

# Redrawing the Landscape of Cross-Border Flow Restrictions: Modern Tools and Historical Perspectives

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The views expressed therein are those of the authors and do not necessarily represent the views of the IMF, the Executive Board, or IMF management.

- A key driver of the international monetary system (IMS) has been the extensive use of **cross-border flow restrictions** by countries.
  - These go beyond **capital controls**: includes import payment regulations, export proceeds requirements, FX restrictions, and more.
- **Our goal**: Leverage recent advances in AI to provide a fresh look at these restrictions through the most **comprehensive** account of the various instruments used in the past seven decades.
- With rising *deglobalization* concerns, these issues remain highly relevant today.
  - "*Tariffs on goods may be a prelude to **tariffs on money***" Financial Times, March 2025.

- **Three key questions**
  - How do we **consistently measure** the wide variety of BoP flows' restrictions across countries and time?
  - How do we account for **breadth and depth** of these policies?
  - What can we learn from their **use and motivations**?
- This paper uses LLMs on official documents to build a **comprehensive** and **granular** account of *de jure* cross-border restrictions since 1950.
  - **Daily information on 70,817 changes in BoP flows' restrictions** for all IMF member countries.
  - **New stylized facts** on use and evolution of these measures.

## Related Literature

- ***De jure* measures of capital account restrictions:** Quinn (1997), Chinn and Ito (2006), Fernandez et al. (2016), Parischa (2012), Ahmed and Zale (2014), Guisinger and Brune (2017), Binici and Das (2016), Acosta-Henao et al (2025).
  - Expand the set of restrictions examined.
  - Finer granularity of restrictions (categories, daily frequency, type, direction of flow)
  - Systematic and replicable approach to classify measures through LLMs
- **Motivations and real effects of capital account restrictions:** Magud et al. (2018), Rebucci and Ma (2018), Erten et al. (2021), Bianchi and Lorenzoni (2022), Ghosh et al. (2017), Baba and Kokenyne (2011), Erten and Ocampo (2017), Forbes et al. (2015).
  - Systematic analysis of country authorities' official documents.
  - Use high-frequency data for joint use of various instruments; analyze crisis episodes.
- **Combination of policy instruments:** Basu et al (2020), Adrian et al (2021).
  - Provide empirical evidence of how instruments affecting BoP are intertwined.

# Main Sources: The IMF's AREAERs

## FIRST ANNUAL REPORT ON EXCHANGE RESTRICTIONS



INTERNATIONAL MONETARY FUND

MARCH 1, 1950

### *Exchange Rate System*

The par value is 0.0341796 gram of fine gold per Austrian Schilling or S 26.00 = US\$1. The official limits for the U.S. dollar are S 25.80 buying, and S 26.20 selling, per US\$1—rates at which the Austrian National Bank will buy or sell. The rate for the U.S. dollar fluctuates in the exchange market between these limits. Market rates for other currencies vary between limits which result from combining the official limits for the U.S. dollar maintained by Austria and such limits in force in the country of the other currency concerned. "Agreement dollars" are quoted at par with the U.S. dollar. Effective costs may deviate in switch transactions. Forward premiums and discounts are left to the interplay of market forces.

Austria accepted the obligations of Article VIII, Sections 2, 3, and 4, of the Fund Agreement, as from August 1, 1962.

### *Administration of Control*

The Austrian National Bank administers the exchange control and issues licenses where required. Most exchange transactions pass through those Austrian banks that have been authorized to implement exchange control regulations.

The customs issue freely and without delay licenses required for imports of liberalized goods. Licenses, if required, for other imports and for exports have to be obtained from the competent ministry, viz., the Federal Ministry of Trade, Commerce, and Industry (Licensing Office) or the Federal Ministry of Agriculture and Forestry.

### *Prescription of Currency*

Settlements with the countries with which Austria maintains bilateral payments arrangements<sup>1</sup> are made through clearing accounts expressed in U.S. dollars. Settlements with all other countries

<sup>1</sup> Bulgaria, Czechoslovakia, Eastern Germany, Hungary, Poland, Romania, and U.S.S.R. Settlements with the U.S.S.R. are to take place in convertible currencies from January 1, 1971.

## AUSTRIA

may be made either in convertible currencies or through Free Schilling Accounts.

### *Nonresident Accounts*

There are two categories of nonresident accounts in schillings: Free Schilling Accounts and Blocked Accounts.

*Free Schilling Accounts* may be freely credited with proceeds from the sale of gold, gold coins, or convertible currencies by a nonresident to the Austrian National Bank, or to an authorized bank, as well as with payments permitted by the National Bank on the basis of a general or individual authorization. The accounts may be freely debited for payments to Austrian residents, with the exception of loans granted by nonresidents to residents, which require individual licenses. Balances may be freely converted into any foreign currency. Transfers between these accounts are free.

*Blocked Accounts* consist of funds that are due to nonresidents. A general license permits their use for many payments for current and capital invisibles. The transfer abroad of funds in Blocked Accounts is subject to an individual license. In most cases the licenses are granted freely if the funds belong to residents of countries with which Austria makes settlements in convertible currencies. As a result, Blocked Accounts largely represent funds due to residents of countries with which Austria settles payments through bilateral accounts.

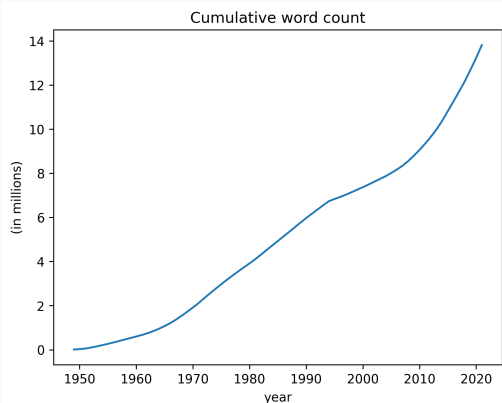
Nonresidents may also maintain Nonresident Accounts in convertible foreign currencies. These accounts may be debited for the same purposes as Free Schilling Accounts.

### *Imports and Import Payments*

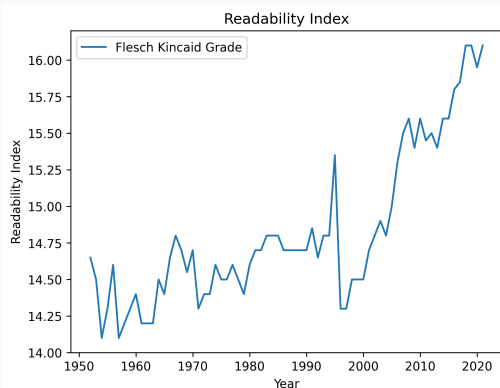
All commodities not included in the Annex to the Foreign Trade Law are free of import licensing and may be imported from any country without quantitative restriction. All goods included in the Annex require licenses. Most of these goods are free of quantitative restriction. The liberalization depends on the group of countries from which they are imported; for such liberalized goods, licenses are issued by the customs at the time of

# Why ML/AI tools? Address two key challenges

- Increased **volume** and **complexity** of text & Changing structure over time

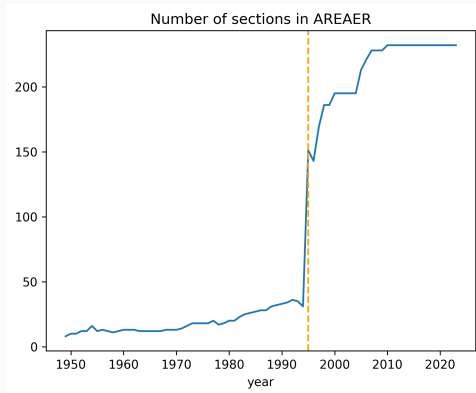


(Sample and avg. words per country)



