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

Katharina Bergant, Andrés Fernández, Ken Teoh, and Martín Uribe

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Prepared by Katharina Bergant, Andrés Fernández, Ken Teoh, and Martín Uribe*

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ABSTRACT: Employing large language models to analyze official documents, we construct a comprehensive record of daily changes in de jure restrictions on cross-border flows worldwide since the 1950s. Our analysis uncovers the wide array of instruments used to regulate cross-border financial flows over the past seven decades, leveraging the fine granularity of the new measures to characterize cross-country and time-series variation across eight categories of restrictions —- distinguishing by flow, direction, instrument type, intensity, and overall policy stance. We exploit the high frequency nature of the new data to document novel patterns in the use of these restrictions, as well as their relationship to crises and political economy determinants.

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Author's E-Mail Address:	kbergant@imf.org, hteoh@imf.org, afernandes@imf.org, mu2166@columbia.edu

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WORKING PAPERS

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1 Introduction

Periods of heightened geopolitical tension and financial fragmentation have revived fundamental questions about how governments manage international financial flows. Recording the full landscape of cross-border restrictions—spanning current-account measures, foreign-exchange market regulations, financial-sector provisions, and capital-account instruments—is essential for understanding how countries have deployed these measures in a historical context, especially during periods of economic stress. Despite a long literature documenting specific facets of capital controls, empirical analysis has remained constrained by data that capture only a narrow subset of instruments, typically at low frequency, often unable to distinguish between in- and outflow measures or different intensities of measures. Consequently, we still lack systematic evidence on how policymakers use the broader set of cross-border measures in practice and what motivates their deployment.

This paper addresses these gaps in two ways. First, by introducing a new dataset that substantially expands the documented universe of cross-border restrictions.[1] Applying modern machine learning and artificial intelligence tools to the full text of the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER), we record over 40,000 policy changes across 195 countries from 1950 to the present, classified by instrument type, direction (inflow versus outflow), and whether each action tightens or eases restrictions—at a daily frequency. This approach yields a considerably richer measure of financial liberalization than existing indicators, most of which begin in the 1990s and therefore fail to capture the largest episode of countries' financial opening. Second, we extensively document how and why countries deploy these measures—across time, across instruments, and especially during periods of crisis. Capital account restrictions—the focus of the existing literature—constitute only a subset of the vast toolkit that policymakers have used to regulate cross-border flows; current account measures, foreign exchange market regulations, and financial sector provisions have all played significant roles, particularly in earlier decades.

Furthermore, policymakers tend to deploy these instruments in packages rather than in isolation, with more than three-quarters of measures occurring within a 30-day window of at least one other action. We find that the use of such policy packages

[1] These datasets will be made publicly available via the authors' website and may also be accessed here: BFTU Data. Further details of the datasets are provided in Appendix E.

rises markedly during crisis episodes, when countries more than double their typical pace of restrictions and shift disproportionately toward tightening outflow controls. Finally, a systematic analysis of official motivations for a subset of macro-critical measures reveals that while most controls are driven by macroeconomic concerns—fear of disruptive outflows, exchange rate management, or overborrowing—roughly one-third are motivated by longer-term objectives such as financial liberalization or geopolitical considerations.

Our data source is the IMF's AREAER, published annually since 1950, providing detailed textual accounts of restrictions on international transactions for all IMF member countries. We organize restrictions into eight categories present since the first edition: (1) foreign exchange market, (2) arrangements for payments and receipts, (3) residents and non-resident accounts, (4) imports and import payments, (5) exports and export proceeds, (6) invisible transactions and current transfers, (7) capital account transactions, and (8) provisions specific to the financial sector. We aggregate these into an integrated Balance of Payments Flows restrictions index (iBoP), encompassing direct impediments to flows from current and capital account transactions, plus regulations indirectly impacting flows via FX markets, account restrictions, and financial sector controls.[2]

Each policy change is classified along four dimensions: direction (tightening or loosening), type (price-based, quantity-based, or administrative), flow direction (inflows or outflows), and implementation date. We construct two main versions. First, the iBoP-C captures changes by aggregating tightening and loosening actions at daily frequency since 1950. In an extension, we also apply intensity weights to avoid treating a minor documentation requirement and a sweeping prohibition equally. Second, iBoP-S measures restrictiveness levels from 1995 onwards by averaging binary indicators across subcategories. The classification process involves five steps: manual labeling of sample narratives, iterative refinement with LLM assistance, augmentation with post-1995 AREAER classifications, fine-tuning a domain-adapted language model, and evaluation against held-out samples. Our baseline model outperforms a number of other machine learning models across all classification

