

GLOBAL IMBALANCES FROM A STOCK PERSPECTIVE

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14th EMERGING MARKET WORKSHOP

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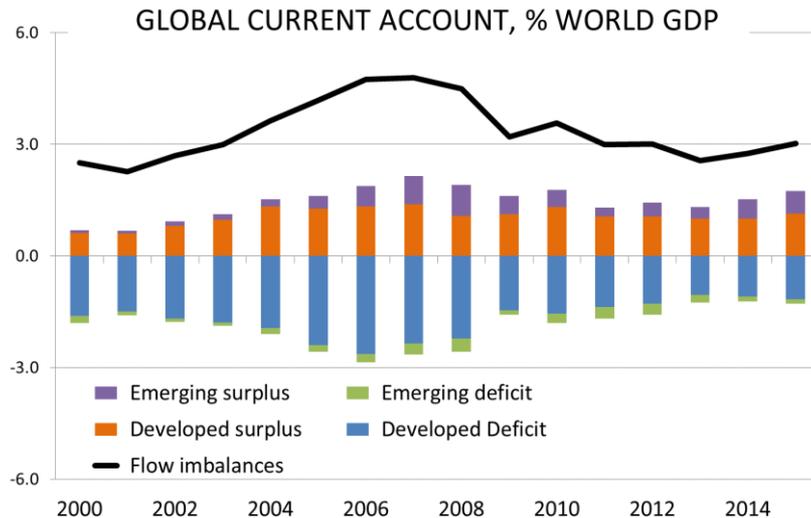
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GLOBAL DISEQUILIBRIA: FLOW VS STOCK IMBALANCES



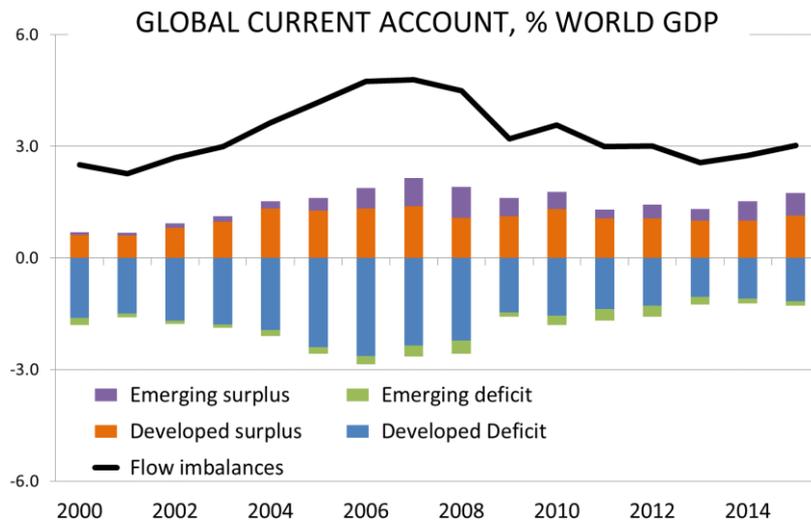
- **Expansion of global imbalances** in first half of 2000s was linked to outburst of Global Financial Crisis. Eight years later, has **increasing trend in imbalances** been corrected?
- **Global imbalances** are traditionally characterized as divergences in the **current account flows** of surplus & 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