## Why ML/AI tools? Address two key challenges (cont.)

- Increased volume and complexity of text & **Changing structure** over time



# Methodology

- Team manually labelled a **training sample of 3000 changes in restrictions** ( $\approx$  5% of sample).
  - Examples drawn from range of countries and time periods.
  - **Labels:** 8 categories, direction of change (tightening vs. loosening), direction of flow (inflow vs. outflow), types (price-based, non price-based, admin.), numerical info.
- Domain-adapted BERT **LLM customized to AREAERs**.
  - Fine-tuned on 80% of labelled examples
  - Performance tested on the remaining 20% of manually labelled examples
  - Performance exceeds other benchmarks (OpenAI GPT, LLama, word-count models)
  - **Avg. matching rate of about 85%**
  - Model accuracy comparable to human coding errors in 15% of mismatches

(performance metrics)



## Eight Different Categories of BoP Flows' Restrictions

Category	Count	Share (%)
1. FX markets	9591	13.5
2. Payments and receipts	6731	9.5
3. Resident and non-resident accounts	3454	4.9
4. Imports and import payments	18959	26.8
5. Exports and export proceeds	7792	11.0
6. Invisible transactions and current transfers	5087	7.2
7. Capital account transactions	8760	12.4
8. Specific to the financial sector	5010	7.1
<b>Overall</b>	<b>70817</b>	<b>100.0</b>

Definitions & Examples:

Cat.1

Cat.2

Cat.3

Cat.4

Cat.5

Cat.6

Cat.7

Cat.8

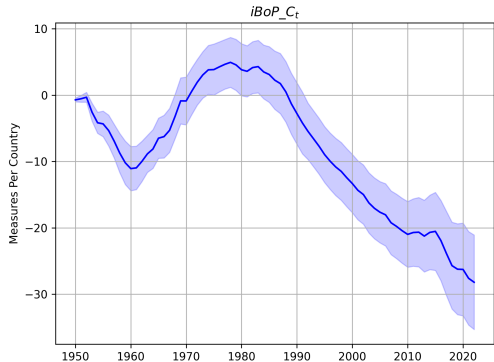
- An integrated BoP flow restriction index on changes (iBoP-C) for country  $i$ , category  $c$ , year  $t$ :

$$iBoP-C_{itc} = \sum_{\tau \leq t} \left( \sum_{k \in \mathcal{T}_{i\tau c}} Tightening_{k,i\tau c} - \sum_{l \in \mathcal{L}_{i\tau c}} Loosening_{l,i\tau c} \right)$$

Caveats and Limitations

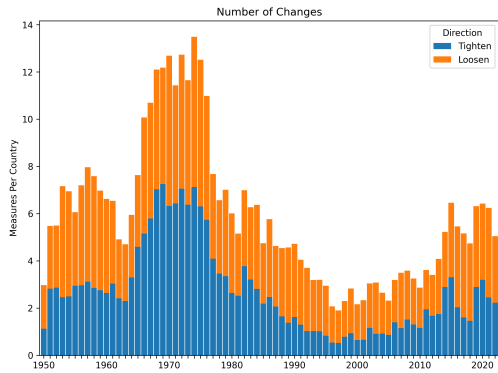
# Stylized Fact 1: Liberalization trends have not evolved linearly

- Average country tightened in the years leading up to the breakdown of Bretton Woods, and began loosening in the mid-1980s.

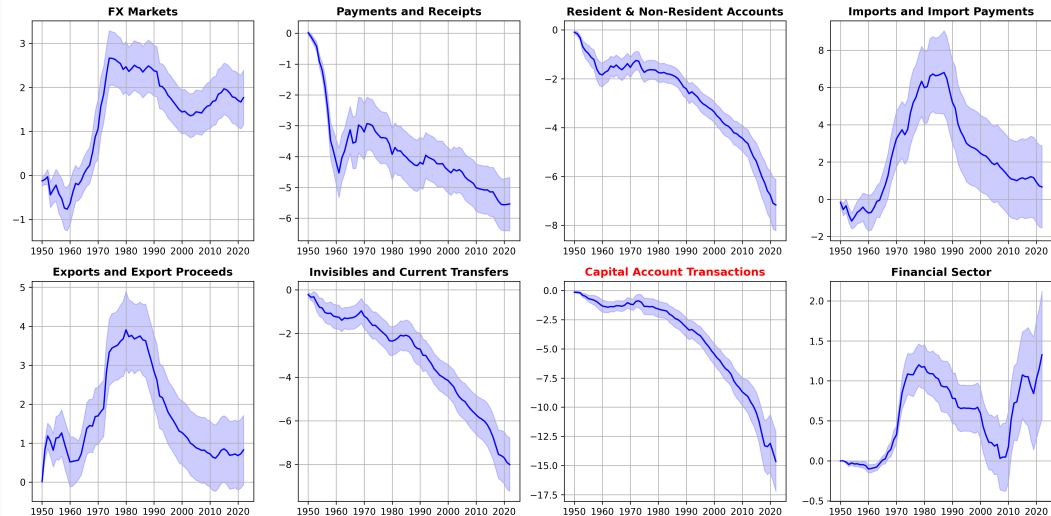


Balanced panel

Median

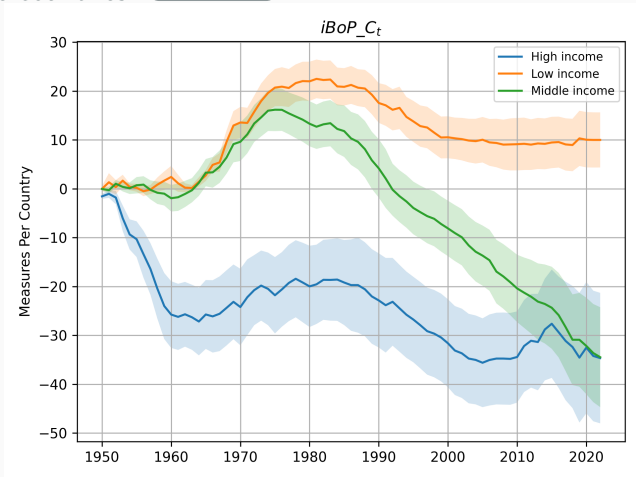


## Stylized Fact 2: Current account restrictions are a significant policy lever



## Stylized Fact 3: Differential pace of liberalization

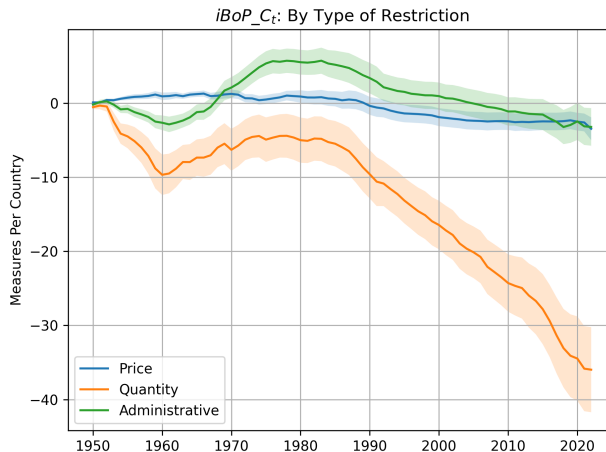
- High income countries liberalizing faster and to a greater extent than middle and lower income countries. Balanced panel



## Stylized Fact 4: Quantity versus administrative restrictions

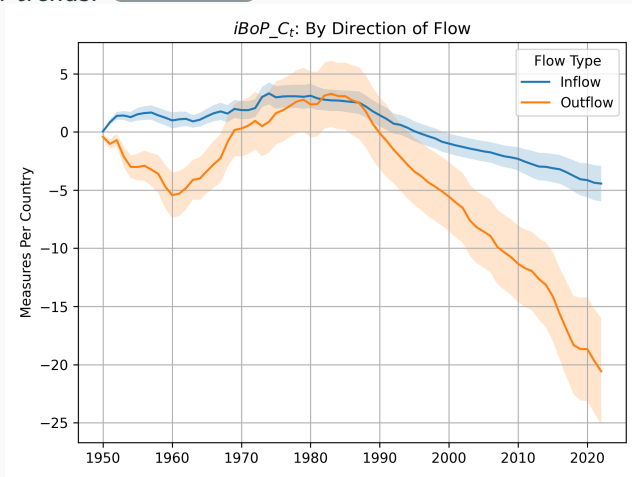
- Quantity-based restrictions have liberalized over time, while administrative requirements persist, particularly among low income countries.