[2]The comprehensive nature of iBoP implies some restrictions may not directly impact cross-border flows. For instance, FX market taxes between residents may indirectly deter resident-nonresident transactions. Similarly, we capture both trade restrictions (e.g., import taxes) and related financial flow limits (e.g., import payment restrictions). A comprehensive account must include these tools. Since measures allow alternative aggregation, researchers can build tailored measures for specific research questions.

dimensions and achieves a performance comparable to human annotators along several dimensions.[3]

From iBoP-C, we document five stylized facts spanning the past seven decades. First, current account restrictions were significant policy levers pre-Bretton Woods collapse, contrasting with recent reliance on capital account restrictions and financial sector provisions. Second, liberalization has been non-linear: while loosening outpaced tightening over seven decades, periods of global monetary system change—notably Bretton Woods breakdown—saw significant tightening. Third, higher income countries liberalized faster and more extensively than lower income countries. Fourth, liberalization primarily concerned quantity-based restrictions, while administrative restrictions persist in low income countries and price-based restrictions loosened modestly. Fifth, outflow liberalization outpaced inflow liberalization.

Examining policy use in detail, we find governments rarely use restrictions in isolation: over one-third of actions occur on days with at least one other measure, rising to three-quarters within ± 30 days, demonstrating systematic *bunching* and *staggering*.[4] Linking to crisis chronologies, intensity and breadth increase markedly during financial crises: countries more than double typical annual restriction use, with tightening actions—especially targeting outflows—rising disproportionately during currency and sovereign-debt crises. These patterns confirm crisis management routinely involves multi-instrument packages. We also show restrictions are more likely deployed during election years and in countries with lower institutional quality. Finally, analyzing 153 capital control measures across 41 countries, we hand-collect official statements revealing six main motivations: fear of disruptive outflows, fear of floating, fear of overborrowing, long-term financial stability goals, geopolitical considerations, and miscellaneous reasons like tax revenue. Notably, one-third are unlinked to business cycles. Low income countries prioritize concerns about disruptive outflows or floating exchange rates; high-income countries focus on overborrowing via inflow controls.

Related Literature. Our work contributes primarily to constructing *de jure* mea-

[3]For instance, in classifying direction of change, human annotators achieve an accuracy of 90.7 percent, which is comparable to our baseline model's (BERT-DAPT) accuracy of 87.0 percent. Our baseline model also outperforms other models, including word-count and frontier models (OpenAI's GPT and Meta's LLama).

[4]We define *bunching* as deploying more than one measure consciously on the same day. We define *staggering* as deploying more than one measure within a given time window, including sequential introduction of different measures or potential re-adjustment of previous policy actions.

sures of capital account restrictions. Three prominent historical studies covering large cross-sections are Quinn (1997), Chinn and Ito (2006), and Fernandez et al. (2016).[5] All use the AREAER but differ importantly. Quinn (1997) codes narrative text into intensity indicators across six categories (import/export payments, invisibles, resident/nonresident capital flows) on a subjective scale, available yearly from the 1950s. Chinn and Ito (2006) uses the first principal component of four binary variables (multiple exchange rates, current/capital account restrictions, export proceeds surrender), available from the 1970s. Neither distinguishes flow direction or type. Fernandez et al. (2016) exploits post-1995 AREAER granularity to build yearly capital account measures disaggregated by asset, flow direction, and residency, but excludes non-capital-account restrictions and pre-1995 coverage.[6] We extend these works significantly. First, we cover all AREAER regulations—adding voluminous non-capital-account flows (current account, FX market, payments/receipts, resident/non-resident accounts, financial sector provisions)—which policymakers actively deploy.[7] Second, we provide greater granularity—eight restriction categories, type and direction of flows—at daily frequency from 1950, versus annual data in prior studies. Third, netting tightening and loosening measures proxies intensity, addressing a key limitation.[8] Our disaggregation into price-based, quantity-based, and administrative measures documents policy reliance on instruments adjustable along intensive margins. Fourth, systematic LLM classification ensures consistency, efficiency, and replicability. We validate against Quinn (1997), Chinn and Ito (2006), Fernandez et al. (2016), and Ilzetzki et al. (2021), showing our measures co-move with theirs but capture additional dynamics like Bretton Woods-era tightening, reflecting comprehensive coverage.