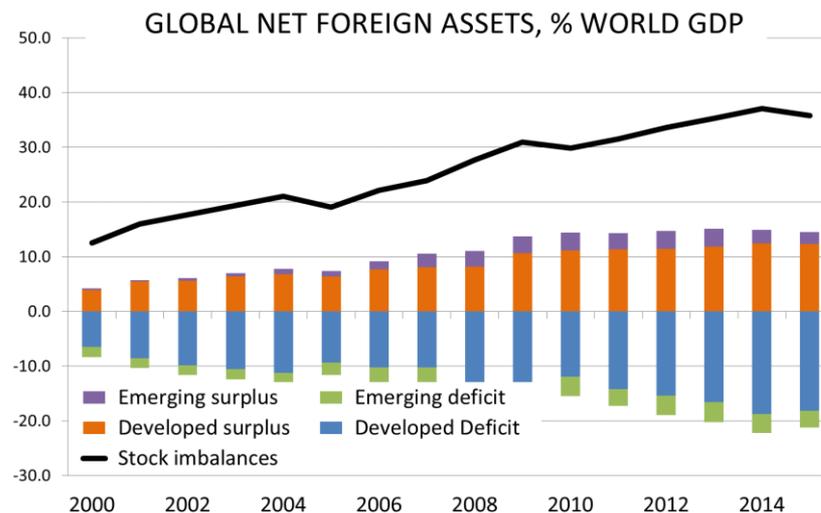
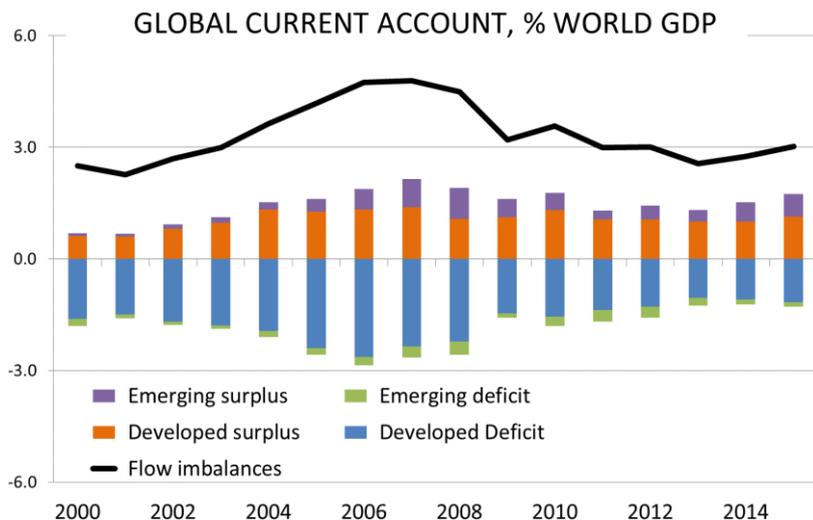
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GLOBAL DISEQUILIBRIA: FLOW VS STOCK IMBALANCES



- **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?
- Still, **global imbalances** can also be 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 have recently studied
 - *The role of **foreign 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

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- 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**:

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

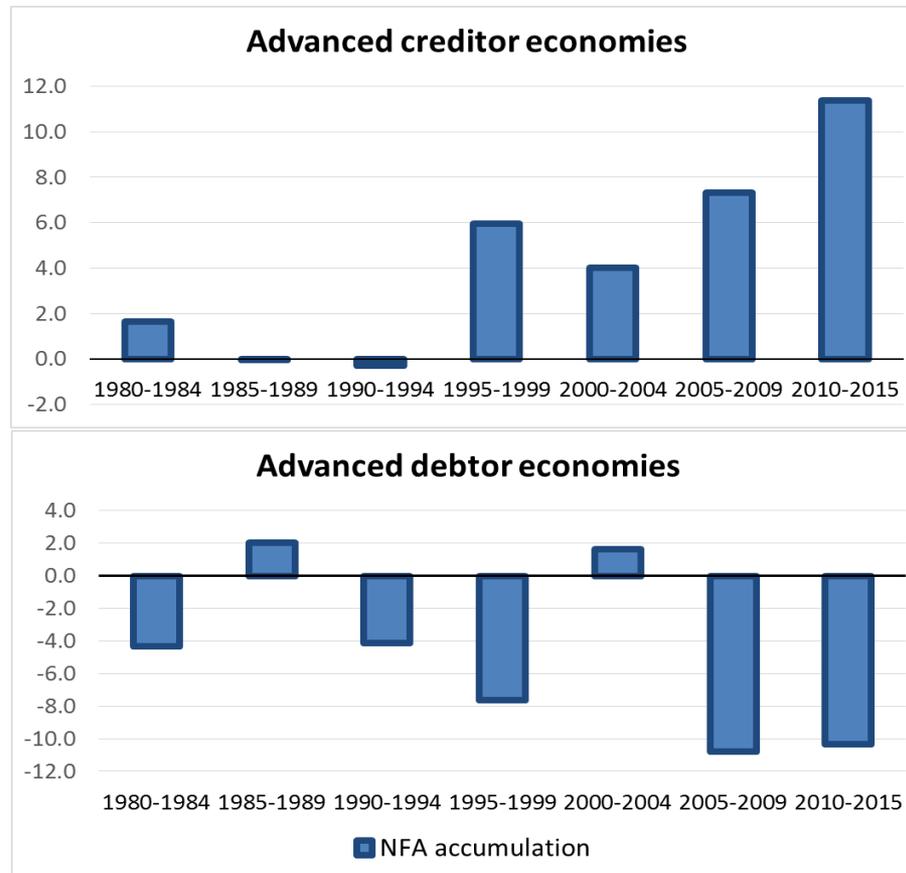
- We also decompose **current and capital account flows** into the main sub-balances:

