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Unit A.2: EMU deepening and macroeconomy of the euro area

Cross-border risk sharing after asymmetric shocks: evidence from the euro area and the United States

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(with Marco Buti and José Leandro)

Disclaimer: The views expressed in this presentation are solely those of the author and do not necessarily represent the official views of the European Commission.

Motivation

- More than 20 years into the EMU existence and several years since the crisis, there is an increased exposure to asymmetric shocks
- It is essential to strengthen the resilience of the euro area to large asymmetric shocks.
- Enhancing the cohesion of the monetary union will help it function in a better way.
- Proper cross-border risk sharing in the euro area reduces the risk in each country by spreading it among a large group.
- This supports consumption after asymmetric shocks to output and stops disparities from becoming entrenched.

Channels of risk sharing

- In this paper risk sharing is the ability to smooth consumption after an asymmetric output shock
- Private channels
  - Capital income from abroad – i.e. owning shares in a different stock market that is not affected, ex-ante insurance.
  - Borrowing from abroad, so called credit market channel, ex-post insurance.
  - Cross-border labour income, commuter workers, remittances.
- Public channels
  - Cross-border fiscal support – subsidies, social protection, cross-border public investment, cross-border fiscal capacity.
- Conditions for smooth operation of cross-border risk sharing
  - Private channels – single market of financial services, Capital Markets Union, Banking Union, labour mobility.
  - Public channels – re-insurance mechanisms, solidarity among members, higher degree of political and institutional integration.

Related literature

- Asdrubali, Sorensen and Yosha (1996)
  - Private and public risk sharing channels among the 50 US States.
  - Methodology – a series of panel regressions of aggregate output, income and consumption. Same approach here.
  - GLS smoothing estimates (1964-1990)
    - Capital markets (cross-border factor income) (39%); Federal government (13%); Credit markets (23%), not smoothed (25%)
- Furceri and Zdzienicka (2013)
  - Apply the ASY (1996) methodology to 15 euro area (1979-2010).
  - Use dummies for economic downturns – normal vs. severe; permanent vs. transitory; anticipated vs. unanticipated; symmetric vs. asymmetric.
  - Risk sharing is especially low when it is most needed, i.e. in downturns that are severe and unanticipated.
- Hepp and von Hagen (2013)
  - Compares risk sharing channels within a federal entity (DE).
  - Results show that there is a significant home bias in risk sharing – channels operate better than within the euro area
  - Institutional setup of the links between Member States must be important

Related literature - results

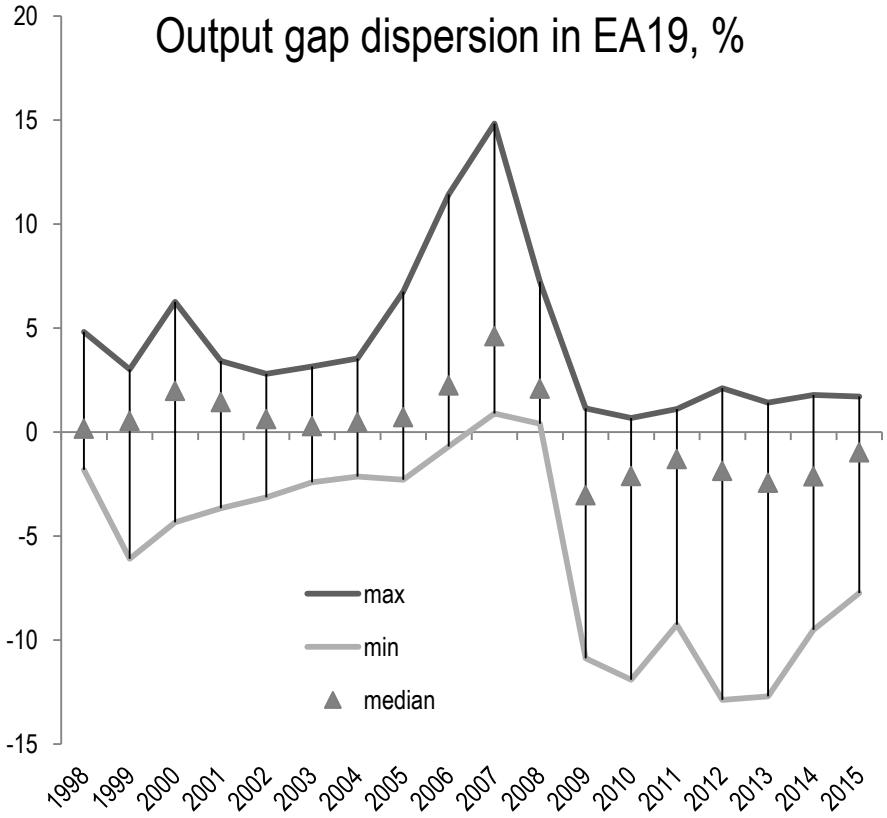
Table 3. Channels of output smoothing across countries

