BANCO DE ESPAÑA
Eurosistema

# GLOBAL IMBALANCES FROM A STOCK PERSPECTIVE

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(*) The views expressed here do not necessarily coincide with those of Banco de España, the BIS or the Eurosystem

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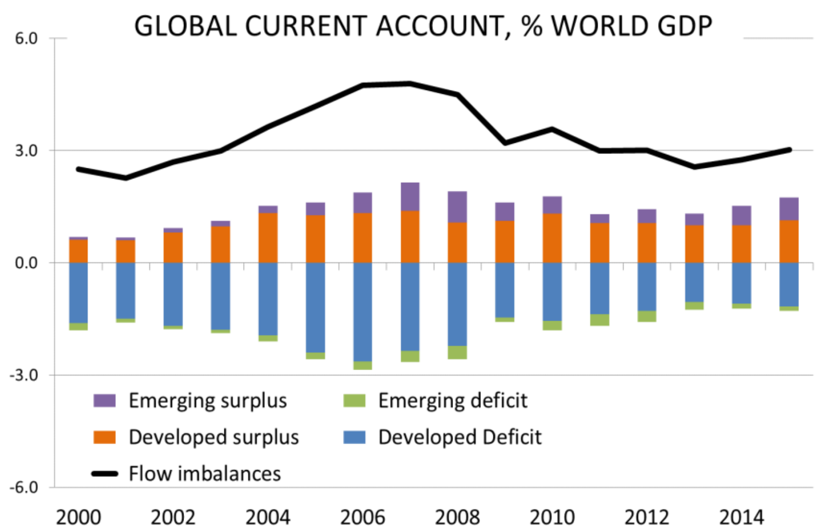
# GLOBAL DISEQUILIBRIA: FLOW VS STOCK IMBALANCES

- **Expansion** of **global imbalances** in first half of 2000s was linked to outburst of Global Financial Crisis. Eight years later, has **increasing trend** in **imbalances** been corrected?

- **Global imbalances** are traditionally characterized as divergences in the **current account flows** of surplus & deficit countries (“current account” or “**flow**” **imbalances**)
  - When the GFC exploded, an important **correction in flow imbalances** was observed, adjustment that was generally interpreted as a sign of **sustainability** of the recovery

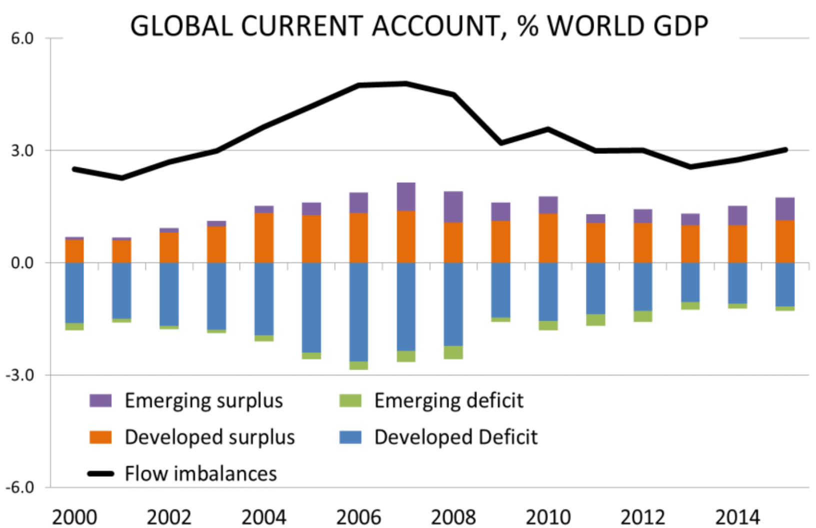


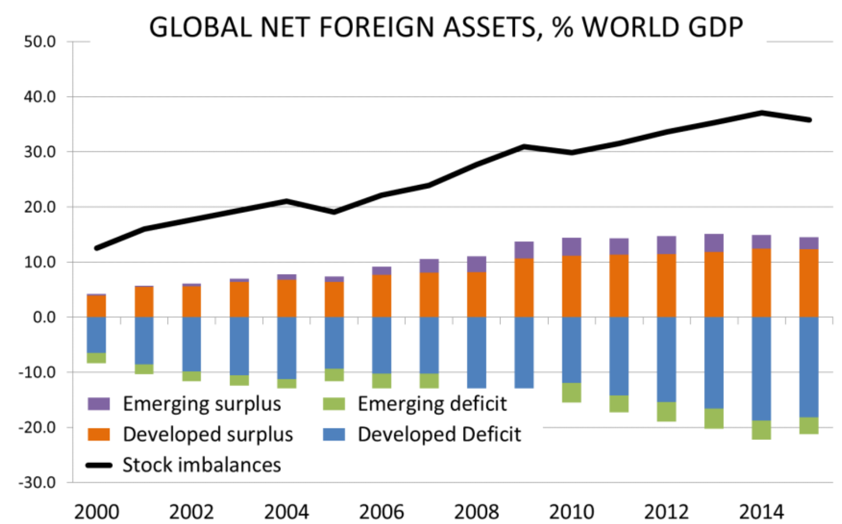
# GLOBAL DISEQUILIBRIA: FLOW VS STOCK IMBALANCES

- **Expansion** of **global imbalances** in first half of 2000s was linked to outburst of Global Financial Crisis. Eight years later, has **increasing trend** in **imbalances** been corrected?