Second, we contribute to literature documenting how countries actively reshape cross-border restrictions during crises, tightening outflow controls and deploying

[5]Others focus on country subsets: Pasricha (2012), Ahmed and Zlate (2014), Guisinger and Brune (2017), Pasricha et al. (2018), Binici and Das (2021), Acosta-Henao et al. (2025). Ongoing work includes Baba et al. (2025) and Li (2025). Ilzetzki et al. (2021) captures *de facto* controls via parallel exchange markets. Quinn (1997) was refined in Quinn and Toyoda (2008) and Alesina et al. (2024).

[6]This consolidates Schindler (2009), Klein (2012), and Fernández et al. (2015).

[7]We exclude only exchange rate regime information. See Levy-Yeyati and Sturzenegger (2003), Reinhart and Rogoff (2004), and Ilzetzki et al. (2021) for regime classifications. Some dimensions (e.g., FX or financial market restrictions) may not directly impact cross-border flows but affect them indirectly; users can tailor measures accordingly given granular data.

[8]Netting is imperfect as measures vary in restrictiveness. Acosta-Henao et al. (2025) studies intensity for selected EMs but warns of bias toward price-based measures—not applicable here given our comprehensive coverage.

multi-instrument packages. Historical analyses (Mitchener and Wandschneider, 2015) show governments simultaneously imposed exchange and capital controls during the 1930s to stem gold losses. Studies of the Asian Financial Crisis (Bhattacharya, 2001; Kaplan and Rodrik, 2002) describe Malaysia's bundled measures combining capital and stock-market controls once traditional tools failed. Cross-country work (Bhargava et al., 2023; Chang et al., 2024a; Bacchetta, 1990; Edwards, 2007; Gallagher, 2012; Ariyoshi et al., 2000) shows governments routinely tighten outflow restrictions or broaden regulatory perimeters during currency pressures, funding stress, or sudden stops, combining capital-account tools with current-account restrictions, FX-market measures, and administrative controls. Theoretical contributions (Aizenman, 1999; Korinek, 2011; Korinek and Sandri, 2016; Benigno et al., 2013) explain crisis-time toolkit expansions through coordination failures, pecuniary externalities, and distorted private incentives requiring aggressive multi-instrument intervention once financial constraints bind—echoed in political-economy analyses like Bianchi et al. (2026). We provide a comprehensive 75-year view across all instruments and countries, rather than focusing on specific crises, countries, or capital controls alone.

Third, we explore motivations and also speak to the literature of the effects of capital restrictions. While Magud et al. (2018) suggests different "fears" motivating controls, we systematically analyze official statements, revealing both short-term crisis responses and long-term liberalization objectives. Our dataset will also inform the literature on the effects of capital restrictions, as surveyed in Rebucci and Ma (2020), Erten et al. (2021), and Bianchi and Lorenzoni (2022). They point out mixed evidence on real effects due to identification challenges.[9] By providing daily frequency for identification, we enable researchers to extend analysis with cleaner identification, more countries and over a longer time period. Finally, our work also informs integrated policy frameworks (Basu et al., 2020; Adrian et al., 2021) by documenting empirical patterns of policy coordination across BoP dimensions.

Our work is divided into seven sections, including this introduction. Sections 2 describe our data sources and the LLM-based methodology used to construct the

[9] Bianchi and Mendoza (2020) surveys macro-prudential policies more broadly. Higher-frequency studies address timing and endogeneity: Ghosh et al. (2017) (quarterly, 50 EMs), Ahmed and Zlate (2014) (quarterly, 19 EMs), and Baba and Kokenyne (2011) (monthly, 5 EMs) find controls reduce inflows and lengthen maturities; Erten and Ocampo (2017) uses IV finding controls reduce appreciation; Forbes et al. (2015) (weekly, 60 countries) finds controls reduce financial vulnerability but not flows or exchange rates. Microdata studies include Forbes (2007), Alfaro et al. (2017), Andreasen et al. (2024), Fabiani et al. (2022), and Fabiani et al. (2025).

new indices. Section 3 presents the main stylized facts on the evolution of cross-border flow restrictions since 1950. Section 4 analyzes how countries deploy these tools in practice, through documenting bunching, staggering, and crisis-related usage patterns. Section 5 validates our methodology by comparing the new indices with existing benchmarks. Section 6 presents the two extensions of our work — documenting policymakers' stated motivations for capital controls and incorporating intensity weights. Section 7 concludes.

