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The Dynamic Impact of Global Determinants on Life-insurance: Evidence from European Union

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Abstract

Applying global vector autoregressive (GVAR) analysis, this paper examines the dynamic impact of global shocks on life insurance markets in 13 countries over the period from 1980 to 2008. Different from the past literature concentrates on domestic variables; this paper considers simultaneously foreign and domestic factors. This is to stress the importance of global perspective in examining the determinants of life insurance premiums. The results indicate that a country's life insurance premium is affected by life insurance premiums of foreign countries, highlighting the crucial role of foreign components in influencing life insurance premiums.

Keywords: GVAR; European Union; Life insurance

I. Introduction

Following a rapidly rising degree of financial market integration and financial globalization, the interdependencies that exist across financial markets and / or countries increase dramatically (e.g., Kose, 2003; Monfort et al., 2003; Dees et al., 2007; Pesaran et al., 2009). Kose (2003) emphasizes that fluctuations in world prices such as crude oil, goods, and interest rate may have important impacts on world business cycles fluctuations. Dees et al. (2007) document the apparently co-movement phenomenon of macro variables such as real output, inflation, interest rates, and equity prices across countries in the world business cycles. Pesaran et al. (2009) stress that equity returns and long-term interest rates are closely correlated across countries. Looking globally, countries in Europe are generally acknowledged to be the most represented area revealing highly interdependence[1] across countries due to their integrated economy, common market, and single currency.

There are benefits when the markets are highly integrated (e.g., Cecchini, 1988). Nevertheless, integrated market may also suffer from lose of flexibility on varies monetary policies, which will especially be restricted when global financial crisis with stronger countries contagion happens. Beginning in the middle of 2007, the U.S. financial crisis triggered by the subprime mortgage spread to global, particularly Europe, financial markets and financial institutions, causing devastating global financial crisis, and thus lead to global

[1] In the last 50 years, the overall economic circumstances, legal and regulation restrictions, and financial institutions in EU have changed substantially. First in 1958, the framework of the common market was proposed to establish an area with no internal barriers to the movement of goods, services, labor, and capital. In 1985, the White Paper from the Commission to the European Council was published in completing the internal market. The White Paper listed measures that would have to be adopted if the goal of free circulation of people, goods, services, and capital within the EU were to be achieved. Except that, the White Paper also contained 300 proposals for legislation that would have to be enacted if barriers were to be removed. Among them, some were applied to banking services. To deal exclusively with the integration of financial intermediations, Price Waterhouse (1988) and Cecchini (1988) document the nature of costs of not having an integrated, competitive banking market in the EU. The report induces EU to develop a single market program in financial intermediations. The single market in financial intermediations was introduced in 1993, transforming the legislative and regulatory environment for banking and financial markets. Then on January 4, 1999, 11 of the 15 EU member states embarked on a dramatic alteration of their momentary arrangements, initiating a single currency (the euro) and a single central bank (European Central Bank, ECB). Thereby, countries in EU are highly integrated in terms of their economies, legal restrictions, financial markets, and monetary structures following the integration of different stages.

recession. As confirmed by Bayoumi and Swiston (2007) and Dees and Saint-Guilhem (2009), the contagion and increasing unilateral spillover effects, especially financial sectors, from the U.S. to the European area are significant. Following by the U.S. global financial crisis is the European sovereign-debt crisis first induced by Greece and spreads to other highly indebted European countries such as Ireland, Spain, Portugal, and Italy, leading to drag on the recovery of entire European economies. That is, because of financial globalization (e.g., Mishkin, 2007; Dees et al., 2007), highly integrated common market, and restricted monetary policy, financial systems in each European country are easily affected by external shocks brought by other European countries and internal disturbed factors caused by herself.