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

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

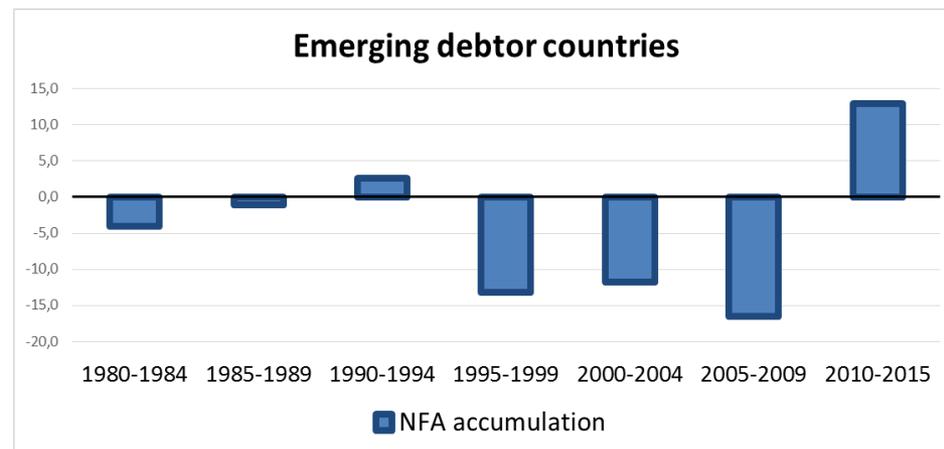
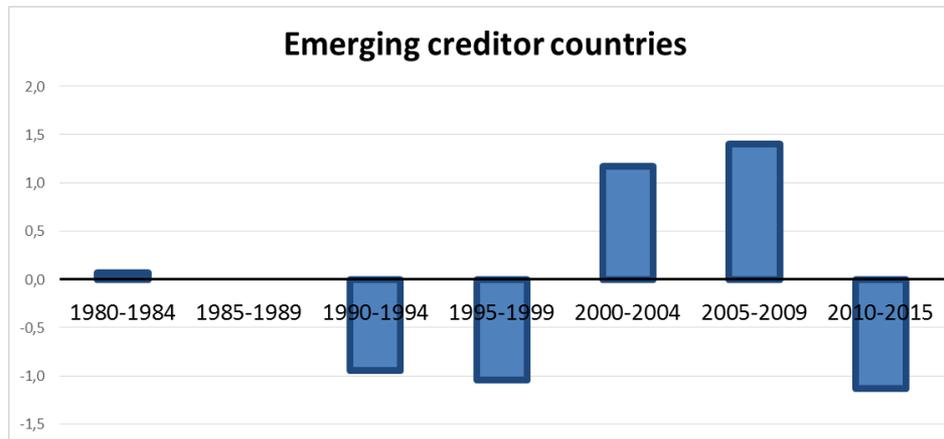


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STYLIZED FACTS ON WEALTH ACCUMULATION



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**



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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**

