

# Golden Fetters or Credit Boom Gone Bust?

## A Reassessment of Capital Flows in the Interwar Period

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CEPR and Ninth Banco de Espana Economic History Seminar

# Motivation

- Long history of explaining domestic economic conditions with international finance (Hume, 1758; Fisher, 1935; Keynes, 1941; Kindleberger, 1978)
  - Traditional focus on net flows, which have proven unreliable (Obstfeld, 2010)
- Recent emphasis is on gross flows and their connection to domestic business cycles
  - Gross flows far outweigh net flows in size, but are less explored (Shin, 2012)
  - Foreign capital 'flighty' in times of crisis (Broner et al. 2013)
  - Capital flight linked to credit crunches (Caballero & Simsek 2020)
- Interwar capital flows are governed by the Gold Standard
  - Increases integration into global financial system (Bordo & Kydland 2005)
  - But restricts governments scope of action (Eichengreen, 1996)
- With newly collected data I ask the question: Can the story of the interwar business cycle be told with (gross) international capital flows?

# What I do

- Data
  - Collect Balance of Payments (BoP) data from the League of Nations (LoN) for 33 countries
  - Document trends in international financial flows in the interwar period
- BoP-Flows and business cycles
  - Link flows to business cycle, financial crises, recession severity and global capital flows around the Great Depression
  - Relate findings to previous work that has been focused on the importance of gold and net measures (imbalances)

# What I find

- 1 Gross capital flows move with the business cycle, peaking in 1929
  - Net and gold flows show no comparable dynamics
- 2 Gross inflows are linked to economic downturns and crises
  - Gross outflows and net capital flows are not
  - Holds in a battery of robustness checks (including Gold Standard proxies)
  - Gold Standard adoption increases gross capital inflows
  - After crises, inflows de- and outflows increase
- 3 High exposure to gross inflows amplifies recessions after crises
  - But: Gross outflows (foreign assets) can moderate recession severity
  - GS individually related to lower growth, but not when interacted with crises
- 4 All results hold in a modern sample of OECD economies

# Why are gross foreign inflows related to adverse outcomes?

- Foreign capital increases financial fragility
  - Capital flight and run like dynamics in times of crises (Caballero & Simsek, 2020; Jorda et al., 2013)
  - Increased exposure to global uncertainty (Rey, 2013)
- Effects of (foreign-) indebtedness
  - Debt service payments reduce available income (Drehman et al., 2017)
  - Reduced available income lowers consumption (Eggertsson & Krugman, 2012)
  - Borrower bears first loss in crises (Mian & Sufi, 2015)
    - Cut domestic spending first, debt payments second
- Net and gross foreign inflows
  - Capital retrenchment induces contractionary biases in deficit countries (Keynes 1941), but: No net capital flight in all countries at the same time
  - Net inflows do not fully capture debt buildup (Borio, 2016)

# Contribution

## 1 International capital flows

- Recent work argues for larger focus on gross flows (Borio & Disyatat, 2015; Shin 2012; Calderon & Kubota, 2012)

Here: Extend data coverage to 30+ countries for years 1922-1938. Support increased focus on gross flows, due to their pro-cyclicality

## 2 Capital flows and adverse economic outcomes

- Foreign financing increases financial fragility (Calvo, 1996)
- 'Capital flow bonanzas' precede crises (Reinhart & Rogoff, 2009)
- Crises followed by capital flight (Broner et. al., 2013)

Here: Greater exposure to these dynamics, via gross inflows, amplifies outcomes

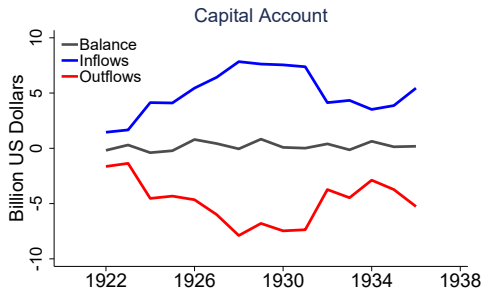
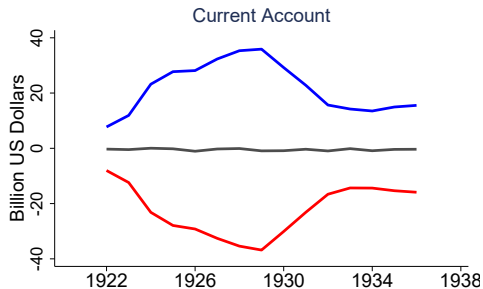
## 3 Interwar Period and Great Depression

- Credit boom gone wrong (Eichengreen & Mitchener, 2003)
- Credit growth countries linked by gross flows (Borio, 2016)
- Net foreign debt causes contractionary bias (Keynes, 1941)
- 'The mother of all sudden stops' (Accominotti & Eichengreen 2016)

Here: International credit boom gone bust. Adverse effects are stronger if previous exposure to gross foreign inflows was large

# Data and Trends

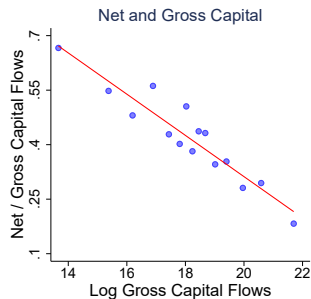
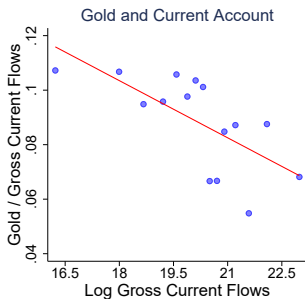
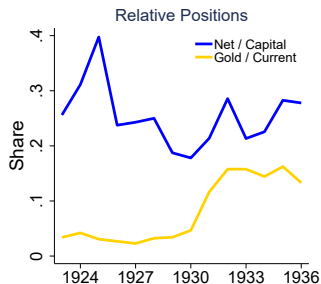
# Balance of Payments



- Gross in- and outflows for the whole sample are equal  
→ Sample approaches a closed system of financial flows
- Gross flows show the boom-bust pattern, associated with business cycle dynamics
- Net flows, by definition, cannot fully capture that



# Gold flows, Net flows and Gross flows compared



- When gross flows are largest, they are least captured by net capital-, or gold flows
  - Net to gross capital ratio reaches trough in 1929/30
  - Gold flows grow in relative size after major economies have left GS and current account flows have decreased