2 Data and Methodology

2.1 Data Sources

The AREAER. Our primary data source is the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER), first published in 1950 and compiled annually in accordance with the IMF's Articles of Agreement. The report systematically covers restrictions on current account transactions, international payments and transfers, foreign exchange market operations, capital and financial account transactions, and financial sector regulation related to cross-border flows. Reports from 1999 onward are publicly available via the IMF's AREAER website;[10] earlier reports (1950–1999) are available as archived PDFs from the IMF e-library.[11]

Figure 1 depicts the inaugural 1950 AREAER report. Early editions described restrictions in extended narratives without much classification into subcategories.[12] To construct our dataset, we downloaded all historical PDF reports from 1950 to 1999 and extracted textual information using Optical Character Recognition (OCR) software (Google Tesseract), supplemented by large language model (LLM) prompts and manual verification where needed. This processed historical dataset was combined with structured data from 1999–2022 downloaded from the AREAER website. The AREAER's mandate stems from the IMF's Articles of Agreement, particularly Article VIII (restrictions on making payments and transfers for current international transactions, discriminatory currency arrangements or multiple currency practices, and

[10] Restrictions can be downloaded by year, country, and type at https://www.elibrary-areaer.imf.org/Pages/ChapterQuery.aspx

[11] These annual reports can be downloaded at https://www.elibrary.imf.org.

[12] An important exception is the Changes section, which has maintained a consistent format over time.

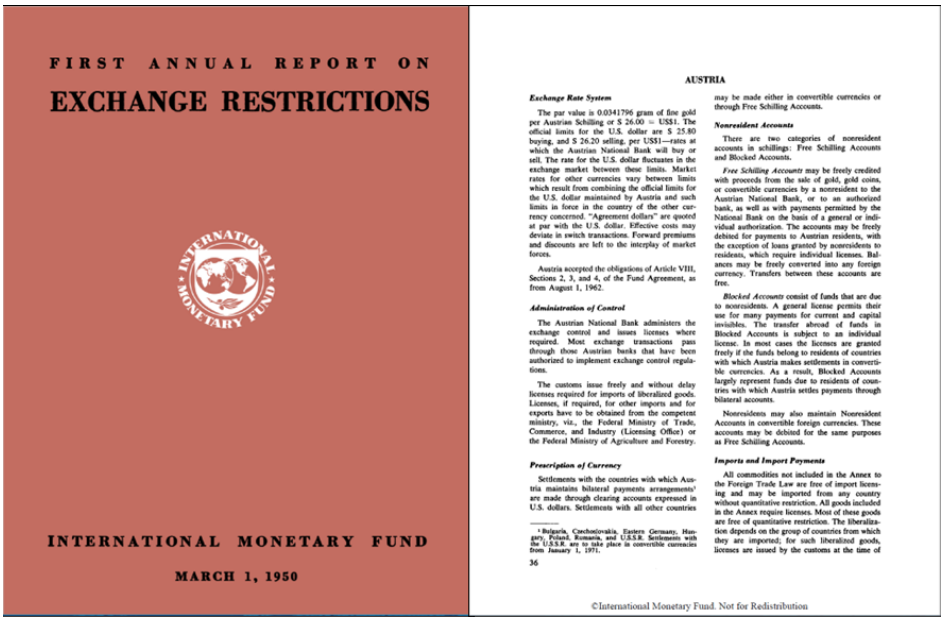


Figure 1: Front cover and first page of the inaugural 1950 AREAER report.

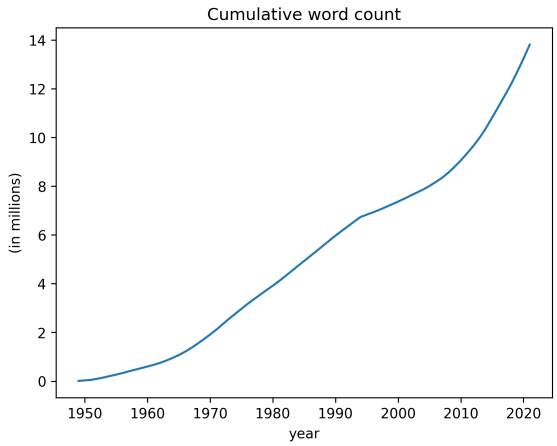
convertibility of foreign-held balances) and Article VI (controls on capital transfers). Coverage has expanded significantly over time, reaching 197 countries in recent reports.