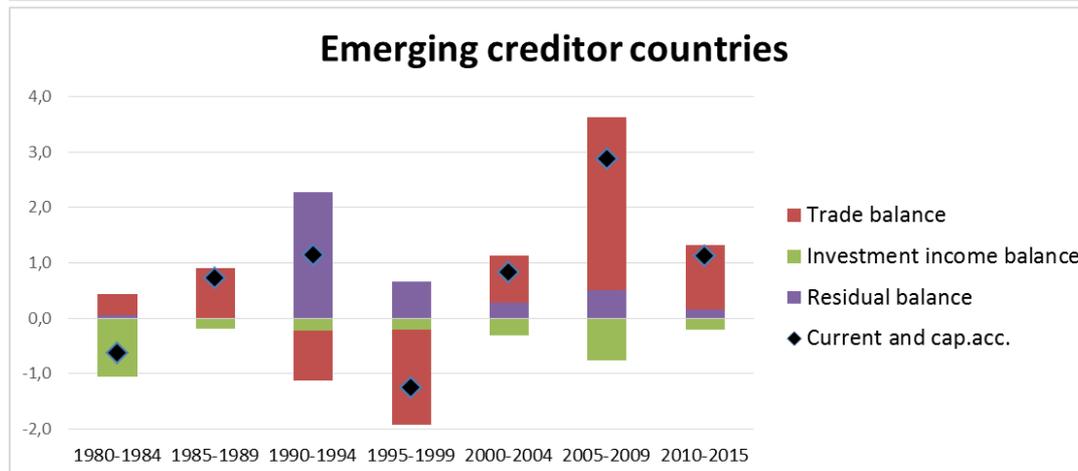
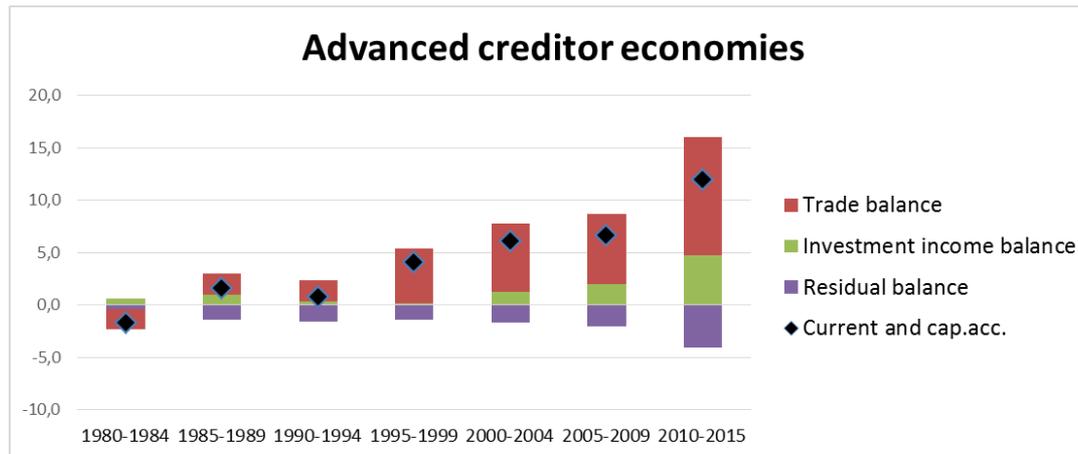
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STYLIZED FACTS ON WEALTH ACCUMULATION



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

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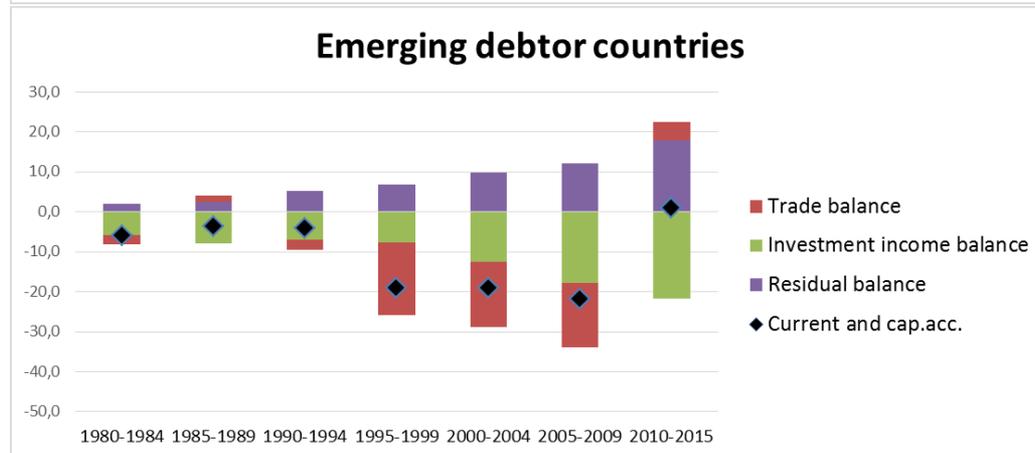
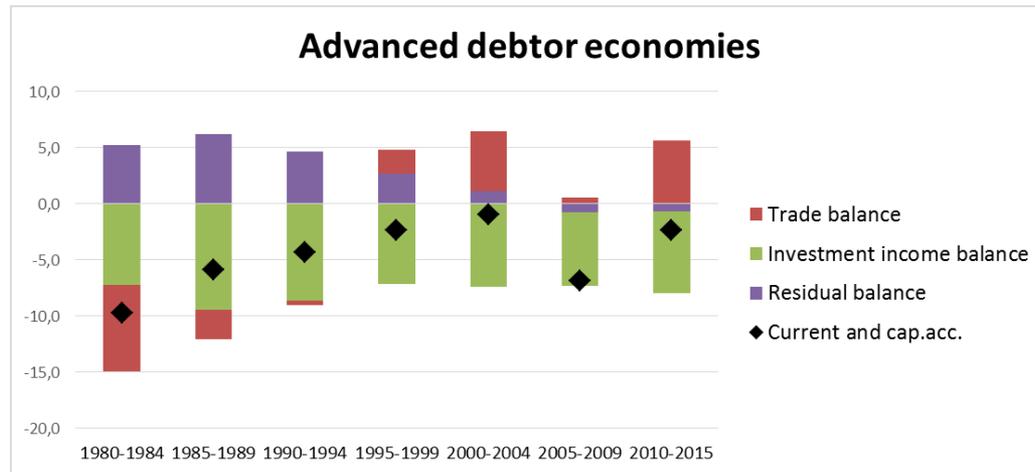