To account for various transmission channels on financial institutions, this paper presents a global model combining individual country vector error-correction models in which the domestic financial institutions are influenced by the country-specific foreign variables. That is, such a framework is capable of considering foreign (external) and domestic (internal) transmission mechanisms, including not only trade relationships but also financial linkages such as interest rates and stock market returns. Except that, another important issue regarding heterogeneity in terms of financial institutions across countries, Browne and Kim (1993), Ward and Zurbruegg (2000), Arestis et al. (2001), and Jawadi et al. (2009) argue that the role of financial institutions may be varied across countries due to culture differences, government control, laws, and regulations. Hence, to acknowledge the heterogeneity as well as impacts from external factors, this paper utilizes global vector autoregressive (hereafter GVAR) analysis originated by Pesaran et al. (2004) and further developed by Dees et al. (2007). The advantage of GVAR analysis is that it bridges the gap between the purely statistical analyses and the traditional modeling approaches (e.g., Dees et al., 2007).

Under the GVAR framework, this paper investigates the impacts of global, foreign, and domestic shocks on life insurance markets in 12 European countries[2] plus US. We focus on insurance sectors rather than other financial services due to rapidly increased financial risk and market uncertainty around the world (e.g., Outreville, 1990; Ward and Zurbruegg, 2000; and Beck and Webb, 2003; Guo et al., 2009). In addition, the total assets of insurance companies grew faster than the assets of banks even after simultaneously suffered from every financial crisis (e.g., Outreville, 2011). These all highlight the gradually crucial role of insurance markets over other financial institutions in the status of globalization and financial liberalization.

Past literature investigates key factors affecting life insurance markets[3] mainly concentrate on domestic macro shocks but ignoring foreign or global elements. As mentioned previously,

[2] Mishkin (2007) indicates that European countries have the longest established financial intermediations and that the legal and regulatory institutions of the financial institutions are more mature than those in other countries around the world. Meanwhile, countries in Europe are highly integrated in terms of their economies, markets, and monetary structures.

[3] For instance, Browne and Kim (1993) provide cross-sectional evidences on the determinants of life insurance demand. The findings reveal that dependency ratio, income, social security expenditure, inflation rate, and the price of insurance are critical determinants of life insurance. Using a panel dataset, Beck and Webb (2003) emphasize that inflation rate, income, banking development, religious, and institutional indicators are the most robust predicator of life insurance. Li et al. (2007) examine determinants of life insurance consumption in 30 OECD countries via the technique of panel analysis. They suggest that income elasticity of life insurance demand, number of dependents, the level of education, life expectancy, government spending on social security, inflation rate, real interest rates, and the level of financial development appear to influence life insurance. Utilizing multivariate structural vector error correction model, Guo et al. (2009) investigate the impacts of oil price, interest rate, real output, and price level on insurance premiums in the U.S. market. They reveal that oil price and real output can better explain insurance premiums.

the characteristics of highly interdependencies among European countries demonstrate the need of containing foreign factors, offering globally and extensively analysis. Meanwhile, the recent U.S. subprime mortgage crisis and European sovereign-debt crisis also provide appropriate backdrop emphasizing the importance of external instead of internal viewpoint. The results indicate that a country's life insurance premium is affected by life insurance premiums of foreign countries, highlighting the crucial role of foreign components in influencing life insurance premiums.

II. Methodology: Global vector autoregressive model (GVAR)

Following the increasing globalization and integration of the world economic and financial markets, there are clearly many channels through which the international transmissions of macro shocks on EU's financial institutions may occur. They could be due to common global shocks like substantially high in oil prices, they could be due to specific national shocks such as loose monetary policy (U.S.) and severely government deficits (Greece), or could arise as a result of global unobserved shocks like the diffusion of technological progress (e.g., Stock and Watson, 2002). Regarding unobserved factors, Dees et al. (2007) argue that unobserved shocks although have important implication, the identification of factors is often problematic. Therefore, this study will concentrate on observed factors constructed by domestic and foreign elements but ignore unobserved ones.

