PARA POLİTİKASI BAĞIMSIZLIĞININ TEST EDİLMESİ: ALMAN BASKINLIK HİPOTEZİ[1]

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ÖZ

1979 yılında yürürtlüğe giren Avrupa Para Sistemi (APS) Avrupa Topluluğu içerisinde oluşturulan bir parasal düzenlemedir ve birincil amacı Avrupa'da parasal istikrar bölgesi oluşturmaktır. Avrupa Para Sistemi£nin en önemli unsuru, katılımcı ülkelerin döviz kuru ilişkilerini yürütmek amacıyla oluşturulan Döviz Kuru Mekanizması'dır (DKM) . Sistem içindeki düzenleme, ikili kur oluşumunu tanımlanan dalgalanma bantları aralığında, yeniden ayarlama'nın mümkün olduğu sabit fakat ayarlanabilir kur sistemi olarak tanımlamaktadır.

İlk başından beri, APS'nin temel hedefi, simetrik yapıda bir kur rejimi oluştuırmak olup, bu amacı gerçekleştirme yönünde sistem içi düzenlemelere gidilmiştir. Buna rağmen, Bir çok iktisatcı, APS'nin simetrik kur rejimi olarak planlanmasına rağmen asimetrik bir yapıya dönüştüğünü vurgulamaktadırlar. Bu durumda, Almanya para politikasının diğer üye ülke para politikaları üzerinde baskınlık oluşturup, söz konusu ülkeler için para politikası bağımsızlığının ortadan kalktığı vurgulanmaktadır.

Alman Baskınlık Hipotezi, Almanya'nın kendi para politikasını bağımsız olarak belirlerken, diğer üyelerin bu politikayı takip etmek durumunda olduğunu ifade eder. Bu durumda, üye ülkelerin para politikası yürütme sürecinde faiz oranlarının belirlenmesinde, Almanya'nın kendisi için belirlediği faiz oranları etkili olmaktadır. Bu çalışma, APS'ne üye ülkelere ait faiz oranları verilerini kullanarak söz konusu Alman Baskınlığının mevcut olup olmadığını ve veya derecesini ölçmeyi hedeflemektedir. Sistemin kuruluş aşamasından, sonu olan Ekonomik ve Parasal Birliğe geçiş aşamasına kadar olan süreçte Alman Baskınlık Hipotezinin test edilmesi için Kointegrasyon metodu kullanılmıştır.

Bu çalışmanın sonuçları, yukarıda zikredilen hipotezde öne çıkan AB ülkeleri para politikası oluşumunda mutlak bir Alman Para politikası baskınlığının mevcudiyetini desteklememektedir. Buna rağmen, sonuçlar aynı zamanda, Almanya para politikasının, AB ülkelerinin para politikası oluşumuna etkilerini destekleyen bazı ipuçları vermektedir. Bu çalışma, Almanya'nın, verili dönemler arasında diğer AB üyesi ülkelerin para politikalarını etkileme derecesini ortaya çıkarmaktadır.

Anahtar Kelimeler: Alman Baskınlık Hipotezi, Avrupa Para Sistemi, (APS) Döviz Kuru Mekanizması, (DKM) Avrupa Birliği, Para Politikası Bağımsızlığı, sabit fakat ayarlanabilir döviz kurları, faiz oranları.

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TESTING THE DEGREE OF MONETARY AUTONOMY: GERMAN DOMINANCE HYPOTHESIS REVISITED

ABSTRACT

European Monetary System, (EMS) came into force in 1979, was an intra European Community monetary arrangement and its foremost aim was to create a zone of monetary stability in Europe. The most important pillar of the Europeran Monetary System was its Exchange Rate Mechanism (ERM) that is designed to administer the exchange rate regimes of the participant countries. Bilateral exchange rates were systemically defined to be of fixed but adjustable nature, with the given fluctuations margins where realignments were possible option for the participating currencies.

From the very start, the main purpose of the EMS was to create a symetrical zone of exchange rate regime and for that end, some operational rules had been introduced to support stability. However; it is often argued and advocated by many scholars to the extent that that European Monetary System was initially designed to operate symetrically but turned out to be conspicously an asymetric regime. In that, it is argued that German Monetary policy largely dominated the monetary policies of the other EMS countries by ruling out molnetary independence for them. This argument explicitly defends the deterministic influence of German Mark on other participant countries in determination of bilateral exchange rates. German Bundesbank had played the most proeminent and active part in monetary interventions designed to smooth out bilateral exchange rates.

