

# **Euro area current account imbalances and income inequality**

**Benedicta Marzinotto**

**University of Udine**

## ■ Literature on current account imbalances in the euro area

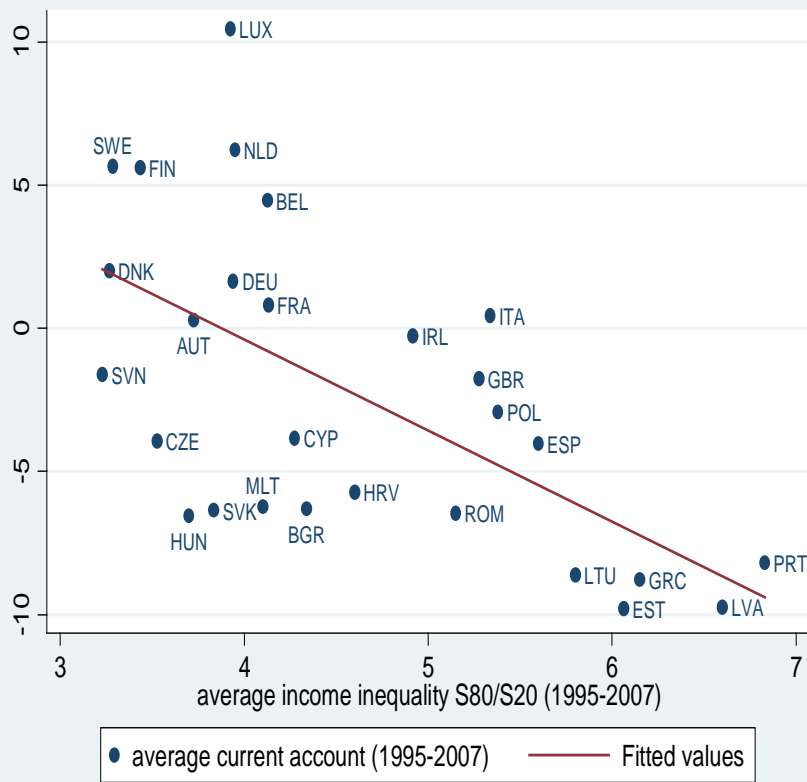
- Inter-temporal (consumption) models:
  - Catching up (i.e. optimistic growth expectations) countries that face lower-than-normal interest rates (thanks to financial liberalization) find it optimal to borrow from abroad (Blanchard and Giavazzi 2002).
  - **But** optimistic expectations "excessive" in ES, PT, IT over 1995–2001 and ES since 2002 (Campa and Gaviland 2011)
- Capital-flow models:
  - Standard downhill flow of capital (Abiad et al 2009; Giavazzi and Spaventa 2010; Jaumotte and Sodsriwiboom 2010)
  - Independent role of growth expectations beyond catching up (i.e. unrelated to convergence) (Lane and Pels 2012)
  - Excess consumption further fuelled by domestic credit growth (Lane 2013)

## ■ Literature on income inequality and household debt

- Idiosyncratic shocks to income distribution raise demand for insurance via markets and debt-to-income ratios
  - Low-income groups start borrowing to smooth consumption and/or because of habit persistence (Krueger and Perri 2002; Iacoviello 2007; Kumhof and Ranciere 2010). **But** no impact on external positions by construction, lower aggregate private consumption, self-correcting through higher interests