# International Investment Positions

- Over time, BoP flows accumulate into international investment positions (IIP), not considering revaluations of existing stocks
- Balances, gross in- and outflows accumulate into NIIP, GILP (gross international liability position) and GIAP respectively:

$$\sum_{t=0}^n Credit_t = \Delta_n GILP_{t+n} - \sum_{t=0}^n R_{L,t}$$

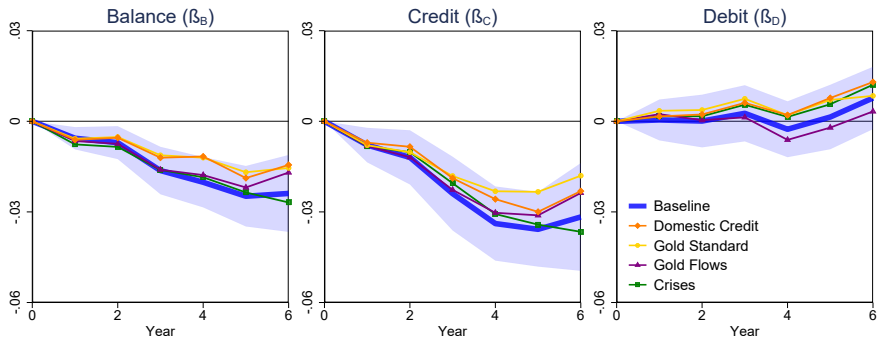
- Where:
  - $\Delta_n GILP_{t+n}$  is the change in gross international liabilities
  - $\sum_{t=0}^n Credit_t$ , are capital inflows (credit) over  $n$  periods
  - $\sum_{t=0}^n R_{L,t}$  is the revaluation of existing liabilities

# Capital flows, Business Cycles and Financial Fragility

# Capital Flows and Business Cycle Dynamics

- How are BoP flows linked to the business cycle?
- Run local projections (Jorda, 2005) of the following form:

$$\Delta_h y_{i,t+h} = \alpha_{i,h} + \sum_{j=0}^2 \beta_{C,j}^h \text{Credit}_{i,t-j} + \sum_{j=0}^2 \beta_{D,j}^h \text{Debit}_{i,t-j} + \gamma^X X_{i,t} + u_{i,t+h},$$



- Robustness:

Baseline Table

GDP-Sources

5-Year Flows

Country-Coefficients

Sample Splits

Gold Standard

# Capital Flows and Crises

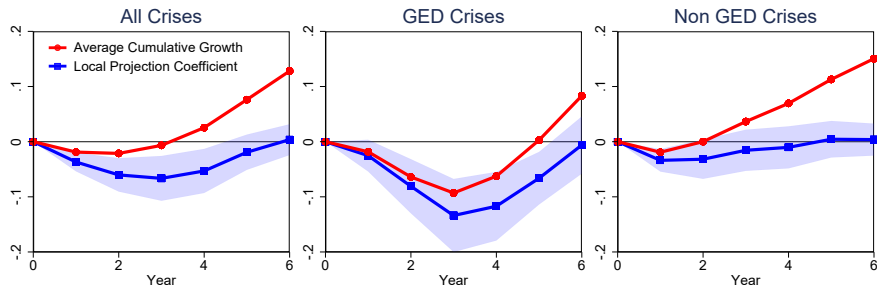
- Narrative: Credit booms before crises are foreign financed (Kindleberger, 1978)
- Capital flows before crises are large, but prone to runs and sudden stops (Reinhart & Rogoff, 2009; Broner et al. 2013; Accominotti & Eichengreen, 2016)
- Gross inflows predict crises **Probit Model**, afterwards: decreased inflows and increased outflows **LP**
- But are crises more *severe* when subject to these dynamics?
  - Contractionary bias in deficit countries (Keynes, 1941)
  - Countries with large credit growth prior to Great Depression have more severe recessions (Borio et al. 2016)
  - Countries with foreign credit booms have more severe recessions **Scatter** **LP**

# Crises, gross inflow exposure and recession severity

- Gross Exposure Dummy (GED) defines inflow exposure as large, when:

$$GED_{i,t} = \begin{cases} 1, & \text{if } Credit_{i,t-1} > \widetilde{Credit}_{i,t-1} \wedge Credit_{i,t-2} > \widetilde{Credit}_{i,t-2} \\ 0, & \text{Otherwise,} \end{cases}$$

- Interacted with a crisis dummy, this identifies:

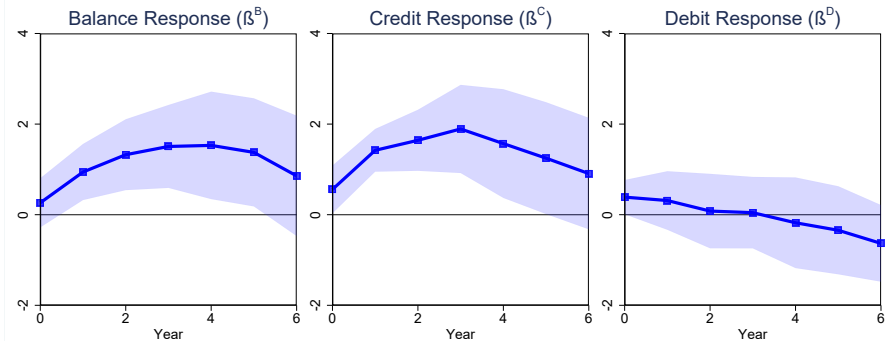


- Interaction setting, controlling for baseline variables [Table](#)
- Accumulated foreign assets moderate recessions (Caballero & Simsek 2020) [Table](#)

# Channels: The Gold Standard and Foreign Capital Supply

# Capital Flows and the Gold Standard

- GS increases integration into global financial system via reducing currency risk, and committing to the free flow of capital
- Run local projection of capital flows on a Gold Standard indicator



- If large gross capital inflows are harmful, how to react?
  - GS limits governments scope of action (Eichengreen, 1996)
  - GS does not allow for capital flow management



# Capital Flows, the Gold Standard and Business Cycles

- Interact *not* being on GS (capital account openness (Quinn, 2003)) with inflows

