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Importance of housing wealth effect in selected European countries: evidence from panel VAR model

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Introduction

- **housing wealth effect-** a change in consumer spending caused by an exogenous movement in housing wealth

- in existing literature there is **no consensus** whether the housing wealth effect or the stock market wealth effect should have stronger impact on consumption
- in this paper **the housing wealth effect on consumption** is tested empirically

Introduction

- A system estimation of housing wealth effect on consumption is conducted for a **panel of 28 selected developed** and **emerging European countries**
- A system of three endogenous variables: **consumption, disposable income** and **housing wealth** is modelled

- The estimation is conducted using **generalised method of moments (GMM)** and addresses the issue of **unobserved heterogeneity** by correcting for fixed effects

Introduction

- **Aim**:
  - to **compare the magnitude of income and housing wealth shocks** on consumption in developed and post-transition European countries
  - to **analyse the impact of financial crisis in** 2008 on housing wealth shock on consumption

- The empirical analysis focuses on **short-run** and enables to track the changes in personal consumption as a result of changes in income and housing wealth

Data

- the data for unbalanced panel of 28 selected European countries is used

- The selected countries are according to **World Bank country classification and the level of their national income**, grouped into two groups: **developed** and **emerging countries**
  - *Austria, Belgium, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Ireland, Italy, Netherlands, Norway, Portugal* and *Sweden* are grouped into **developed countries**
  - *Bulgaria, Czech Republic, Estonia, Croatia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Slovenia, Slovakia* and *Turkey* are grouped into **emerging countries**

Data

- The data set consists of yearly data spanning from **1990 to 2016**

- The **private final consumption expenditure**, **gross wages** and **gross national disposable income** are expressed in milliards of Euros and are taken from **AMECO** and **WIIW database**
- **Real estate price indices** are taken from **BIS database** and are all recalculated to the same base (2015=100)

- All data is **recalculated into logarithms** and then the **first difference of log data is analysed**

Methodology

- In this study the **panel vector autoregression model** by Abrigo and Love (2015) is used

- It explicitly allows for **feedback effect** from consumption to wealth and income and it is **not based on strong assumption of a cointegrating relationship** between consumption, income and wealth

Methodology

- The following **first-order three-variable panel VAR** model is used in the empirical analysis:

$$Y_{i,t} = \alpha_i + \Theta(L)Y_{i,t} + f_i + d_{c,t} + \mu_{i,t}$$

- Where α_i is the vector of constant terms for each variable, $\Theta(L)$ is the lag operator and $Y_{i,t}$ represents a vector of three endogenous variables (C, I, HW), namely: C and I are the changes of household total consumption and disposable income and HW denotes changes in housing wealth

- Subscripts *i* and *t* refer to country and time
- f_i denotes the fixed effect; $d_{c,t}$ represents the country-specific time dummy and $\mu_{i,t}$ denotes the vector of residuals

Empirical analysis results

- Main results of a baseline (1-lag) PVAR model with wage (whole panel)

Response of:	Response to (GMM estimates):		
	C(t-1)	w(t-1)	HW(t-1)
C(t)	0.237*** [0.097]	-0.012 [0.087]	**0.037***** **[0.005]**
w(t)	-0.009 [0.101]	0.327*** [0.091]	0.052*** [0.006]
HW(t)	1.094*** [0.256]	-0.129 [0.215]	-0.237*** [0.073]

Note: three-variable VAR model is estimated by GMM, country-specific and fixed effects are removed prior to estimation. Heteroskedasticity and serial correlation robust standard errors are in brackets. ***, ** denote significance on 1% and 5% significance level, respectively.

