Intersectoral Financial Flows and Non-Financial Corporate Investment in the USA and Europe

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Goals

- Document intersectoral financial flows involving non-financial corporations (NFCs) in the USA and Europe.
- Cast light on comparison between 1950-1980 and post-1980 periods in the USA.
- Cast light on the development of external imbalances in 1995-2007 in Europe.
- Present preliminary econometric results linking pattern of intersectoral finance and investment by NFCs.

Intersectoral Financial Flows: Method and Data Sources

The Capital Account — General Format

Sources	Uses
Gross Saving	Gross Capital Formation
Net Capital Transfers Received	Net Purchases of land and intangible assets
	Net Lending $(+)$ or Net Borrowing (-)

Intersectoral Financial Flows: Method and Data Sources

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Sources > **Uses** $\longrightarrow$ Net Acquisition of Financial Assets
(Net Lending)

Data Sources: US Flow of Funds and Eurostat ESA95 Database.

Use of external finance by NFCs — General Trends

3 Country Groups:

Financial Centers

United States
United Kingdom
Germany
France
Netherlands
Switzerland

Top-ranked U.S. and European cities of the 2012 International Financial Center Development Index

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European Core

Germany
Finland
Denmark
Netherlands
Sweden
Lithuania
Switzerland
Austria
Norway

$\Delta CA \geq 1\%$ of GDP
between 1995-1999
and 2000-2007

European Periphery

Latvia
Portugal
Cyprus
Italy
Hungary
Estonia
Spain
Ireland
Greece

$\Delta CA \leq -2\%$ of GDP
between 1995-1999
and 2000-2007

Variable of interest: net borrowing as a share of capital expenditures (nb/capx)

Use of external finance by NFCs — General Trends

Variable of interest: net borrowing as a share of capital expenditures (nb/capx)

Financial Centers:

$$\text{nb/capx} = \beta_0 + \beta_1 a_i + \beta_2 a_t + \epsilon_{i,t} \tag{1}$$

European Countries:
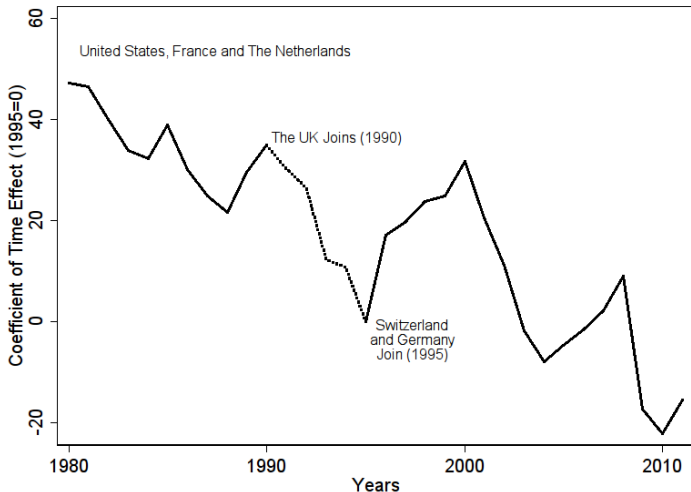
$$\text{nb/capx} = \beta_0 + \beta_1 a_i + \beta_2 a_{t,g} + \epsilon_{i,t} \tag{2}$$
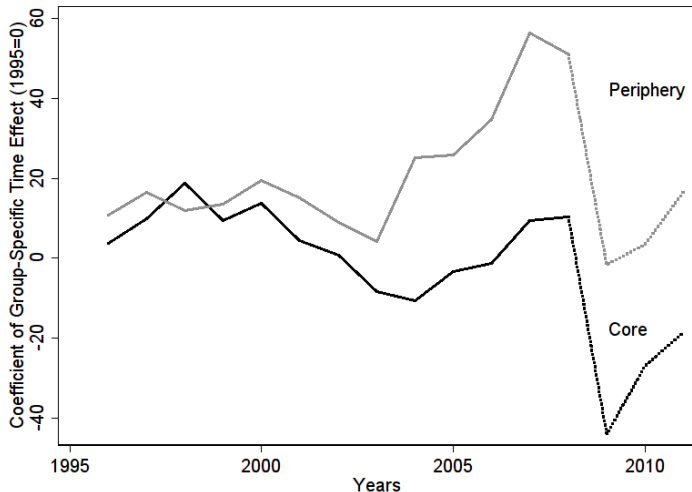
where g = core, periphery or rest.

