorderet (2003) asymmetric CT	FD → CAD, except Italy. A decrease in FD has a greater impact on the CAD.
Xie & Chen (2014)	OECD 1980-2010	Emirmahmutoglu & Kose (2011) Causality Test	No relationship: France, UK
			FD →CAD: Norway, Switzerland
			CAD →FD: Ireland, Spain, Sweden
			FD↔CAD: Belgium, Finland, Greece, Iceland
Ahmad et al. (2015)	9 AC 1980-2009	Hansen & Seo (2002) TCT	6/9 countries FD → CAD
Litsios&Pilbeam (2017)	Greece, Portugal, Spain	ARDL CT, Pedroni (1999) CT, FMOLS	FD → CAD
Helmy (2018)	Egypt 1975-2014	Granger Causality	CAD → FD

FD: Fiscal deficit, CAD: Current account deficit, CT: Cointegration test; TCT: Threshold Cointegration test TVP-VAR: Time-Varying Parameter VAR; DDC: Developed & Developing countries; TC: Transition countries; AC: African countries

3. GRANGER CAUSALITY WITH STRUCTURAL SHIFTS

In this study, the relationship between budget deficit and current account deficit is tested using two different methodologies. These methods are based on the pioneering study of Granger causality test (1969) which is constructed with $VAR(p)$ system as defined below:

$$y_t = \alpha + \beta_1 y_{t-1} + \cdots + \beta_p y_{t-p} + \varepsilon_t \tag{1}$$

where y_t consists of K endogenous variables that includes all there variables in the multivariate estimations, α is a vector of intercept terms, β are coefficient matrices and ε_t are white-noise residuals. More specifically, y_t includes budget deficit and current account deficit for this study. The traditional Granger causality test has some difficulties such as the necessity of nuisance parameters. Moreover, if the variables are integrated or cointegrated the test statistic is not valid and it does not follow its own distribution (Toda and Yamamoto, 1995; Dolado and Lütkepohl, 1996). To overcome these problems an alternative method is proposed by Toda and Yamamoto (1995) (hereafter, TY) which augments the $VAR(p)$ model with extra lags determined by the maximum integration order of the series. TY approach estimates $VAR(p + d)$ model with the levels of the variables and asymptotically follows a chi-square distribution.

In equation (1) y_t are assumed not to have any structural shifts and the intercept terms α are constant over time. Recent empirical literature stresses the importance of considering structural breaks in the causality modelling since ignorance of the structural breaks may lead to mis-specification bias in model estimation (Enders and Jones, 2016). To get over this problem and simplify the determination of the number, date and the form of the breaks Enders and Jones (2016) use Fourier approximation in a VAR framework.

Utilizing the approach of Enders and Jones (2016) and going one step further Nazlioglu et al. (2016) augment the TY testing approach with gradual structural shifts using a Fourier approximation. By this way, the assumption that intercept terms are constant over time is relaxed and $VAR(p + d)$ model is defined as

$$y_t = \alpha(t) + \beta_1 y_{t-1} + \cdots + \beta_{p+d} y_{t-(p+d)} + \varepsilon_t \tag{2}$$

where the intercept terms $\alpha(t)$ are time dependent and denote structural shifts in y_t. To consider structural shifts as a gradual process with an unknown date, number and form of breaks the Fourier approximation is defined as follows:

$$\alpha(t) \cong \alpha_0 + \sum_{k=1}^{n} \gamma_{1k} sin\left(\frac{2\pi kt}{T}\right) + \sum_{k=1}^{n} \gamma_{2k} cos\left(\frac{2\pi kt}{T}\right) \tag{3}$$

where n is the number of frequencies and k represents an integer frequency. By substituting equation (3) in equation (2), equation (4) is obtained as below:

$$y_t = \alpha_0 + \sum_{k=1}^{n} \gamma_{1k} sin\left(\frac{2\pi kt}{T}\right) + \sum_{k=1}^{n} \gamma_{2k} cos\left(\frac{2\pi kt}{T}\right) + \beta_1 y_{t-1} + \cdots + \beta_{p+d} y_{t-(p+d)} + \varepsilon_t \tag{4}$$

In this study, the bootstrap distribution of Wald statistic which is originally proposed by Efron (1979) is also used since Wald statistic may depend on the number of frequency and so may not follow an asymptotic chi-square distribution. To determine the number of Fourier frequency and lag lengths Akaike information criterion is used and the optimal number of k and p are selected with the smallest number of this criterion.