	$\Delta_2 Y_{i,t+2}$								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\sum_{j=0}^2 \text{Credit}_{i,t-j}$	-0.04*** (0.01)	-0.04*** (0.02)	-0.04*** (0.01)	-0.06*** (0.02)	-0.06*** (0.02)	-0.06*** (0.02)	-0.06*** (0.02)	-0.06*** (0.02)	-0.06*** (0.02)
$\sum_{j=0}^2 \text{Credit}_{i,t-j} \times \text{No Gold}_{i,t \rightarrow t-2}$	0.03** (0.01)	0.03** (0.01)	0.03** (0.01)						
$\sum_{j=0}^2 \text{Credit}_{i,t-j} \times \text{Closed} (< 100)_{i,t \rightarrow t-2}$				0.04** (0.02)	0.04** (0.02)	0.04** (0.02)			
$\sum_{j=0}^2 \text{Credit}_{i,t-j} \times \text{Closed} (< 67)_{i,t \rightarrow t-2}$							0.05** (0.02)	0.05** (0.02)	0.05** (0.02)
$R^2$	0.269	0.271	0.269	0.408	0.409	0.408	0.386	0.386	0.386
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓	✓
Net Capital Inflows		✓			✓			✓	
Gross Outflows			✓			✓			✓
Observations	361	361	361	235	235	235	235	235	235

- Option for capital flow management insulates from the effects of gross inflows
- Results for not being on GS and capital account openness are similar
- Leaving GS: → capital controls, monetary policy underutilized (M & W, 2015)

# The role of foreign capital supply

- BoP cannot discriminate between global capital supply and domestic demand
- Borrowing against fundamentals unlikely to have adverse aggregate effects
- The Global Financial Cycle (GFC)
  - Global capital supply often unrelated to domestic conditions of individual countries (Rey, 2013; Miranda-Agrippino & Rey, 2020)
  - Disentangle demand and supply by using principal component analysis to construct a measure of the GFC (Aldasoro et al. 2020)

# The Global Financial Cycle

- Principal component of the outflows of all other countries (Aldasoro et al. 2020)

$$GFC_{-i,t} = PC_1(\sum_{i \notin j} Debit_{j,t}),$$

- where  $j$  is the set of countries excluding country  $i$ , First Stage
- Not fully exogenous, but presumably goes some in isolating global supply

	$\Delta_2 Y_{i,t+2}$			$\Delta_3 Y_{i,t+3}$			$\Delta_4 Y_{i,t+4}$		
	OLS (1)	Reduced (2)	IV (3)	OLS (4)	Reduced (5)	IV (6)	OLS (7)	Reduced (8)	IV (9)
$\sum_{j=0}^2 Credit_{i,t-j}$	-0.04*** (0.01)		-0.13*** (0.03)	-0.06*** (0.02)		-0.17*** (0.04)	-0.06*** (0.02)		-0.17*** (0.04)
$\sum_{j=0}^2 GFC_{-i,t-j}$		-0.05*** (0.01)			-0.07*** (0.01)			-0.07*** (0.01)	
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓	✓
Net Capital Inflows	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kleibergen-Paap Weak ID			25.40			24.59			24.37
Observations	321	321	321	294	294	294	266	266	266

- Coefficients larger than baseline indicate baseline bias towards 0

# Other findings and work in progress

## ■ Other Findings:

1 Results are not limited to GDP and Crises as outcomes variables

■ Gross inflows also predict lower returns on equity [Table](#)

2 Not being on GS shields countries from the GFC [Table](#)

3 All results hold in a modern sample of OECD economies

[LP](#)

[Baseline](#)

[Recession Severity](#)

## ■ Work in Progress: Construct shift-share-IV

1 Newly collected data on the bilateral portfolio investment positions of the United States in other countries (the share)

2 Changes in the Federal Reserve discount rate (the shift)

3 Use their interaction as an instrument for capital inflows

# Conclusions

- I document the development in Balance of Payments flows for over 30+ economies for the years 1922 to 1938
- Gross capital inflows are the decisive link from international capital flows to adverse economic outcomes
- They are robustly linked to:
  - 1 Business cycle downturns
  - 2 Increasing recession severity
- The Gold Standard enables these dynamics by increasing financial integration and decreasing the scope of action to respond to surging capital flows
  - Not being on GS or closed capital accounts provide some protection
- Results hold using an alternative IV-specification and in an external sample of advanced economies

# Appendix: Data and Trends

- Balance of Payments statistics (BoP) from the League of Nations
  - First attempt at homogeneous accounting across countries

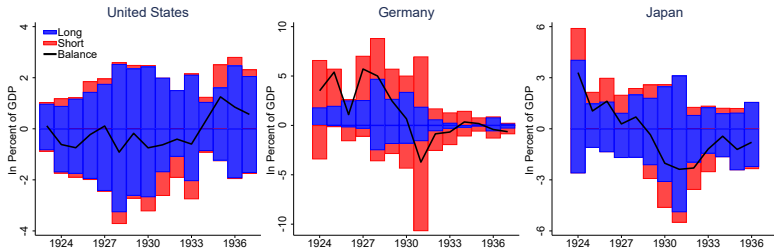
GERMANY 101

SUMMARY TABLE.

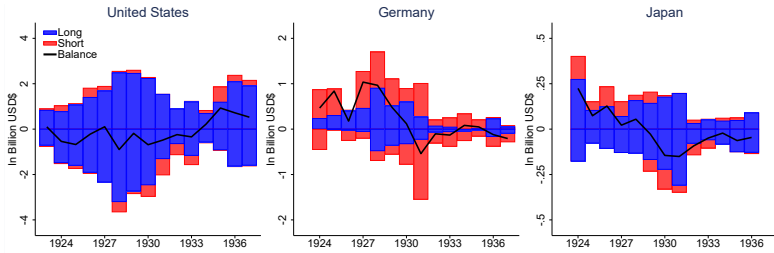
	Reichsmarks (000,000's)									
	Goods, services and gold					Capital items				All items
	Mer- chandise	Interest and di- vidends	Other services	Gold	Total	Long- term	Short- term	Undefin- able	Total	
1924 Balance ....	- 1,848	+ 159	- 12	- 253	- 1,954	+ 1,000	+ 541	+ 413	+ 1,954	—
1925 Balance ....	- 2,362	- 6	- 636	- 519	- 3,523	+ 1,214	+ 605	+ 1,704	+ 3,523	—
1926 Balance ....	+ 817	- 173	- 742	- 641	- 739	+ 1,454	+ 201	- 916	+ 739	—
1927 Balance ....	- 2,890	- 345	- 1,018	- 99	- 4,352	+ 1,778	+ 2,264	+ 310	+ 4,352	—
1928 Balance ....	- 1,250	- 563	- 1,323	- 922	- 4,058	+ 1,788	+ 1,270	+ 1,000	+ 4,058	—
1929 Balance ....	+ 31	- 800	- 1,630	+ 376	- 2,023	+ 660	+ 484	+ 879	+ 2,023	—
1930 Balance ....	+ 1,644	- 1,000	- 1,173	- 13	- 542	+ 1,119	+ 169	- 746	+ 542	—
1931 Credit .....	9,637	300	1,056	1,520	12,513	1,135	3,109	—	4,244	16,757
Debit .....	6,779	1,500	1,599	369	10,247	955	2,205	3,350	6,510	16,757
Balance ....	+ 2,858	- 1,200	- 543	+ 1,151	+ 2,266	+ 180	+ 904	- 3,350	- 2,266	—
1932 Credit .....	2,778	200	763	500	7,241	300	329	236	865	8,106
Debit .....	4,724	1,100	665	318	6,807	286	1,013	—	1,299	8,106
Balance ....	+ 1,054	- 900	+ 98	+ 182	+ 434	+ 14	- 684	+ 236	- 434	—
1933 Credit .....	4,910	150	645	798	6,503	200	909	—	1,109	7,612
Debit .....	4,240	850	569	365	6,033	250	1,250	79	1,579	7,612
Balance ....	+ 661	- 700	+ 76	+ 433	+ 470	- 50	- 341	- 79	- 470	—