In order to account for those possible channels, this paper utilizes a GVAR analysis in which it explicitly allows for interdependencies that exist across countries and markets. Based on three investigation proceedings examining global shocks on financial institutions mentioned previously, the third procedure simultaneously considered U.S. and combined three European countries, i.e., euro area, as global shocks is adopted as an example of construction GVAR model. Suppose that there are N+1 countries indexed by i=0, 1, …, N, with i=0 for numeraire country, for example U.S., and $i>0$ for the other countries. The specification of the GVAR for each EU country can be represented as:

$$\Phi_i(L,p_i)X_{i,t} = c_i + b_i t + \Omega_i(L,q_i)X_{0,t} + \Theta_i(L,r_i)d_t + \Psi_i(L,r_i)X^*_{i,t} + u_{i,t} \qquad (1)$$

where $X_{i,t}$ is the $k_i \times 1$ vector of modeled variables in EU country i (with $i>0$), c_i and b_i are the coefficients of intercepts and linear time trend, $X_{0,t}$ is the $k_0 \times 1$ vector of modeled variables in U.S., d_t is the $k_d \times 1$ vector of common global factors suffered by each EU country, and $X^*_{i,t}$ is the $k^*_i \times 1$ vector of foreign variables specific to country i. $\Phi_i(L,p_i)$, $\Omega_i(L,q_i)$, $\Theta_i(L,r_i)$, and $\Psi_i(L,r_i)$ are the $k_i \times k_i$, $k_i \times k_0$, $k_i \times k_d$, and $k_i \times k^*_i$ matrix polynomials in the lag operator L of the coefficients of the EU country i, U.S., common global factors, and country specific foreign variables. $u_{i,t}$ is a $k_i \times 1$ vector of idiosyncratic country specific shocks. Through using country-specific trade-weighted averages over the values of the other countries, the foreign variables $X^*_{i,t}$ for each country i can be represented as:

$$X^*_{it} = \sum_{j=1}^{N} w_{ij} X_{jt}, \text{ with } w_{ii} = 0 \qquad (2)$$

where w_{ij} denotes the weight of country j in the total trade of country i and is expected to

measure the importance of country j for country i^{th} economy. Note that the sum of the weights is equal to 1, i.e., $\sum_j w_{ij} = 1$. Dees and Saint-Guilhem (2009) stress that geographical patterns of trade provide a clear source of information in this respect and could be effective in removing some of the remaining spatial dependencies. After choosing the proper lag length-order p_i, q_i, and r_i, for each EU country via Akaike Information Criterion (AIC), equation (1) can be reconstructed into an error correction (ECM) form allowing for the possibility of cointegration among $X_{i,t}$, $X_{0,t}$, $d_{i,t}$, and $X^*_{i,t}$. The ECM form can be written as:

$$\Delta X_{i,t} = c_i - \alpha_i \beta_i' \left[\xi_{i,t-1} - \gamma_i (t-1) \right] + \sum_{j=1}^{p_i - 1} \Gamma_{i,j} \Delta X_{i,t-j} + \sum_{j=0}^{q_i - 1} \mathrm{K}_{i,j} \Delta X_{0,t-j} + \sum_{j=0}^{r_i - 1} \Upsilon_{i,j} \Delta d_{i,t-j} + \sum_{j=0}^{r_i - 1} \Lambda_{i,j} \Delta X^*_{i,t-j} + u_{i,t} \quad (3)$$

where $\xi_{i,t} = \left(X_{i,t}', X_{0,t}', d_{i,t}', X^{*\prime}_{i,t} \right)'$, α_i is a $k_i \times r_i$ matrix of rank r_i and represents the speed of adjustment to the long-run, β_i' denotes long-run coefficients and is a $\left(k_i + k_0 + k_d + k_i^* \right) \times r_i$ matrix of rank r_i. Each EU countries can be consistently estimated separately by treating $X_{0,t}$, $d_{i,t}$, and $X^*_{i,t}$ as weakly exogenous $I(1)$ variables with respect to the long run parameters of the conditional equation (3). Johansen (1992), Hall and Wickens (1993), and Hall and Milne (1994) mention that a test of zero restrictions on the error correction term α_i is a test of weak exogeneity. In other words, the weak exogeneity assumption in the context of coinegrating models implies no long-run feedback from $X_{i,t}$ to $X_{0,t}$, $d_{i,t}$, and $X^*_{i,t}$, without necessarily ruling out lagged short-run feedback between the two sets of variables. More specifically, the error correction terms of the individual country VECMs do not place into the marginal model of $X_{0,t}$, $d_{i,t}$, and $X^*_{i,t}$. The weak exogeneity of these variables can then be tested in the context of each of the country-specific models.