German dominance Hypothesis suggests that Germany fixes monetary policy of its own while the other EMS countries would have to follow its footsteps. According to that; as a monetary policy measure, the process of interest rate determination for other EMS countries is manipulated by German interst rates. This work is an attempt to measure the presence and/or the degree of German dominance by using interst rates data for the EMS countries. A cointegration method has been employed to carry out testing the validity of the German Dominance Hypothesis from the onset of the system until the end, when Economic and Monetary Union in EU had become operational.

The findings of this work does not support an absolute presence of German Dominance in EU monetary policy as the aforementioned hypothesis suggests. However, it is also notable to infer the supportive elements of the German influence in monetary policy in EU. This work try to highlight the degree of German monetary impact on other participants over the sample period.

Key Words: German Dominance Hypothesis, European Monetary System, (Ems) Exchange Rate Mechanism, (Erm) European Union, Monetary Policy Independence, Fixed But Adjustable Exchange Rates, Interst Rate.

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INTRODUCTION

It is widely believed that Fixed Exchange Rate Regime, depending on its kind and particular features, brings in stability for the domestic economy. Such inclination has given way for foundation of fixed exchange rate regimes for over a long period of time in the

world. Although one can hardly ever discover a truly fixed Exchange rate regime established so far, yet there exist numerous mixed regimes that some way or another are the reminiscent of exchange rate fixity. Among others, the Bretton Woods exchange rate regime and European Monetary system are the well known examples. This paper examines European Monetary System as a community wide monetary arrangement with a particular focus on its Exchange Rate Mechanism.

Dominant currency hypothesis defends that, in a fixed exchange rate scheme where there are n numbers of the participant countries' currencies, if there is a leading country relatively stronger than others, its currency will equally be stronger and endowed with the capacity to lead others given the independence to do so. In the light of this, when there are n numbers of participating currencies, the n-1 currency will possibly dominate the other currencies, in return, most notably the monetary policy making authority of the dominant currency will equally exert dominance over their counterparts in associated economies.

From the very start, the European Monetary System (EMS) was designated to operate in a symmetrical version with the operational rules set up within the Exchange Rate Mechanism (ERM). However; almost from the start to the end; the EMS has been viewed as a asymmetrical exchange rate regime; that is consistent with the hegemonic leadership model. It is often argued that Germany was the hegemonic country that dominated its monetary policy in the Community while others were to follow the policy line designated by the Germany. While the presupposed symmetrical view asserted that the burden of adjustment was to be shared equally; the asymmetric version points to the contrary. It implies relatively disproportionate allocation of burden of adjustment within the EU. This latter approach that proposed an asymmetrical dispersion in the EMS was theoretically supported by the German dominance hypothesis defending that German Bundesbank was to set its monetary policy independently while others were obliged to adopt to the policy path of German Bundesbank. German Dominance Hypothesis defends that non- German interest rates cointegrate with that of Germany which in return taken for granted in proof of asymmetrical design within the ERM. On the other hand; non-existence of German Monetary Policy influence on other EU members would suggest the formation of a divergent EU-wide monetary policy. The general structure of this article is as follows:

The first section reviews some of the existing literature on German Dominance Hypothesis and highlights the some related findings. The next section deals with the model specification that is to be applied in testing the German Dominance Hypothesis. The following section deals with estimation and presents empirical results. Section 4 introduces the general results of the testing of the German Dominance Hypothesis. Finally section 5 provides conclusions.

1. LITERATURE SURVEY ON GERMAN DOMINANCE HYPOTHESIS

There have been empirical supports for the German Dominance Hypothesis while degrees of dominance- are varied depending on the method of the empirical investigation selected. However, in the light of the findings of the studies conducted in this respect; it is conclusive that German influence in the ERM has been considerable and German Monetary Policy has affected the policies of the other members. Although German Dominance Hypothesis rejects the option of using independent monetary policy by the other members; they are proved to have had some room for independent monetary policy making, but in a

limited degree. On the other hand; given the fact that non-German interest rates cointegrate with that of Germany presupposes the existence of monetary policy convergence among the ERM members. However, on the other hand, prevalence of the contrary would suggest the case of divergence in monetary policy among the participant ERM members.