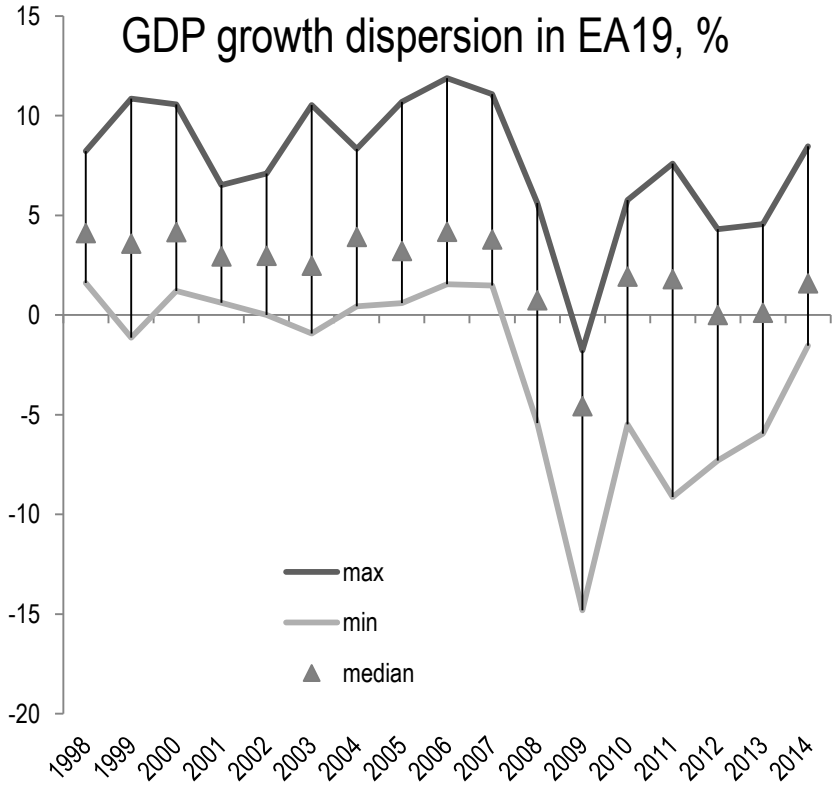
	(I)	(II)	(III)	(IV)	(V)	(VI)
	Euro area 1979-2010	EU 1979-2010	OECD 1979-2010	US [a] 1963-1990	Germany [b] 1970-1994	Germany [b] 1995-2006
Factor income flows [c]	0.076**	0.062**	0.006			
	(2.21)	(2.16)	(0.22)	0.390***	0.195**	0.505***
Capital depreciation	-0.084***	-0.110***	-0.097***	(13.00)	(2.87)	(6.82)
	(-6.13)	(-8.73)	(-6.34)			
Net taxes and transfers [d]	0.039***	0.035***	0.026***	0.130***	0.541***	0.114
	(3.35)	(3.56)	(5.22)	(13.00)	(5.15)	(1.58)
Saving	0.310***	0.322***	0.329***	0.230***	0.173**	0.175***
	(5.40)	(6.36)	(6.13)	(3.83)	(2.14)	(3.13)
Public	0.092***	0.108***	0.085***			
	(4.25)	(6.16)	(5.59)			
Private	0.218***	0.214***	0.244***			
	(4.48)	(5.09)	(5.55)			
Unsmoothed	0.658***	0.691***	0.736***	0.250***	0.085**	0.208***
	(12.18)	(15.36)	(17.23)	(4.17)	(2.02)	(3.014)

***, **, *denotes significance at 1%, 5%, 10%, respectively. [a] refers to estimates reported in Table 1 of Asdrubali et al. (1996) obtained with two-step GLS; [b] refers to estimates reported in Table 5 (column I) of Hepp and von Hagen (2013); [c] international income flows for EU, OECD and euro area, while domestic income flows for the U.S. and Germany; [d] international net taxes and transfers for EU, OECD and euro area, while federal government taxes and transfers for the U.S. and Germany.