By Income Group



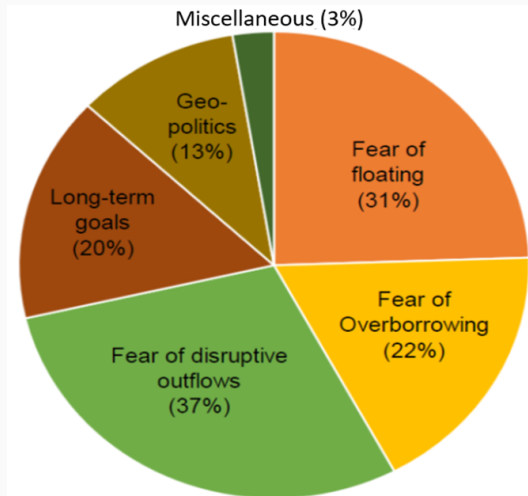
## Stylized Fact 5: Inflow versus outflow restrictions

- Outflow restrictions have displayed more action than on inflows along the liberalization trends. By Income Group



## Stylized Fact 6: Motivations for capital flow measures (CFMs)

- Two (one) thirds of “macro-critical” CFMs motivated by cyclical (non-cyclical) reasons.





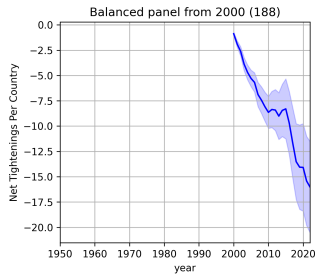
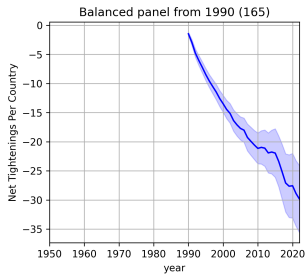
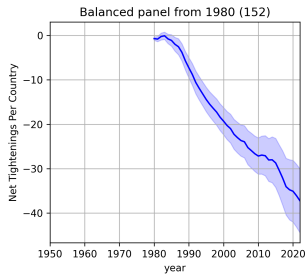
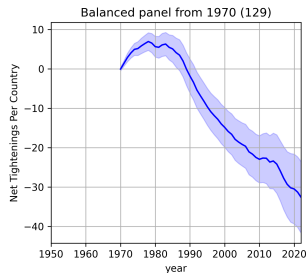
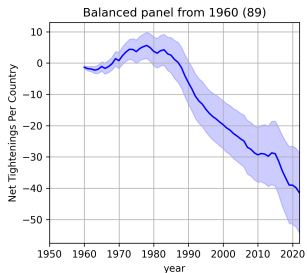
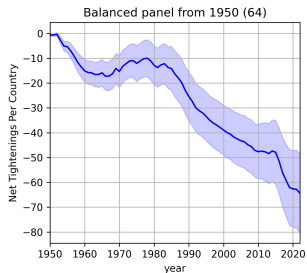
# On-going Extensions & Robustness

1. Comparing (and replicating) previous studies [link](#)
2. Use of different BoP restrictions [link](#)
3. Intensity Measures [link](#)
4. Stance (iBoP-S) index [link](#)
5. Finer iBoP-C index w/ 29 categories [link](#)
6. Excluding restrictions predominantly among residents [link](#)
7. Excluding trade and macroprudential policies [link](#)
8. LLM Training & Performance [link](#)

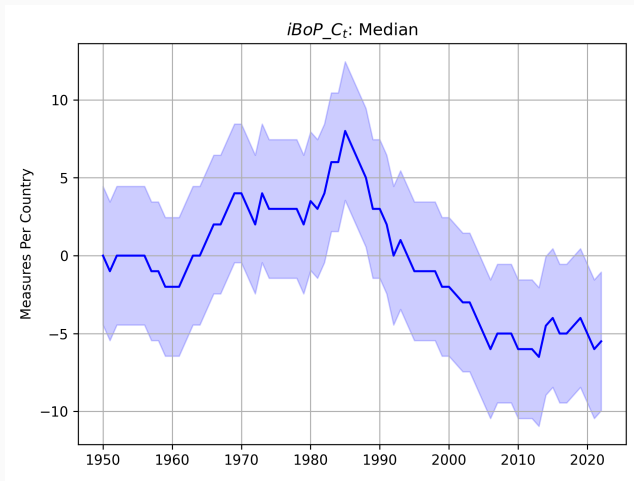
- Machine learning techniques use to build high-frequency, multi-category records of cross-border flow restrictions spanning the decades since 1950
  - Better understanding of the changing drivers behind the IMS
  - Redraw the landscape of cross-border restrictions worldwide since Bretton Woods
- **More work ahead:**
  - Enhanced LLM training with institutional Knowledge from IMF Staff
  - High-frequency identification
  - Extend the Stance index since 1950
- **Timeline for the release of the paper and dataset**
  - Complete working paper by end of Summer
  - Publicly available dataset by Fall

# Appendix

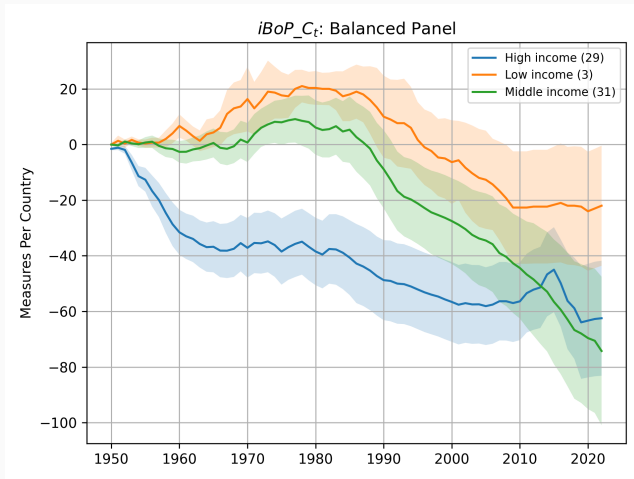
# Balanced panel: Overall

[Back to Fact 1](#)

## Fact 1: Median $iBoP\_C_t$ [Back to Fact 1](#)



## Fact 3, balanced panel: By Income Group [Back to Fact 3](#)



**Figure 1:** Balanced panel from 1950 (N=63)

- **FX markets restrictions: Definition**

Includes (1) exchange restrictions and multiple currency practices (MCPs) maintained by a member country, (2) exchange measures on payments and transfers in connection with international transactions imposed by member countries for reasons of national or international security, (3) foreign exchange transactions subject to a special tax, (4) foreign exchange transactions subsidized using separate, non-market exchange rates, (5) restrictions imposed on foreign exchange markets.

- **FX markets restrictions: Examples**

- *Tighten*: A sliding-scale exchange tax was introduced on export proceeds from karakul, to become effective whenever the price a skin exceeded US\$8.24. (Afghanistan, 1966-03-09)
- *Loosen*: The 1% tax on purchases by resident natural persons of foreign currencies and foreign payments instruments was lifted. (Russia, 2003-01-01)

- **Arrangement for payments and receipts: Definition**

Includes (1) official requirements affecting the selection of currency and the method of settlement for transactions with other countries, (2) agreements that prescribe specific rules for payments to each other, including cases in which private parties are also obligated to use specific currencies, (3) separate rules for trading in gold domestically and with foreign countries, (4) regulations governing the physical movement of means of payment between countries.