# Empirical motivation: current accounts and income inequality (1995–2007)

EU28

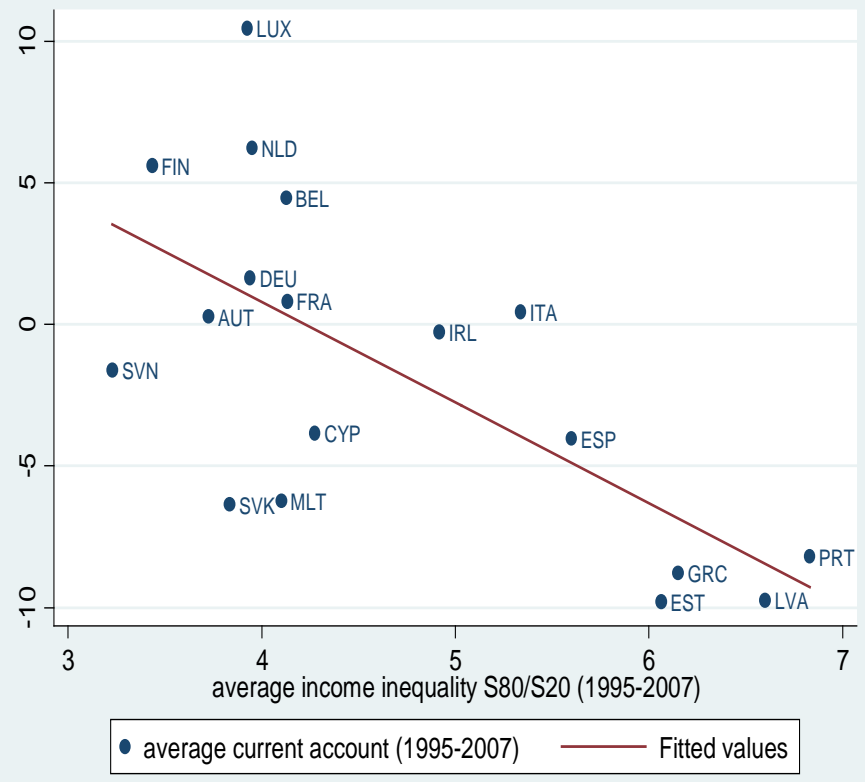


R-Square: 0.36

With Gini

R-Square: 0.33

EU18



R-Square: 0.42

R-Square: 0.36

- A fraction of the population  $(1-n)$  consists of a low-income group that obtains income from labour and consumes based on current and expected income under some budget constraint
- A fraction of the population  $n$  consists of a high-income group that obtains income from labour and consumes based on current and expected income under no budget constraint
- Skill endowment for both groups is fully exogenous, de facto representing a source of permanent income inequality

- **Life-time utility function:**

$$\max V \equiv C_t + \beta C_{t+1}$$

$$\text{Log}(C) \equiv \frac{1}{2} \log(C_t) + \frac{1}{2} \log(C_{t+1})$$

- **Inter-temporal budget/wealth flow constraint:**

$$A^L \equiv W_t L_t + W_{t+1} L_{t+1} + B_t \text{ with } A^L \equiv B_t < m(W_{t+1} L_{t+1})$$

$$A^H \equiv W_t L_t + W_{t+1} L_{t+1} + B_t \text{ with } A^L \equiv B_t \geq m(W_{t+1} L_{t+1})$$

With  $m$  representing an economy-wide shock in credit supply independent of income and potentially time-varying.

Descriptive model: equilibrium condition, aggregate consumption and current account

- **Equilibrium for each group:**

$$C_t \equiv \frac{1}{2} \left( \frac{1}{1 + \beta} \right) A$$

- **Aggregate-consumption equilibrium condition and CA:**

$$C_t = n \left[ \frac{1}{2} \left( \frac{1}{1 + \beta^H} \right) A^H \right] + (1 - n) \left[ \frac{1}{2} \left( \frac{1}{1 + \beta^L} \right) A^L \right]$$

$$CA_t = 1 - \left\{ n \left[ \frac{1}{2} \left( \frac{1}{1 + \beta^H} \right) A^H \right] + (1 - n) \left[ \frac{1}{2} \left( \frac{1}{1 + \beta^L} \right) A^L \right] \right\}$$

- **Relaxation of binding collateral constraints for low-income group:**

$$B_t \geq m(W_{t+1}L_{t+1}) \text{ and } \delta m > 0$$

- **Impact on budget/wealth flow constraint:**

$$\delta A^L > \delta A^H$$

$$\left(\frac{1}{1 + \beta^L}\right)\delta A^L > \left(\frac{1}{1 + \beta^H}\right)\delta A^H$$