- Current credit = Outflow of goods, Inflow of Money
- Capital credit = Outflow of financial assets, Inflow of Money

# Capital Account to GDP



# Capital Account

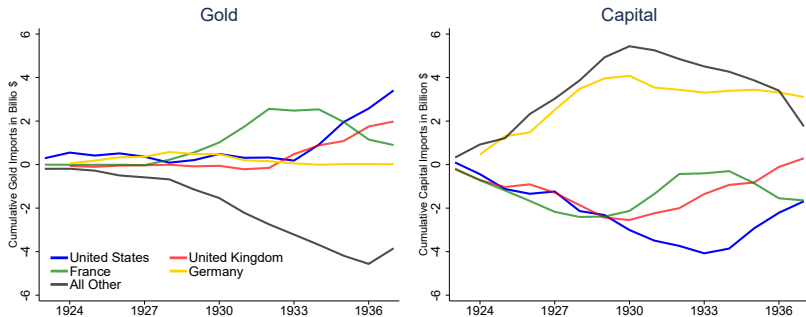




# Complimentary Data

- Reliable historical GDP estimates for a large panel of Countries notoriously difficult to obtain
  - 1 Maddison style GDP estimates (Bolt and van Zanden 2020)
  - 2 Economic Activity Indicators (Albers 2018)
  - 3 Log growth rates (Baron et al. 2021)
    - Growth variables are expressed in log differences and reported separately and combined
- Crisis Data
  - 1 Baron, Verner, Xiong crises chronology (BVX Crises)
  - 2 Reinhart and Rogoff chronology (RR Crises)
    - Predominance of Great Depression in interwar era means that the two chronologies differ mainly in country coverage and classification of country specific starting years

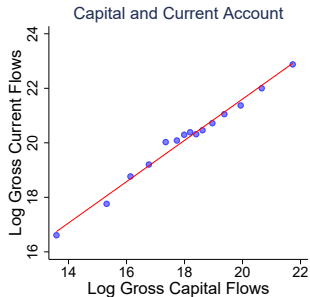
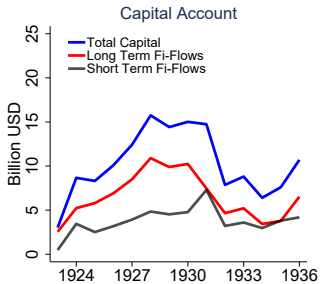
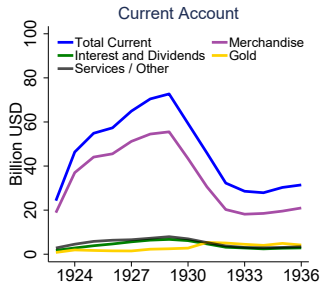
# Cumulative Net- Gold and Capital Inflows



- Gold flows reflect findings in literature (see e.g. Irwin 2012)
  - Undervalued currencies (Franc) attract gold inflows, overvalued currencies fail to do so (Pound)
  - UK, US devalue currencies → gold inflows increase
- US, UK, France supply (net-) capital particularly to Germany
  - Flows reverse during Great Depression
  - No obvious link from net flows to economic performance

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# Trends in Balance of Payments flows



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# Appendix: Business Cycle

# Baseline Results, Cumulative Flows

	$\Delta_2 Y_{i,t+2}$			$\Delta_3 Y_{i,t+3}$			$\Delta_4 Y_{i,t+4}$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\Sigma_{j=0}^2 \text{Balance}_{i,t-j}$	-0.02*** (0.01)	0.01 (0.01)		-0.03*** (0.01)	0.01 (0.01)		-0.03*** (0.01)	0.01 (0.01)	
$\Sigma_{j=0}^2 \text{Credit}_{i,t-j}$		-0.04*** (0.01)	-0.03*** (0.01)		-0.06*** (0.02)	-0.05*** (0.01)		-0.06*** (0.02)	-0.05*** (0.01)
$\Sigma_{j=0}^2 \text{Debit}_{i,t-j}$			-0.00 (0.01)			-0.00 (0.01)			-0.00 (0.01)
$R^2$	0.112	0.225	0.220	0.201	0.332	0.329	0.412	0.500	0.498
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓	✓
p-value, $\beta_{\text{Credit}} = \beta_{\text{Balance}}$		0.01			0.00			0.00	
p-value, $\beta_{\text{Credit}} = \beta_{\text{Debit}}$			0.00			0.00			0.00
Observations	361	361	361	334	334	334	303	303	303

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# Capital Account Flows and output growth