- Still, **global imbalances** can also characterized from a stock perspective, as divergences in **net foreign asset position** of creditor & debtor countries (“**stock**” **imbalances**)

  - Under this metric, the correction in global disequilibria observed after the crisis was only a **transitory** phenomenon, as afterwards **stock imbalances** continued to **widen**



## STOCK IMBALANCES AND EXTERNAL STABILITY

- In light of this evidence, the **focus** of the **economic debate** has recently shifted from the analysis of current account imbalances to reconsider the **implications that stock imbalances may have for external stability**

  - The **IMF**, in its **World Economic Outlook**, alerts against the **projected widening of stock imbalances** in the next years, which may leave several debtor economies **exposed to market sentiments**

  - The **IMF** 2016 **External Sector Report** suggests the opportunity to **monitor** and ultimately **limit** the **growth of stock positions** of both debtor and creditor countries

  - Several contributions, focused on countries' NFA positions, have recently studied
    - *The role of **foreing debt** in determining **external crises** (Catao & MFerretti, 2014);*
    - *The implications of **large NFA positions** for the ability of an economy to respond to **external shocks** (Forbes et al. 2016);*
    - *How **countries' NFA** lead them to accumulate or lose wealth through **valuation effects** (Benetrix et al., 2016)*

# THIS PAPER

## ARE STOCK IMBALANCES STABILIZING OR DESTABILIZING FOR COUNTRIES' WEALTH ACCUMULATION?

- The aim of this paper is to contribute to the debate on the implications of **stock imbalances** for external stability
- **Main question: Do stock imbalances have a destabilizing impact on countries' accumulation of external wealth?**
  - Do **creditor** economies, due to their positive **stock of net foreign assets**, **keep accumulating** net **external wealth**?
  - Do **debtor** countries, due precisely to their **stock of external debt**, **keep increasing** their net **foreign debt** over time?
  - If this was the case, stock imbalances would lead creditors (debtors) to accumulate (lose) even more wealth in the future, and could therefore trigger **destabilizing dynamics** in the evolution of external wealth

# THIS PAPER

## ARE STOCK IMBALANCES STABILIZING OR DESTABILIZING FOR COUNTRIES' WEALTH ACCUMULATION?

- The aim of this paper is to contribute to the debate on the implications of **stock imbalances** for external stability
- **Main question: Do stock imbalances have a destabilizing impact on countries' accumulation of external wealth?**
- Our **answer** (for short):
  - **Debtor** economies, due to the existing **stock of net debt**, have a tendency to limit current account deficits & to **contain future debt accumulation**
  - **Creditor** countries, instead, due to positive **stock of net foreign assets**, have tendency to run current account surpluses & to **keep accumulating external wealth**
    - ***Do stock imbalances have a destabilizing impact on countries' wealth / debt accumulation? Yes, but only for creditors***
  - This important **asymmetry** between creditor and debtor economies might have relevant **implications for global trade and growth**

# THIS PAPER

## A ROADMAP

Focus on a wide set of advanced and emerging market economies

1. We **inspect** the **evolution of wealth accumulation** over the last three decades, by decomposing it into its **main channels** (CA, trade balance, investment income…)

2. We illustrate how –according to **economic theory**– **stock imbalances** may **affect wealth accumulation** through **each channel**

   - **Economic theory** provides reasons to believe stock imbalances may **boost wealth accumulation in creditors** and **wealth losses in debtors**…
   - …But it also offers **theoretical reasons** to believe the opposite –that stock imbalances help **limit wealth accumulation in creditors** and **wealth losses in debtors**…
   - …So whether stock imbalances have a **stabilizing** or **destabilizing** impact on wealth accumulation is essentially an **empirical question**

3. We address this empirical issue by **testing** the **relevance of theoretical mechanisms** through **panel regressions** of CA, its sub-balances and real exchange rate on a set of fundamental determinants, including countries' stock of **net foreign assets**

# INSPECTING THE EVOLUTION OF EXTERNAL WEALTH

- Use **Balance of Payment data** from 1980 to 2015 for a set of **39 advanced and emerging markets economies**

- We **inspect** the evolution of **wealth accumulation** over the last three decades by decomposing it into its **main channels**:

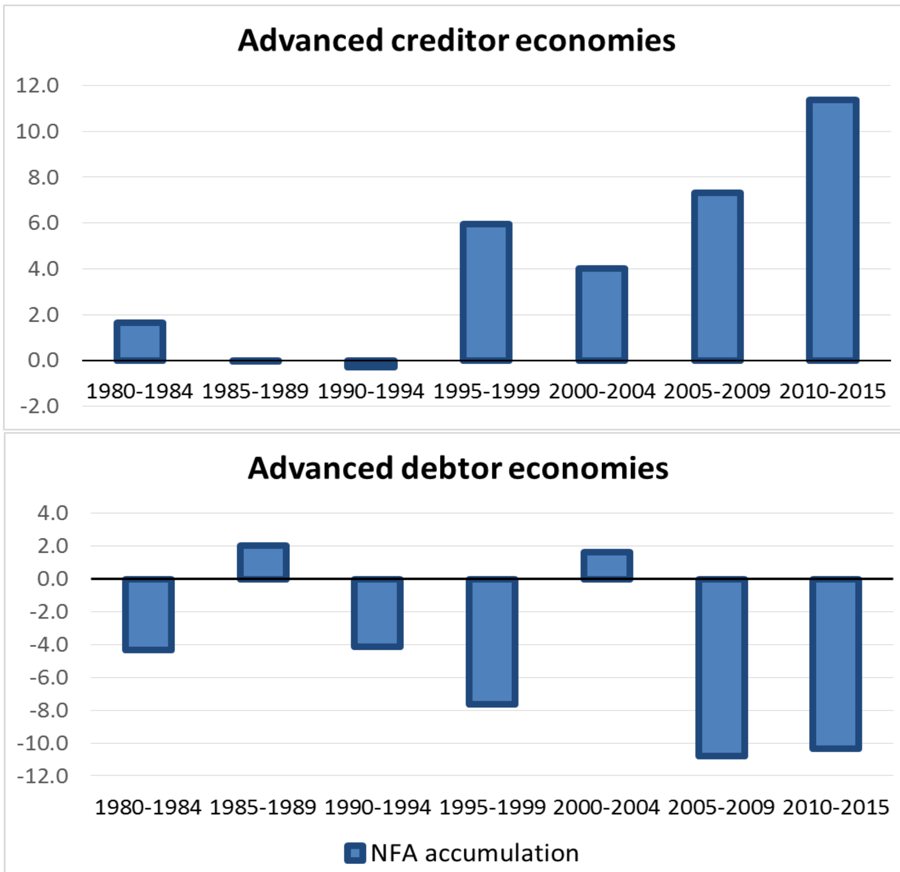
$$nfa_{it} - nfa_{it-1} = -\frac{g_{it}}{1+g_{it}} nfa_{it-1} + ca_{it} + val_{it} + eo$$

- We also decompose **current and capital account flows** into the main sub-balances:

$$ca_{it} = tb_{it} + iib_{it} + res_{it}.$$

## STYLIZED FACTS ON WEALTH ACCUMULATION

1. **Advanced creditors (debtors)** have **accumulated (lost) wealth** at an **increasing pace** in the last two decades