- **Expectations of convergence lead to greater impatience:**

$$\delta C^L = \frac{1}{2}(-\delta\beta) > 0$$

▪ **The baseline specification (Chinn and Prasad 2003)**

$$CA_{it} = \alpha_0 + \beta X_{it} + \varepsilon_{it}$$

where

Dependent variable	=	current account as a proportion of GDP
Independent variables (NFA)	=	net foreign asset position as a proportion of GDP
		government budget balance
		relative income
		real GDP growth
		dependency ratio
		financial deepening (i.e. private credit to GDP)
		openness
		income inequality or labour share



# Is income inequality one of the medium-term determinants of euro area current accounts?

VARIABLES	(1) Current account GINI NET	(2) Current account LABOUR SHARE	(3) Current account 1-PERCENT	(4) Private saving GINI NET	(5) Private saving LABOUR SHARE	(6) Private saving 1-PERCENT
NFA to GDP ratio	<b>3.366+</b> [1.939]	<b>3.127+</b> [1.758]	<b>3.897*</b> [2.160]			
Openness	-0.00954 [-0.803]	-0.00552 [-0.469]	-0.0106 [-0.983]	<b>0.0286*</b> [2.630]	<b>0.0361**</b> [3.108]	<b>0.0277*</b> [2.502]
Financial deepening	<b>-0.0454*</b> [-2.188]	<b>-0.0475*</b> [-2.385]	<b>-0.0440*</b> [-2.013]	0.00333 [0.227]	-0.00218 [-0.138]	0.00652 [0.443]
Dependency ratio (young)	<b>0.225**</b> [3.016]	<b>0.189**</b> [2.805]	<b>0.194**</b> [2.864]	-0.0986 [-1.401]	-0.150* [-2.027]	-0.147* [-2.030]
Relative income	<b>0.141**</b> [4.604]	<b>0.150**</b> [4.896]	<b>0.141**</b> [4.501]	0.0373+ [1.832]	0.0437+ [1.936]	0.0427* [2.053]
Real GDP growth	-0.541 [-1.489]	<b>-0.819*</b> [-2.175]	-0.543 [-1.445]	-0.0362 [-0.100]	-0.404 [-1.127]	-0.0474 [-0.126]
Income inequality (Gini)	<b>-0.199*</b> [-2.214]			<b>-0.295**</b> [-3.751]		
CA gov budget balance	0.158 [0.953]	0.253 [1.646]	0.178 [1.037]	<b>-0.634**</b> [-4.166]	<b>-0.487**</b> [-3.332]	<b>-0.629**</b> [-4.104]
Income inequality (Labour share)		<b>-0.139**</b> [-2.992]			<b>-0.122**</b> [-2.706]	
Income inequality (Top 1%)			-0.467 [-1.585]			<b>-0.788**</b> [-3.467]
Significant time dummies	All	All	All	None	2000-2007	None
Observations	81	81	81	83	83	83
R-squared	0.709	0.714	0.707	0.565	0.530	0.573

The dependent and independent variables are non-overlapping 3-year averages of the corresponding annual values.

