

Sovereign ownership and uncertainty

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12a Jornada Riesgos Financieros RiskLab-Madrid
Bankia Auditorium
Madrid, May 25th, 2017



Foreign investors dump UK bonds at the start of the year,

by Mehreen Khan

“Foreign investors dumped their holdings of UK government bonds at the fastest pace in nearly three years at the start of 2017.

The latest data from the Bank of England show a £7.59bn fall in net overseas investor gilt holdings in January, the second consecutive month of declines and the biggest monthly dip since March 2014. The cumulative two-month fall in net sales since December is now over £10bn.

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International investors dump Spain debt as liquidity drops,

by Kirsten Donovan and Paul Day

“Non-resident investors cut their exposure to Spanish debt further in June, according to Bank of Spain data on Friday, spooked by concerns the country may need a full-scale bailout.

A similar pattern has affected holdings of Italian bonds this year as the euro zone debt crisis threatens to engulf the region’s third and fourth largest economies while its rescue fund does not have enough cash to support both.

Spanish trading volumes dwindled and low demand pushed sovereign average borrowing costs higher, the data showed.” (...)



In a nutshell

What? We examine the behaviour of sovereign debt holders during distress scenarios.

In particular, we study the response of non-resident holders (NRH), and their role in sovereign debt crisis.

How? A comprehensive panel of sovereign debt holdings for Spanish Treasury auctions in the primary market from 1997 to 2016.

- Results**
- ▶ Negative and time varying correlation between NRH and resident holders (RH)
 - ▶ Foreign investment seem not to be linked to domestic political uncertainty (!)
 - ▶ Leading role of the European Central Bank (ECB) on the structure of sovereign debt holdings.



Motivation

Augustin et al.(2016)

- ▶ The academic literature on asset pricing is primarily concerned with the determinants of the prices and returns of financial assets.
- ▶ There is, however, significantly less research on what explains asset trading, which underlies the price formation process.
- ▶ Since quantities are as important as prices in determining market equilibrium outcomes, our objective in this paper is to address the behaviour of sovereign holdings.



Motivation

Augustin et al.(2016)

- ▶ The academic literature on asset pricing is primarily concerned with the determinants of the prices and returns of financial assets.
(→ *What price to trade?*)
- ▶ There is, however, significantly less research on what explains asset trading, which underlies the price formation process.
(→ *Why do they trade?*)
- ▶ Since quantities are as important as prices in determining market equilibrium outcomes, our objective in this paper is to address the behaviour of sovereign holdings.
(→ *we focus on the determinants of sovereign bond trading, in contrast to bond prices, i.e., bond spreads alone.*)



Motivation

Why on sovereign debt?

- ▶ Sovereign debt is, by large, the preferred vehicle for financing government budgets.
- ▶ In many advanced economies, the total amount of debt is closer to their Gross Domestic Product (GDP):
 - ▶ US (104.97%), France (95.56%) or Canada (86.20%).
 - ▶ Not to mention Japan (249.08%) and Italy (132.52%).
 - ▶ Spain (99.28%)
- ▶ From the demand side, sovereign bonds are not only investment assets, but also serve as collateral for funding needs.



Motivation

Why on sovereign holdings?

- ▶ An important amount of sovereign debt is hold by non-residents (Andritzky, 2012):
 - ▶ Higher than 50% in Germany, France or US.
 - ▶ Up to 70% for Australia, Ireland or Greece.
 - ▶ Less than 10% for Japan an South Korea.
- ▶ Non-resident holders own more than 50% of total debt issuance of Spain (since 2014).



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Question

Such heterogeneity in debtholders, have an impact on the sovereign debt?