Once the individual country models are estimated, all the $k = \sum_{i=0}^{N} k_i$ endogenous variables of the global economy need to be solved simultaneously. To do this, equation (1) can be written as:

$$A_i \left(L, p_i, r_i, q_i \right) Z_{i,t} = \varphi_{i,t}, \text{ for } i = 0,1,2,...,N \quad (4)$$

where

$$A_i \left(L, p_i, r_i, q_i \right) = \left[\Phi_i (L, p_i) - \Omega_i (L, q_i) - \Psi_i (L, r_i) \right],$$

$$Z_{i,t} = \left(X_{i,t}', X_{0,t}', X^{*\prime}_{i,t} \right)',$$

$$\varphi_{i,t} = c_i + b_i t + \Theta_i (L, r_i) d_t + u_{i,t}$$

Let $p = \max \left(p_0, p_1, ..., p_N, q_0, q_1, ..., q_N, r_0, r_1, ..., r_N \right)$ and construct $A_i \left(L, p \right)$ from

$A_i(L, p_i, r_i, q_i)$ by augmenting the $p - p_i$, $p - q_i$ or $p - r_i$ additional terms in powers of L by zero. Also note that

$$Z_{i,t} = W_i X_t, \quad i = 0,1,2,...,N \tag{5}$$

where $X_t = (X'_{0t}, X'_{1t}, ..., X'_{Nt})'$, W_i is a $(k_i + k_0 + k_i^*) \times k$ matrix, defined by the country specific weights, w_{ji}. Thereby, equation (4) can be reconstructed as $A_i(L, p_i, r_i, q_i) W_i X_t = \varphi_{i,t}$, for $i = 0,1,2,...,N$, and then stack to yield the VAR(p) model in X_t:

$$G(L, p) X_t = \varphi_t \tag{6}$$

where

$$G(L, p) = \begin{pmatrix} A_0(L, p) W_0 \\ A_1(L, p) W_1 \\ \\ A_N(L, p) W_N \end{pmatrix}, \text{ and } \varphi_t = \begin{pmatrix} \varphi_{0t} \\ \varphi_{1t} \\ \\ \varphi_{Nt} \end{pmatrix}$$

The GVAR(p) model of equation (6) can now be solved recursively and used for generalized impulse response analysis in the usual manner.

III. Variables and Data

III.1. Variables

III.1.1. Measures of Variables

To measure life insurance indicator, we follow Guo et al., (2009) and use life insurance premiums as the measure of life insurance markets. Past literature investigates crucial factors that might affect life insurance premiums (e.g., Browne and Kim, 1993; Beck and Webb, 2003; Li et al., 2007; Guo et al., 2009). Accordingly, this paper considers country specific variables are income (e.g., Beck and Webb, 2003; Guo et al., 2009), household final consumption expenditure (e.g., Beck and Webb, 2003), real interest rates (e.g., Arestis et al., 2002; Li et al., 2007; Jawadi et al., 2009), price level (e.g., Browne and Kim, 1993; Fung et al., 1998; Beck and Webb, 2003; Li et al., 2007; Djankov et al., 2007; Guo et al., 2009), and common factor oil prices (e.g., Guo et al., 2009).

More specifically, income is measured by the logarithm of real GDP expressed in U.S. dollars. The real rate of interest is constructed by taking the difference between long-term government bonds and the country's rate of inflation. The natural log of consumer price index (CPI) is the proxy for the price level. The natural log of household final consumption expenditure (HFCE) is the proxy for the consumption expenditure. Finally, this paper deflates the benchmark West Texas Intermediate spot oil price (WTI) by CPI to obtain the common factor, real oil price (RO_{it}).