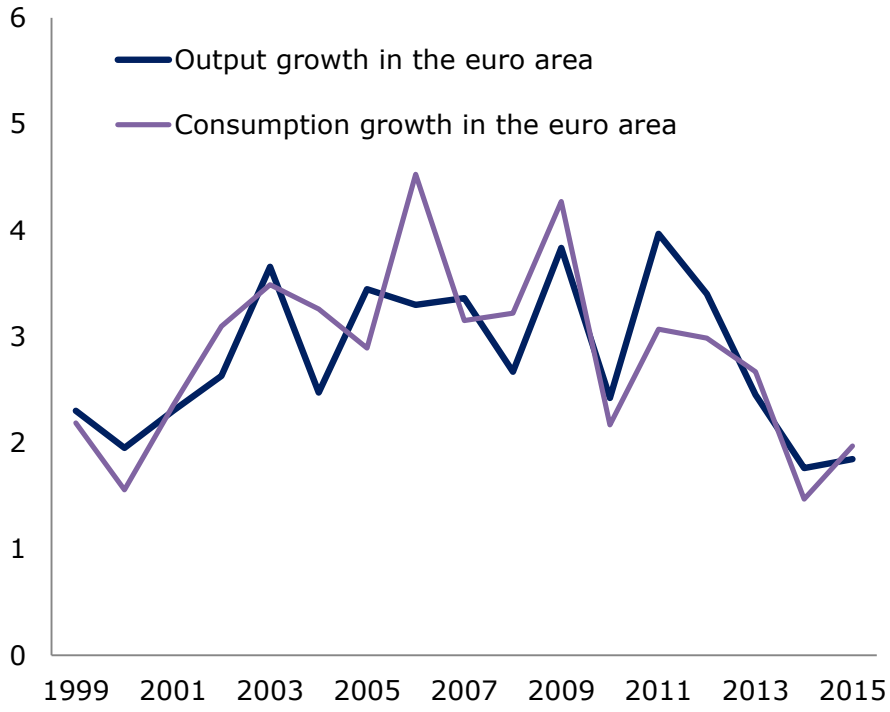
Source: Furceri and Zdzienicka (2013), note that in IV, V and VI capital depreciation is not reported separately.