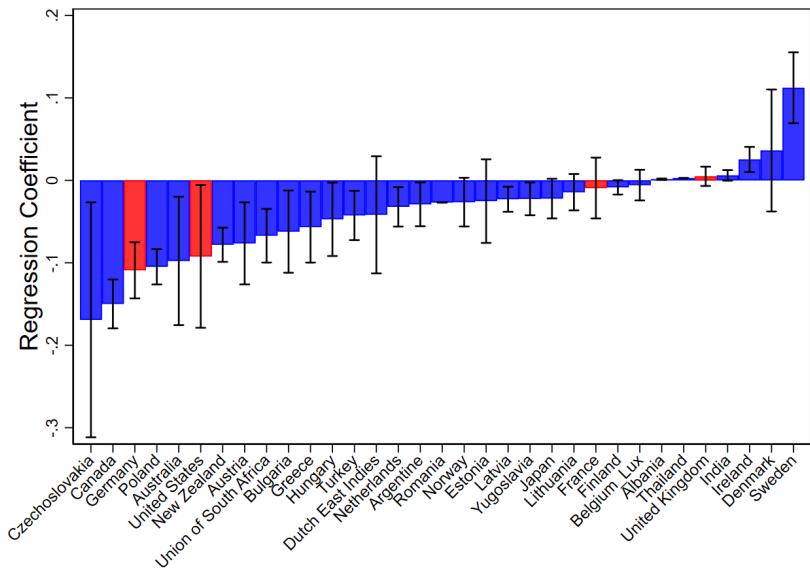
	$\Delta_2 \text{Maddison}_{i,t+2}$			$\Delta_2 \text{EAI}_{i,t+2}$			$\Delta_2 Y_{i,t+2}$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\sum_{j=0}^2 \text{Balance}_{i,t-j}$	-0.02*** (0.01)	0.01 (0.01)		-0.03*** (0.01)	0.00 (0.01)		-0.02*** (0.01)	0.01 (0.01)	
$\sum_{j=0}^2 \text{Credit}_{i,t-j}$		-0.04*** (0.01)	-0.04*** (0.01)		-0.05*** (0.02)	-0.06*** (0.02)		-0.04*** (0.01)	-0.04*** (0.01)
$\sum_{j=0}^2 \text{Debit}_{i,t-j}$			0.00 (0.01)			0.01 (0.01)			0.00 (0.01)
$R^2$	0.114	0.239	0.234	0.314	0.423	0.426	0.112	0.225	0.222
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Balances			✓			✓			✓
p-value, $\beta_{\text{Credit}} = \beta_{\text{Balance}}$		0.00			0.06			0.01	
p-value, $\beta_{\text{Credit}} = \beta_{\text{Debit}}$			0.01			0.01			0.00
Observations	325	325	325	162	162	162	361	361	361

- Gross Capital inflows predict growth slowdowns over the following 3 Years

## 5 Year BoP sums and growth over varying horizons

	$\Delta_2 Y_{i,t+2}$			$\Delta_3 Y_{i,t+3}$			$\Delta_4 Y_{i,t+4}$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\Sigma_{j=0}^4 Balance_{i,t-j}$	-0.02*** (0.01)	0.00 (0.01)		-0.03*** (0.01)	-0.00 (0.01)		-0.03*** (0.01)	-0.01 (0.01)	
$\Sigma_{j=0}^4 Credit_{i,t-j}$		-0.04*** (0.01)	-0.04*** (0.01)		-0.05*** (0.01)	-0.05*** (0.01)		-0.03** (0.01)	-0.04*** (0.01)
$\Sigma_{j=0}^4 Debit_{i,t-j}$			0.00 (0.01)			0.00 (0.01)			0.00 (0.01)
$R^2$	0.203	0.280	0.280	0.367	0.433	0.433	0.617	0.639	0.639
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓	✓
p-value, $\beta_{Credit} = \beta_{Balance}$		0.02			0.03			0.18	
p-value, $\beta_{Credit} = \beta_{Debit}$			0.00			0.00			0.00
Observations	292	292	292	264	264	264	235	235	235

# Time Series Regression, by Country





# Sample split, State dependency, Linearity

	$\Delta_2 Y_{i,t+2}$								
	Time Split		Country Split		State Dependence		Current Account		Linearity
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\sum_{j=0}^2 \text{Credit}_{i,t-j}$	-0.05*** (0.02)	-0.05*** (0.01)	-0.07*** (0.02)	-0.03*** (0.01)	-0.04*** (0.01)	-0.03*** (0.01)	-0.01* (0.01)	-0.02* (0.01)	
$\sum_{j=0}^2 \text{Balance}_{i,t-j}$	0.01 (0.01)	0.01 (0.01)	0.03* (0.02)	0.00 (0.00)	0.01 (0.01)	0.00 (0.01)			0.01 (0.01)
$\sum_{j=0}^2 \text{Current Credit}_{i,t-j}$							-0.02 (0.02)	-0.01 (0.02)	
$\sum_{j=0}^2 \text{Current Debit}_{i,t-j}$							-0.02 (0.02)	-0.02 (0.02)	
$\sum_{j=0}^2 \text{Credit}_{i,t-j} \times 1(> 0)$									-0.04* (0.02)
$\sum_{j=0}^2 \text{Credit}_{i,t-j} \times 1(< 0)$									-0.04*** (0.01)
$R^2$	0.226	0.293	0.438	0.177	0.173	0.134	0.325	0.327	0.226
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sample	pre 1929	post 1929							
Countries			Core	Non-Core					
Current Account					Positive	Negative			
Lagged Balances								✓	
Observations	125	235	73	288	176	183	340	340	361

# Capital flows, the gold standard and output growth

- If capital inflows capture gold purchases by foreigners, the described link would proxy for a GS mechanism

	$\Delta_2 Y_{i,t+2}$								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\Sigma_{j=0}^2 Credit_{i,t-j}$	-0.04*** (0.01)	-0.04** (0.02)	-0.02** (0.01)	-0.06*** (0.02)	-0.03** (0.01)	-0.05*** (0.02)		-0.04*** (0.01)	-0.03** (0.01)
$\Sigma_{j=0}^2 Balance_{i,t-j}$	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02** (0.01)	0.00 (0.01)	0.02** (0.01)		0.01 (0.01)	0.01 (0.01)
$\Sigma_{j=0}^2 Gold\ Balance_{i,t-j}$	0.01 (0.00)	0.00 (0.00)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.02* (0.01)	0.01 (0.01)	0.01* (0.01)
<i>Gold Standard<sub>i,t</sub></i>								-0.03* (0.02)	-0.03 (0.02)
$R^2$	0.236	0.192	0.183	0.305	0.149	0.213	0.043	0.258	0.286
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sample		pre 1933	post 1933				pre 1933	pre 1933	
Goldstandard				Yes	No	Yes	Yes		
Lagged GoldStandard									✓
Observations	327	193	132	146	179	125	125	327	327