Motivation

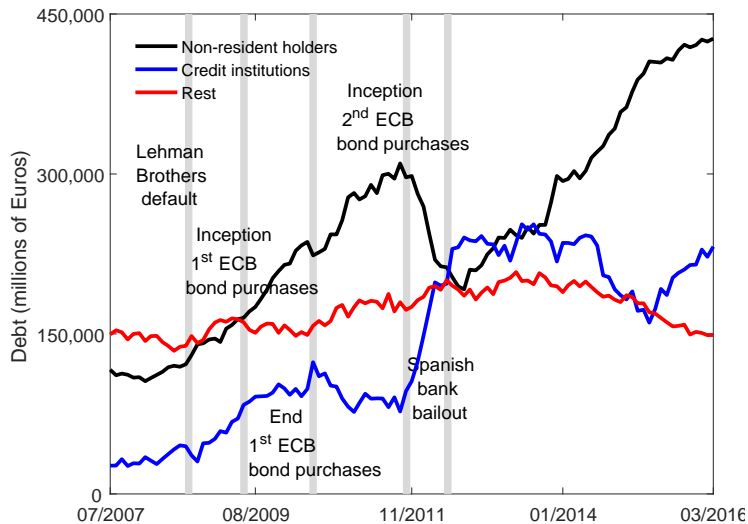


Figure: Sovereign debt by holders



This article

Research questions

- ▶ This article belongs to a more general line of research that explores the relationship of **sovereign debt** and **debtholders**.
- ▶ This presentation analyses the behaviour of the ownership structure of sovereign debt during periods of financial uncertainty. In particular,
 - ▶ How do NRHs respond to political uncertainty?
 - ▶ How do they react to certain domestic policies?
 - ▶ Is foreign investment linked to actions by supra-national institutions?



Contributions

The main results can be summarized as follows,

- 1.- Internal demand is negatively correlated with NRHs.
 - ▶ Conditional correlation is time-varying (~ -0.50)
- 2.- Domestic institutions do not seem to be linked to statistically significant increments of NRHs.
- 3.- A leading role of supranational institutions influencing the non-resident demand of sovereign debt.



Literature Review

We base our research on these separate strands of the literature.

Preferred Habitat View (PH)

- ▶ Investors have preferences for specific maturities and their demand for these maturities is to some extent inelastic, affecting interest rates.
- ▶ Modigliani and Sutch (1966), Cox et al.(1981, 1985), Vayanos and Vila (2009), Greenwood and Vayanos (2010,2014), Hamilton and Wu (2012), D'Amico and King (2013), Li and Wei (2014) and Zinna (2016).

Domestic institutions and political uncertainty

- ▶ Bernanke (1983), Julio and Yook (2012), Baker, Bloom and Davis (2013), Gulen and Ion (2016).



Route map

1. The data
 - ▶ Debt holdings, descriptive statistics and commonality.
2. The correlation between NRHs and Credit Institutions
 - ▶ How this correlation evolves over time.
3. Uncertainty and sovereign demand
 - ▶ Variables description, OLS regressions
4. The impact of ECB measures on sovereign NRHs
 - ▶ Econometric modelling and results (VAR) analysis
5. Conclusions



1.- The Data

Time series

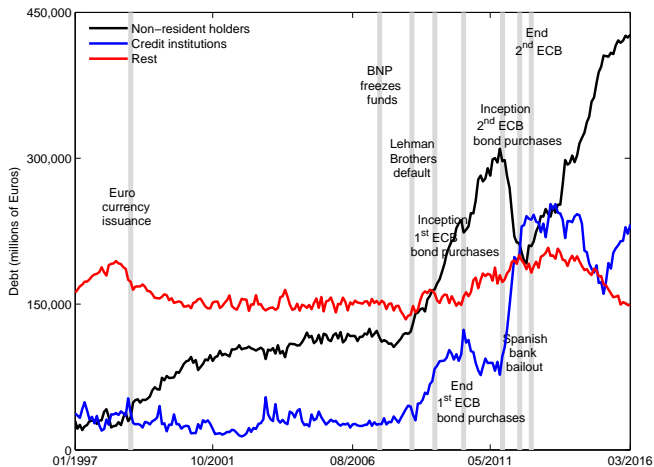


Figure: Time series of debt by type of holder



1.- The Data

Summary Statistics in levels

Variable	Obs	Mean	Std. Dev.	Min.	Max.
Panel A: Levels (million Euros)					
Credit Inst.	231	79,963	77,223	13,940	252,867
Insurance Companies	231	26,691	11,507	16,265	56,975
Pension Funds	231	12,000	3,588	6,297	18,892
Mutual Funds	231	49,668	25,353	19,135	116,376
Other Financial Inst.	231	6,170	2,306	508	11,534
Non Financial Inst.	231	23,523	5,862	10,378	33,398
Individual Investors	231	9,639	4,190	4,004	19,650
General Government	231	36,279	26,122	396	91,519
Non-Residents	231	159,058	105,134	20,380	426,944
<i>Non-Residents_ST</i>	231	16,980	20,928	203	63,380
<i>Non-Residents_LT</i>	231	140,651	84,895	20,042	363,847
Total	231	403,036	183,636	221,723	807,719