1949	1952	1967	1980	1995	2005-Present
				Status under IMF Articles of Agreement	Status under IMF Articles of Agreement
Nature of Restrictive System Exchange Rates	Exchange Rate System	Exchange Rate System	Exchange Arrangement	Exchange Arrangement	Exchange Arrangement Exchange Measures
Resident/Non-resident accounts	Resident/Non-resident accounts	Resident/Non-resident accounts	Resident/Non-resident accounts	Resident/Non-resident accounts	Resident/Non-resident accounts
Exchange Payments and Receipts - *Payments and receipts* - *Imports* - *Exports* - *Invisibles* - *Capital*	Administration of control Prescription of currency	Administration of control Prescription of currency Gold	Administration of control Prescription of currency Gold	Arrangement for Payments and Receipts	Arrangement for Payments and Receipts
	Imports and import payments	Imports and import payments	Imports and import payments	Imports and import payments	Imports and import payments
	Exports and export proceeds	Exports and export proceeds	Exports and export proceeds	Exports and export proceeds	Exports and export proceeds
	Payments/Proceeds for invisibles	Payments/Proceeds for invisibles	Payments/Proceeds for invisibles	Payments/Proceeds for invisibles	Payments/Proceeds for invisibles
	Capital	Capital	Capital	Capital Transactions	Capital Transactions
					Financial sector provisions
Changes	Changes	Changes	Changes	Changes	Changes

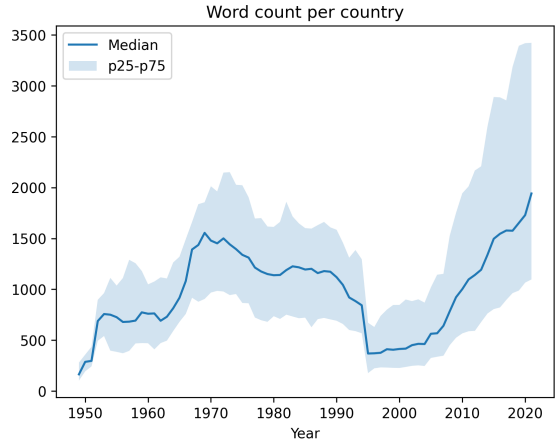
Figure 2: Sections in AREAER reports over time. Red text denotes new sections.

Figure 2 provides a historical overview of the reports' evolving structure. Current

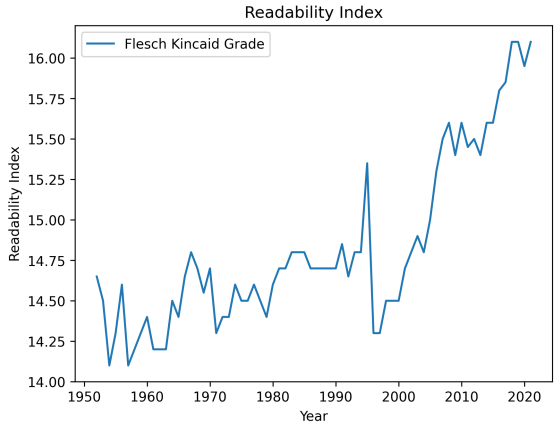
editions comprise more than 14 distinct sections. Many core sections—payments and receipts, import payments, export proceeds, invisibles, and capital/financial transactions—have existed since the early editions, albeit with changes in classification and organization. Notably, the section on policy changes has been present since 1950, forming the basis for our iBoP-C construction.



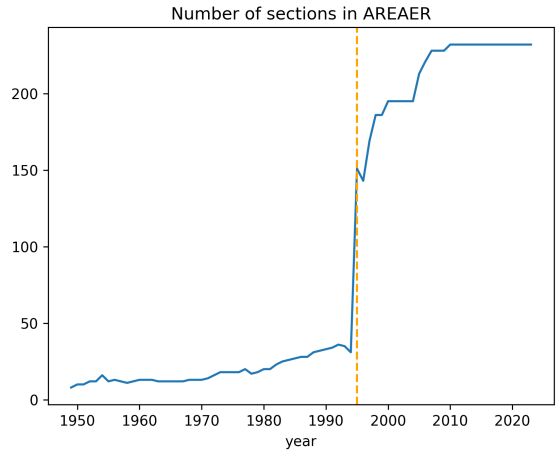
(a) Cumulative number of words in all AREAER reports.