Robust t-statistics in brackets

\*\* p<0.01, \* p<0.05, + p<0.1

# Do unequal euro area countries have worse-than-expected current account balances?

VARIABLES	(1) RE All EA 95-07	(2) RE All EA 95-07	(3) RE unequal 95-07	(4) RE equal 95-07	(5) RE unequal 95-02	(6) RE equal 95-02	(7) RE unequal 03-07	(8) RE equal 03-07
CA norm	0.433** [2.765]	0.326* [2.101]	1.566** [6.363]	0.140 [0.743]	1.302* [2.101]	-0.546* [-2.572]	1.614** [4.225]	0.277 [1.168]
Lagged income	0.106** [3.813]	0.0805** [2.864]	<b>0.112**</b> [3.534]	<b>0.0697*</b> [2.021]	<b>0.169**</b> [3.005]	<b>0.0996*</b> [2.090]	0.0567 [0.942]	<b>0.138**</b> [2.941]
Real GDP growth	-0.497** [-4.157]	-0.506** [-4.357]	<b>-1.079**</b> [-4.389]	<b>-0.420**</b> [-3.066]	<b>-0.957*</b> [-2.325]	<b>-0.554**</b> [-4.437]	<b>-0.564+</b> [-1.649]	0.111 [0.562]
Private credit	<b>-0.0589**</b> [-6.264]	-0.0179 [-1.168]	<b>-0.0414**</b> [-4.565]	-0.0146 [-0.888]	<b>-0.0558**</b> [-3.357]	-0.0158 [-0.680]	-0.0127 [-1.033]	<b>-0.0651*</b> [-2.334]
Private credit*dummy ineq.	-	<b>-0.0623**</b> [-3.324]	-	-	-	-	-	-
Dummy for inequality	<b>-3.604*</b> [-2.140]	1.850 [0.798]	-	-	-	-	-	-
Net f. assets (H)	0.0209* [2.339]	0.0155+ [1.759]	0.00309 [0.317]	<b>0.0233+</b> [1.882]	-0.00679 [-0.516]	<b>0.0328**</b> [2.799]	<b>0.0304*</b> [2.245]	<b>0.0469*</b> [2.156]
Constant	-2.125 [-0.883]	-3.251 [-1.377]	-0.832 [-0.239]	-3.929 [-1.389]	-2.710 [-0.443]	-7.782* [-2.510]	-5.398 [-0.861]	-8.566* [-2.263]
Observations	166	166	59	107	34	60	25	47
Number of countries	15	15	5	10	5	9	5	10

Panel estimated using random effects.

z-statistics in brackets

\*\* p<0.01, \* p<0.05, + p<0.1

The current account 'norm' estimates are based on a panel regression of current account balances (CA) on 'fundamental factors', such as oil balance, fiscal policy stance, demographic factors, GDP growth, relative level of per capita income and level of NFA. Methodology based on Salto and

Turrini (2010).

# To what extent is the relationship between income inequality and poor current account imbalances stemming from EMU membership?

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	EU	EA	EU	EA	EU	EA	EU	EA	EU	EA	EU	EA
	RE 95-02	RE 95-02	RE 03-07	RE 03-07	RE 95-02	RE 95-02	RE 03-07	RE 03-07	RE 95-02	RE 95-02	RE 03-07	RE 03-07
CA norm	0.0794 [0.331]	-0.295 [-1.050]	0.615** [3.028]	0.538* [2.479]	0.0618 [0.255]	-0.222 [-0.775]	0.569** [2.785]	0.479* [2.212]	0.278 [1.248]	-0.0723 [-0.279]	0.592** [2.976]	0.548* [2.537]
Relative income	0.170** [4.029]	0.222** [4.486]	0.0959** [2.914]	0.0969** [2.660]	0.167** [3.982]	0.251** [5.292]	0.0946** [2.930]	0.0984** [2.738]	0.118** [3.331]	0.220** [3.812]	0.107** [3.171]	0.0956** [2.613]
Real GDP growth	-0.652* [-2.502]	0.0134 [0.0452]	-0.246 [-1.352]	-0.0909 [-0.376]	-0.658* [-2.473]	0.0744 [0.241]	-0.202 [-1.116]	-0.0526 [-0.219]	-0.551** [-4.124]	-0.838** [-5.484]	-0.205 [-1.177]	-0.138 [-0.570]
Bank credit	-0.0488** [-3.051]	-0.0846** [-4.881]	-0.0439** [-2.856]	-0.0430* [-2.296]	-0.0477** [-2.911]	-0.0887** [-4.844]	-0.0405** [-2.667]	-0.0400* [-2.146]	-0.0240* [-2.065]	-0.0923** [-4.129]	-0.0515** [-3.133]	-0.0376+ [-1.770]
Net f. assets (H)	0.00454 [0.473]	0.0310** [3.851]	0.0392** [2.848]	0.0415* [2.430]	0.00557 [0.574]	0.0295** [3.495]	0.0396** [2.934]	0.0419* [2.458]	0.00685 [0.725]	0.0145 [1.200]	0.0387** [2.830]	0.0442** [2.702]
Wage share									-0.105 [-1.440]	<b>-0.287*</b> [-2.508]	-0.0612 [-0.539]	<b>-0.265+</b> [-1.654]
S80/S20	-0.0958 [-0.203]	<b>-1.328*</b> [-2.347]	-0.605 [-1.351]	<b>-1.079+</b> [-1.720]								
Gini					-0.0511 [-0.433]	<b>-0.271+</b> [-1.798]	<b>-0.286*</b> [-2.310]	<b>-0.399*</b> [-2.289]				
Constant	-4.756 [-1.147]	-4.373 [-0.787]	-3.029 [-0.784]	0	-3.766 [-0.766]	-4.467 [-0.671]	1.853 [0.398]	3.289 [0.495]	6.878 [0.826]	23.40+ [1.867]	0.422 [0.0351]	18.22 [1.131]
Observations	98	76	88	65	97	75	87	64	141	94	102	72
Number of countries	19	13	21	15	19	13	21	15	20	14	21	15