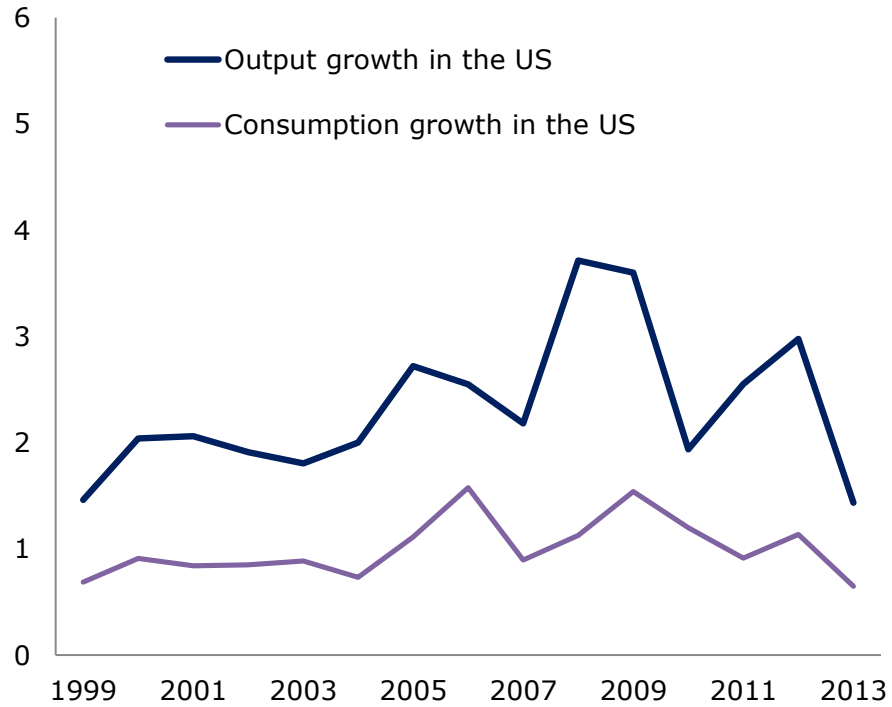
Convergence in the euro area





Dispersion of output and consumption growth

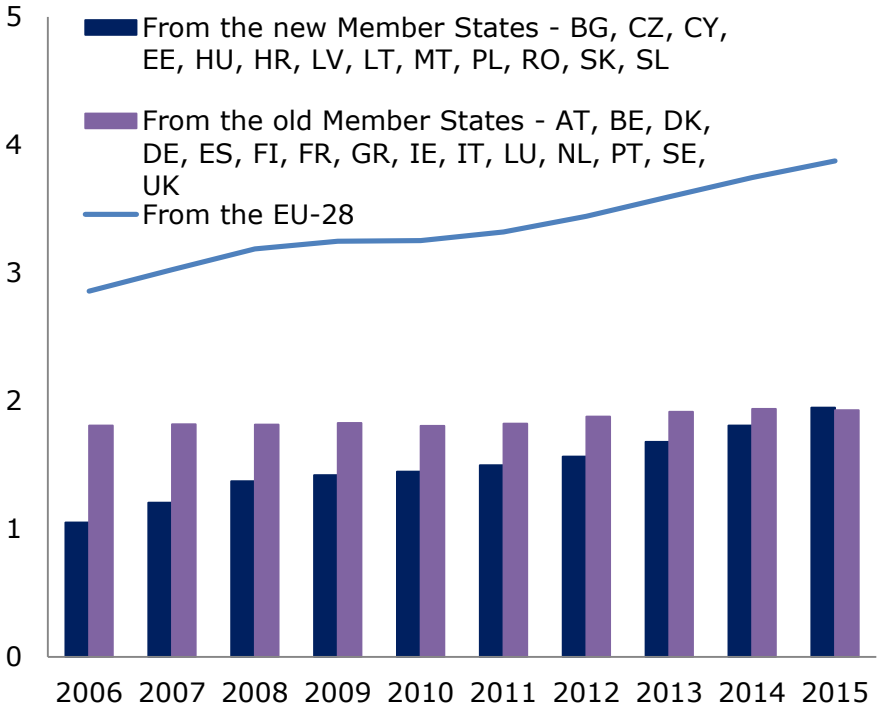


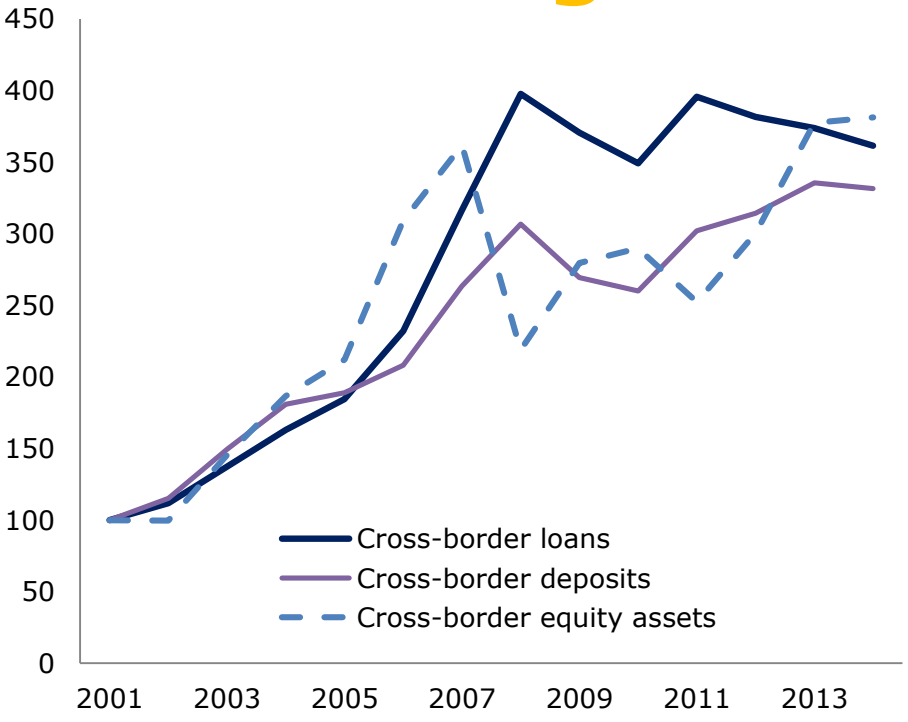


Cross-state dispersion of output and consumption growth in the euro area and the 50 US states (1)
in pps., 1999-2015