In addition to domestic variables, country specific foreign variables are also critical due to subsequently financial globalization and interdependencies across countries (e.g., Dees et al., 2007; Pesaran et al., 2009). The foreign variables, life insurance premium, real output, household final consumption expenditure, real interest rates, and price level are constructed using trade weights, advanced by Baxter and Kouparitsas (2004). Dees et al. (2007) mention

that empirical results relied on fixed or time varying trade weights are essentially the same. Therefore, for simplify, fixed trade weights based on the average trade flows calculated over the sample period is adopted.

III.2. Data

The sample period starts from 1980 and ends in 2008. Thirteen countries are used in our empirical investigation including Austria, Belgium, Finland, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom, and United States. To account for the possible impacts of U.S. macro shocks on European countries, USA is also included. Data for life insurance premiums are obtained from the OECD Statistical Yearbook. The remaining data are obtained from the International Financial Statistics (IFS).

IV. Empirical Results

Table 1 shows countries included in GVAR model. The model covers 13 countries, where Italy and Spain are grouped together as the representation of sovereign-debt crisis. The rest of the 11 countries are modeled individually.

Table 2 shows the trade shares for our twelve countries. We can see high share, i.e., over 20%, of the Germany in the trade of the Austria, Belgium, Finland, France, Italy, Netherlands, Spain, Switzerland, and United States. Hence, in looking at European countries, Germany is a key point in the transmission of shocks to the aforementioned countries. Other critical information shown from the trade matrix is the high share of the UK in the trade of USA, and vice versa.

Table 3 reveals the WS unit root tests for our variables of interest. Although GVAR model can be used to stationary or non-stationary variables, the integrated characteristic should also be verified. Based on WS tests, almost all the endogenous variables are integrated of order 1, except for life insurance premium of Finland, Germany, and UK, household final consumption expenditure (HFCE) of Finland, France, and Switzerland, exchange rate of Switzerland, and real interest rate of Belgium, Germany, Netherland, and Switzerland. In looking at the integrated characteristics of foreign variables, only life insurance premium of Finland, Norway, and Sweden are stationary. The rest of the foreign variables are non-stationary, i.e., $I(1)$.

Table 4 reports the number of cointegrating relationships for the set of focus countries according to the 95% critical value level. Due to data limitation, all the lag orders are set to 1 for endogenous and foreign variables. The table shows five coinegrating relationships for over half of the observed countries, four for one third of the overall countries, and three for UK. Therefore, the results confirm long-run relationships among variables of interest.

Table 5 shows weak exogeneity test for foreign variables and real oil price. The weak exogeneity assumptions for each country and each foreign variable are not rejected, suggesting that all the foreign variables are considered as weakly exogenous.

Table 6 reports contemporaneous effects of foreign variables on their domestic counterparts. We first look at the determinants of domestic life insurance premiums, except for Norway, Sweden, and UK, the findings reveal that life insurance premiums are positively affected by the life insurance premiums of foreign countries. That is, for 9 of the 12 countries, foreign life insurance premiums may play a key role in influencing domestic life insurance premium, highlighting the crucial role of foreign variables. Similar results can be found for consumer

price index, real output, and real interest rates. Contrast to the previous findings, we find that not over half of the countries have their household final consumption expenditure affected by foreign variables, stressing that domestic household final consumption expenditure maybe irrelevant to foreign countries. Taken as a whole, the results indicate that one should not ignore the importance of foreign factors due to the rapidly rising degree of financial market integration and financial globalization.

V. Conclusion

Utilizing global vector autoregressive analysis, this paper intends to examine the dynamic impact of global shocks on life insurance markets in 13 countries over the period from 1980 to 2008. Distinct form previous literature such as Beck and Webb (2003), Li et al. (2007), and Guo et al. (2009), focuses on domestic variables at best, this paper considers both foreign and domestic factors. In other words, this study emphasizes the importance of global perspective in examining the determinants of life insurance premiums. The results indicate that a country's life insurance premium is strongly affected by foreign factors, highlighting the crucial role of foreign components in influencing domestic life insurance markets.