Testing the existence of GDH hypothesis provides with the evidence that whether ERM of the EMS was an asymmetric regime or not. There are number of work that attempted to test the validity of German Dominance Hypothesis. *Baum and Barkoulas* (2001) tested the GDH, their findings suggest the short-run interaction among the monetary policy of the EMS participants while on the other hand pointing to the presence of German Dominance. Findings of- Ma, Yue and Kanas, A. (2000) are similar to the that of above, suggesting the validity of GDH.

Rubio and Garces, (2002) tested the German Dominance hypothesis and their findings were in support of weak version of German Dominance. They used the Granger Causality tests between the interest rates of Germany and other EMS participants up to the period December 1998 when the EMS was replaced by the rules of EMU. Their finding about the German Dominance is not strong but may be important to imply some extent of German leadership in the EMS.

Taufik Choudhry (2002) investigates monetary interdependence between three ERM members, namely Germany, France and Holland between 1979 and 1997. He utilized Johansen Multivariate cointegration method and error correction model. According to his findings; international transmission of monetary policy spread in diverse directions and this can be taken as evidence against the propositions of German Dominance Hypothesis. *Muscatelli, Tirelli and Trecroci* (2002) estimated forward-looking interest rate reaction functions for the ERM members in the Community. They found that credibility concerns and the goal of converging to German inflation level was of monetary policy priority. Henry and Weidmann (1995), in their work, uses VAR approach to test the existence of German Dominance; and their findings are in support of the dominance implied by GDH.

Table 1 Major Studies Testing The German Dominance Hypothesis

	Test Object(s)	German Dominance Yes: + ,No: -
Giovannini (1988)	interest rates and realignments	+
Grauwe (1988a, b)	interest rates	
	- short term	+
	- long term	-
Mastropasqua at all (1988)	interventions	+
Giavazzi & Giovannini (1989)	interest rates	-
Von Hagen &Fratianni (1989)	interest rates and money supply growth	(-)
Honohan & Mcnellis (1989)	realignments and exchange rate predictability	+
Fratianni & Von Hagen (1990)	monetary base growth	-
Von Hagen &Fratianni (1990)	interest rates	(-)
Karfakis & Moschos (1990)	Granger causality tests with short term interest rates	+
Macdonald & Taylor (1990)	Granger causality test with nominal money supply-growth rates	+
Artus at all (1991)	- Granger causality tests with short term and long term interest rates	+
	- Maximum likelihood estimation of a structural model describing the transmission of US monetary policy	
Kirchgassner & Wolters (1991a)	Granger causality tests with short term and long term interest rates	+
Kutan(1991)	money growth rates	-
Beyer & Schmidt (1992)	co-integration and error correction model for interest rates	+
Herz & Roger (1992)	estimation of a neoclassical two-country model	+
Koedijk & Koll (1992)	VAR estimations with domestic credit	+/.
Garcia-Herroro&Thomton (1996)	co-integration and Granger causality tests with interest rates	+/-

Source: Sinimaaria Ranki (1998), *Exchange rates In European Monetary Integration,* Bank Of Finland Studies E: 9, Finland.

2. A SIMPLE MODEL OF GERMAN DOMINANCE MODEL SPECIFICATION

There are numbers of studies that were attempted to test the presence of German Dominance Hypothesis. However, different criteria and different methods have been used in those studies and the results are varying pending on the methodology selected. Some findings suggest the presence of GDH. While some others found partial existence of GDH and also some others rejected the existence of GDH. The findings of major studies are summarized above.

The causality tests require that the time series be stationary, otherwise the empirical results can be misleading. Thus, if the original series are non-stationary, they

must be transformed into stationary variables by differencing the variables until they are stationary. When two series are cointegrated, however, there is a long-run equilibrium between two variables. Hence, in the absence of cointegration, the simple Granger causality tests can be inappropriate and should be modified because when all the series are in difference, only short run effects will be picked up. Thus, standard Granger causality tests, augmented with error correction terms are used to examine the long run effects. Such tests are carried out on I (0) variables to assume that valid inferences may be made from the tests. The augmented Granger causality test is usually formulated as follows:

$$\text{A In } ru = ao\backslash + \overset{m}{\underset{k=1}{Yj}} \text{/M In } ru - * + \pounds \; hA \text{ In } \overset{n}{\underset{Jfc=l}{gerrjt}} + 0\text{A In } usr + Srjt \text{ -1} + sa$$