- Gross Capital inflows are robust to gold standard variables
- Gold Standard mechanism is visible for a subset of countries

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# Appendix: Crises

# Capital flows and financial crises

	<i>BVX Crisis<sub>i,t</sub></i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Sigma_{j=0}^2 \text{Balance}_{i,t-j}$	0.02 (0.01)	-0.01 (0.02)			0.04 (0.02)	-0.02 (0.03)		
$\Sigma_{j=0}^2 \text{Credit}_{i,t-j}$		0.05*** (0.02)	0.04** (0.01)	0.04*** (0.01)		0.08** (0.04)	0.07*** (0.02)	0.07*** (0.02)
$\Sigma_{j=0}^2 \text{Debit}_{i,t-j}$			0.02 (0.01)				0.03 (0.03)	
AUC	0.69	0.73	0.74	0.73	0.77	0.80	0.80	0.80
s.e.	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.04
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓
Country fixed effects					✓	✓	✓	✓
Observations	382	382	382	382	217	217	217	217

- Gross foreign credit predicts crises RR Robustness Table
- Classification accuracy (AUC) concentrated in gross inflows
- Predominance of Great Depression in sample (Case Study)

# Capital flows and financial crises (RR)

	<i>RR Crisis<sub>i,t</sub></i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Sigma_{j=0}^2 \text{Balance}_{i,t-j}$	0.01 (0.02)	-0.04* (0.02)			0.04 (0.03)	-0.02 (0.04)		
$\Sigma_{j=0}^2 \text{Credit}_{i,t-j}$		0.08*** (0.02)	0.04** (0.02)	0.05** (0.02)		0.09*** (0.03)	0.07** (0.03)	0.08*** (0.03)
$\Sigma_{j=0}^2 \text{Debit}_{i,t-j}$			0.04** (0.02)				0.03 (0.02)	
AUC	0.74	0.77	0.77	0.77	0.76	0.79	0.79	0.79
s.e.	0.04	0.05	0.05	0.04	0.05	0.05	0.05	0.04
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓
Country fixed effects					✓	✓	✓	✓
Observations	301	301	301	301	192	192	192	192

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# What happens after crises?

- Sudden stops (Broner et al. 2013) and capital flight (Caballero & Simsek, 2020)
- Response of capital flows to a financial crises

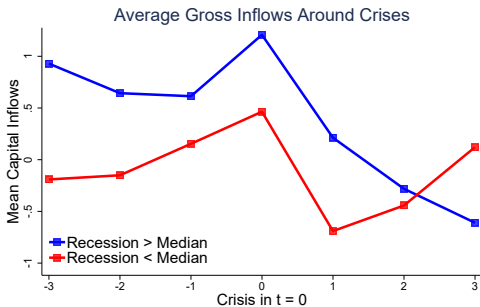
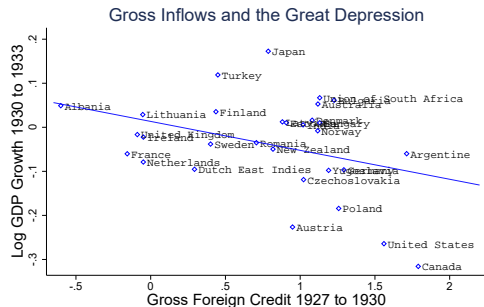
$$\sum_{h=0}^n \text{Capital}_{i,t+h}^T = \alpha_{i,h} + \sum_{j=0}^2 \beta_{h,j}^{Cr} \text{Crisis}_{i,t-j} + \sum_{j=0}^2 \beta_{h,j}^T \text{Capital}_{i,t-j}^T + u_{i,t+h} \quad (1)$$



- Statistically significant net capital outflows over all horizons
- Inflows trend downward (stops), outflows trend upward (flight)

# Appendix: Recession Severity

# Recession severity, descriptive evidence



- Larger inflows 1927-1930 linked to deeper recession 1930-1933
- Problem: Imprecise to take 1930 as cutoff for all countries
  - Calculate 3 year growth after crisis indicator
  - When recessions  $>$  median 'treated' (Borio, et al. 2016)
  - Treated countries have larger inflows before crises



# Recession aggravation via foreign liabilities, Table

	$\Delta_2 Y_{i,t+2}$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Crisis_{i,t}$	-0.06* (0.03)	-0.02 (0.02)	-0.00 (0.02)	-0.00 (0.02)	-0.06* (0.03)	-0.02 (0.02)	-0.01 (0.02)	-0.00 (0.03)
$GED_{i,t}$	-0.01 (0.01)	-0.00 (0.01)	0.02** (0.01)	0.02** (0.01)	-0.01 (0.02)	0.00 (0.02)	0.02 (0.02)	0.02 (0.02)
$Crisis_{i,t} \times GED_{i,t}$		-0.10** (0.04)	-0.10** (0.04)	-0.09** (0.04)		-0.11** (0.05)	-0.10** (0.05)	-0.09** (0.04)
$\sum_{j=0}^2 Credit_{i,t-j}$			-0.04*** (0.01)	-0.04*** (0.01)			-0.04*** (0.01)	-0.03*** (0.01)
$\sum_{j=0}^2 Balance_{i,t-j}$			0.00 (0.01)	0.01 (0.01)			0.00 (0.01)	0.01 (0.01)
$Gold\ Standard_{i,t}$				-0.03* (0.02)				-0.02 (0.02)
$\sum_{j=0}^2 Gold\ Balance_{i,t-j}$				0.01 (0.01)				0.01* (0.01)
$R^2$	0.100	0.120	0.265	0.291	0.150	0.185	0.303	0.324
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Crisis	✓	✓	✓	✓	✓	✓	✓	✓
Crisis in Sample					✓	✓	✓	✓
Observations	340	340	340	340	200	200	200	200