# STYLIZED FACTS ON WEALTH ACCUMULATION

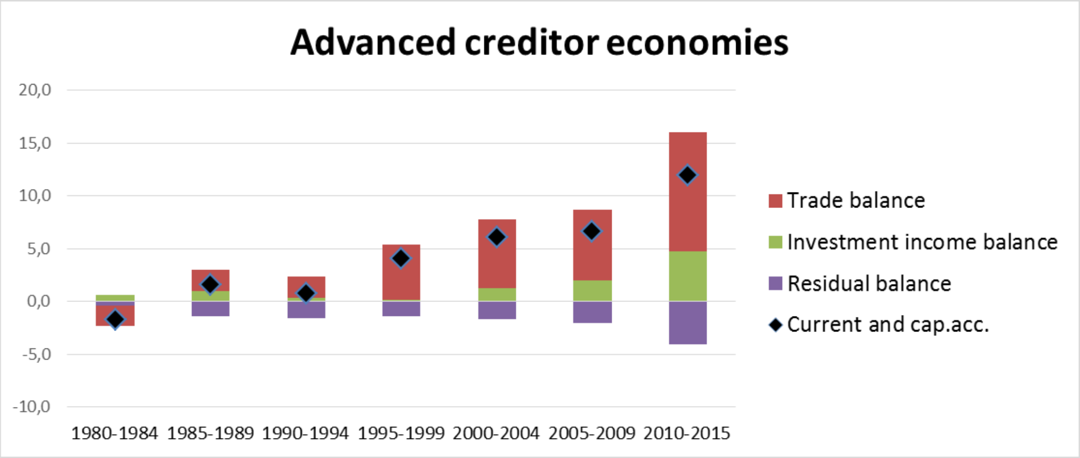
1. **Advanced creditors (debtors)** have **accumulated (lost) wealth** at an **increasing pace** in the last two decades
2. **Emerging debtor** countries **increased external debt** over full horizon but **reversed this trend** in the last 5 years
3. The **majority** of wealth accumulation (loss) occurs **through** the **current and capital account**
4. **Valuation changes** are **sizable** but very **volatile**

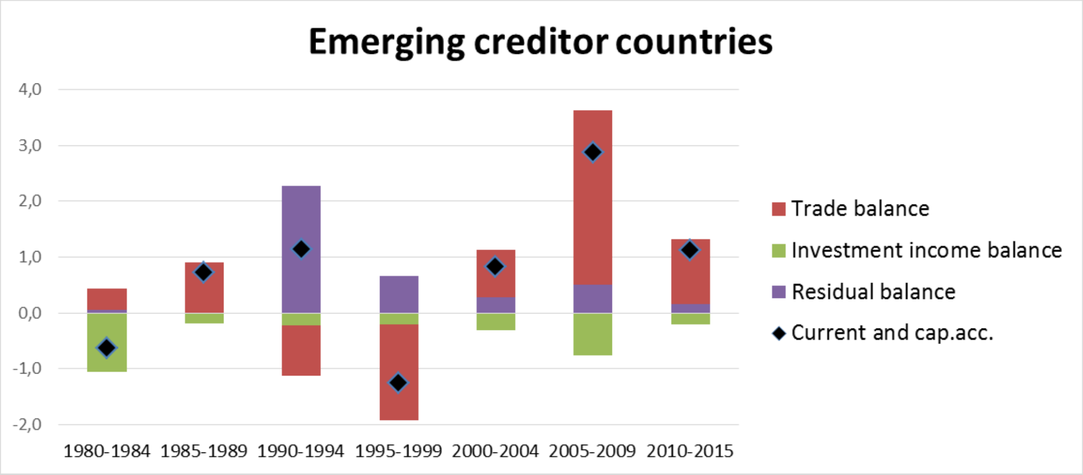
$$nfa_{it} - nfa_{it-1} = -\frac{g_{it}}{1+g_{it}} nfa_{it-1} + ca_{it} + val_{it} + eo$$

# STYLIZED FACTS ON WEALTH ACCUMULATION

5. The **trade balance** is relatively **volatile** and especially **relevant** for **creditor countries**

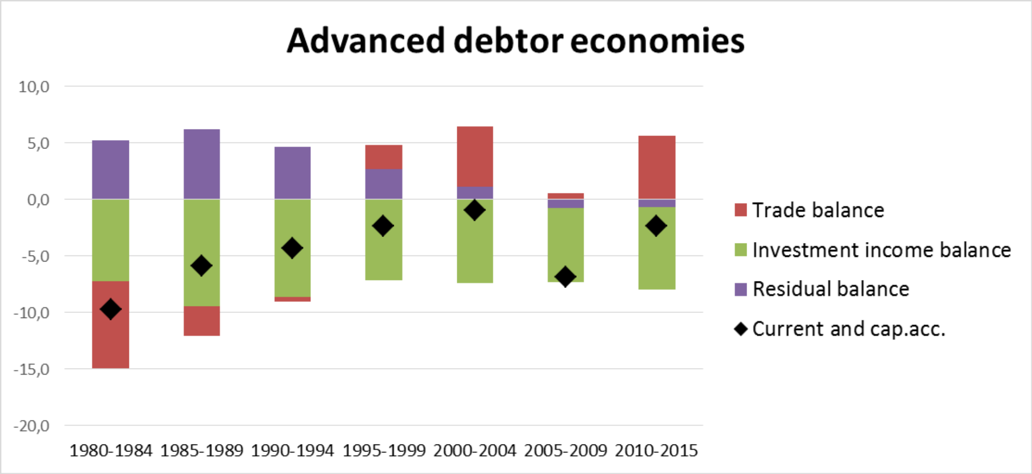
$$ca_{it} = tb_{it} + iib_{it} + res_{it}.$$