$$\text{A In } gerrjt = a \; o2 + \pounds \underset{k=l}{\text{/M In } ru} - k + \pounds \text{ In } gerrjt + (f{>}A \text{ In } usr + Srjt \text{ - i} + a \; 2$$

where s $_t$i and s a are error terms which are assumed to be white noise zero mean, constant variance and no autocorrelation. A denotes the first differences and $5r|_t$-i is the error correction term which is derived from the long run cointegrating relationship. The Time Series used in this thesis come from the IMF's International Financial Statistics (2000). All series are at the monthly frequency and the sample included 238 observations from 1979:4 through 1998:12. In particular the series are call money rates for Belgium (lnbelr), Denmark (Indenr), France (lnfrar), Germany (lngerr), Spain (Inspar) and Netherland (lnnetr) and treasury bill rates in the case of the United Kingdom (lnukr), Ireland (lnirer), Italy (Initar) and the United States (lnusr). For Portugal the interest rates is used as 5 days interbank deposit rate (lnporr).

The countries included in the sample are those members of the EMS with data availability for the majority of the sample. This wide sample allows us to study the performance of the EMS for twenty years.

3. ESTIMATION AND EMPIRICAL RESULTS

The first step in the analysis is to make unit root tests for the individual country specific-interest rates. Here, we have used ADF test (Augmented Dickey Fuller Test). In the analysis, the optimal lag selection is made by the Schwarz Information Criteria. The results are shown in table-2. According to ADF test, the null of stationary in differences is not rejected for all the interest rates considered and for both the model with and without trend while the opposite happens for the levels of variables.

Thus, the structure of the series can led us to make cointegration test. In the model, we accept that for each sub-model there are three variables; the interest rates of the selective country and Germany are endogenous, and interest rate of the US is exogenous. The results of test are summarized in table-2.

Table 2 Unit Root Test Results (1979:4 -1998:12)

Series In Levels (Logarithmic)				Series In Differences (Logarithmic)			
Countries	ADF Test Statistics	Critical Value	Optimum Lag	Countries	ADF Test Statistics	Critical Value	Optimum Lag
Lnbelr	-1.02	-1.95	2	*lnbelr*	-9.51	-3.41	2
Lndenr	-0.79	-1.95	5	*lndenr*	-6.95	-3.41	5
Infrar	-0.73	-1.95	2	*Infrar*	-8.89	-3.41	2
Ingerr	-0.88	-1.95	6	*Ingerr*	-4.30	-3.41	6
Ingrer	-0.05	-1.95	2	*Ingrer*	-10.36	-3.41	2
Inirer	-1.01	-1.95	7	*Inirer*	-7.37	-3.41	7
Initar	-0.88	-1.95	2	*Initar*	-8.93	-3.41	2
Innetr	-0.90	-1.95	2	*Innetr*	-9.89	-3.41	2
lnporr	-1.26	-1.95	8	*lnporr*	-2.51	-1.95	8
Inspar	-1.17	-1.95	3	*Inspar*	-10.99	-3.41	->
Inukr	-0.81	-1.95	9	*Inukr*	-4.78	-3.41	9
lnusr	-0.88	-1.95	3	*lnusr*	-8.70 1-3.41		3

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Thus, the structure of the series can lead us to make cointegration test. In the model, we acknowledge that for each sub-model there are three variables; the interest rates of the selected country, Germany and the US. However, the structure of the tests that have been done are as follows: First of all cointegration analysis includes the whole sample period between 1979 and 1998. Alternatively, the above sample periods have been divided into three sub-periods. The first period includes 1979-1985; the second period deals with 1985-1990; the third period covers 1990-1998 respectively[3].

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[3] The reason for including these three sub-periods can be explained by the presence of breaks in the data. This conclusion was reached at pending on the results of Perron test that contained breaks in the whole sample period. The result of Perron test is shown in this chapter.

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Table 3. Cointegration Test Results*

| | Bivariate | | | |
	1979.4-1998.12	1979.4-1985-12	1985.12-1990.12	1990.12-1998.12
Belgium	No	No	No	No
Denmark	No	No	No	Yes
France	No	Yes	No	No
Greece	No	No	Yes	No
Ireland	No	No	Yes	Yes
Italy	No	No	No	No
Netherland	No	Yes	Yes	Yes
Portugal	No	No	No	No
Spain	No	No	No	No
UK	No	No	Yes	Yes
US	Yes	Yes	No	No
	Trivariate			
Belgium	No	Yes	No	Yes
Denmark	No	Yes	No	Yes
France	No	Yes	No	Yes
Greece	No	Yes	Yes	Yes
Ireland	No	Yes	No	Yes
Italy	No	Yes	Yes	No
Netherland	No	Yes	Yes	Yes
Portugal	No	Yes	No	Yes
Spain	No	Yes	No	No
UK	No	Yes	Yes	Yes

*On the test, Yes indicates cointegration, No indicates the absence of cointegration.