Standard deviation of growth in real per-capita terms

Channels of risk sharing





Cross-border employment, EA19(1)

Employment by citizenship other than of the reporting country, 15-64 year old, % of total employment

Source: Eurostat Labour Force Survey

Cross-border financial instruments in the euro area

2001 = 100

For loans and deposits other bank counterparties are excluded

Source: BIS, IMF Coordinated Portfolio Investment Survey

Methodology

We want to see how an asymmetric shock in output in the euro area is smoothed so it affects consumption as little as possible.

Starting from $GDP = \frac{GDP}{GNI} \cdot \frac{GNI}{GDI} \cdot \frac{GDI}{C} \cdot C$

$$\Delta logGDP_t^i - \Delta logGNI_t^i = \mu_{fi,t} + \beta_{fi} \cdot \Delta logGDP_t^i + u_{fi,t}^i$$
$$\Delta logGNI_t^i - \Delta logGDI_t^i = \mu_{tr,t} + \beta_{tr} \cdot \Delta logGDP_t^i + u_{tr,t}^i$$
$$\Delta logGDI_t^i - \Delta logC_t^i = \mu_{s,t} + \beta_s \cdot \Delta logGDP_t^i + u_{s,t}^i$$
$$\Delta logC_t^i = \mu_{u,t} + \beta_u \cdot \Delta logGDP_t^i + u_{u,t}^i$$

we can show that $1 = \beta_{fi} + \beta_{tr} + \beta_s + \beta_u$ *as these are the relative weights of the different consumption smoothening channels plus the unsmoothed part.*

This is in fact a sequential move down balancing items in the NA, where differences are:

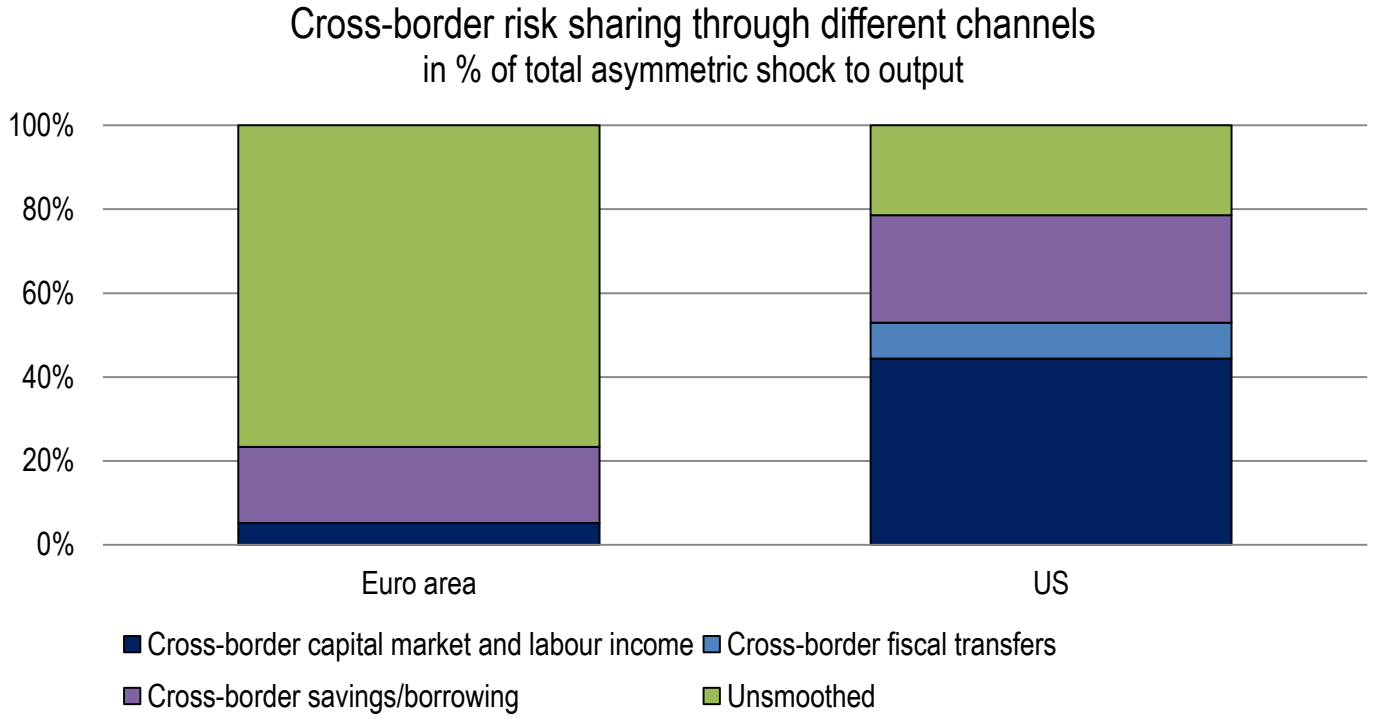
- **Net factor income from abroad, including labour income. Part of it is called "capital market channel"**
- **Cross-border fiscal transfers**
- **Savings/borrowings or "credit market channel"**