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STYLIZED FACTS ON WEALTH ACCUMULATION



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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- 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

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

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

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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 **transitory income shocks**, to which creditors tend to respond running surpluses and debtors deficits
 - 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)

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

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 & M Ferretti)

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- 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 & M Ferretti)
- 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 STOCK IMBALANCES ON WEALTH ACCUMULATION: WHAT THEORY SUGGESTS



Overall impact of stock imbalances on wealth accumulation:

$$\begin{aligned}
 \Delta nfa_{it} = & \underbrace{tb_{it}} \left(\underbrace{nfa_{it-1}}_{-}; \underbrace{nfa_{it-1} * temporary_{shocks}}_{+}; \underbrace{reer_{it} \left(\underbrace{nfa_{it-1}}_{+} \right)}_{-} \right) \\
 & + \underbrace{iib_{it}} \left(\underbrace{nfa_{it-1}}_{+}; \underbrace{\Delta feer_{it} \left(\underbrace{\Delta nfa_{it-1}}_{+} \right)}_{?} \right) \\
 & + \underbrace{val_{it}} \left(\underbrace{\Delta feer_{it} \left(\underbrace{\Delta nfa_{it-1}}_{+} \right)}_{?} \right)
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THE IMPACT OF STOCKS IMBALANCES ON WEALTH ACCUMULATION: WHAT THEORY SUGGESTS



Overall impact of stock imbalances on wealth accumulation:

$$\begin{aligned}
 \Delta nfa_{it} = & \underbrace{tb_{it}}_{\text{investment income}} \left(\underbrace{nfa_{it-1}}_{-}; \underbrace{nfa_{it-1} * temporary_{shocks}}_{+}; \underbrace{reer_{it} \left(\underbrace{nfa_{it-1}}_{+} \right)}_{-} \right) \\
 & + iib_{it} \left(\underbrace{nfa_{it-1}}_{+}; \underbrace{\Delta feer_{it} \left(\underbrace{\Delta nfa_{it-1}}_{+} \right)}_{?} \right) \leftarrow \text{Financial Exchange Rate} \\
 & + val_{it} \left(\underbrace{\Delta feer_{it} \left(\underbrace{\Delta nfa_{it-1}}_{+} \right)}_{?} \right)
 \end{aligned}$$

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Financial Exchange Rate

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 \end{aligned}$$

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**)

$$ca_{it} = \alpha + \beta_1 \cdot nfa_{it-1} + \beta_2 \cdot nfa_{it-1} \cdot (creditor_{dum}) + \beta_3 \cdot nfa_{it-1} \cdot (ygap_{it}) + \beta_4 \cdot nfa_{it-1} \cdot (ygap_{pos_{it}}) + \gamma_1 \cdot reer_{it-1} + \gamma_2 \cdot \Delta feer_{it-1} + (others)_{it}$$