The Granger tests has been done for the countries of which the results of cointegration relationship has shown significance. The Granger test result are bivariate in order to find out whether there exists a Granger causality between the selected country and Germany, and trivariate in order to find out whether there exists a Granger causality between the selected country, the US and Germany. The results are given below, the causality relationship has not been supported for the whole sample periods.

Tables indicate the co-integration equations and error corrections. The values in parentheses derive t-statistics. According to this, t-statistics becomes significant with 2 lag when model 3 is used with 2 lag proves the existence of co-integration relationship and shows that this relationship is statistically significant. The above tables also yield the parameters that are derived from co-integration equation and t- statistics of the parameters, therefore: In the bivariate analysis that covers the period between 1979 and 1986, The relationship between German and Dutch short term interest rates are statistically significant. Concerning the three variate analysis, significance has been indicated between German and Italian interest rates and German and Dutch interest rates. On the other hand; Belgium and US interest rates and French and US interest rates implies statistical significance.

Bivariate analysis in the period between 1985 and 1990 shows that German and Greek and German and Irish interest rates are statistically significant. In the tirivariate

analysis, German and United Kingdom interest rates show statistical significance over the same period. Bivariate analysis between the period 1990 and 1998 shows that the German and Denmark's interest rates are statistically significant. In the trivariate analysis, German and French and, German and Greek interest rates show statistical significance. Moreover, the Belgium and US interest rates and the Dutch and US interest rates imply statistical significance.

Table-4 Bivariate Causality Test Results 1979-1985

Country Statistics	Dependent Variable	Error Correction Term	F-
France	Infra 13.3600* (1)	-0.114732 (-1.27590)	
Inger		0.291245 (2.28488)* 7.39264* (1)	
Netherland	lnnet 1.69829* (2)	0.676476(4.02864)*	
Inger		-0.146055 (-2.23155)* 4.01320* (2)	
US	lnus 10.5556* (2)	0.244321 (1.82857)*	
Inger		-0.029206 (-0.45521) 2.48052* (2)	

* indicates at 5 % level. Numbers inside parenthesis in the third and the fourth columns show the t- statistics of the error correction terms and the number of lags respectively.

Table-5 Bivariate Causality Test Results: 1985-1990

Country	Dependent Variable	Error Correction Term	F-Statistics
Greece	Ingre	0.006342 (0.12097)	4.03328* (2)
	Inger	-0.684451 (-2.17760)*	3.49773* (2)
Ireland	lnire	0.024142 (0.13687)	1.29932 (2)
	Inger	0.124371 (1.71723)*	3.72630* (2)
Netherland	lnnet	0.86527 (0.40149)	5.20838* (1)
	Inger	0.162096 (1.69491)*	20.1927* (1)
UK	lnuk	-0.3302942 (-2.00341)*	17.1096* (2)
	Inger	-0.116870 (-1.34040)	2.42842* (2)

* indicates at 5 % level. Numbers inside parenthesis in the third and the fourth columns show the t- statistics of the error correction terms and the number of lags respectively.

Table- 6 Bivariate Causality Test Results: 1990-1998

Country	Dependent Variable	Error Correction Term	F-Statistics
Denmark	İnden	0.169962 (-0.52263)	0.19340 (2)
	Inger	0.059811 (1.67683)*	8.83949* (2)
Netherland	lnnet	0.499657 (3.38968)*	8.05578* (1)
	Inger	0.299771 (2.72928)*	11.6339* (1)
UK	lnuk	0.743251 (2.84901)*	8.69239* (2)
	Inger	0.155873 (1.56943)*	5.91645* (2)

* indicates at 5 % level. Numbers inside parenthesis in the third and the fourth columns show the t-

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statistics of the error correction terms and the number of lags respectively.