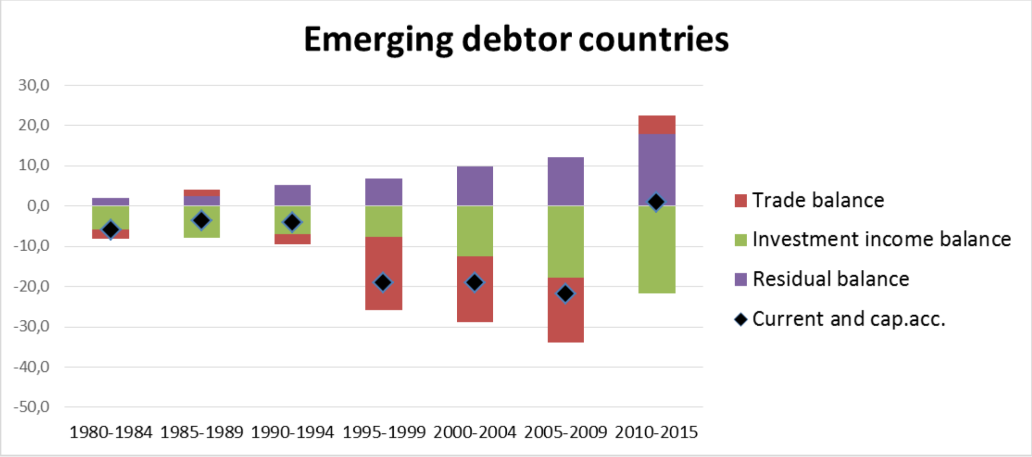


# STYLIZED FACTS ON WEALTH ACCUMULATION

5. The **trade balance** is relatively **volatile** and especially **relevant** for **creditor countries**
6. The **investment income balance** is more **persistent**; it is quantitatively **relevant especially** for **debtor economies**



# THE IMPACT OF STOCKS IMBALANCES ON WEALTH ACCUMULATION: WHAT THEORY SUGGESTS

$$\Delta nfa_{it} = iib_{it} + tb_{it} + val_{it} + (others)$$

**Economic theory suggests stock imbalances (NFA) should have**:

# THE IMPACT OF STOCKS IMBALANCES ON WEALTH ACCUMULATION: WHAT THEORY SUGGESTS

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**Economic theory suggests stock imbalances (NFA) should have**:

➢ A **destabilizing impact** on wealth accumulation through the **investment income balance** (iib), as creditor (debtor) countries should tend to receive more (less) revenues from their foreign assets than they pay on their liabilities

$$iib_{it} = \left[\frac{\widehat{i_{it}^{A}}}{1+g_{it}}\left(\Delta FEER_{it}^{A}\right)^{-1}\right]\cdot nfa_{it-1} + \left[\frac{\widehat{i_{it}^{A}}/\Delta FEER_{it}^{A} - \widehat{i_{it}^{L}}/\Delta FEER_{it}^{L}}{1+g_{it}}\right]\cdot l_{it-1}\,,$$

$$iib_{it} = f(\underbrace{nfa_{it-1}}_{+})$$

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➢ A **stabilizing** impact through the **trade balance** (tb), as **wealth effects** should imply that wealthier, creditor countries will end up consuming and therefore importing more than poorer, debtor economies, thus reducing their trade surpluses

$$tb_{it} = [f.absorption] - f(tot_{it})\left[\left(\frac{i_{it}}{1+g_{it}}\right)\cdot nfa_{it-1} + \left(\frac{i_{it}}{1+g_{it}}\right)\cdot v_{it-1} + h_{it}\right]$$

$$tb_{it} = f(\underbrace{nfa_{it-1}}_{-})$$

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- A **destabilizing** impact through the **trade balance** in response to **cyclical increases in income** (positive ygap), to which debtors react by running higher deficits than creditors (Bussiere, Chortareas & Driver, 2003)
  - This may be due either to **frictions in portfolio reallocations** (Kraay & Ventura, 2000)
  - Or to stricter **credit constraints** in debtor economies (Bussiere et al., 2003)

## THE IMPACT OF STOCKS IMBALANCES ON WEALTH ACCUMULATION: WHAT THEORY SUGGESTS

$$\Delta nfa_{it} = iib_{it} + tb_{it} + val_{it} + (others)$$

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- A **destabilizing** impact through the **trade balance** in response to **cyclical increases in income** (positive ygap), to which debtors react by running higher deficits than creditors
- A **stabilizing** impact through the **trade balance** in response to **cyclical decreases in income** (negative ygap), which generate higher surpluses in debtor than in creditor countries

$$tb_{it} = f\left(\underbrace{nfa_{it-1} * pos\_cyclical_{shocks}}_{+}; \underbrace{nfa_{it-1} * neg\_cyclical_{shocks}}_{-}\right)$$

# THE IMPACT OF STOCKS IMBALANCES ON WEALTH ACCUMULATION: WHAT THEORY SUGGESTS

$$\Delta nfa_{it} = iib_{it} + tb_{it} + val_{it} + (others)$$

**Additional indirect impacts of NFA through exchange rate fluctuations:**

- Economic theory suggests **higher** (lower) **NFA** position should correspond –at least in long run– to a **more appreciated** (depreciated) **real exchange rate** (e.g., Lane & MFerretti)

- Creditors' (debtors') **more appreciated** (depreciated) **exchange rate**, in turn, should affect wealth accumulation by:

  - **Reducing trade surpluses** (deficits) (**stabilizing** impact)
  - Changing **returns on foreign assets and liabilities in local currency** (impact on IIB may be stabilizing or destabilizing depending on currency composition of NFA)
  - Generating **valuation changes** on gross assets and liabilities (stabilizing / destabilizing impact on wealth accumulation depending on currency composition)

# THE IMPACT OF STOCKS IMBALANCES ON WEALTH ACCUMULATION: WHAT THEORY SUGGESTS

**Overall impact of stock imbalances on wealth accumulation:**

$$\Delta nfa_t = tb_t\left(\underbrace{nfa_{t-1}}_{-};\underbrace{nfa_{t-1} * pos\_cyclical_{shock}}_{+};\underbrace{nfa_{t-1} * neg\_cyclical_{shock}}_{-};\underbrace{reer_t\left(\underbrace{nfa_{t-1}}_{+}\right)}_{-}\right)$$

$$+\, iib_t\left(\underbrace{nfa_{t-1}}_{+};\underbrace{\Delta feer_t\left(\underbrace{\Delta nfa_{t-1}}_{+}\right)}_{?}\right)$$

$$+\, val_t\left(\underbrace{\Delta feer_t\left(\underbrace{\Delta nfa_{t-1}}_{+}\right)}_{?}\right)$$