- Distinguish between **creditor** and **debtor** countries
- Study how NFA influence the CA in response to **temporary income shocks** (ygap), distinguishing between expansions and recessions
- **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 spec.	Diff. btw creditors & debtors	Valuation effects	Temporary shocks
Net foreign assets (L)	0.016** (0.006)	-0.015 (0.009)	-	-0.024*** (0.009)
Net foreign assets creditor countries (L)	-	0.052*** (0.015)	-	0.057*** (0.016)
Net foreign assets. CA accumulation (L)	-	-	-0.011 (0.011)	-
Net foreign assets. Valuation effects (L)	-	-	-0.018* (0.011)	-
Net foreign assets creditor countries. CA accumulation (L)	-	-	0.055*** (0.015)	-
Net foreign assets creditor countries. Valuation effects (L)	-	-	0.040** (0.018)	-
Net foreign assets * output gap (L)	-	-	-	-0.437 (0.309)
Net foreign assets * positive output gap (L)	-	-	-	1.351*** (0.332)
Obs.	1164	1164	1164	1164
Country fixed effects	No	Yes	Yes	Yes
R ²	0.3872	0.6432	0.6472	0.6524

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Country fixed effects	No	Yes	Yes	Yes
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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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After a temporary increase in income, creditors tend to run CA surpluses, debtors CA deficits			0.040** (0.018)	-
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Net foreign assets. CA accumulation (L)	-	-	-0.011 (0.011)	-

Due to their stock of NFA:

- **Debtors reduce** their **CA deficit** by **0.1%** of GDP each year
- **Creditors increase** their **CA surplus** by **2.7%** GDP each year

creditor countries. Valuation effects (L)	-	-	0.040** (0.018)	-
Net foreign assets * output gap (L)	-	-	-	-0.437 (0.309)
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Obs.	1164	1164	1164	1164
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WHERE DOES THE ASYMMETRY COME FROM? IIB OR TB?



Table 2. Investment income balance and trade balance regressions

	Investment income balance	Trade balance
Net foreign assets (L)	0.029*** (0.003)	-0.043*** (0.009)
Net foreign assets creditor countries (L)	-0.007 (0.009)	0.061*** (0.015)
Net foreign assets. CA accumulation (L)	-	-
Net foreign assets. Valuation effects (L)	-	-
Net foreign assets * output gap (L)	-	-0.311 (0.245)
Net foreign assets * positive output gap (L)	-	1.083*** (0.265)
Obs.	1164	1228
Country fixed effects	Yes	Yes
R ²	0.8308	0.7500

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		-
		-
output gap (L)	-	-0.311 (0.245)
Net foreign assets * positive output gap (L)	-	1.083*** (0.265)
Obs.	1164	1228
Country fixed effects	Yes	Yes
R ²	0.8308	0.7500

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

⇒ stock imbalances have destabilizing impact on wealth acc. through IIB

WHERE DOES THE ASYMMETRY COME FROM? IIB OR TB?



Table 2. Investment income balance and trade balance regressions

	Investment income balance	Trade balance
Net foreign assets (L)	0.029*** (0.003)	-0.043*** (0.009)
Net foreign assets creditor countries (L)	-0.007 (0.009)	0.061*** (0.015)
	-	-
	-	-
		-0.311 (0.245)
		1.083*** (0.265)
Obs.	1164	1228
Country fixed effects	Yes	Yes
R ²	0.8308	0.7500

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

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**?
 - Because of **low marginal propensity** to consume out of external wealth? (**weak wealth effect**)
 - 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

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

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

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- **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**

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- **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?



- 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? (**weak wealth effect**)
 - 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 for a higher stock of NFA, making creditors' imports relatively cheaper**
- So our **preliminary results** seem to suggest that the reason why **creditors' stock of net foreign assets do not boost their imports** is a **low marginal propensity to consume** out of their external wealth

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 focuses on wealth accumulation through the CA. Need to work out overall impact of NFA on wealth accumulation, including **valuation effects**
 - **How do stock imbalances impact countries' Financial Effective Exchange Rate?**
 - **How do FEER fluctuations affect, in turn, wealth accumulation through valuation changes?**