Table 7. Trivariate Causality Test Results: 1979-I985

Country	Dependent Variable	Error Correction Term	F-Statistics
Belgium	Inbel	0.008257 (0.13851)	4.51884* (1)
	Inger	0.292952 (1.61888)*	9.64884* (1)
	lnus	0.893153 (2.57762)*	9.69001* (1)
Denmark	Inden	-0.144214 (-0.45448)	0.598139 (2)
	Inger	-0.025701 (-0.82504)	3.53467* (2)
	lnus	0.122936 (1.78883)*	1.65559* (2)
France	lnfira	-0.094597 (-0.94938)	13.3600* (1)
	Inger	0.224711 (2.01892)*	7.39284* (1)
	lnus	0.366480 (1.55488)*	10.2680* (1)
Greece	lngre	-0.005605 (-0.04889)	8.52490* (1)
	Inger	0.555510(3.98965)*	2.11852* (1)
	lnus	0.221036 (0.72120)	0.22472 (1)
Ireland	lnire	0.039827 (0.24510)	1.74048 (1)
	Inger	-0.103210 (-1.59260)*	2.08344* (1)
	lnus	0.159556(1.30091)	4.34534* (1)
Italy	lnita	0.145647 (2.39903)*	8.44173* (2)
	Inger	-0.093458 (0.49245)	5.42490* (2)
	lnus	-0.062851 (0.14846)	3.02617* (2)
Netherland	lnnet	0.557740 (3.06640)*	4.01130* (2)
	Inger	-0.109085 (-1.83734)*	1.68860* (2)
	lnus	0.119962 (0.92759)	3.28230* (2)
Portugal	lnpor	-0.010795 (-0.09117)	0.16647(1)
	Inger	-0.289718 (-1.63763)*	5.19681* (1)
	lnus	-0.137439 (-0.34006)	0.00296 (1)
Spain	lnspa	-0.252352 (-0.66160)	0.50301 (2)
	Inger	-0.45930 (-1.65961)*	0.13578 (2)
	lnus	-0.22521 (-1.40157)	0.12646 (2)
UK	lnuk	-0.425738 (-4.13880)*	0.31368* (2)
	Inger	-0.031576 (-1.10643)	3.48284* (2)
	lnus	-0.03357 (-0.05670)	0.97458* (2)

*indicates at 5 % level. Numbers inside parenthesis in the third and the fourth columns show the t-statistics of the error correction terms and the number of lags respectively.

Table-8 Trivariate Causality Test Results: 1985-1990

Country	Dependent Variable	Error Correction Term	F-Statistics
Netherland	lnnet	-0.144874 (-1.27660)	5.20888* (1)
	Inger	-0.016490 (-0.19724)	20.1754* (1)
	lnus	0.098968 (1.96966)*	3.89683* (1)
UK	lnuk	-0.385313 (-2.35533)*	2.42803* (2)
	Inger	0.109104(1.36243)	17.1096* (2)
	lnus	-0.005235 (-0.09701)	4.98094* (2)

* indicates at 5 % level. Numbers inside parenthesis in the third and the fourth columns

show the t- statistics of the error correction terms and the number of lags respectively.

Table-9 Trivariate Causality Test Results: 1990-1998

Country	Dependent Variable	Error Correction Term	F-Statistics
Belgium	lnbel	-0.075894 (-0.38380)	2.89352* (1)
	lnger	0.058262 (1.19868)	5.32782* (1)
	lnus	-0.121722 (-1.95295)*	1.65812(1)
Denmark	lnden	0.097613 (0.30984)	0.19340(2)
	lnger	0.060768 (1.87201)*	8.83949* (2)
	lnus	-0.060245 (1.40427)	0.05465 (2)
France	lnfra	0.030767 (0.14075)	0.28211* (2)
	lnger	0.144578 (3.28910)*	5.17535* (2)
	lnus	-0.019420 (-030205)	0.61987 (2)
Netherland	lnnet	0.27322 (0.84328)	11.6369* (2)
	lnger	-0.075188 (-1.71070)*	8.05780* (2)
	lnus	-0.232485 (-0.21239)	3.81817* (2)
UK	lnuk	0.230426 (0.96126)	8.69238* (2)
	lnger	0.037362(1.94113)*	5.91645* (2)
	lnus	0.050210 (1.96773)*	11.0521* (2)

* indicates at 5 % level. Numbers inside paranthesis in the third and the fourth columns show the t- statistics of the error correction terms and the number of lags respectively.