Empirical analysis results

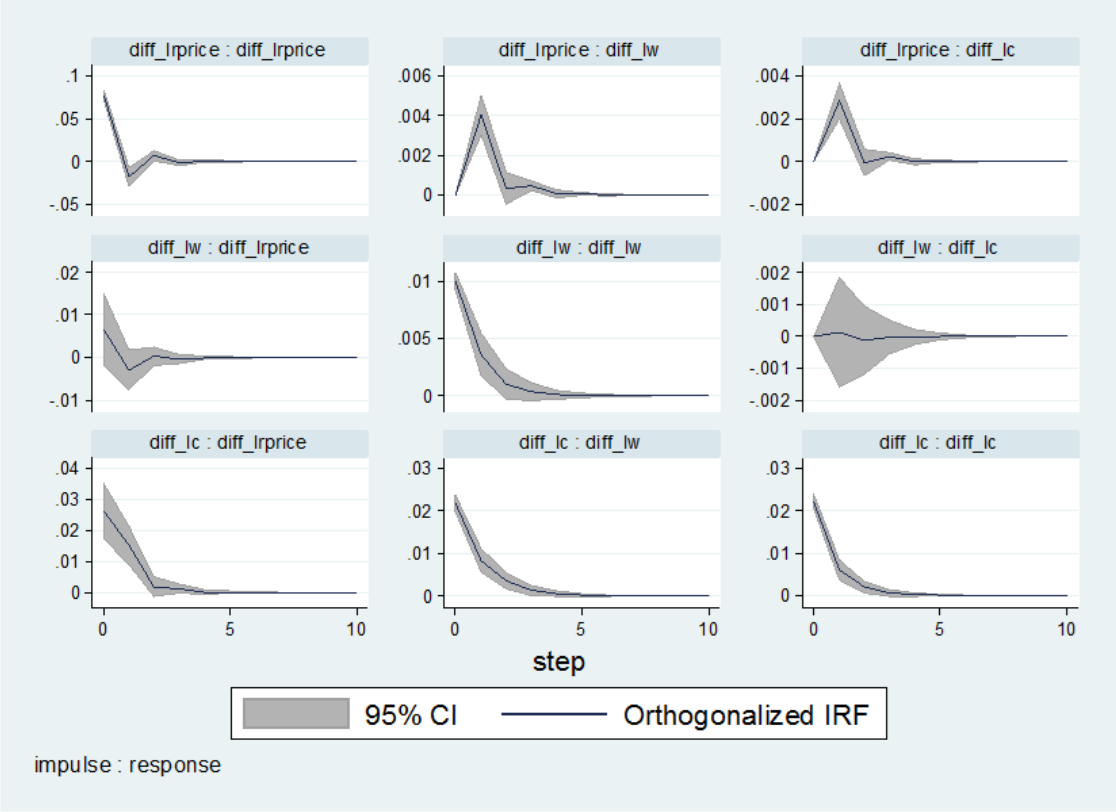

Figure 1. IRF for baseline (whole panel) PVAR model with wage (Stata 13)

Empirical analysis results

Results of PVAR model with wage for developed and post-transition countries

Response of:	Response to (GMM estimates):					
	Developed countries			Post-transition countries		
	C(t-1)	w(t-1)	HW(t-1)	C(t-1)	w(t-1)	HW(t-1)
C(t)	-0.054 [0.123]	0.372*** [0.119]	**0.025***** **[0.006]**	0.224*** [0.085]	-0.151* [0.083]	**0.038***** **[0.005]**
w(t)	-0.136 [0.144]	0.584*** [0.133]	0.033*** [0.009]	-0.169** [0.080]	0.277*** [0.079]	0.060*** [0.006]
HW(t)	-1.821*** [0.389]	2.285*** [0.337]	-0.123 [0.098]	2.154*** [0.232]	-0.925*** [0.205]	-0.361*** [0.048]

Note: three-variable VAR model is estimated by GMM, country-specific and fixed effects are removed prior to estimation. Heteroskedasticity and serial correlation robust standard errors are in brackets. ***, ** denote significance on 1% and 5% significance level, respectively.

Empirical analysis results

- Results of PVAR model with wage for **before crisis** and **after crisis** period

Response of:	Response to (GMM estimates):					
	Before crisis			After crisis		
	C(t-1)	w(t-1)	HW(t-1)	C(t-1)	w(t-1)	HW(t-1)
C(t)	0.088 [0.152]	0.399*** [0.139]	**0.021***** **[0.005]**	0.217** [0.109]	0.242*** [0.071]	**-0.002** **[0.003]**
w(t)	-0.045 [0.138]	0.529*** [0.132]	0.036*** [0.008]	0.092 [0.133]	0.462*** [0.094]	0.009*** [0.003]
HW(t)	2.039*** [0.359]	-1.142*** [0.326]	-0.329*** [0.089]	2.565*** [0.532]	-1.469*** [0.379]	-0.388*** [0.078]

Note: three-variable VAR model is estimated by GMM, country-specific and fixed effects are removed prior to estimation. Heteroskedasticity and serial correlation robust standard errors are in brackets. ***, ** denote significance on 1% and 5% significance level, respectively.

Conclusion

- Housing wealth effect is especially interesting for the empirical analysis, since there is no consensus weather it should be more prominent than financial wealth effect

- the **dynamic relationship between consumption and housing wealth is empirically tested** using the panel vector autoregressive approach

Conclusion

- housing wealth has **statistically significant and positive effect** on personal consumption for the whole panel of 28 countries

- a one standard deviation shock in housing wealth has **more impact on personal consumption in the group of post-transition countries** (when compared to developed countries), with the higher coefficient and the same is evident in the case of wage

- **before the crisis** results show a **statistically significant and positive effect of housing wealth on personal consumption**, while, after the crisis, housing wealth has no statistically significant impact on personal consumption

Conclusion

- This empirical research gave an insight into the housing wealth effect on personal consumption using the **system estimation** and thus **allowing for the feedback effect from consumption to housing wealth and wage**

- Although these conclusions are based on a specific statistical methodology, they can be useful to policy makers, since the housing wealth shock shown to be **more prominent in post-transition economies and in the before crisis period**

Thank you for your attention!

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