1.- The Data

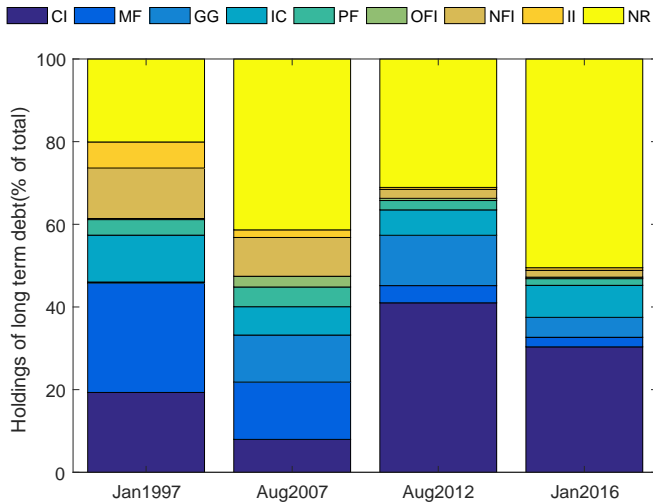
Summary Statistics in increments (%)

Variable	Mean	Std. Dev.	Min.	Max.	Obs
Panel B.- Increments (percentage)					
Credit Inst.	2.12	16.92	-41.24	72.91	230
Insurance Companies	0.59	4.87	-13.36	15.49	230
Pension Funds	0.49	4.98	-12.62	17.88	230
Mutual Funds	-0.56	4.42	-13.77	33.53	230
Other Financial Inst.	1.60	14.75	-31.40	147.22	230
Non Financial Inst.	-0.14	6.61	-26.11	31.62	230
Individual Investors	-0.42	5.85	-31.88	42.49	230
General Government	4.98	44.12	-41.84	615.81	230
Non-Residents	1.44	7.48	-31.83	46.87	230
TOTAL	0.57	1.82	-5.00	6.72	230



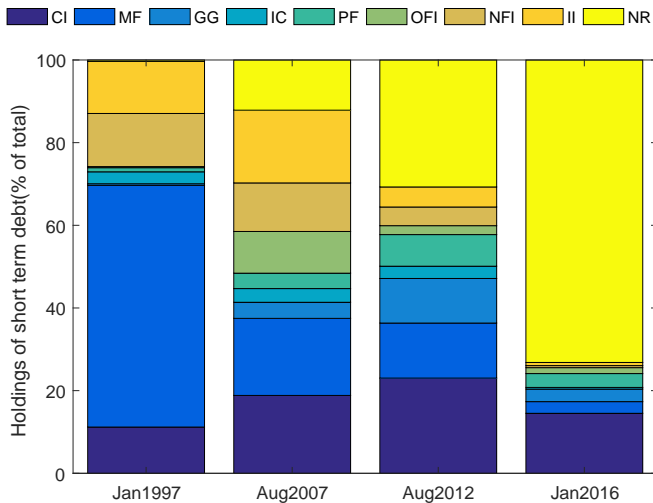
1.- The Data

Holdings of long-term debt (% total)



1.- The Data

Holdings of short-term debt (% total)