# THE IMPACT OF STOCKS IMBALANCES ON WEALTH ACCUMULATION: WHAT THEORY SUGGESTS

**Overall impact of stock imbalances on wealth accumulation:**

wealth effects

cyclical income increases

cyclical decreases

REER

$$\Delta nfa_t = tb_t\left(\underbrace{nfa_{t-1}}_{-}; \underbrace{nfa_{t-1} * pos\_cyclical_{shock}}_{+}; \underbrace{nfa_{t-1} * neg\_cyclical_{shock}}_{-}; \underbrace{reer_t\left(\underbrace{nfa_{t-1}}_{+}\right)}_{-}\right)$$

investment income

$$+ iib_t\left(\underbrace{nfa_{t-1}}_{+}; \underbrace{\Delta feer_t\left(\underbrace{\Delta nfa_{t-1}}_{+}\right)}_{?}\right)$$

Financial Exchange Rate

$$+ val_t\left(\underbrace{\Delta feer_t\left(\underbrace{\Delta nfa_{t-1}}_{+}\right)}_{?}\right)$$

## THE IMPACT OF STOCK IMBALANCES ON THE CA: EMPIRICAL TESTS

- We employ **panel regressions** of **CA** (over GDP) on its determinants, including the **stock of NFA**, which allow to estimate the impact of stock imbalances on CA **controlling** for a set of other possible determinants of external flows (e.g., **IMF External Balance Assessment**)

$$
\begin{aligned}
ca_{it} = {} & \alpha + \beta_1 \cdot nfa_{it-1} + \beta_2 \cdot nfa_{it-1} \cdot (creditor_{dum}) + \beta_3 \cdot nfa_{it-1} \cdot (ygap_t) \\
& + \beta_4 \cdot nfa_{it-1} \cdot (ygapneg_{it}) + \beta_5 \cdot nfa_{it-1} \cdot (ygap_t) \cdot (creditor_{dum}) \\
& + \beta_6 \cdot nfa_{it-1} \cdot (ygapneg_{it}) \cdot (creditor_{dum}) \\
& + \gamma_1 \cdot reer_{it-1} + \gamma_2 \cdot \Delta feer_{it-1} + (others)_{it} + \varepsilon_t .
\end{aligned}
$$

- Distinguish between **creditor** and **debtor** countries
- Study how NFA influence CA in response to **cyclical income shocks** (ygap), distinguishing btw expansions & recessions and btw creditors & debtors
- **Exchange rates** only appear lagged. Therefore, **NFA coefficient** estimates both the direct impact of NFA on CA (through **wealth effects** and **investment income**) and the **indirect** one through effect they have on **contemporaneous exchange rates**

# THE IMPACT OF STOCK IMBALANCES ON THE CA: EMPIRICAL TESTS

**Table 1. Current account regressions**

| | Basic specif. | Diff. btw. creditors & debtors | Valuation effects | Cyclical shocks |
|---|---|---|---|---|
| Net foreign assets (L) | 0.003 (0.005) | -0.019** (0.008) | - | -0.031*** (0.008) |
| Net foreign assets creditor countries (L) | - | 0.062*** (0.014) | - | 0.078*** (0.015) |
| Net foreign assets highly | - | 0.012** (0.005) | 0.012** (0.005) | 0.010** (0.005) |
| | | | -0.017* (0.010) | - |
| | | | -0.023** (0.009) | - |
| | - | - | 0.065*** (0.014) | - |
| | | | 049*** (0.017) | - |
| | | | - | 0.596*** (0.157) |
| | - | - | - | -0.791*** (0.210) |
| Net foreign assets * output gap creditors (L) | - | - | - | -1.39** (0.593) |
| Net foreign assets * negative output gap creditors (L) | - | - | - | 1.60* (0.886) |
| Constant | -0.046*** (0.008) | -0.049*** (0.008) | -0.048*** (0.008) | -0.052** (0.008) |
| Obs. | 1164 | 1164 | 1164 | 1164 |
| $R^2$ | 0.6591 | 0.6758 | 0.6796 | 0.6852 |

In **debtors, stock of net debt limits CA deficits** and **contains future debt accumulation**

In **creditors, positive stock of NFA** increases **CA surpluses** and **boosts future wealth accumulation**

# THE IMPACT OF STOCK IMBALANCES ON THE CA: EMPIRICAL TESTS

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Stabilizing impact of debt **relatively less pronounced** in highly-indebted countries (NFA<-80%)

Following **positive cyclical income shocks**, the higher net debt the **higher the CA deficit debtors** tend to run

# THE IMPACT OF STOCK IMBALANCES ON THE CA: EMPIRICAL TESTS

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Due to their stock of NFA:

- **Debtors reduce** their **CA deficit** by **0.6-0.9**% GDP each year
- **Creditors increase** their **CA surplus** by **1.3**% GDP each year

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## WHERE DO ASYMMETRIES COME FROM? IIB OR TB?

### Table 2. Investment income balance and trade balance regressions

| | Investment income balance | Trade balance |
|---|---|---|
| Net foreign assets (L) | 0.024*** (0.004) | -0.043*** (0.008) |
| Net foreign assets creditor countries (L) | 0.001 (0.009) | 0.072*** (0.015) |
| | 0.002 (0.003) | 0.005 (0.005) |
| | | 0.754*** (0.197) |
| | | -1.07*** (0.288) |
| | | -0.640 (0.464) |
| | | 0.847 (0.665) |
| Constant | -0.007** (0.003) | -0.046*** (0.007) |
| Obs. | 1164 | 1261 |
| $R^2$ | 0.8268 | 0.7621 |

**Creditors receive positive investment income flows**, **debtors** make **net** investment **payments to foreigners**

⇨ **stock imbalances have destabilizing impact on wealth acc. through IIB**

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**Due to stock of net debt, debtors consume and import less**

**⇨ stocks limit debt accumulation**

**In spite of positive stock of NFA, creditors do not consume and import more**

**⇨ stocks do NOT limit wealth accumulation**

Valuation

High-debt

# DO HIGHER NFA APPRECIATE THE REAL EXCHANGE RATE?

- Why is it that a **higher stock of NFA** does **not make creditors import more**?
  - **NFA coefficient** captures both the direct impact of NFA on the TB (**wealth effects**) and the indirect impact due to the effect that NFA may have on the level of the **REER**
  - So **why do creditor countries not import more** for a **higher stock of NFA**?
    1. *Because of **low marginal propensity** to consume out of external wealth? Or a higher expenditure does not translate into more imports (**high home bias**)? (**weak wealth effect on imports**)*
    2. *Or because a **higher NFA stock** does **not appreciate creditors' REER** and does **not** make their **imports** relatively **cheaper**?*