Including time effects  
z-statistics in brackets

### ■ **Negative relationship between income inequality and current account balances**

- Linked to saving/consumption patterns
- Fuelled by financial deepening (> a special feature of euro area)
- Further fuelled by growth rates (> pro-cyclical private debt)
- It adds to income convergence hypothesis
- Break in the data in 2002: income convergence less and less important (>bubble)
- Net financial assets functioned as a buffer (>different behaviour of similarly unequal societies)

### ■ The dynamics in the crisis

- Argument useful to understand the crisis, which has been a large negative credit supply shock
- South: the crisis shock was perfectly symmetric to first positive cycle leading to a contraction of demand in countries where the private sector was exposed and collaterals over-valuated
- North: less a dramatic impact because there was no positive financial shock to start with.

### ■ The export side

- Income-inequality argument does not exclude possibility that same institutions responsible for greater equality in the North also favour competitive wage-setting (i.e. centralized wage setting with pattern setting by the export sector)

**Thank you**

# Does a simple cross-section regression carry useful information?

VARIABLES	(1) Private saving GINI NET	(2) Private saving GINI MARKET	(3) Private saving 1-PERCENT	(4) Private consumption GINI NET	(5) Private consumption GINI MARKET	(6) Private consumption 1-PERCENT
Financial deepening	0.0234 [0.734]	0.0327 [0.882]	0.00843 [0.269]	-0.0228 [-0.403]	-0.0207 [-0.259]	-0.000271 [-0.00455]
Dependency ratio (old)	0.0490 [0.201]	-0.181 [-1.078]	-0.0173 [-0.0483]	0.0537 [0.132]	0.479 [1.292]	0.166 [0.344]
Relative income	<b>0.0851**</b> [3.490]	<b>0.0710+</b> [2.296]	<b>0.0920**</b> [4.275]	<b>-0.108*</b> [-2.543]	-0.0979 [-1.642]	<b>-0.118*</b> [-2.652]
Real GDP growth	0.886 [1.593]	-0.144 [-0.428]	0.394 [0.577]	<b>-1.793*</b> [-2.333]	-0.271 [-0.400]	-1.064 [-1.186]
Income inequality (Gini net)	<b>-0.474*</b> [-2.841]			<b>0.679*</b> [2.823]		
CA gov budget balance	<b>-0.969**</b> [-4.636]	<b>-0.631*</b> [-2.938]	<b>-0.806**</b> [-3.577]	-0.122 [-0.503]	-0.616 [-1.531]	-0.362 [-1.127]
Income inequality (market)		<b>-0.370+</b> [-2.077]			0.424 [1.505]	
Income inequality (Top 1%)			-1.011 [-1.599]			1.414 [1.552]
Observations	15	15	15	15	15	15
R-squared	0.796	0.752	0.761	0.875	0.820	0.848

The dependent and independent variables are the full sample average of the corresponding annual values.