1.- The Data

Principal components

Variable	PC1		PC2		PC3	
	β	R^2	β	R^2	β	R^2
Panel A.- Increments (Percentage)						
Credit Inst.	1.13	88.34	-0.26	9.90	-0.06	1.47
Mutual Funds	-1.10	11.05	0.54	5.77	0.95	55.82
General Government	0.07	0.15	1.13	88.74	-0.23	10.93
Insurance companies	-0.95	1.93	-0.13	0.08	1.23	22.22
Pension funds	-3.03	4.78	-0.82	0.76	2.35	19.74
Other financial institutions	-2.22	2.28	0.44	0.20	0.34	0.36
Non-financial institutions	-0.47	0.87	-0.18	0.28	1.11	33.47
Individual Investors	-4.92	8.64	-0.62	0.30	1.78	7.74
Non-residents	-1.19	73.71	-0.42	19.93	-0.13	6.06
Expl.Var.(%)		59.40		27.04		8.67



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1.- The Data

Results

- ▶ Spanish sovereign debt has skyrocketed since 2007.
- ▶ NRHs account for 45% of total outstanding debt.
- ▶ NRHs and CIs are the most important components of Spanish sovereign debt.
 - ▶ High variability over time
 - ▶ Heterogeneous behaviour during crisis
- ▶ PCA analysis also emphasizes the importance of mutual funds (past) and General Government (present).



2.- The correlation between NRHs and CIs

What we do

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- ▶ It seems that something interesting is going on the dynamics between NRHs and CIs.
- ▶ We examine this idea by analysing the (conditional) correlation between NRHs and CIs.
 - ▶ Dynamic Conditional Correlation (DCC) model of Engle and Sheppard (2001)



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- ▶ Here are the main results.



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Conditional correlation on aggregate debt

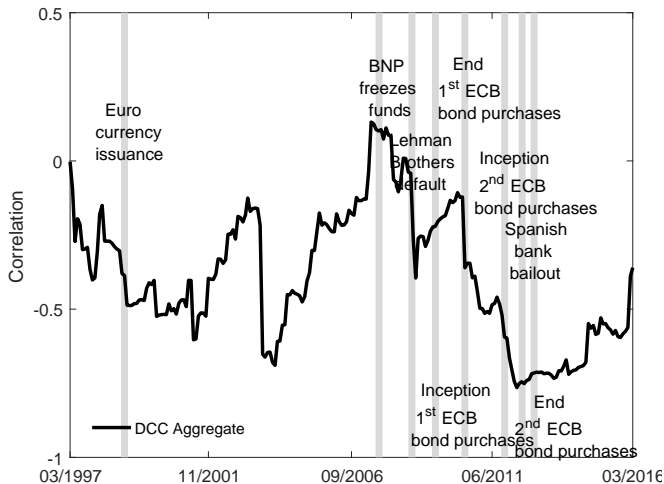


Figure: Conditional correlation on aggregate debt



2.- The correlation between NRHs and CIs

Conditional correlation by maturity

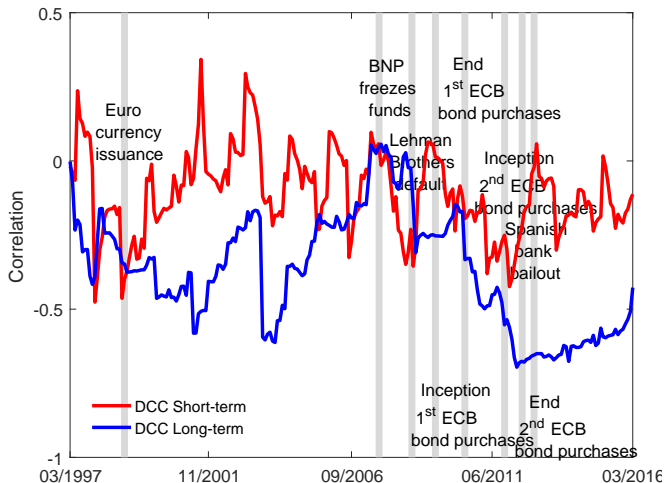


Figure: Conditional correlation by maturity



2.- The correlation between NRHs and CIs

Results

- ▶ Unconditional correlation is -0.57 (LT debt).
- ▶ The nature of long- and short-term correlations exhibit an idiosyncratic pattern
- ▶ Correlation increases during distress times
- ▶ ECB interventions seem to have an impact on the structure of correlations between NRHs and CIs.
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- ▶ Previous section shows that NRHs and CIs are negatively correlated.
- ▶ We focus on the covariates of NRHs' sovereign demand, although results are (negatively) similar for CIs.
- ▶ In this section, we project the increments (in percentage) of NRH demand onto a series of possible explanatory variables.
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3.- Uncertainty and sovereign demand

Explanatory variables

We structure our study in three subsets of variables,

I. Financial uncertainty

- ▶ VIX, spread volatility, noise measure, etc.