- We test for this second possibility by running **panel regressions of the REER** on its determinants, including NFA positions (in spirit of **IMF External Balance Assessment**)
  - We also use these regressions to study whether **impact of NFA on REER** might have been **reduced for countries that joined the Euro Zone**, as, in presence of frictions, EZ members' REER might move with the NFA position of the currency area as a whole

$$reer_{it} = \alpha + \beta_1 nfa_{it-1} + \beta_2 nfa_{it-1}(creditor_{dum}) + \beta_3 nfa_{it-1}(EZmember_{dum}) + \beta_4 nfa_{it-1}(EZmember_{dum})(creditor_{dum}) + (others)_{it} + \varepsilon_{it}.$$

# DO HIGHER NFA APPRECIATE THE REAL EXCHANGE RATE?

**Table 3. Real effective exchange rate regressions**

| | Basic spec. | Diff. btw creditors & debtors | Euro Zone member dummy |
|---|---|---|---|
| Net foreign assets (L) | 0.108*** (0.029) | -0.065** (0.032) | 0.028 (0.045) |
| Net foreign assets creditor countries (L) | - | 0.414*** (0.056) | 0.323*** (0.069) |
| NFA *EuroMember (L) | - | - | -0.161*** (0.047) |
| NFA creditors* EuroMember (L) | - | - | -0.123 (0.099) |
| Obs. | 977 | 977 | 977 |
| Country fixed effects | No | No | No |
| $R^2$ | 0.8277 | 0.8434 | 0.8488 |

- **Higher stock** of **NFA appreciates REER of creditor** countries, which should make their **import cheaper**, tend to **increase their imports flows** and to contain their trade surpluses, with a **stabilizing** impact on their **trade balance**

# DO HIGHER NFA APPRECIATE THE REAL EXCHANGE RATE?

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| NFA creditors* EuroMember (L) | - | - | -0.123 (0.099) |
| Obs. | 977 | 977 | 977 |
| Country fixed effects | No | No | No |
| $R^2$ | 0.8277 | 0.8434 | 0.8488 |

- **Higher stock** of **NFA appreciates REER of creditor** countries, which should make their **import cheaper**, tend to **increase their imports flows** and to contain their trade surpluses, with a **stabilizing** impact on their **trade balance**
- This stabilizing mechanisms is **hampered for EZ members**, but this **does not explain** the **asymmetry** between **creditors and debtors**

# DO HIGHER NFA APPRECIATE THE REAL EXCHANGE RATE?

## Table 3. Real effective exchange rate regressions

| | Basic spec. | Diff. btw creditors & debtors | Euro Zone member dummy |
|---|---|---|---|
| Net foreign assets (L) | 0.108*** (0.029) | -0.065** (0.032) | 0.028 (0.045) |
| Net foreign assets creditor countries (L) | - | 0.414*** (0.056) | 0.323*** (0.069) |
| NFA *EuroMember (L) | - | - | -0.161*** (0.047) |
| NFA creditors* EuroMember (L) | - | - | -0.123 (0.099) |
| Obs. | 977 | 977 | 977 |
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Fixed effects

- **Higher stock** of **NFA appreciates REER of creditor** countries, which should make their **import cheaper**, tend to **increase their imports flows** and to contain their trade surpluses, with a **stabilizing** impact on their **trade balance**
- This stabilizing mechanisms is **hampered for EZ members**, but this **does not explain** the **asymmetry** between **creditors and debtors**
- Stabilizing impact of REER **not robust to FE** estimation: only a **long run** phenomenon? Still, **REER relatively more stabilizing for creditors**

# DO HIGHER NFA APPRECIATE THE REAL EXCHANGE RATE?

- So **why do creditor countries not import more** for a **higher stock of NFA**?
  - *Because of **low marginal propensity** to consume out of external wealth? Or a higher expenditure does not translate into more imports (**high home bias**)? (**weak wealth effect on imports**)*
  - *Or because a **higher NFA stock** does **not appreciate creditors' REER** and does **not** make their **imports** relatively **cheaper**?*
    - **A: No, their REER actually appreciates (at least in the long-run) for a higher stock of NFA, making creditors' imports relatively cheaper**

- So our **preliminary results** suggest that the reason why **creditors' stock of net foreign assets do not boost their imports** might be either a **low marginal propensity to consume** out of their external wealth or other characteristics that do not make their imports react much to an increased expenditure (e.g., a **high propensity to consume home-produced goods**)

# CONCLUDING

- After the recent crisis, a reduction was observed in global current account (flow) imbalances. Still, global disequilibria as measured in terms of countries' net foreign assets (**stock imbalances**) **kept increasing**

- **This paper studies whether stock imbalances have a stabilizing or destabilizing impact on countries' accumulation of external wealth**

- We find that there exists a **notable asymmetry** between **creditor** and **debtor** economies in the impact that stock imbalances have on current account flows

- **Creditor** countries, due to NFA, have a tendency to **keep accumulating** external wealth
  - Their **low marginal propensity to consume** does not make their imports increase with external wealth, and cannot compensate for the increased investment income they receive on NFA

- **Debtors'** negative NFA, instead, tends to **limit** future wealth losses
  - Debtors tend to **pay more revenues on their stock of debt**, but also to **consume and import less** due to a negative wealth effect, which halts to some extent the accumulation of external debt over time