# Recession moderation via foreign assets, Table

	$\Delta_2 Y_{i,t+2}$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Crisis_{i,t}$	-0.06* (0.03)	-0.06** (0.02)	-0.02 (0.02)	-0.04 (0.03)	-0.09*** (0.03)	-0.02 (0.03)	-0.03 (0.03)	-0.08*** (0.03)
$GFA_{i,t}$	-0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03** (0.01)
$Crisis_{i,t} \times GFA_{i,t}$		0.05* (0.03)	0.07** (0.03)	0.06** (0.03)	0.07** (0.03)	0.05* (0.02)	0.05* (0.03)	0.06** (0.03)
$Crisis_{i,t} \times GED_{i,t}$			-0.11*** (0.03)	-0.11*** (0.03)	-0.09*** (0.03)	-0.10*** (0.04)	-0.11*** (0.04)	-0.10*** (0.04)
$Crisis_{i,t} \times Gold_{i,t}$				0.02 (0.03)	0.00 (0.04)		0.02 (0.03)	0.00 (0.04)
$Crisis_{i,t} \times NID_{i,t}$					0.07* (0.04)			0.07* (0.04)
$R^2$	0.097	0.248	0.276	0.297	0.307	0.335	0.345	0.360
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Crisis	✓	✓	✓	✓	✓	✓	✓	✓
Capital Flow Controls		✓	✓	✓	✓	✓	✓	✓
Crisis in Sample						✓	✓	✓
Observations	340	340	340	340	340	200	200	200

# Crises and Capital Flight, Alternative Exposure Dummy

- GED2- is defined as the first lag of the baseline credit variable  $\sum_{j=0}^2 Credit_{i,t-j}$  being in the top 80%

	$\Delta_2 Y_{i,t+2}$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Crisis</i> <sub><i>i,t</i></sub>	-0.06* (0.03)	0.00 (0.02)	0.02 (0.03)	0.02 (0.03)	-0.06* (0.03)	-0.01 (0.02)	0.01 (0.03)	0.02 (0.03)
<i>GED2</i> <sub><i>i,t</i></sub>	-0.03** (0.01)	-0.03* (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.04** (0.02)	-0.04* (0.02)	-0.02 (0.02)	-0.02 (0.01)
<i>Crisis</i> <sub><i>i,t</i></sub> × <i>GED2</i> <sub><i>i,t</i></sub>		-0.07* (0.04)	-0.07* (0.04)	-0.07* (0.03)		-0.06* (0.04)	-0.06* (0.03)	-0.07** (0.03)
$\sum_{j=0}^2 Credit_{i,t-j}$			-0.03*** (0.01)	-0.03** (0.01)			-0.03** (0.01)	-0.03** (0.01)
$\sum_{j=0}^2 Balance_{i,t-j}$			0.00 (0.01)	0.01 (0.01)			0.00 (0.01)	0.01 (0.01)
<i>Gold Standard</i> <sub><i>i,t</i></sub>				-0.04** (0.02)				-0.03* (0.02)
$\sum_{j=0}^2 Gold\ Balance_{i,t-j}$				0.01 (0.01)				0.01 (0.01)
<i>R</i> <sup>2</sup>	0.123	0.130	0.248	0.281	0.193	0.201	0.291	0.316
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Crisis	✓	✓	✓	✓	✓	✓	✓	✓
Crisis in Sample					✓	✓	✓	✓
Observations	340	340	340	340	200	200	200	200

# Crises, the Gold Standard and capital Flows

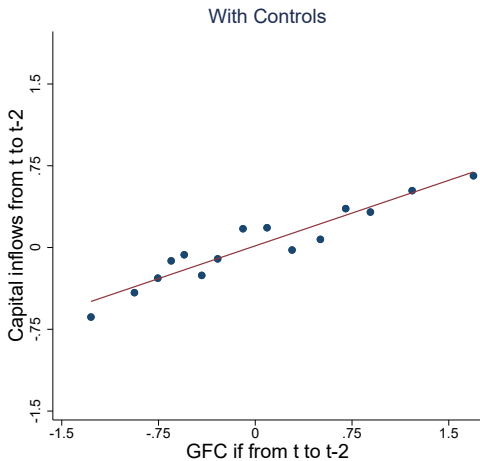
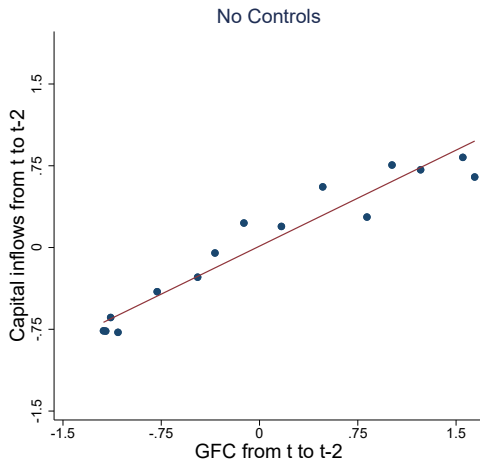
	$\Delta_2 Y_{i,t+2}$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Crisis</i> <sub><i>i,t</i></sub>	-0.04 (0.04)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.03)	-0.05 (0.04)	-0.02 (0.02)	-0.01 (0.02)	-0.02 (0.03)
<i>Gold Standard</i> <sub><i>i,t</i></sub>	-0.04** (0.02)	-0.04** (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)
<i>Crisis</i> <sub><i>i,t</i></sub> × <i>Gold Standard</i> <sub><i>i,t</i></sub>		-0.03 (0.04)	-0.02 (0.04)	0.01 (0.03)		-0.04 (0.03)	-0.04 (0.04)	0.01 (0.03)
$\sum_{j=0}^2 \textit{Credit}_{i,t-j}$			-0.03** (0.01)	-0.03*** (0.01)			-0.02* (0.01)	-0.02** (0.01)
$\sum_{j=0}^2 \textit{Balance}_{i,t-j}$			0.00 (0.01)	0.00 (0.01)			0.00 (0.01)	0.00 (0.01)
<i>Crisis</i> <sub><i>i,t</i></sub> × <i>GED</i> <sub><i>i,t</i></sub>				-0.08** (0.04)				-0.08** (0.04)
<i>R</i> <sup>2</sup>	0.231	0.232	0.287	0.281	0.273	0.277	0.312	0.315
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Crisis	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Gold Standard	✓	✓	✓	✓	✓	✓	✓	✓
Crisis in Sample					✓	✓	✓	✓
Observations	340	340	340	340	200	200	200	200