4. FINDINGS

The yearly data is obtained from Eurostat database for fiscal deficit as a percentage of GDP and World Development Indicators for current account deficit as a percentage of GDP for the period 1995-2017. The sample contains the data for Greece, Italy, Ireland, Portugal and Spain.

The first step of the empirical part of this study is to determine the integration number of the variables because the TY framework requires to know the maximum number of the integration number of the unit root. To this end, the study employs Augmented Dickey-Fuller (ADF) (1979) no shift unit root tests, the Zivot and Andrews (1992) one-sharp break unit root test and Enders and Lee (2012) ADF unit root test with Fourier approximation. In the dummy variable approach of Zivot and Andrews (1992) it is assumed that there may be sharp shifts in series and these shifts entails to know *a priori* the number and dates of breaks. However, in practice economic series may contain an unknown form breaks at unknown dates. For this reason, Enders and Lee (2012) recently use a Fourier approximation for deterministic terms which does not require selecting the dates, number, and form of the breaks. Table 2 reports the results of a battery of unit root tests which generally indicate that all the unit root tests strongly support the evidence of stationarity for the first differences of the variables. These findings for the models with constant and trend imply that the maximum order of integration of the variables is equal to 1, and $VAR(p + d)$ models can be estimated.

Table 2: Results for unit root tests for fiscal deficit and current account deficit

Countries	Level						First Difference					
	ADF t		ADF t1		ADF tF		ADF T		ADF t1		ADF tF	
FD												
Greece	-1.73		-4.18		-2.31		-6.18	***	-7.33	***	-7.42	***
Ireland	-5.62	** *	-5.41	***	-4.46	***	-4.64	***	-5.85	***	-4.31	**
Italy	-1.94		-2.90		-2.65		-4.63	***	-8.54	***	-4.74	***
Portugal	-3.22	*	-4.83	*	-4.48	** *	-4.93	***	-5.39	**	-5.07	***
Spain	-2.08	**	-6.73	***	-2.60		-2.93		-4.37		-3.37	
CAD												
Greece	-1.11		-4.21		-2.01		-3.46	*	-5.01	*	-3.94	**
Ireland	-1.04		-5.41	**	-2.58		-4.03	**	-7.47	***	-4.97	***
Italy	-0.51		-3.64		-1.42		-7.83	***	-14.14	***	-10.02	***
Portugal	-1.19		-4.86	*	-2.56		-3.14		-4.08		-3.47	
Spain	-1.40		-3.33		-2.35		-2.91		-5.03	*	-3.68	*

Notes: ***, **, and * denote statistically significance at the 1%, 5% and 10% levels, respectively.
ADFt: Dickey and Fuller (1979) no shift ADF test, ADFt1: Zivot and Andrews (1992) one sharp break ADF test.
ADFtf: Enders and Lee (2012) ADF test with Fourier approximation.
No-shift model: $\Delta y_t = \mu + \beta t + \alpha y_{t-1} + \sum_{j=1}^{p} \beta_j \Delta y_{t-j} + \varepsilon_t$.
One-break sharp shift (ADFt1) model is $\Delta y_t = \mu + \beta t + \mu_1 DU_{1t} + \beta_1 DT_{1t} + \alpha y_{t-1} + \sum_{j=1}^{p} \beta_j \Delta y_{t-j} + \varepsilon_t$.
Gradual structural shift model is $\Delta y_t = \mu + \beta t + \theta sin\left(\frac{2\pi kt}{T}\right) + \varphi \cos\left(\frac{2\pi kt}{T}\right) + \alpha y_{t-1} + \sum_{j=1}^{p} \beta_j \Delta y_{t-j} + \varepsilon_t$.

Table 3 presents the results for causality between fiscal deficit and current account deficit. The results of TY test with no structural break shows that there is a unidirectional causality running from current account deficit to fiscal deficit in the cause of Greece, and Portugal. The opposite causality running from fiscal deficit to current account deficit is found for Spain. The no break TY test results also indicates an absence of any unidirectional or bidirectional link between these two deficits for Ireland and Italy.