Financial Centers: Coefficients of Time Dummies (1980-2011).
Baseline year: 1995.

Use of external finance by NFCs — General Trends

Europe: Coefficients of Group-Specific Time Dummies (1995-2011).
Baseline year: 1995.

Boldfaced years denote structural breaks in the mean of the ratio of external finance as identified by the Bai-Perron procedure.

	Period	Net Borrowing (% of capital expenditures)	Capital Expenditures (% of GDP)
United States	1947-**1965**	9.1	10.0
	1966-**1981**	21.2	11.9
	1982-**2007**	6.9	10.3
	2008-2011	-25.9	8.3
United Kingdom	1990-**2002**	0.6	10.9
	2003-2011	-37.4	9.1
Germany	1995-2001	11.7	11.5
	2002-2011	-9.3	10.2

Financial Centers — Structural Breaks in the Use of External Finance and Investment by NFCs (2/2)

Boldfaced years denote structural breaks in the mean of the ratio of external finance as identified by the Bai-Perron procedure.

	Period	Net Borrowing (% of capital expenditures)	Capital Expenditures (% of GDP)
The Netherlands	1980-**1993**	-8.7	11.6
	1994-**2001**	-31.4	10.8
	2002-2011	-86.7	8.8
Switzerland	1995-**2002**	4.3	13.1
	2003-2011	-25.6	12.6
France	1971-**1975**	41.8	10.4
	1976-**1985**	52.9	9.3
	1986-**1991**	19.4	9.9
	1992-**1999**	-0.9	8.4
	2000-2011	15.1	9.9

Financial Centers — Decomposition of Changes in Net Lending by NFCs (1/2)

			Change between Periods (% of GDP)		
	Period 1	Period 2	Net Lending	Gross Saving	Capital Expenditures
United States	1947-1965	1966-1981	-1.55	0.31	1.86
	1966-1981	1982-2007	1.8	0.21	-1.59
	1982-2007	2008-2011	2.76	0.76	-2
United Kingdom	1990-2002	2003-2007	3.25	1.87	-1.38
	2003-2007	2008-2011	0.56	-0.26	-0.83
Germany	1995-2001	2002-2007	2.15	0.89	-1.25
	2002-2007	2008-2011	0.74	0.43	-0.31

Financial Centers — Decomposition of Changes in Net Lending by NFCs (2/2)

	Period 1	Period 2	Change between Periods (% of GDP)		
			Net Lending	Gross Saving	Capital Expenditures
Netherlands	1980-1993	1994-2001	2.15	1.52	-0.63
	1994-2001	2002-2007	3.92	1.95	-1.97
	2002-2007	2008-2011	0.91	0.6	-0.3
Switzerland	1995-2002	2003-2007	4.04	3.69	-0.34
	2003-2007	2008-2010	-0.77	-1.16	-0.39
France	1971-1985	1986-1991	2.8	3.4	0.17
	1986-1991	1992-2007	1.31	0.51	-0.74
	1992-2007	2008-2011	-1.37	-0.56	0.8

Structural Breaks in the Use of External Finance and Investment
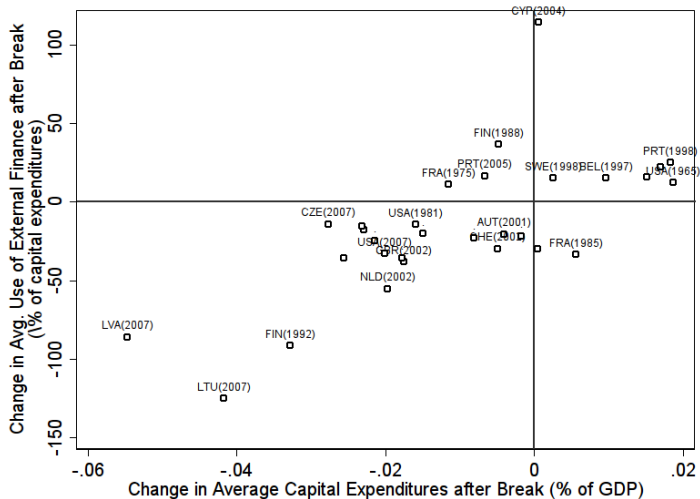
If investment demand by NFCs goes down, does the share of investment that is externally financed also go down?