(b) Number of words in AREAER reports per country.



(c) Readability index of AREAER reports over time.



(d) Number of sections in AREAER reports over time.

Figure 3: Overview of structure and content of AREAER reports over time.

Figure 3 summarizes trends in the reports' structure and content. Reports have grown significantly in volume and complexity. By 2022, total cumulative text reached approximately 14 million words (Panel A), with country-level sections expanding considerably (Panel B). Text complexity has increased, with recent reports requiring

college-level comprehension (Panel C). An important structural change occurred in 1995, with the text becoming semi-structured and the number of sections expanding significantly (Panel D). Due to their focus on substance, rather than formatting, we argue that machine learning methods are particularly suitable for this analysis.

The CFM Taxonomy. For our analysis of policy motivations (Section 6.1), we draw on the IMF's Taxonomy of Capital Flow Management Measures, a publicly available subset of macro-critical measures from the AREAER.[13] These measures have been assessed by IMF staff as significantly influencing a country's domestic or balance of payments stability and are discussed in published IMF staff reports since the adoption of the Institutional View in 2012. Appendix Figure A1 presents the distribution: 153 introductions, 111 tightenings, 222 eases, 49 removals, and 2 extensions. Our motivations analysis focuses on the 153 introductions.

2.2 Methodology

There are at least three challenges that arise when using our data sources to create a comprehensive granular dataset of all cross-border restrictions, across all countries and for at least seven decades. First, what categories of restrictions should one study? Second, given the large volume of text in the AREAER reports, how can this large amount of text be processed in a systematic way? Third, how can one satisfactorily account for changes in the structure of the AREAER, in a way that allows for a consistent measure of current and capital account restrictions over time and across countries? The next subsections will describe how we address these challenges.

2.2.1 Defining categories of restrictions

We organize restrictions into eight categories affecting current and capital accounts in the Balance of Payments: (1) FX markets, (2) arrangements for payments and receipts, (3) residents and non-resident accounts, (4) import payments, (5) export proceeds, (6) invisible transactions and current transfers, (7) capital account transactions, and (8) provisions specific to the financial sector.[14] Detailed definitions of each category are

[13] The dataset can be accessed at `https://www.imf.org/en/Data`. See Binici and Das (2021) for an in-depth analysis.

[14] The mapping to the 2023 AREAER is detailed in Appendix C.1. Within these categories, we retain all relevant measures except restrictions not directly related to cross-border flows or falling outside the IMF's reporting mandate.

provided in Appendix C.2.[15] The comprehensive nature of these categories captures not only restrictions directly impacting cross-border flows but also those with indirect implications. As the granularity allows for alternative aggregation, researchers can build tailored measures for specific research questions.

2.2.2 Classification Methodology

Our methodological approach leverages Large Language Models (LLMs) to address two key challenges: maintaining consistency across seven decades of varying AREAER formats, and classifying narratives at scale. Our methodology proceeds in five steps.

Step 1: Manual Annotation. Human annotators label a sample of AREAER Changes entries across five dimensions: (1) direction of change (tighten/loosen/neutral), (2) direction of flow (inflow/outflow/neutral), (3) category of restriction (eight categories), (4) type of restriction (price/quantity/administrative), and (5) numerical information (numerical/non-numerical).[16]

Step 2: Review and Refinement. We validate manual annotations by comparing labels assigned by two trained annotators.[17]

Figure 4 displays agreement measures. Disagreement rates range from 3% (category) to 13% (direction). Cohen's kappa values range from 0.69 to 0.84, reflecting substantial to near-full agreement (Landis and Koch, 1977). Unlike simple disagreement rates, Cohen's kappa adjusts for the likelihood of chance agreement, which becomes particularly relevant if labels are imbalanced in the sample. Formally, for each dimension we calculate

$$\kappa = \frac{P_o - P_e}{1 - P_e},$$

where P_o is the observed agreement rate (i.e., the proportion of instances on which annotators agree), and P_e is the expected agreement given each annotator's individual label frequencies. Discrepancies are resolved through joint re-examination by co-authors with domain expertise, supplemented by LLM-generated predictions to

[15] For exchange rate regime classifications, see Levy-Yeyati and Sturzenegger (2003), Reinhart and Rogoff (2004), and Ilzetzki et al. (2021).

[16] Detailed dimension definitions are provided in Appendix C.2.