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Table 1: Countries and regions in the GVAR model

Numeraire country			Euro Zone			Non Euro Zone			Sovereign-debt crisis		
No	Country	code	No	Country	code	No	Country	code	No	Country	code
1	USA	USA	2	Austria	AUT	8	Norway	NOR	12	Italy	ITA
			3	Belgium	BEL	9	Sweden	SWE	13	Spain	EST
			4	Finland	FIN	10	Switzerland	CHE			
			5	France	FRA	11	UK	GBR			
			6	Germany	FRG						
			7	Netherlands	NLD						

Table 2: Trade weights

	AUT	BEL	FIN	FRA	FRG	SDC	NLD	NOR	SWE	CHE	GBR	USA
AUT	0.000	0.012	0.018	0.013	0.072	0.032	0.015	0.007	0.015	0.046	0.011	0.016
BEL	0.027	0.000	0.039	0.112	0.078	0.058	0.148	0.036	0.059	0.033	0.077	0.063
FIN	0.010	0.008	0.000	0.008	0.017	0.011	0.013	0.036	0.078	0.009	0.016	0.013
FRA	0.059	0.203	0.074	0.000	0.165	0.247	0.116	0.112	0.081	0.133	0.141	0.133
FRG	0.527	0.227	0.220	0.232	0.000	0.273	0.310	0.158	0.199	0.348	0.193	0.237
SDC	0.130	0.103	0.092	0.234	0.170	0.000	0.101	0.059	0.085	0.147	0.125	0.127
NLD	0.047	0.192	0.075	0.081	0.115	0.075	0.000	0.113	0.090	0.057	0.112	0.081
NOR	0.003	0.008	0.048	0.014	0.020	0.007	0.014	0.000	0.116	0.004	0.029	0.018
SWE	0.017	0.025	0.173	0.019	0.031	0.022	0.031	0.154	0.000	0.017	0.034	0.035
CHE	0.072	0.016	0.023	0.048	0.064	0.047	0.019	0.010	0.020	0.000	0.035	0.053
GBR	0.047	0.121	0.128	0.127	0.120	0.117	0.136	0.210	0.135	0.076	0.000	0.223

USA	0.060	0.085	0.110	0.112	0.147	0.111	0.097	0.105	0.122	0.131	0.226	0.000
Sum	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Table 3: WS Unit Root tests (5% critical value=-3.24)

Endogenous variables

C/R	Premium	CPI	HFCE	RGDP	RI	OIL
AUT	-1.775	-0.419	-1.381	-0.902	-2.717	-
BEL	-1.789	1.189	-1.348	1.248	-3.288**	-
FIN	-5.002**	0.118	-3.863**	-0.752	-1.208	-
FRA	-2.642	1.978	-3.606**	-0.955	0.097	-
FRG	-3.299**	-1.148	-1.57	-0.752	-4.140**	-
SDC	-2.523	-0.238	-2.614	-1.207	-0.393	-
NLD	-1.342	-3.169	-1.286	-1.007	-3.317**	-
NOR	-1.685	-0.083	-2.598	-0.764	-1.618	-
SWE	-2.12	-0.19	-2.602	-1.453	-2.203	-
CHE	-1.551	-0.514	-3.826**	0.214	-4.101**	-
GBR	-3.635**	0.311	-2.732	-1.454	-1.032	-
USA	-1.35	0.741	0.523	-0.324	-3.100	-1.761

Foreign variables

C/R	Premium*	CPI*	HFCE*	RGDP*	RI*	OIL
AUT	-2.021	0.159	-1.469	-1.000	-1.984	-1.761
BEL	-1.886	-0.084	-0.741	-1.262	-2.697	-1.761
FIN	-3.510**	0.283	-2.532	-1.635	-0.317	-1.761
FRA	-2.042	0.217	-1.576	-1.605	-0.266	-1.761
FRG	-2.672	0.03	-2.163	-1.296	-0.291	-1.761
SDC	-1.941	0.257	-0.587	-1.469	-1.518	-1.761
NLD	-3.099	0.148	-1.545	-1.482	-1.082	-1.761
NOR	-3.293**	0.196	-2.860	-1.312	-1.299	-1.761
SWE	-3.337**	0.264	-2.055	-1.617	-1.007	-1.761
CHE	-1.988	0.291	-1.191	-1.238	-1.442	-1.761
GBR	-2.066	0.073	-0.242	-1.337	-2.465	-1.761
USA	-2.029	0.191	-	-	-	-