## CONCLUDING

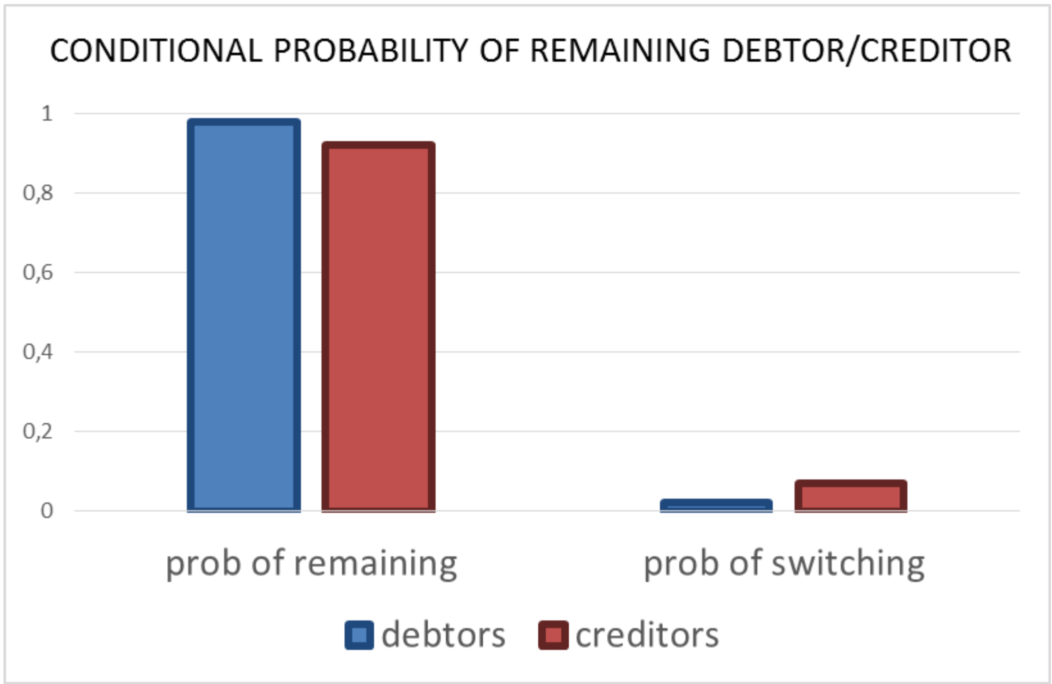
- **Asymmetry** btw creditors & debtors has **implications** for **global trade & growth**:
  - As **debtors** remain most **vulnerable** to market sentiment, corrections in their disequilibria are called for, usually by generating **surpluses** in their current account
  - Still, if **creditors** do not react by increasing their demand & imports (which constitute debtor economies' exports), the adjustment can only go through a **reduction in debtors'** imports and, ultimately, in **aggregate demand**
  - This kind of **adjustment**, while effective in limiting risks stemming from excessively negative current account and debtor positions, would likely imply a **slowdown** in both global **trade** and **GDP** growth, and may eventually end up **hampering global recovery**

- **Work in progress**:
  - ***Highly preliminary*** *version of our paper does not fully exploit richness of our dataset*
    - **Heterogeneity between Advanced Economies and Emerging Markets?**
    - **Is currency composition of assets and liabilities a relevant driver of asymmetries in wealth accumulation for EMEs?**
  - *Delve deeper into* ***drivers of asymmetries****?*

# THANKS FOR YOUR ATTENTION

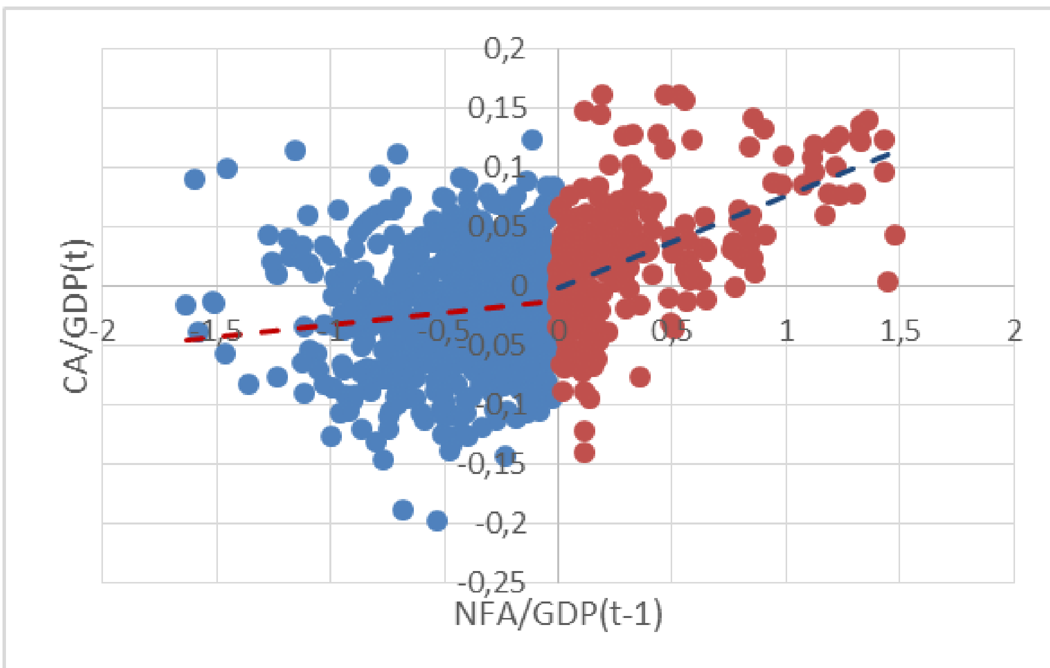
# STYLIZED FACTS ON WEALTH ACCUMULATION

- **Creditor** and **debtor positions** are **highly persistent**



# SOME (NAÏVE) SIGNS OF ASYMMETRIES

- **Unconditional relationship between NFA and next year's CA**:
  - In **creditors higher stock imbalances** (a higher positive stock of NFA) are **often associated with a higher CA surplus in the following year**
  - The **unconditional** association between **stock of net debt and CA deficits is less strong for debtors** –and the difference in the slopes is statistically significant



# SOME (NAÏVE) SIGNS OF ASYMMETRIES

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- Might stock imbalances be **less destabilizing for debtor than for creditor** countries?