- **Arrangement for payments and receipts: Examples**

- *Tighten*: The bilateral payments agreements with the People's Republic of China, Hungary, Romania, and Yugoslavia expired. (Algeria, 1975-12-31)
- *Loosen*: Gold producers in Papua New Guinea were exempted from the requirement of surrendering newly mined gold to the Reserve Bank of Australia. (Australia, 1973-04-02)



# Category definitions and examples: Residents and non-resident accounts

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- **Residents and non-resident accounts: Definition**

Indicates (1) whether resident accounts that are maintained in the national currency or in foreign currency, locally or abroad, are allowed and describes how they are treated and the facilities and limitations attached to such accounts, (2) whether local nonresident accounts maintained in the national currency or in foreign currency are allowed and describes how they are treated and the facilities and limitations attached to such accounts.

- **Residents and non-resident accounts: Examples**

- *Tighten*: Central Bank of the Argentine Republics prior authorization must be required except the customer submits an affidavit declaring that during the last 90 days as of the date of the transfer request, and also during the following 90 days, the customer had/will not arrange sales or exchanges of securities settled in foreign currency in Argentina or transfer of same to foreign depository entities. (Argentina, 2021-07-12) - *Loosen*: Residents of Colombia were authorized to open foreign exchange accounts abroad, and were granted a six-month period to legalize foreign exchange accounts held abroad through the payment of a 3 percent tax amnesty on the amount held abroad; after June 26, the rate of tax payment would be raised to 5 percent. (Colombia, 1991-06-24)

- **Imports and import payments: Definition**

Describes the nature and extent of exchange and trade restrictions on imports. Includes: (1) foreign exchange budgets, (2) financing requirements of imports, (3) documentation requirements for the release of foreign exchange for imports, (4) import licenses and other non-tariff measures, (5) import taxes and/or tariffs, (6) state import monopolies.

- **Imports and import payments: Examples**

- *Tighten*: Licensing of imports was employed as a temporary measure for a six-month period for certain types of plaster articles (Republic of Belarus Council of Ministers Resolution No. 104 of February 8, 2016, on Licensing Imports of Certain Types of Plaster Articles and Additions to Republic of Belarus Council of Ministers Resolution No. 156 of February 17, 2012). (Belarus, 2016-02-15)
- *Loosen*: The margin requirement for the opening of LCs against imports of rice and wheat was reduced to 25% from 100%. (Bangladesh, 2002-01-31)

- **Exports and export proceeds: Definition**

Describes restrictions on the use of export proceeds, as well as regulations on exports.

Includes: (1) repatriation and surrender requirements for exporters, (2) export financing requirements, (3) export documentation requirements, (4) export licenses, (5) export taxes.

- **Exports and export proceeds: Examples**

- *Tighten*: Exports of tanned leather and skins were made subject to export duty of 7%. (Brazil, 2006-01-01) - *Loosen*: Exports became free from licensing requirements, except for certain products for which permits must be obtained (e.g., weapons, drugs, rough diamonds, dual-use items, and art objects). (Croatia, 2006-11-30)

# Category definitions and examples: Invisible transactions and current transfers

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## ■ Invisible transactions and current transfers: Definition

Describes (1) procedures for effecting payments abroad in connection with current transactions in invisibles, with reference to prior approval requirements, the existence of quantitative and indicative limits, and/or bona fide tests, and (2) regulations governing exchange receipts derived from transactions in invisibles—including descriptions of any limitations on their conversion into domestic currency—and the use of those receipts.

## ■ Invisible transactions and current transfers: Examples

- *Tighten*: Amounts owed by nonresidents for services and all income from foreign assets earned outside the CEMAC must be collected through a licensed bank and repatriated immediately (previously within 30 days). (Equatorial Guinea, 2019-03-01) - *Loosen*: Authorized banks were allowed to provide foreign currency to pay up to the full amount of wages due to foreign crew members (previously, a limit equivalent to F\$10,000 a beneficiary applied). (Fiji, 2003-01-01)

- **Capital account transactions: Definition**

Describes regulations influencing both inward and outward capital flows. Includes (1) repatriation requirements, (2) controls on capital and money market securities, (3) controls on credit operations, (4) controls on direct investment, (5) controls on real estate transactions, (6) controls on personal capital transactions.

- **Capital account transactions: Examples**

- *Tighten*: Investment abroad by residents in debt securities is not authorized (Regulation No. 14-04 of September 29, 2014). (Algeria, 2014-09-29) - *Loosen*: The maximum maturity of external loans subject to the 6% IOF rate was decreased from 1,800 days to 720 days. (Brazil, 2012-06-14)

- **Provisions specific to the financial sector: Definition**

Describes (1) regulations specific to commercial banks and other credit institutions, such as monetary, prudential, and foreign exchange controls, (2) controls specific to institutions, such as insurance companies, pension funds, investment firms (including brokers, dealers, or advisory firms), and other securities firms (including collective investment funds). Inclusion of an entry does not necessarily signify that the aim of the measure is to control the flow of capital.

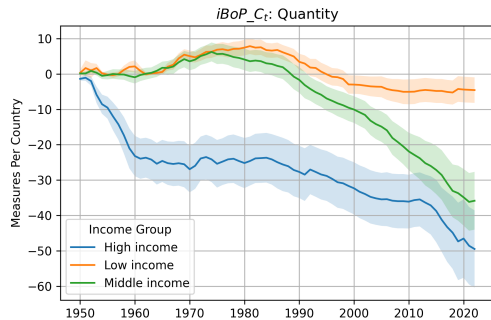
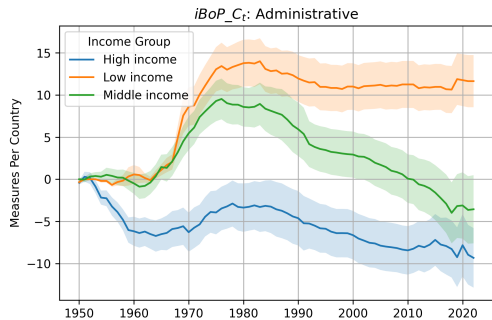
- **Provisions specific to the financial sector: Examples**

- *Tighten*: The U.S. dollar reserve requirement for foreign currency deposits was raised to 90% from 80%. (Haiti, 2012-04-16) - *Loosen*: The limit for investments in securities, mutual fund and investment fund units, money market instruments, other negotiable financial instruments, and monetary claims and other comparable claims in foreign currency, on notification to the Central Bank of Iceland, was raised to ISK 100 million a party. (Iceland, 2017-01-01)

## Stylized Fact 4: Price versus non-price restrictions

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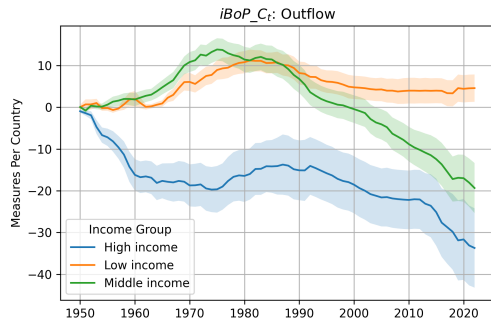
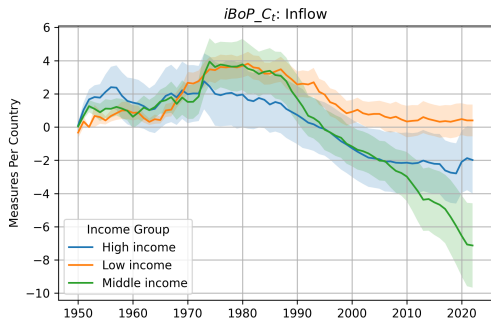
- Administrative requirements are important policy levers in middle and low income countries, and have not loosened significantly since the 1970s and 80s.