See Asdrubali, Sorensen and Yosha (1996) in QJE for more details

Data construction

- Variables needed – output (GDP), income (GNI), disposable income (GDI) and consumption (C)
- For the euro area these are available in quarterly frequency at the national level, instructional sector total economy
  - Difference between GDP and GNI is net factor income from abroad
  - Difference between GNI and GDI is net fiscal transfers from abroad
  - Difference between GDI and C is saving/borrowing from abroad
- For the US, data on output and consumption at the state level are available
- US data on income and disposable income are constructed
  - Same approach as in the Appendix of ASY (1996)
  - Itemisation of federal transfers and taxes to ensure federal-state flows
  - US Bureau of Economic Analysis (BEA), US Office of Management and Budget (OMB), US Bureau of Labour Statistics (BLS), US Census Bureau

Main findings



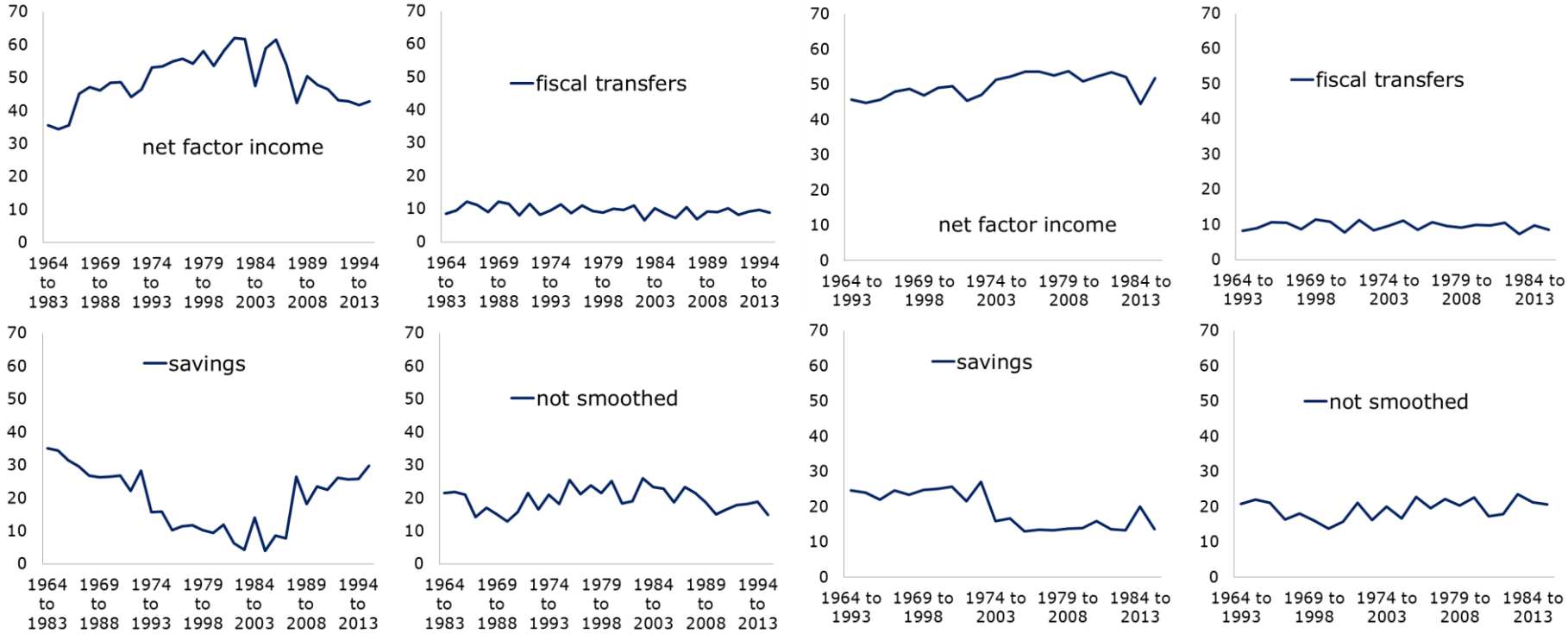
- Unsmoothed part in EA much bigger than in the US
- Cross-border savings/borrowing channels similar.
- Cross-border fiscal channel in the euro area virtually non-existing.
- Cross-border capital channel much smaller because financial union incomplete.