- **When testing empirically whether the overall impact of NFA on CA is stabilizing or destabilizing, we will also test whether this effect is different across creditor & debtor economies**

# THE IMPACT OF STOCK IMBALANCES ON THE CA: THE EMPIRICAL FRAMEWORK (I)

**Reduced specification** (Diff. btw creditors & debtors)

$$ca_{it} = \alpha + \beta_1 \cdot nfa_{it-1} + \beta_2 \cdot nfa_{it-1} \cdot (creditor_{dum}) +$$
$$+\gamma_1 \cdot reer_{it-1} + \gamma_2 \cdot \Delta feer_{it-1} + (others)_{it} + \varepsilon_t.$$

- Assumes **NFA do not change the impact of cyclical shocks** on the CA
- **NFA coefficients** capture the **overall impact** of stock imbalances on the CA of different groups of countries (assuming cyclical shocks don't make a difference)
- What does overall impact include? **Exchange rates** only appear lagged. Then NFA coefficients estimate both the **direct impact** of NFA ont he CA (through **wealth effects** and **investment income**) and the **indirect one** through the effect they have on **contemporaneous exchange rates**

# THE IMPACT OF STOCK IMBALANCES ON THE CA: THE EMPIRICAL FRAMEWORK (II)

**Extended specification** (Cyclical shocks)

$$
\begin{aligned}
ca_{it} = \alpha &+ \beta_1 \cdot nfa_{it-1} + \beta_2 \cdot nfa_{it-1} \cdot (creditor_{dum}) + \beta_3 \cdot nfa_{it-1} \cdot (ygap_t) \\
&+ \beta_4 \cdot nfa_{it-1} \cdot (ygapneg_{it}) + \beta_5 \cdot nfa_{it-1} \cdot (ygap_t) \cdot (creditor_{dum}) \\
&+ \beta_6 \cdot nfa_{it-1} \cdot (ygapneg_{it}) \cdot (creditor_{dum}) \\
&+ \gamma_1 \cdot reer_{it-1} + \gamma_2 \cdot \Delta feer_{it-1} + (others)_{it} + \varepsilon_t.
\end{aligned}
$$

- To study whether NFA **change the impact of cyclical shocks** on the CA, NFA also appear **interacted with the output gap** (ygap), distinguishing btw recessions (ygapneg) and expansions and btw creditors and debtors
- **Ygap also included as a separate regressor.** Then interacted coefficients represent **differential impact** of ygap on the CA depending on a country's NFA (wrt country with zero net external wealth)
- **Coefficient of NFA alone** represents **impact of NFA on the CA at closed ygap** (**wealth effects**, **investment income** and **exchange rates** at closed ygap)

# PROPENSITY TO CONSUME OUT OF VALUATION EFFECTS

## Trade balance regressions

| | Basic specif. (1) | Diff. btw. creditors & debtors (2) | Valuation effects (3) | Cyclical shocks (4) | Cyclical shocks (exp. vs rec.) (5) |
|---|---|---|---|---|---|
| Net foreign assets (L) | -0.015*** (0.006) | -0.035*** (0.008) | - | -0.035*** (0.008) | -0.043*** (0.008) |
| Net foreign assets creditor countries (L) | - | 0.065*** (0.015) | - | 0.066*** (0.014) | 0.072*** (0.015) |
| Net foreign assets highly indebted countries (NFA/GDP < -80%) (L) | - | 0.006 (0.005) | 0.006 (0.004) | 0.008 (0.004) | 0.005 (0.005) |
| Net foreign assets. CA accumulation (L) | - | - | -0.033*** (0.009) | - | - |
| Net foreign assets. Valuation effects (L) | - | - | -0.034*** (0.010) | - | - |
| Net foreign assets creditor countries. CA accumulation (L) | - | - | 0.071*** (0.014) | - | - |
| Net foreign assets creditor countries. Valuation effects (L) | - | - | 0.050*** (0.019) | - | - |
| Net foreign assets * output gap (L) | - | - | - | 0.083 (0.105) | 0.754*** (0.197) |
| Net foreign assets * negative output gap (L) | - | - | - | - | -1.07*** (0.288) |
| Net foreign assets * output gap creditors (L) | | | | | -0.640 (0.464) |
| Net foreign assets * negative output gap creditors (L) | | | | | 0.847 (0.665) |
| Real effective trade weighted exchange rate (L) | -0.009 (0.006) | -0.007 (0.006) | -0.007 (0.006) | 0.002 (0.006) | 0.001 (0.006) |
| Constant | -0.047*** (0.007) | -0.047*** (0.007) | -0.047*** (0.007) | -0.046*** (0.007) | -0.046*** (0.007) |
| Obs. | 1261 | 1261 | 1261 | 1261 | 1261 |
| $R^2$ | 0.7204 | 0.7341 | 0.7355 | 0.7593 | 0.7621 |

# Trade balance and investment income balance regressions

| | Trade balance | Trade balance w/ cyclical shocks | Investment income balance |
|---|---|---|---|
| Net foreign assets (L) | -0.035*** (0.008) | -0.043*** (0.008) | 0.024*** (0.004) |
| Net foreign assets creditor countries (L) | 0.065*** (0.015) | 0.072*** (0.015) | 0.001 (0.009) |
| Net foreign assets highly indebted countries (NFA/GDP < -80%) (L) | 0.006 (0.005) | 0.005 (0.005) | 0.002 (0.003) |
| Net foreign assets * output gap (L) | - | 0.754*** (0.197) | - |
| Net foreign assets * negative output gap (L) | - | -1.07*** (0.288) | - |
| Net foreign assets * output gap creditors (L) | - | -0.640 (0.464) | - |
| Net foreign assets * negative output gap creditors (L) | - | 0.847 (0.665) | - |
| Real effective trade weighted exchange rate (L) | -0.007 (0.006) | 0.001 (0.006) | - |
| Constant | -0.047*** (0.007) | -0.046*** (0.007) | -0.007** (0.003) |
| Obs. | 1261 | 1261 | 1164 |
| $R^2$ | 0.7341 | 0.7621 | 0.8268 |

# REAL EXCHANGE RATE REGRESSIONS WITH FIXED EFFECTS

## Real Exchange Rate regressions, fixed effects

| | Basic spec. | Diff. btw cred. & deb. | Euro Zone member dummy |
|---|---|---|---|
| **Cons.** | -1.551*** (0.153) | -1.527*** (0.156) | -1.591*** (0.155) |
| **Net foreign assets (L)** | -0.161*** (0.029) | -0.176*** (0.038) | -0.312*** (0.0436) |
| **Net foreign assets creditor countries (L)** | - | 0.055 (0.071) | 0.172** (0.084) |
| **NFA *EuroMember (L)** | - | - | 0.231*** (0.048) |
| **NFA creditors* EuroMember (L)** | - | - | -0.123 (0.114) |
| **Obs.** | 977 | 977 | 977 |
| **$R^2$** | 0.9396 | 0.9397 | 0.9427 |