It is apparent that taking into account structural shift plays a role on the causality relationship results of Ireland, Italy and Spain. The findings of no break TY test shows that the twin deficit hypothesis is supported through Keynesian Hypothesis (for Spain) or Current Account Targeting

Hypothesis (for Greece and Portugal) but also Barro-Ricardo Equivalence Theorem is acknowledged for Ireland and Italy. Along with Greece and Portugal, Fourier TY test results point out that the null hypothesis of non-causality from current account deficit to fiscal deficit cannot be rejected for Italy and Spain. This result hence provides a strong evidence on the validity of Current Account Targeting Hypothesis in the GIIPS countries. This finding is sharply in contrast with the previous studies on GIIPS countries (Trachanas and Katrakilidis, 2013 and Litsios and Pilbeam, 2017) which find unidirectional causality from fiscal deficit to current account deficit for the majority of the GIIPS countries. The other difference from the no break TY test result is that, the null of Granger non-causality from fiscal deficit to current account deficit is rejected for Ireland which implies that the Keynesian Hypothesis is acknowledged by this country.

Table 3: Results for causality between FD and CAD

	k	P		Wald	Boot p-val.			Wald	Boot p-val.
			H_0:CAD does not cause FD				H_0:FD does not cause CAD		
Greece	0	2	TY	**21.277**	0.000	TY		0.702	0.725
			Fourier						
	3	3	TY	**65.522**	0.008	Fourier TY		7.061	0.190
Ireland	0	2	TY	0.750	0.668	TY		2.763	0.279
			Fourier						
	3	3	TY	0.698	0.876	Fourier TY		**16.894**	0.077
Italy	0	2	TY	2.631	0.318	TY		1.404	0.519
			Fourier						
	3	3	TY	**20.776**	0,045	Fourier TY		4.611	0.340
Portugal	0	2	TY	**5.912**	0.080	TY		0.148	0.934
			Fourier						
	3	3	TY	**17.011**	0.073	Fourier TY		4.276	0.343
Spain	0	1	TY	2.365	0.141	TY		**6.818**	0.016
			Fourier						
	3	3	TY	**37.826**	0.020	Fourier TY		9.142	0.154

Notes: TY: conventional TY approach which does not account for structural breaks, FTY(n): Fourier TY approach with cumulative frequencies is based on equation (4). Maximum k and p are respectively set to 3 and optimal k and p are determined by Akaike information criterion. p-value[a] is based on the asymptotic chi-square distribution with p degrees of freedom. p-value[b] is based on the bootstrap distribution with 1,000 replications. $VAR(p + d)$ models are estimated with dmax equal to 1. Bold values present the significance of the coefficients.

5. CONCLUSION

This study re-examines the direction of causality between fiscal deficits and current account deficits for the GIIPS countries between the period 1995-2017. GIIPS countries have experienced structural changes in their government and trade balances during this period. This study is the first that examine the twin deficit hypothesis by considering structural shifts in causal linkages. To investigate whether structural shifts plays a role in causality results, I employ first traditional TY test and then Fourier TY testing approach. The findings show that (i) taking into account structural shifts has a role on twin deficits nexus. (ii) TY test with Fourier approximation test results show that all countries, except for Ireland support the Current Account Targeting Hypothesis. This means that large current account deficits leads to increase in fiscal deficits of the GIPS (Greece, Italy, Portugal and Spain) countries. (iii) On the other hand, the Keynesian Hypothesis is supported by Ireland which implies that an increase in fiscal deficit leads to current account deficits.

These results indicate first that ignoring the structural breaks in the causality analysis may lead to misleading results and policy implication. Second, the policy recommendations will vary depending on the type of relationship between fiscal and current account deficits. For the GIPS countries, a restrictive fiscal policy may help to improve fiscal balance but seems to be no effect on current account imbalances. Conversely, trade balances of these countries should be ameliorated in order to engage in sound fiscal policy. The findings for the Ireland differ from the other GIIPS countries and suggest that tightening of the fiscal policy may lead to an improvement in its current account deficits and fiscal consolidation may be a necessary measure to reduce large trade deficits.

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APPENDIX: Current Account Deficit to GDP ratio (CAD) and Fiscal Deficit to GDP ratio (FD)

Spain