THANKS FOR YOUR ATTENTION

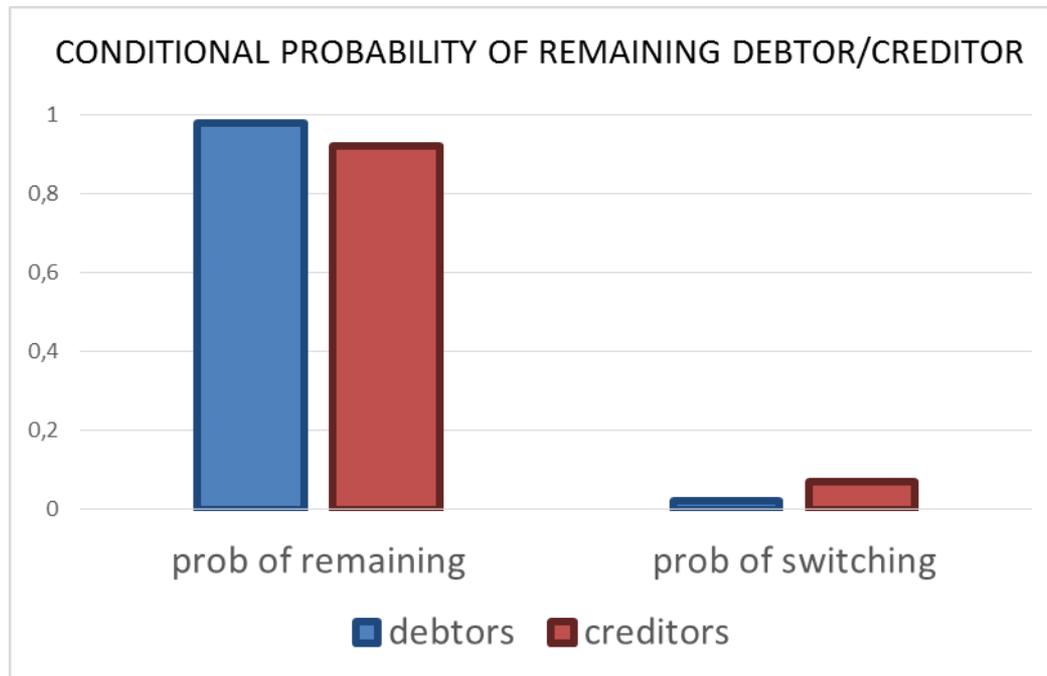
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STYLIZED FACTS ON WEALTH ACCUMULATION



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



THE IMPACT OF STOCK IMBALANCES ON THE CA: EMPIRICAL TESTS



Table 1. Current account regressions

	Basic spec.	Diff. btw creditors & debtors	Valuation effects	Temporary shocks
Net foreign assets (L)	0.016** (0.006)	-0.015 (0.009)	-	-0.024***
Net foreign assets creditor countries (L)	-	0.052*** (0.015)	-	
Net foreign assets. CA accumulation (L)	-	-	-0.011 (0.011)	
Net foreign assets. Valuation effects (L)	-	-	-0.018* (0.011)	-
Net foreign assets creditor countries. CA accumulation (L)	-	-	0.055*** (0.015)	-
Net foreign assets creditor countries. Valuation effects (L)	-	-	0.040** (0.018)	-
			-	-0.437 (0.309)
			-	1.351*** (0.332)
Obs.	1164	1164	1164	1164
Country fixed effects	No	Yes	Yes	Yes
R ²	0.3872	0.6432	0.6472	0.6524

But **asymmetry** btw **creditors and debtors survives** when we only look at the part of **NFA due to CA accumulation**

Creditors consume less out of NFA accumulated due to **valuation changes**

THE IMPACT OF STOCK IMBALANCES ON THE CA: RESIDUAL BALANCE REGRESSIONS



Table 4. Residual balance regressions

	Basic spec.	Country fixed effs.	Diff. btw. cred. & deb.	Valuation effects	Temporary shocks
Net foreign assets (L)	-0.011*** (0.002)	-0.007*** (0.002)	-0.007*** (0.003)	-	-0.009*** (0.002)
Net foreign assets creditor counties (L)	-	-	-0.001 (0.004)	-	-
Net foreign assets. CA accumulation (L)	-	-	-	-0.016*** (0.003)	-
Net foreign assets. Valuation effects (L)	-	-	-	0.003 (0.002)	-
Net foreign assets * output gap (L)	-	-	-	-	-0.044 (0.065)
Net foreign assets * positive output gap (L)	-	-	-	-	0.248** (0.108)
Real effective trade weighted exchange rate (L)	0.006* (0.003)	0.009*** (0.003)	0.009*** (0.003)	0.010*** (0.003)	0.009*** (0.003)
Obs.	1228	1228	1228	1228	1228
Country fixed effects	No	Yes	Yes	Yes	Yes
R ²	0.3833	0.7854	0.7854	0.7989	0.7880

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