Econometric results

	(1)	(2)	(3)	(4)
Risk sharing through:	2-step GLS	2-step GLS	2-step GLS	PC-OLS
cross-border factor income	0.0504***	0.0229***	0.0367***	0.4440***
	(7.22)	(3.16)	(5.68)	(15.09)
of which cross-border labour compensation	0.0024***	-0.0015***	-0.0012***	
	(2.81)	(-4.14)	(-2.82)	
cross-border fiscal transfers	-0.0007	0.0156***	0.0257***	0.0853***
	(-0.39)	(8.47)	(7.61)	(10.15)
credit markets	0.1816***	0.2459***	0.1800***	0.2566***
	(17.38)	(8.31)	(4.78)	(5.92)
unsmoothed	0.7574***	0.6171***	0.6312***	0.1947***
	(378.4)	(25.05)	(18.38)	(6.15)
Countries	Full panel - 13 countries: BE, DE, EE, ES, FI, FR, IE, IT, LV, NL, PT, SK, SL	Old member states - 9 countries: BE, DE, ES, FI, FR, IE, IT, NL, PT	Core vs. periphery - 5 countries: DE, ES, IE, NL, PT	50 US states
Period	2000Q4-2015Q4	2000Q4-2015Q4	2000Q4-2015Q4	1964-2014
No of observations	793	549	305	2550

*Estimation through 2-step GLS, correcting for heteroskedasticity and cross-sectional correlation (EA); ordinary least squares (OLS) with panel-corrected standard errors (US). Both estimations include an AR1 autocorrelation structure of errors, common among panels. Variables in first difference of natural logarithms. Time Fixed Effects (FE) not reported. *** denotes significance at 1% level.*

Rolling regression coefficients - US



20-year windows

30-year windows

- Risk sharing through fiscal transfers is pretty stable.
- Trade-off in the role of capital and credit markets, overall level of risk sharing doesn't change.