## Stylized Fact 5: Inflow versus outflow restrictions

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- Inflow restrictions have liberalized at a similar pace across income groups, while outflow restrictions have liberalized faster among higher income countries.





- **Policy changes weighted equally.**
  - All reported changes are weighted equally, regardless of economic impact.
  - An extension incorporating intensity-based classifications (following the ordinal scales used by Quinn, 1997) is presented as extension.
- **iBoP-C captures adjustments, not absolute restrictiveness.**
  - Identifies frequency and direction of policy changes but not the absolute level of restrictiveness.
  - Addressing absolute restrictiveness requires initial policy stance data.
  - Provide a stance index, iBoP-S, but only from 1995.
- **Measures do not overcome missing information in raw source.**
  - Early AREAER reports (pre-1990s) may underreport restrictions due to evolving reporting standards.
  - Our machine learning approach ensures classification consistency, but do not address issue of missing information in raw source.
  - Several refinement extensions to ensure consistency of measures.

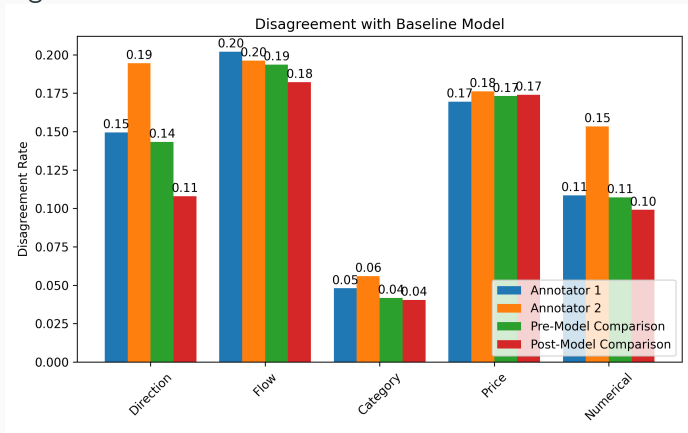
## Evaluation of model performance

Baseline model (Domain-adapted BERT) performs well compared to other classification models.

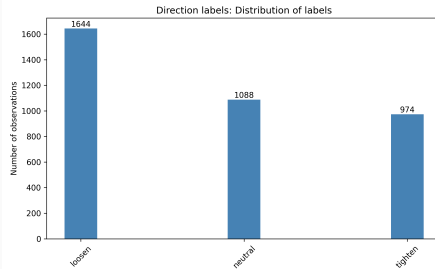
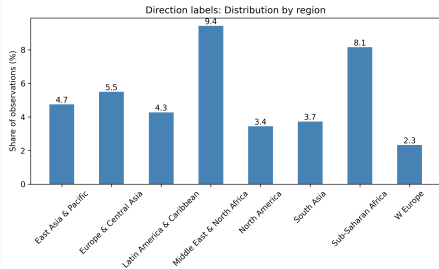
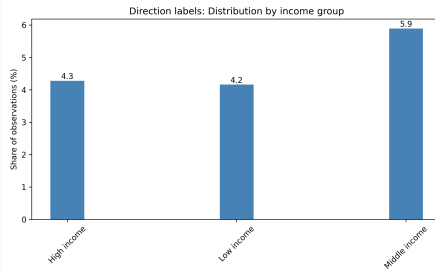
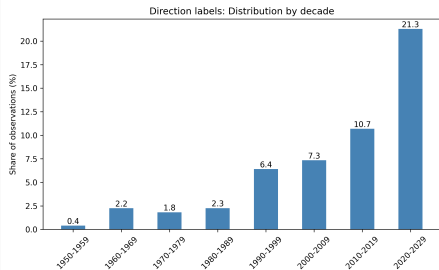
Label Model	Direction	Flow	Category	Price	Numerical
<b>BERT (DAPT)</b>	<b>0.870</b>	<b>0.806</b>	0.816	<b>0.767</b>	0.942
<b>BERT (base)</b>	0.854	0.797	<b>0.822</b>	0.696	<b>0.949</b>
<b>GPT 4o mini</b>	0.857	0.679	0.110	0.567	0.917
<b>Llama 32 3B</b>	0.854	0.742	0.092	0.658	0.899
<b>TFIDF + Logistic Reg.</b>	0.752	0.758	0.687	0.638	0.899
<b>TFIDF + RF</b>	0.738	0.734	0.546	0.600	0.919
<b>TFIDF + SVC</b>	0.772	0.770	0.755	0.651	0.904

# Review of manually annotated labels

Further reduce discrepancies by discussing cases with inter-coder disagreements and reviewing them against a baseline LLM model.



# Distribution of Training Sample

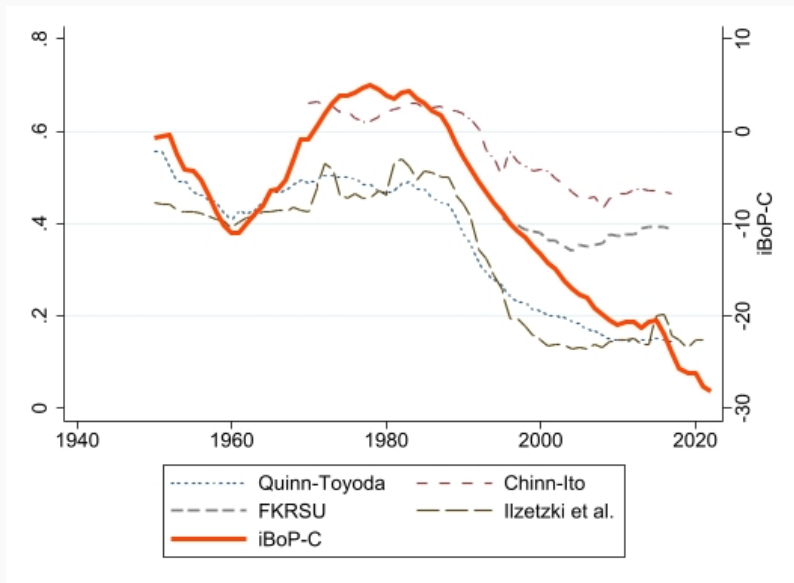


## Comparison with previous work: Correlations [\(Back to Extensions\)](#)

	Quinn-Toyoda	Chinn-Ito	Ilzetsky et al	FKRSU (org)	FKRSU (rep)	FKRSU (ext)	iBoP-C
Quinn-Toyoda	1.00						
Chinn-Ito	0.97	1.00					
Ilzetsky et al	0.95	0.96	1.00				
FKRSU (org)	0.23	0.43	0.72	1.00			
FKRSU (rep)	0.10	0.12	0.53	0.90	1.00		
FKRSU (ext)	0.82	0.52	-0.12	-0.52	-0.59	1.00	
iBoP-C	0.90	0.96	0.91	-0.06	-0.21	0.84	1.00

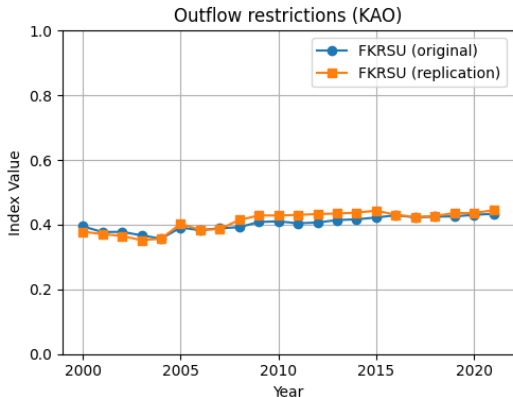
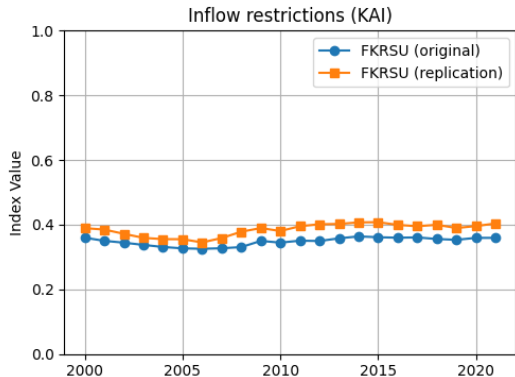
Note: Ilzetsky, et al. is the share of countries with multiple/dual/parallel rates; FKRSU is Fernandez et.al (2016). FKRSU (org) is the original FKRSU dataset; FKRSU (rep) replicates FKRSU (org) with LLMs; FKRSU (ext) extends the dataset across more countries.