4. GENERAL RESULTS OF THE MODEL

The results for the bivariate and trivariate tests have been shown above for the 12 sample countries. Those sample countries are EU countries apart from the US. US is included in the trivariate test to find out whether US monetary policy influence is existed on EMS members. This tests uses interest rates as a crucial variant of monetary policy, Hence confirmation of GDH for the members means that German interest rates determines the interest rates of those countries that confirmed the existence of the GDH. This can further be interpreted that Germany fixes monetary policy for those countries concerned. The results for both bivariate and trivariate tests are shown on the table-10. The direction of the arrow points to the progress of the interaction.

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Table-10 General Results Of The Tests

Bivariate		
1979-85	1985-1990	1990-98
ger -» fra	ger —» gre	ger -»den
net -> ger ; ger -» net	ger -» ire	net -»ger ; ger -» net
us -» ger	ger —» net	uk -»ger ; ger -» uk
	uk -» ger	
Trivariate		
1979-85	1985-1990	1990-98
ger -» bel	us -» net	us -»bel
us -» bel	us —» ger	ger -» den
us -» den		ger -» fra
ger -» fra ; us -» fra		ger -» uk ; us -» uk
ger -» gre		
ger —» ire		
ita -» ger		
net -» ger ; ger -» net		
ger —» por		
ger -» spa		
uk-» ger		

Bivariate Test Results Between 1979-1998

The result of the co-integration test does not confirm any significance apart from the US. However; the US being outside the ERM and EU; the direction of interaction would not make contribution to the this that attempt to measure the validity of German dominance hypothesis. However; it may be useful piece of knowledge to note that there has been interaction between German and US interest rates which is confirmed by the sample period between 1979-1998. The fact that within the scope of the method utilized the whole sample period does not record of co-integration relations; the proposition that rules out German influence could be methodologically misleading. This points to the importance of studying the EMS in a dynamic sense with its achievements, weaknesses and shortcomings which was attempted by this worked in various chapters. It is agreed and shown in this work that the ERM period marks the greater convergence in nominal variables of the ERM members. The fact that German Dominance Hypothesis employs nominal interest rates-the relative convergence achieved in this score in general has not been as strong as the nominal exchange rate convergence which was considered to be the most significant sign of EMS stability. Exchange rates differentials in instances have been instrumental in exploiting limited scope left for independent policy making which would be interpreted as diluting German leadership in monetary policy. Exchange rate differential of an ERM member with Germany has been direct outcome of the efforts to keep the domestic currency within the given margins of fluctuations against German mark. This cannot totally be dismissed as an inclination to reduce the overall EMS discipline under the German leadership. Exchange rate differentials of an ERM member with Germany in some cases have been direct

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outcome of the efforts to keep the domestic currency within the given margins of fluctuations against German mark. This is specifically confirmed by the data during the ERM in early 1990s. In the light of this; Germany's influence on other members' monetary policy could have been reduced or ceased to exist for certain periods for certain members. The breaks observed in the Perron test are significant findings in this respect. Therefore; the fact that whole period does not confirm the German leadership would not mean that German Leadership had never been the case for the any member countries. This way of reasoning had shaped the second step of this work by allowing three sub periods into the analysis to examine whether those sub periods relates to the German Dominance.

The Bivariate Test Results for the Period Between 1979-1985

Among the 12 countries included in the co-integration test, only the US, Netherland and France confirms the relationship. German interest rates influence that of France, Netherland, and in return Netherland's influence that of Germany and US interest rates influence that of Germany. Thus, France and Netherland confirms the validity of German Dominance.

The Bivariate Test Results Between 1985-1990

According to co-integration test results-Greece, Ireland, Netherland, and UK confirms the relationship. German interest rates influence the interest rates of Greece, Ireland and Netherlands while UK interest rates influence German interest rates. In this case; German dominance is confirmed by the results of Greece, Ireland, Netherland.

The Bivariate Test Results Between 1990-1998

Denmark, Netherland and the UK confirms the presence of co-integration relation for this sub-period. German interest rates influence that of Denmark, Netherland and UK; in return also interest rates of the latter influence that of Germany. In that sense; while there is significant interaction between the German interest rates and other members; thus, Denmark, Netherland and the UK confirms GDH.

Trivariate Test Results Between 1979-1998

As in the bivariate test covered the whole sample period; the cointegration relationship between Germany and other ERM members and between US and ERM members could not be found. Trivariate tests again points to the fact that German Dominance Hypothesis is not confirmed by the selected method. However; it does not rule out the German influence that could be weaker in strength. This test results also points to the fact that the US dominance is not confirmed for any country for the whole sample period.