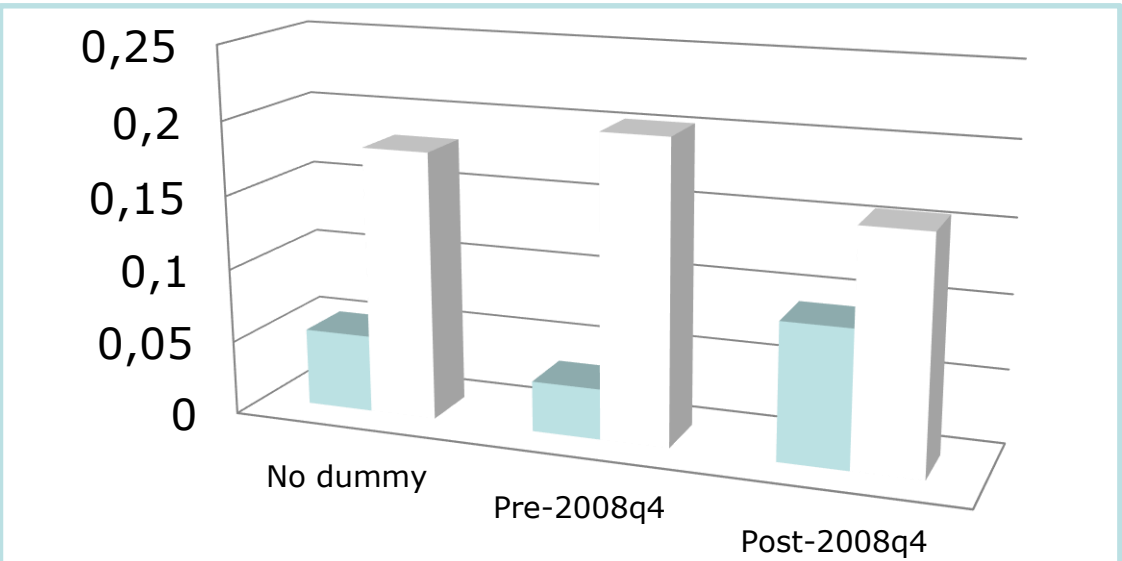
Dummy variables – Euro Area

$$\Delta logGDP_t^i - \Delta logGNI_t^i = \mu_{fi,t} + \beta_{fi} \cdot (1 - D_t^i) \cdot \Delta logGDP_t^i + \gamma_{fi} \cdot D_t^i \cdot \Delta logGDP_t^i + u_{fi,t}^i$$
$$\Delta logGNI_t^i - \Delta logGDI_t^i = \mu_{tr,t} + \beta_{tr} \cdot (1 - D_t^i) \cdot \Delta logGDP_t^i + \gamma_{tr} \cdot D_t^i \cdot \Delta logGDP_t^i + u_{tr,t}^i$$
$$\Delta logGDI_t^i - \Delta logC_t^i = \mu_{s,t} + \beta_s \cdot (1 - D_t^i) \cdot \Delta logGDP_t^i + \gamma_s \cdot D_t^i \cdot \Delta logGDP_t^i + u_{s,t}^i$$
$$\Delta logC_t^i = \mu_{u,t} + \beta_u \cdot (1 - D_t^i) \cdot \Delta logGDP_t^i + \gamma_u \cdot D_t^i \cdot \Delta logGDP_t^i + u_{u,t}^i$$

- Dummy variable, D_t^i takes the value of 1 after 2008/Q4 and zero before. Thus beta are the before-the-crisis coefficients and gamma are after-the-crisis coefficients.
- The model is run for EA13 - BE, DE, EE, ES, FI, FR, IE, IT, LV, NL, PT, SK, SL (2000Q4-2015Q4)

Estimation through 2-step GLS, correcting for heteroskedasticity and cross-sectional correlation (EA); include an AR1 autocorrelation structure of errors, common among panels. Variables in first difference of natural logarithms. Time FE not reported.

Euro Area, pre- and after-crisis



	No dummy	Pre-2008q4	Post-2008q4
cross-border factor income	0,0522332	0,0341088	0,092333
credit markets	0,1815457	0,2031388	0,1571587

- Shift from risk sharing through credit markets (savings/borrowings channel) to risk sharing through capital markets (net factor income channel). Opposite was seen in the US.
- The optimal weights of the different channels are difficult to determine.
- The unsmoothed part remains constant in the euro area as well.

Conclusion

- Enhancing private risk sharing is a priority.
- This can be done through the completion of the Banking Union.
  - Common backstop to the Single Resolution Fund – separate banks from sovereigns.
  - Common deposit insurance scheme.
- Building a Capital Markets Union that will reduce bank dependence on firm financing and increase ex-ante risk sharing.
- Structural reforms will enhance the performance of labour markets and facilitate risk sharing through cross-border labour income.
- Cross-border fiscal risk sharing is important in a fully-fledged economic union like the US, but less than the private channels.

Future work

- Better account of the role of cross-border labour income
- The role of remittances
- The role of structural funds
- Role of public and private savings channel
- Dynamic risk sharing
- Integration in a DSGE model

Thank you for your attention

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