## Comparison with previous work: Time Series [\(Back to Extensions\)](#)



## Using LLM to replicate previous work

- LLMs can replicate the capital control indices on inflows/outflows in Fernandez et al (2016), KAI/KAO. Corrs are 0.91 and 0.94, respectively. (Extensions))



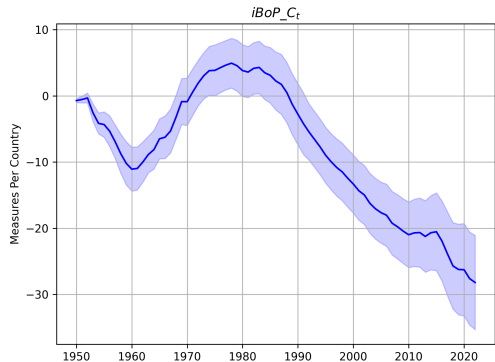
# Adjusting Measures by Intensity

- We extend the **LLM** to classify measures according to their intensity level
- Follow seminal work by **Quinn (1997)**
- We **scale the iBoP-C by a scalar ( $\alpha$ )** that takes on 5 alternative values:
  - $\alpha = 0.00$  when a **notification or documentation requirement** is needed
  - $\alpha = 0.25$  when a **tax** is levied
  - $\alpha = 0.50$  when a **quantitative limit** is imposed
  - $\alpha = 0.75$  when an **approval** is required
  - $\alpha = 1.00$  when a **ban** exists

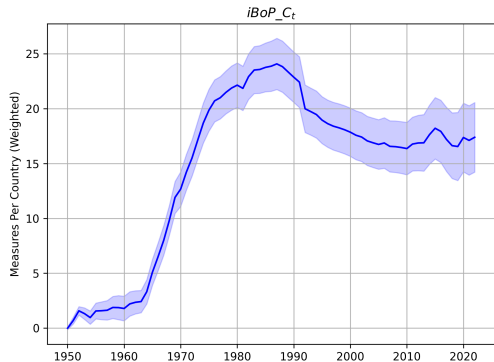
(Extensions))



# Adjusting Measures by Intensity (cont.)



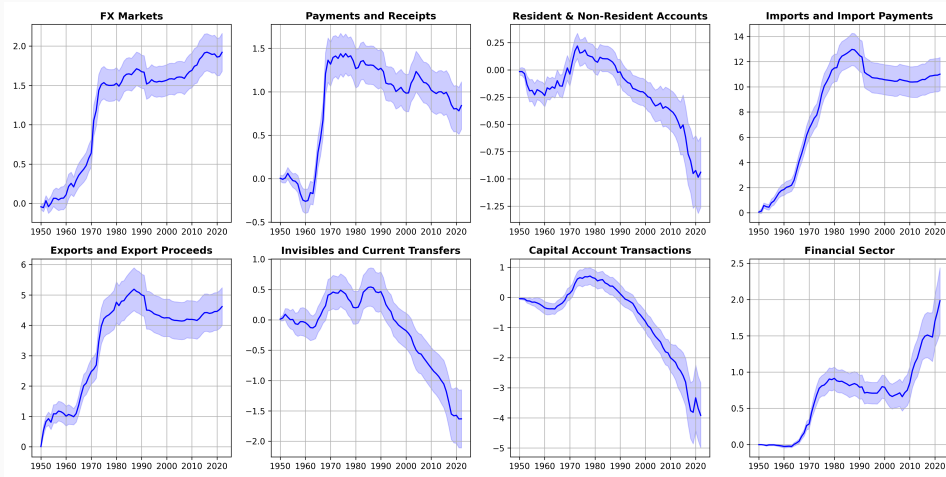
Net Tightenings (unweighted)



Net Tightenings (weighted by **Intensity**)

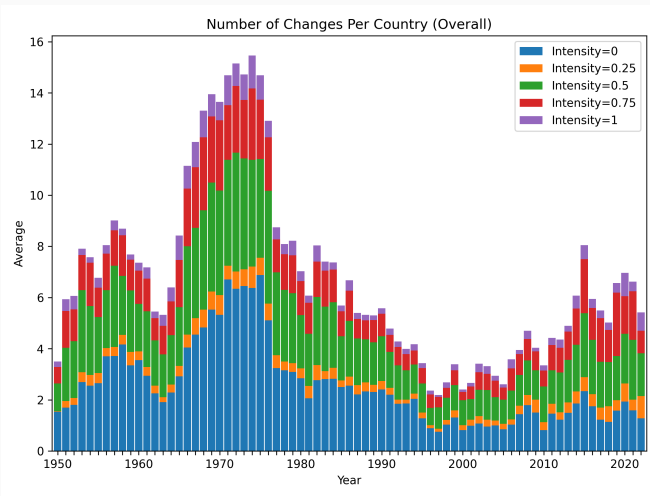
(Extensions))

# Adjusting Measures by Intensity (cont.)



(Extensions))

# Adjusting Measures by Intensity (cont.)

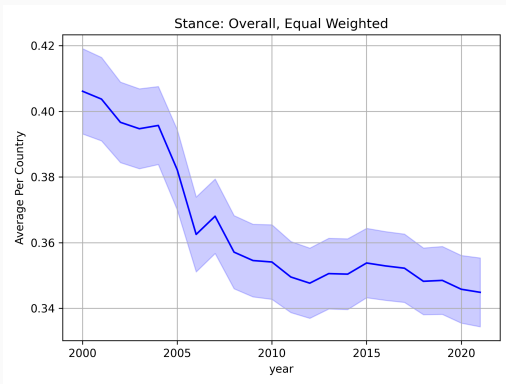


## Additional Measures of Restrictions

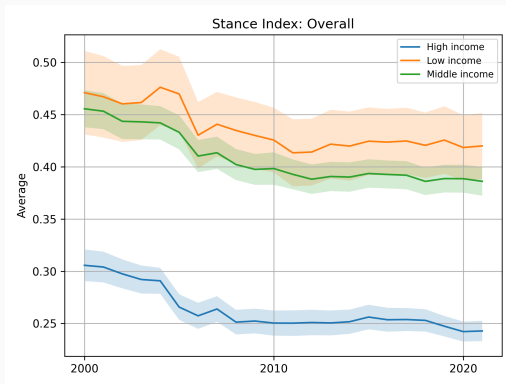
- Change Index iBoP-C captures adjustments, not absolute restrictiveness.
  - Identifies frequency and direction (tightening vs. loosening) of policy changes but not the absolute level of restrictiveness.
  - Addressing absolute restrictiveness requires initial policy stance data
- **A Stance Index, iBoP-S**

$$iBoP-S_{itc} = \frac{1}{N_c} \sum_{s \in S_c} \mathcal{I}_{itc}$$

# Additional Measures of Restrictions



**(a)** Stance of restrictions: iBoP-S

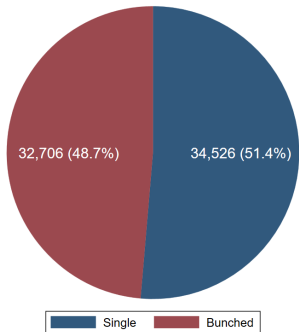


**(b)** iBoP-S by income group

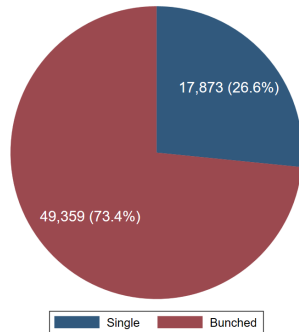
(Extensions))