# Appendix: Additional Results

# Capital Flows and Equity Returns

	$\Delta_2 FI - Equity_{i,t+2}$			$\Delta_2 NF - Equity_{i,t+2}$		
	(1)	(2)	(3)	(4)	(5)	(6)
$\sum_{j=0}^2 Balance_{i,t-j}$	-0.01 (0.02)	0.05* (0.03)		-0.07** (0.03)	0.02 (0.03)	
$\sum_{j=0}^2 Credit_{i,t-j}$		-0.10** (0.04)	-0.06** (0.03)		-0.14** (0.06)	-0.13*** (0.05)
$\sum_{j=0}^2 Debit_{i,t-j}$			-0.03 (0.03)			0.00 (0.03)
$R^2$	0.053	0.113	0.110	0.218	0.285	0.284
Country fixed effects	✓	✓	✓	✓	✓	✓
Lagged Returns	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓
p-value, $\beta_{Credit} = \beta_{Balance}$		0.02			0.09	
p-value, $\beta_{Credit} = \beta_{Debit}$			0.41			0.00
Observations	219	219	219	228	228	228

# Global Cycle first stage scatterplot



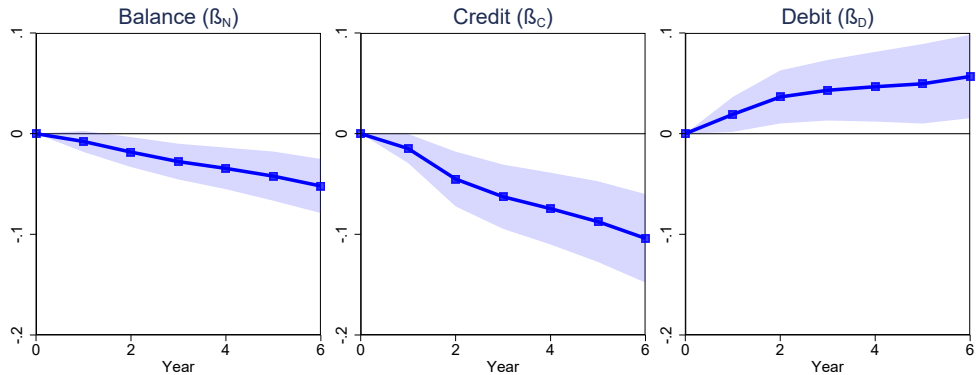
# Global cycle and independent monetary policy

	$\Delta_2 Y_{i,t+2}$								
	OLS			Reduced			IV		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>No Gold</i> $_{i,t \rightarrow t-2}$	0.03** (0.02)	0.04*** (0.02)	0.04*** (0.02)	-0.01 (0.02)	0.00 (0.02)	0.00 (0.02)	-0.06** (0.02)	-0.01 (0.02)	-0.02 (0.02)
$\sum_{j=0}^2 \text{Credit}_{i,t-j}$	-0.03*** (0.01)	-0.04*** (0.02)	-0.05*** (0.02)				-0.11*** (0.02)	-0.17*** (0.03)	-0.19*** (0.03)
$\sum_{j=0}^2 \text{Credit}_{i,t-j} \times \text{No Gold}_{i,t \rightarrow t-2}$		0.04** (0.02)	0.04** (0.02)					0.16*** (0.03)	0.11*** (0.02)
$\sum_{j=0}^2 \text{GFC}_{i,t-j}$				-0.06*** (0.01)	-0.07*** (0.01)	-0.07*** (0.01)			
$\sum_{j=0}^2 \text{GFC}_{i,t-j} \times \text{No Gold}_{i,t \rightarrow t-2}$					0.04*** (0.01)	0.04*** (0.01)			
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓	✓
Net Capital Inflows			✓			✓			✓
Kleibergen-Paap Weak ID							36.91	14.34	10.40
Observations	321	321	321	321	321	321	321	321	321



# Appendix: External Validity

# External Validity, Local Projection



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# External Validity, Business Cycle

	$\Delta_2 Y_{i,t+2}$							
	OECD Sample				Full Sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Balance</i> <sub><i>i,t</i></sub>	-0.02** (0.01)		-0.01* (0.00)		-0.02*** (0.00)		-0.00 (0.00)	
<i>Credit</i> <sub><i>i,t</i></sub>		-0.03*** (0.01)	-0.03*** (0.01)	-0.04*** (0.01)		-0.03*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)
<i>Debit</i> <sub><i>i,t</i></sub>				0.01 (0.01)				0.00 (0.00)
<i>R</i> <sup>2</sup>	0.189	0.290	0.297	0.292	0.179	0.258	0.259	0.258
Country fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓
Observations	657	657	657	657	1018	1018	1018	1018

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# External Validity, Crises

	<i>BVX Crisis<sub>i,t</sub></i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Sigma_{j=0}^2 \text{Balance}_{i,t-j}$	0.02*** (0.01)	0.01 (0.01)			0.03*** (0.01)	0.02* (0.01)		
$\Sigma_{j=0}^2 \text{Credit}_{i,t-j}$		0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)		0.03*** (0.01)	0.04*** (0.01)	0.04*** (0.01)
$\Sigma_{j=0}^2 \text{Debit}_{i,t-j}$			0.00 (0.01)				-0.01 (0.01)	
AUC	0.67	0.70	0.70	0.70	0.72	0.75	0.74	0.74
s.e.	0.04	0.04	0.04	0.04	0.03	0.03	0.04	0.04
Lagged Growth	✓	✓	✓	✓	✓	✓	✓	✓
Country fixed effects					✓	✓	✓	✓
Observations	1101	1101	1101	1101	784	784	784	784

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# External Validity, Recession Severity

	$\Delta_2 Y_{i,t+2}$					
	(1)	(2)	(3)	(4)	(5)	(6)
$Crisis_{i,t}$	-0.06*** (0.01)	-0.03** (0.01)	-0.02 (0.01)	-0.06*** (0.02)	-0.03** (0.01)	-0.02 (0.01)
$GED_{i,t}$	-0.01* (0.01)	-0.01 (0.01)	0.02** (0.01)	-0.01 (0.01)	-0.00 (0.01)	0.02** (0.01)
$Crisis_{i,t} \times GED_{i,t}$		-0.05** (0.02)	-0.04** (0.02)		-0.06*** (0.02)	-0.05*** (0.02)
$\sum_{j=0}^2 Credit_{i,t-j}$			-0.03*** (0.01)			-0.02*** (0.01)
$\sum_{j=0}^2 Balance_{i,t-j}$			-0.00 (0.00)			-0.00 (0.00)
$R^2$	0.178	0.183	0.282	0.233	0.243	0.323
Country fixed effects	✓	✓	✓	✓	✓	✓
Lagged Growth	✓	✓	✓	✓	✓	✓
Crisis in Sample				✓	✓	✓
Observations	1018	1018	1018	794	794	794