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Table 4: Cointegration relationships

Country	VARX*(p_i, q_i)		No. of Cointegration relationships
	p_i	q_i	
AUT	1	1	4
BEL	1	1	5
FIN	1	1	5
FRA	1	1	5
FRG	1	1	5
SDC	1	1	4
NLD	1	1	4
NOR	1	1	4
SWE	1	1	5
CHE	1	1	5
GBR	1	1	3
USA	1	1	5

Table 5: Test for Weak Exogeneity for foreign variables and real oil price

Country	F-test	Premium*	CPI*	HFCE*	RGDP*	RI*	OIL
AUT	F(4, 9)	1.356	0.24	0.595	0.326	0.258	0.244
BEL	F(5, 8)	0.51	0.34	0.719	0.281	0.122	0.014
FIN	F(5, 8)	0.231	0.167	0.26	0.325	0.635	0.159
FRA	F(5, 8)	0.383	0.758	0.734	0.532	0.719	0.07
FRG	F(5, 8)	0.273	0.342	0.276	0.111	0.128	0.4
SDC	F(4, 9)	0.413	0.106	0.154	0.138	0.157	0.369
NLD	F(4, 9)	0.811	0.207	1.402	0.604	0.089	0.038
NOR	F(4, 9)	0.487	0.354	0.19	0.279	0.79	1.337
SWE	F(5, 8)	1.112	0.132	0.811	0.299	0.465	0.629
CHE	F(5, 8)	1.424	0.103	0.715	0.188	0.242	0.133
GBR	F(3,10)	0.326	0.436	0.027	0.005	0.17	0.119
USA	F(5,12)	0.736	0.143				

Table 6: Contemporaneous Effect of Foreign Variables on Domestic Counterparts

	Domestic variables				
Country/Region	Log(Premium)	Log(CPI)	Log(HFCE)	Log(RGDP)	Real interest
AUT	1.197**	0.947***	0.357	1.657***	0.232
	(2.322)	(3.309)	(1.502)	(18.86)	(0.774)
BEL	0.739***	0.922***	0.051	0.991***	0.743***
	(3.691)	(5.398)	(0.131)	(3.902)	(3.632)
FIN	1.863***	0.951***	0.056	0.792***	1.079***
	(14.793)	(4.463)	(0.097)	(3.573)	(7.848)
FRA	0.585**	0.835***	0.795*	0.185	1.008***
	(2.622)	(6.821)	(1.663)	(1.167)	(9.638)
FRG	1.647***	-0.143	0.084	1.592***	0.950**
	(13.081)	(-0.471)	(0.216)	(6.243)	(2.505)
SDC	0.602**	0.382**	1.014**	0.893***	1.296***
	(2.455)	(2.173)	(3.259)	(8.227)	(5.641)
NLD	0.827***	1.864***	-0.097	1.123***	-2.814***
	(3.499)	(4.45)	(-0.17)	(6.549)	(-5.887)
NOR	0.207	1.357***	-2.84***	0.983***	0.208
	(1.474)	(3.301)	(-4.762)	(3.284)	(0.625)
SWE	0.196	0.624	-3.707***	1.606***	2.068***
	(0.547)	(0.883)	(-6.866)	(7.021)	(3.523)
CHE	1.409***	0.175	1.079***	0.497**	0.857***
	(10.09)	(0.526)	(6.62)	(2.372)	(4.377)
GBR	0.023	0.75**	-0.329	1.359***	-0.031
	(0.082)	(2.536)	(-0.66)	(9.05)	(-0.117)
USA	0.167**	0.418***			
	(2.245)	(4.542)	-	-	-
%	9/12	9/12	5/11	10/11	8/11

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