Robust t-statistics in brackets

\*\* p<0.01, \* p<0.05, + p<0.1

# To what extent is the relationship between income inequality and poor current account imbalances stemming from EMU membership?

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	EU 95-02	EA 95-02	EU 03-07	EA 03-07	EU 95-02	EA 95-02	EU 03-07	EA 03-07	EU 95-02	EA 95-02	EU 03-07	EA 03-07
CA norm	0.00275 [0.00954]	-0.0611 [-0.222]	1.087** [2.739]	1.018* [2.107]	-0.00246 [-0.0082]	-0.0190 [-0.0647]	1.004* [2.383]	0.990+ [1.849]	-0.0528 [-0.234]	0.0845 [0.323]	1.549** [4.252]	1.678** [3.648]
Lagged S80/S20	<b>-1.267**</b> [-3.865]	<b>-1.433**</b> [-3.833]	<b>-2.119**</b> [-4.258]	<b>-2.525**</b> [-4.153]								
Lagged income	<b>0.202**</b> [5.544]	<b>0.225**</b> [6.323]	0.0392 [0.890]	0.0307 [0.592]	0.207** [5.619]	0.241** [6.518]	0.0481 [1.029]	0.0374 [0.651]	<b>0.243**</b> [9.997]	<b>0.278**</b> [13.97]	0.0568 [1.011]	0.0261 [0.419]
Real GDP growth	-0.290 [-1.389]	-0.252 [-1.146]	<b>-0.628**</b> [-3.195]	<b>-0.76**</b> [-3.195]	-0.317 [-1.469]	-0.249 [-1.087]	<b>-0.535*</b> [-2.364]	<b>-0.647*</b> [-2.443]	-0.302* [-2.086]	-0.430* [-2.405]	-0.642* [-2.290]	-1.02** [-3.00]
Bank credit	<b>-0.0690**</b> [-4.760]	<b>-0.0909**</b> [-7.472]	<b>-0.022+</b> [-1.822]	-0.0121 [-0.748]	<b>-0.068**</b> [-4.602]	<b>-0.091**</b> [-6.976]	<b>-0.022+</b> [-1.758]	-0.00951 [-0.566]	<b>-0.074**</b> [-5.526]	<b>-0.095**</b> [-6.974]	<b>-0.039**</b> [-2.753]	-0.0306 [-1.643]
Net f. assets (H)	0.0178** [3.105]	0.0246** [3.608]	0.0264** [3.150]	0.0173* [2.072]	0.0180** [3.044]	0.0235** [3.215]	0.0285** [3.252]	0.0195* [2.086]	0.00742 [1.434]	0.0138* [2.053]	0.0147+ [1.759]	0.0088 [1.093]
Lagged Gini					<b>-0.299**</b> [-3.786]	<b>-0.324**</b> [-3.434]	<b>-0.607**</b> [-4.454]	<b>-0.715**</b> [-3.890]				
Lagged wage share									<b>0.0933*</b> [2.023]	<b>-0.169+</b> [-1.736]	<b>0.205+</b> [1.816]	-0.0642 [-0.371]
Constant	-3.050 [-0.940]	-2.437 [-0.721]	9.523** [3.094]	11.96** [2.935]	-0.561 [-0.146]	-0.640 [-0.160]	16.01** [4.482]	19.61** [3.632]	-19.12** [-3.978]	6.802 [0.693]	-17.57 [-1.434]	11.69 [0.692]
Observations	90	71	78	58	90	71	76	56	141	94	102	72
R-squared	0.667	0.748	0.797	0.830	0.655	0.737	0.803	0.826	0.624	0.751	0.715	0.747

The dependent and independent variables are annual values. Same results with time fixed effects and all time dummies insignificant.

Robust t-statistics in brackets

\*\* p<0.01, \* p<0.05, + p<0.1