To investigate this relation, we estimate a Panel VAR using the data from the US Flow of Funds and the ESA95 databases described above.

$$
\left(\frac{\text{nb}}{\text{capx}}\right)_{i,t} = \sum_{n=1}^{p} \beta_{1,1,n}\left(\frac{\text{nb}}{\text{capx}}\right)_{i,t-n} + \sum_{n=1}^{p} \beta_{1,2,n}\left(\frac{\text{capx}}{\text{gdp}}\right)_{i,t-n} + \epsilon_{1,t} + \epsilon_{1,i} + \epsilon_{1,i,t}
$$

$$
\left(\frac{\text{capx}}{\text{gdp}}\right)_{i,t} = \sum_{n=1}^{p} \beta_{2,1,n}\left(\frac{\text{nb}}{\text{capx}}\right)_{i,t-n} + \sum_{n=1}^{p} \beta_{2,2,n}\left(\frac{\text{capx}}{\text{gdp}}\right)_{i,t-n} + \epsilon_{2,t} + \epsilon_{2,i} + \epsilon_{2,i,t}
$$

(3)

We use the methodology in Love and Zicchino (2006)[**?**]:

- Cross-sectional demeaning to account for common, unobserved year effects.
- Forward Orthogonal Differences to account for unobserved fixed effects.
- The VAR is estimated by GMM, with lagged levels as instruments for transformed variables, to account for Nickell bias.
- Downside: no cross-sectional heterogeneity in the structure of the VAR (coefficients and lags).

Example: Impulse-Response Functions of VAR with 2 lags (results are not sensitive to lag choices).

response of nb_capx to capx shock

response of nb_capx to capx shock

External Finance and Investment — Preliminary Estimates
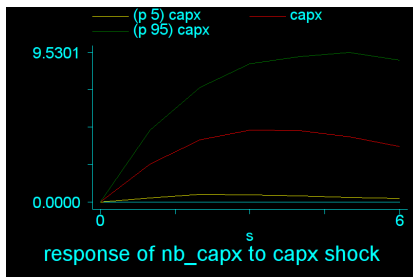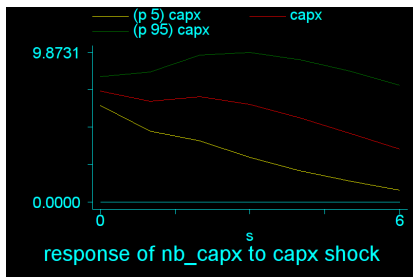
Example: Variance Decompositions of VAR with 2 lags (results are not very sensitive to lag choices).

Percent of variation in the row variable explained by column variable after 20 periods.

	Decomposition 1		Decomposition 2	
	nb/capx	capx	nb/capx	capx
nb/capx	75%	24%	42%	57%
capx	18%	81%	11%	88%

Thank you!

Extra Slides.

European Core — Examples

Country	Group	Chg. Between 1995-1999 and 2000-2007		
		Net Lending (1) = (2)-(3)	**Gross Saving** (2)	**Capital Expenditures** (3)
United Kingdom	2	1.97	0.53	-1.44
Austria	5	1.97	2.36	0.40
Norway	5	2.06	0.03	-2.03
Lithuania	5	2.26	2.36	0.10
Switzerland	5	2.40	2.40	-0.01
The Netherlands	5	2.84	1.15	-1.69
Germany	5	-0.11	-0.04	0.07
		Chg. Between 2000-2003 and 2004-2007		
Germany	5	2.97	1.99	-0.98

European Periphery — Examples

Country	Group	Net Lending (1) = (2)-(3)	Gross Saving (2)	Capital Expenditures (3)
		Chg. Between 1995-1999 and 2000-2007		
Italy	1	-1.01	0.17	1.18
Latvia	1	-2.36	4.32	6.69
Portugal	1	-3.50	-2.48	1.02
Cyprus	1	-4.08	-4.98	-0.89
France	2	-1.28	0.10	1.38
		Chg. Between 2000-2003 and 2004-2007		
Spain	1	-3.64	-2.18	1.36