# Use of BoP Flow Restrictions - "Bunching" of Interventions

- In a window of  $\pm 10$  (30) days, about 50% (75%) of the measures are "bunched" with at least another measure (Extensions) (Same Day) (Time Series)



Window: -10 to +10 days



Window: -30 to +30 days

## How measures are combined - Conditional usage (%) in 30 Day Window

- Within a 30 day window, bunching occurs via a **recalibration** and combination with other measures, particularly **Imports and Import Payment** restrictions

	FX Markets	Pyts & Rcpts	(Non)Res. Act.	Imports & Pyts	Exports & Pcds	Invis Trans	Capital Act.	Fin. Sector
FX Markets	27	8	6	23	12	8	10	6
Pyts & Rcpts	11	17	7	29	12	9	12	4
(Non)Res. Act.	12	10	11	23	10	12	16	6
Imports & Pyts	9	8	4	44	16	7	8	3
Exports & Pcds	10	8	4	34	23	7	10	4
Invis Trans	12	9	8	27	14	13	13	4
Capital Act.	11	8	7	26	12	9	18	8
Fin. Sector	13	7	8	18	9	7	21	18
AVG	13	9	7	28	13	9	13	7

(Extensions)

# Use During Crises - Panel OLS Regressions / by Instrument

- Use of cross-border flow restrictions **nearly doubles** in crises
- Some instruments are **used more systematically** than others

	(1) <b>All</b> <b>Categories</b>	(2) FX Mkt	(3) Pyts & Rcpts	(4) (Non)Res. Act.	(5) Imports & Pyts	(6) Exports & Pcads	(7) Invis. Tran.	(8) Cap. Act.	(9) Fin. Sector
<b>Crisis Dummy</b> (Laeven-Valencia)	<b>2.162***</b> (0.43)	<b>0.598***</b> (0.11)	0.070 (0.06)	0.250*** (0.07)	<b>0.696***</b> (0.17)	<b>0.291***</b> (0.10)	0.192*** (0.06)	0.083 (0.11)	-0.047 (0.08)
Pseudo R2	0.380	0.185	0.233	0.122	0.326	0.307	0.232	0.191	0.225
Observations	8146	8146	8146	8146	8146	8146	8146	8146	8146
Δ Real GDP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

(Extensions)

(Type of Crisis)

(Direction & Instrument)



## Use During Crises - Panel OLS Regressions / Directions

- Both **tightening** *and* **loosening** during crises
- Outflow measures** used more heavily than inflow ones

	(1)	(2)	(3)	(4)	(5)	(6)
	Tightening	Loosening	Net tightening	Inflow	Outflow	Net inflow
<b>Crisis Dummy</b> (Laeven-Valencia)	<b>0.899***</b> (0.22)	<b>0.864***</b> (0.25)	0.035 (0.25)	0.397*** (0.12)	<b>1.004***</b> (0.25)	-0.607*** (0.22)
Pseudo R2	0.336	0.311	0.147	0.324	0.307	0.203
Observations	8146	8146	8146	8146	8146	8146
$\Delta$ Real GDP	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

(Extensions)

(Type of Crisis)

(Direction & Instrument)

## Use During Crises - Panel OLS Regressions / Type of Crisis

- Use of BoP restrictions more systematically linked to **currency and sovereign debt Crises**, particularly **outflow measures**

	(1) All	(2) Tightening	(3) Loosening	(4) Inflow	(5) Outflow	(6) Net Inflow
Banking Crisis	0.641 (0.70)	0.638 (0.42)	0.191 (0.46)	0.263 (0.40)	0.482 (0.59)	-0.219 (0.37)
Currency Crisis	<b>2.454***</b> (0.57)	<b>1.479***</b> (0.34)	<b>1.561***</b> (0.37)	<b>1.448***</b> (0.32)	<b>2.131***</b> (0.48)	-0.683** (0.30)
Sovereign Debt Crisis	<b>2.782***</b> (0.97)	<b>1.966***</b> (0.57)	0.933 (0.63)	<b>1.225**</b> (0.55)	<b>2.449***</b> (0.81)	-1.224** (0.50)
Pseudo R2	0.381	0.355	0.325	0.360	0.354	0.203
Observations	8146	8146	8146	8146	8146	8146
$\Delta$ Real GDP	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

# Use During Crises - Panel OLS Regressions / by Direction & Instrument

- Heterogeneity in the use of instruments
- Import Pyts. and Cap. Act deployed in outflow tightening
- Export Pcds in outflow tightening and loosening
- Others employed uniformly (FX mkts)

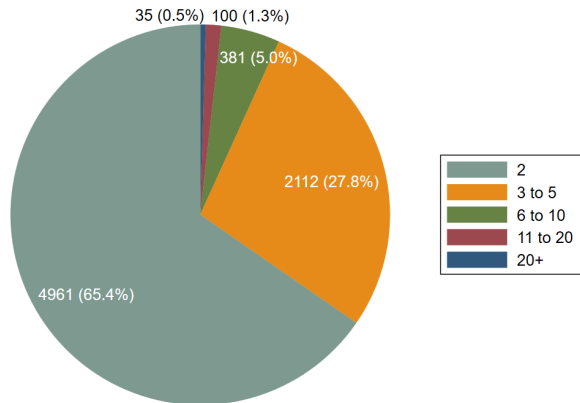
	(1) FX Mkt	(2) Pyts & Rcpts	(3) (Non)Res. Act.	(4) Imports & Pyts	(5) Exports & Pcds	(6) Invis. Tran.	(7) Cap. Act.	(8) Fin. Sector
LHS = Outflow Tightening								
Any Crisis	0.467*** (0.10)	0.061 (0.04)	0.107*** (0.03)	0.230** (0.11)	0.026 (0.02)	0.091*** (0.03)	0.114** (0.04)	0.029 (0.05)
LHS = Outflow Loosening								
Any Crisis	0.480*** (0.08)	0.017 (0.04)	0.137*** (0.04)	0.445*** (0.10)	0.038** (0.02)	0.088* (0.05)	-0.093 (0.07)	-0.096** (0.04)
LHS = Inflow Tightening								
Any Crisis	0.454*** (0.10)	0.049 (0.03)	0.078*** (0.02)	-0.018 (0.02)	0.126** (0.06)	0.015 (0.01)	0.051 (0.03)	0.013 (0.05)
LHS = Inflow Loosening								
Any Crisis	0.467*** (0.07)	0.016 (0.04)	0.094*** (0.03)	0.014 (0.02)	0.114** (0.05)	0.040*** (0.01)	0.046 (0.05)	-0.036 (0.04)

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

# Use of BoP Flow Restrictions - Same Day Bunching

Number of Measures on the Same Day

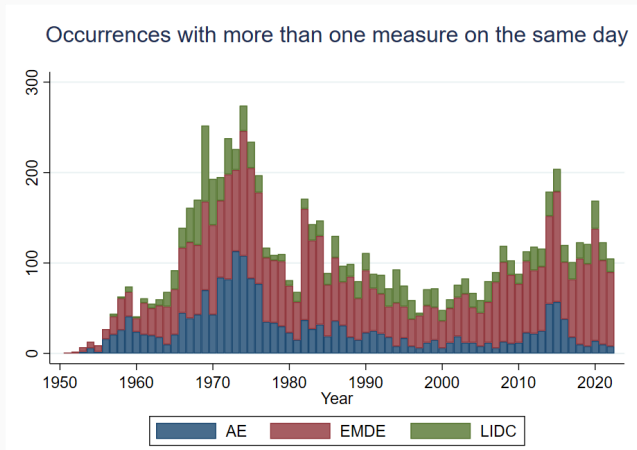


Note: This sample is conditional on changing at least two measures which accounts for 14.5% of all days where a measure was changed.