II. Political uncertainty

- ▶ European political uncertainty (EPU) index (Baker et al., 2016), Political Trust index (CIS), Elections, Left/Wing periods, etc.

III. Funding liquidity

- ▶ LTROs, marginal/lending facilities, Spanish bailout.

...and the usual controls: Spread (1-,5-,10-year), EuroStoxx50, USD/EUR, IPI, Deposits, Unemployment, CPI, etc.



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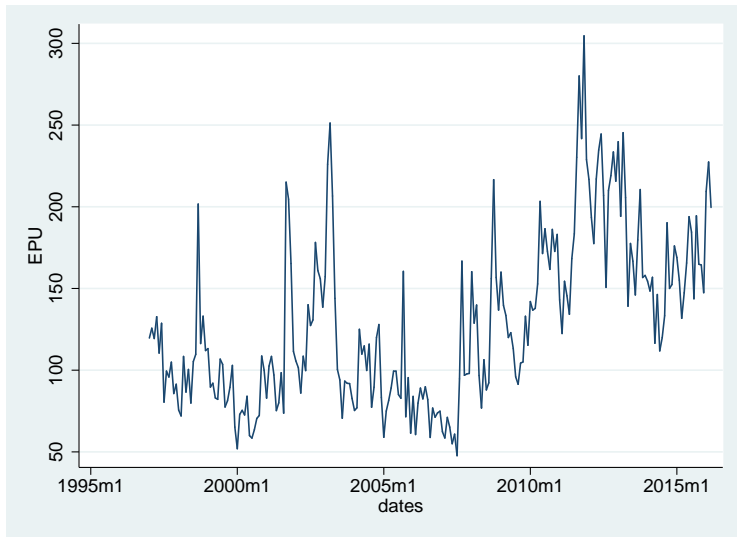


Figure: European economic policy uncertainty (EPU) index - Baker et al.(2016)



3.- Uncertainty and sovereign demand

Political uncertainty

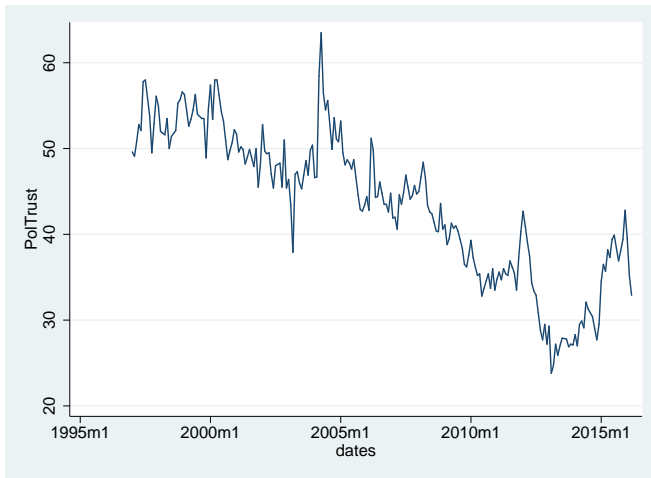


Figure: Political trust index for Spain (CIS)



3.- Uncertainty and sovereign demand

Political uncertainty

Variable	ΔNRH_t (%)				
	(1)	(2)	(3)	(4)	(5)
ΔIPI_{t-1}	0.5566** (0.2461)	0.5729** (0.2494)	0.5703** (0.2465)	0.5267** (0.2538)	0.5434** (0.2513)
ΔEPU_{t-1}	0.0165 (0.0158)				
$\Delta PolTrust_{t-1}$		0.0337 (0.0593)			
$Elections_T-1$			-1.7819 (1.5882)		
Left wing				1.3051 (0.8940)	
Right wing					-1.1051 (0.8386)
Constant	1.2098*** (0.3415)	1.2664*** (0.3344)	1.3200*** (0.3416)	0.8047* (0.4821)	1.9356*** (0.5672)
Obs.	104	104	104	104	104
Controls	Yes	Yes	Yes	Yes	Yes
R^2	0.0797	0.0697	0.0744	0.0916	0.0860