Trivariate Test Results Between 1979-1985

German interest rates influence that of Belgium, France, Greece, Ireland, Netherland, Portugal and Spain. German interest rates influence that of Netherland and in return Netherland's interest rate influence that of Germany. UK interest rates influence that of Germany. US interest rates influence that of Belgium and Denmark. Three variate test results supports the presence of GDH for Belgium, France, Greece, Ireland, Netherland, Portugal and Spain.

Trivariate Test Results Between 1985-1990

US interest rates influence that of Netherland and Germany. There is no evidence

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in support of GDH in this sub-period.

Trivariate Test results between 1990-1998:
German interest rates influence that of Denmark, France and the UK. The US and German interest rates both influence that of UK. The US interest rates influence that of Belgium and the UK. The influence of German interest rates on that of Denmark, France and the UK supports GDH for those countries in this subperiod.

German Dominance Hypothesis has been tested for the ten EU countries other than Germany-for the whole sample period both in bivariate and trivariate tests there is no evidence to support GDH. However; The results of bivariate and trivariate tests for the sample periods brings evidence in support of GDH. As for this outcome; Germany is far from determining the monetary policy of the whole ERM members but successful at that for some members in the sub-periods.

Table 11. Perron Test
Break Dates For Sample Countries According to Test Discussed in Perron*

Countries	1979:04 -1990:12	1990:01 -1998:12
Belgium	1986:05	1993:02
Denmark	1990:10	1993:09
France	1988:08	1993:03
Germany	1987:02	1996:03
Greece	1979:10	1991:06
Ireland	1988:01	1993:04
Italy	1979:11	1991:11
Netherland	1987:12	1994:07
Portugal	1983:04	1996:06
Spain	1984:05	1995:08
UK	1987:06	1996:10
US	1986:04	1993:06

* Pierre Perron (1997), "Further evidence on breaking trend functions in macroeconomic variables", Journal of Econometrics 80, pp.355-386.
In the test "Innovational outlier with a change in the intercept and in the slope" model is used.

In order to test whether there had been structural breaks in the given interest rate data of the 11 EU countries and US, Perron test has been utilized with the application of Rats programme. The reason why two sub-periods used to cover 1979-1998 ERM period is that when the whole periods is considered only one "break" can be obtained for the each country whereas two sub periods yields two "breaks" in the dynamic process.

The occurrence of the breaks visible for the most countries in the periods between 1986 and 1990; and 1993 and 1996. In the light of the above findings, considering the period taking into account of the process between 1987 -1992 ifris visible that the ERM process has not simultaneously brought about exchange rate convergence and interest rate convergence with same extent. The exchange rate convergence over that period required tough monetary stance while on the other hand interest rate divergence were observable. The conclusion on this, the exclusive community wide exchange rate convergence has not also been observed with interest rates within the period between 1987-1992. One way of explanation of this could be that exchange rate instrument was increasingly being used as

means of correcting external deficit through capital flows. On the other hand; the breaks in early and mid 1990s reflects the monetary disturbances lived with at this period. The breaks in pre-crisis period can possibly be tied to the German monetary policy after the unification. Five episodes of breaks have been recorded in 1993 coinciding with the exchange rate crisis period. Interest rates were to rise extensively while some realignments were inevitable. Realignments followed after the regime change in 1993 that meant to be widening the bands of fluctuations. However after 1996 there is no breaks recorded. Prior to Monetary Union, the concern over convergence criterion about interest rates may be crucial factor in removing the "jumps" in the interest rates of the given EU countries.

CONCLUSION

This work tested the Hypothesis that German Bundesbank is the dominant player in the EU monetary policy making. The results of assessments of the other authors generally found no evidence for absolute German Dominance. The results of this work do not support full German domination but does not also rule out monetary influence by German Bundesbank. The existence and degree of influence vary over the horizon of selected period and vary according to sample countries. The findings are consistent with that of other studies.

The interpretation of the findings points to the asymmetrical conduct of the European Monetary System from which emergence of relative convergence of monetary policy results. It is equally important to point out that such degree of convergence has helped the members in the process of meeting convergence criteria towards EMU in Europe. It can be concluded that the declared aim of EMS at the start on creating a zone of monetary stability in Europe to a large extent has been materialized drawing upon the nominal convergence in this respect.

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