(Extensions)

(Use)

# Use of BoP Flow Restrictions - Same Day Bunching over time & across countries

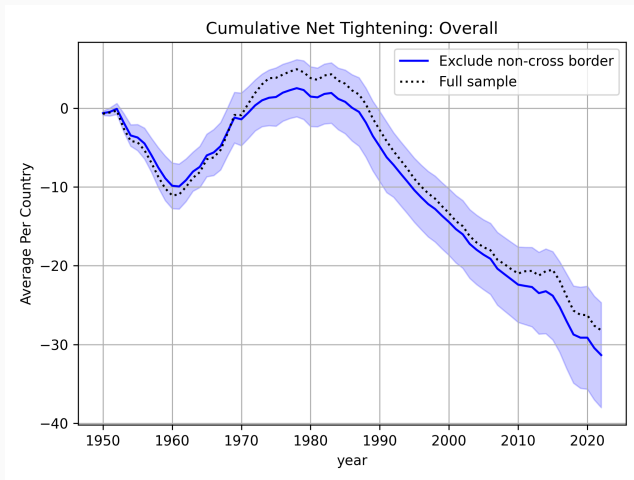


Note: This sample is conditional on changing at least two measures which accounts for 14.5% of all days where a measure was changed.

(Extensions)

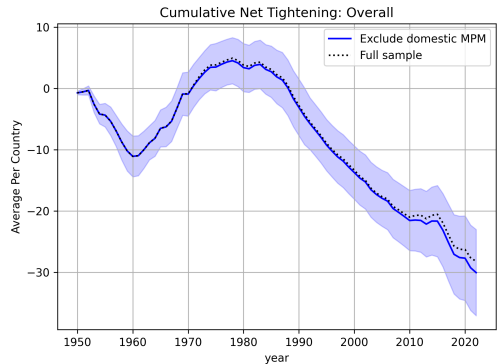
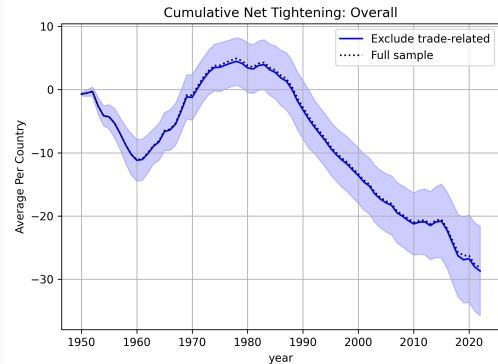
(Use)

# Excluding Non-Cross Border Restrictions



(Extensions))

# Excluding Trade, MacroPru Restrictions



(Extensions))

## A more granular view of the past three decades: 1995-2022 (Extensions))

For post-1995 restrictions, further disaggregate 8 categories into 29 granular subcategories.

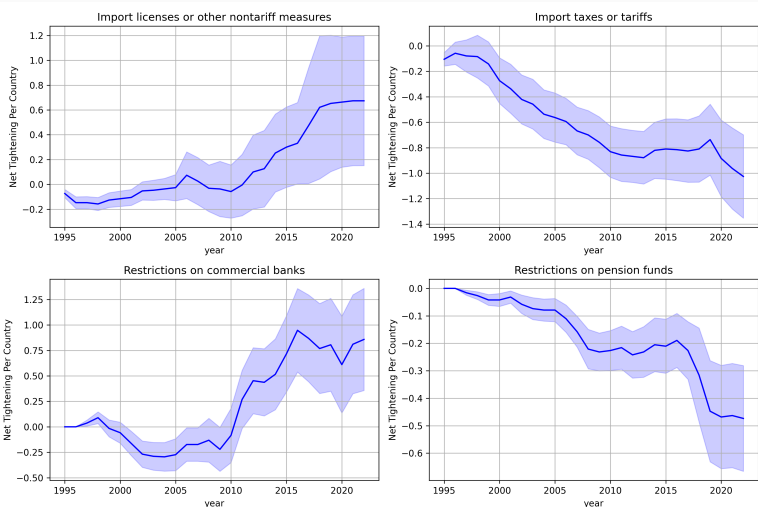
Subcategory	Count
Overall	22852
MCPs, Exchange taxes and subsidies	218
Exchange measures for security reasons	1203
Foreign exchange market restrictions	1317
Other FX restrictions	1500
Prescriptions of currency use	814
Payment arrangements, trade of banknotes and gold	1318
Restrictions on resident accounts	974
Restrictions on nonresident accounts	705
Import financing and documentation requirements	838
Import licenses and other non-tariff measures	887
Import taxes and tariffs	1154
Other imports and import payment restrictions	10
Export proceeds repatriation and surrender requirements	677
Export financing and documentation requirements	585
Export taxes	221

Subcategory	Count
Payments of invisible transactions and current transfers	1430
Proceeds from invisible transactions and current transfers	294
Capital repatriation and surrender requirements	114
Controls on capital market securities	2330
Controls on credit operations	769
Controls on direct investment	802
Controls on real estate transactions	271
Controls on personal capital transactions	381
Other controls on capital transactions	776
Restrictions specific to commercial banks	2914
Restrictions specific to institutional investors	302
Restrictions specific to pension funds	266
Restrictions specific to investment firms	172
Other restrictions specific to financial sector	281

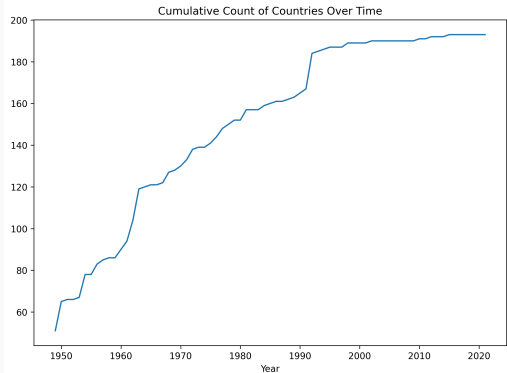


## Selected trends by subcategories (Extensions))

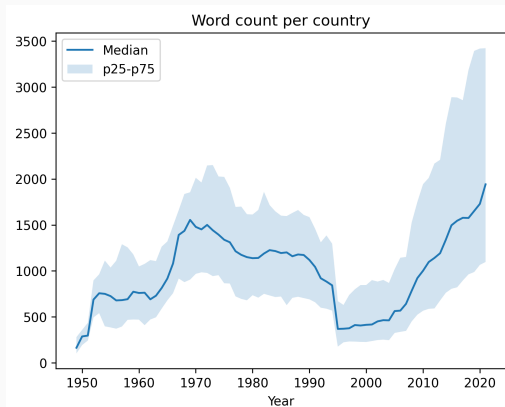
- (1) Import taxes/tariffs have broadly loosened, while non-tariff measures have tightened.
- (2) Restrictions on commercial banks have tightened since GFC.



# Sample of Member Countries & Words per Country



return



# Selected Cases & No. Words