3.- Uncertainty and sovereign demand

Funding liquidity

Variable	ΔNRH_t (%)		
	(1)	(2)	(3)
ΔIPI_{t-1}	0.4803* (0.2435)	0.4986* (0.2842)	0.4169 (0.2830)
$\Delta LTRO_t$	-0.03913* (0.0226)		-0.0368 (0.0228)
$\Delta Mgf_{facility}_t$ ($\times 10^{-5}$)		4.22*** (1.53)	4.08*** (1.46)
Constant	1.3204*** (0.3271)	1.2311*** (0.2842)	1.2782*** (0.3444)
Obs.	98	98	98
Controls	Yes	Yes	Yes
R^2	0.10	0.08	0.11



3.- Uncertainty and sovereign demand

Results

- ▶ Increments of NRH demand seem not to be correlated with our measures of political uncertainty
 - ▶ European news index is not statistically significant
 - ▶ Political surveys neither.
 - ▶ Elections or political wing do not covariate with NRH
- ▶ ECB measures are statistically significant, but their effect seems to be the opposite.



4.- The impact of ECB on sovereign NRHs

What we do

- ▶ The actions taken by supra-national institutions seem to be strongly linked to NRHs.
- ▶ We explore in deep the dynamic relationship of NRHs and ECB measures by means of vector autorregressive (VAR) model.
- ▶ This econometric framework permits to study the response of NRH demand to shocks in the ECB liquidity supply.



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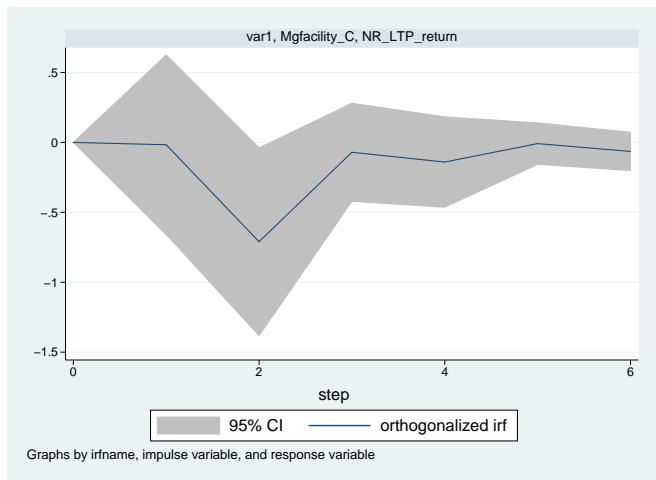


Figure: Time series of debt by type of holder



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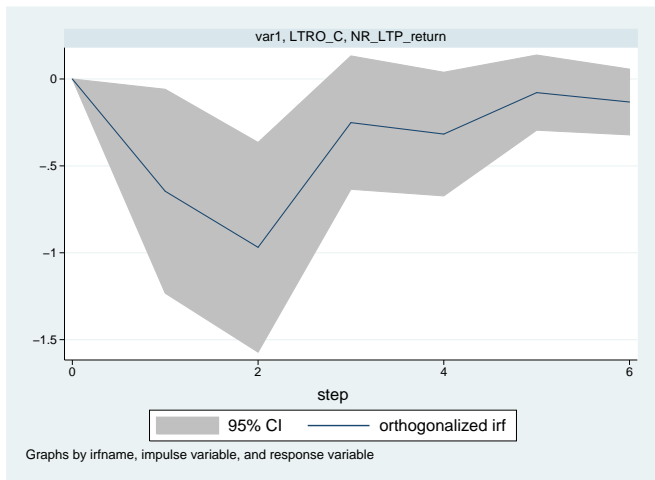


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 - ▶ Neither elections nor political wing changes have an effect of NRHs.
- ▶ Actions taken by supranational institutions are strongly linked to NRHs.
 - ▶ LTROs and the Spanish bailout have a strong negative and significant relation to NRHs.