[17] The pool comprised co-authors and research assistants from Columbia University with prior labeling experience.

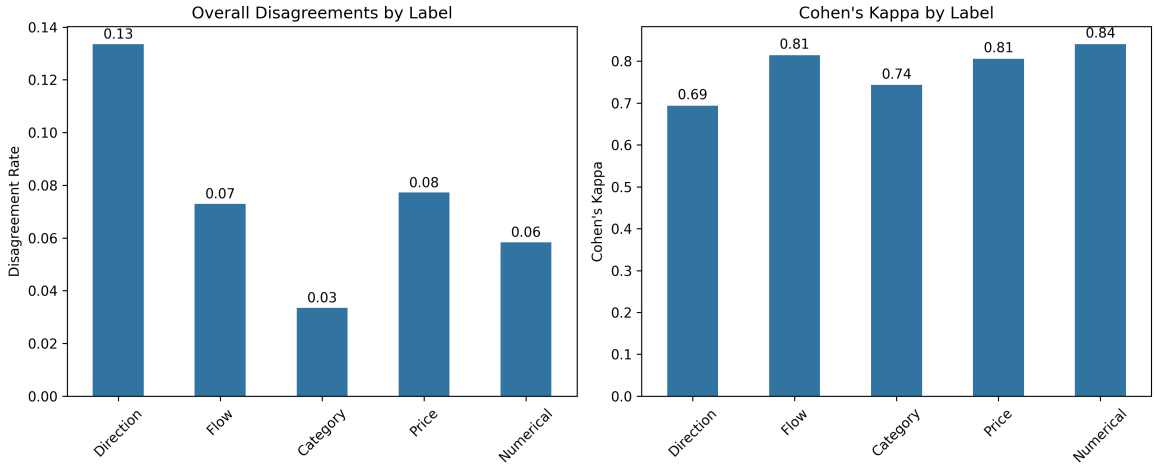


Figure 4: Disagreement rate between annotators (left) and Cohen's kappa (right) by dimension. The sample consists of observations from the pre-1995 AREAER sample.

provide additional validation.[18] Appendix Figure A3 shows this reconciliation process substantially reduces disagreements, suggesting that combining manual labeling with assistive LLMs improves overall accuracy.

Step 3: Augmented Training Data. We combine manually annotated labels with pre-existing labels from the post-1995 AREAER to expand the training dataset. This includes (i) manual annotations covering all five dimensions (2000-3000 observations per label), (ii) post-1995 category labels from the AREAER,[19] and (iii) supplementary observations from post-1995 AREAER sections not directly related to capital flows, labeled "neutral" for direction and flow dimensions. We used 80% of the dataset for training and the remaining 20% for testing. Appendix Table A3 shows the distribution of labeled observations; Appendix Figures C3–C7 show distributions across income groups and regions.

Step 4: Model Training. We employ a Domain-Adapted BERT model as our primary classifier. Given the specialized nature of the AREAER corpus, we continue pre-training a BERT model (110 million parameters) on narratives from the entire collection of AREAER reports (1950–2022) (Gururangan et al., 2020).[20] We compare performance with word-count models (TF-IDF with logistic regression, random forests, support vector machines), open-source generative models (off-the-shelf BERT

[18] We use zero-shot prompting; prompts available upon request.

[19] Labels for other dimensions are not systematically available in the AREAER.

[20] Technical details on tokenization, masking, and training are provided in Appendix C.3. Perplexity on a held-out sample decreased from 17.28 to 2.19, indicating substantial improvement.

and Llama 3.2), and closed-source models (GPT via few-shot prompting).[21] After domain-adaptive pre-training, we fine-tune separate linear classification heads for each dimension.

Step 5: Model Evaluation.

Label Model	Direction	Flow	Category	Price	Numerical
BERT (DAPT)	**0.870**	**0.806**	0.816	**0.767**	0.942
BERT (base)	0.854	0.797	**0.822**	0.696	**0.949**
GPT 4o mini	0.857	0.679	0.638	0.567	0.917
Llama 32 3B	0.854	0.742	0.761	0.658	0.899
TFIDF + Logistic Reg.	0.752	0.758	0.687	0.638	0.899
TFIDF + RF	0.738	0.734	0.546	0.600	0.919
TFIDF + SVC	0.772	0.770	0.755	0.651	0.904

Table 1: Comparison of model performance. Performance metric reported is the model accuracy. The sample consists of a 20% randomly selected held-out sample of labeled data.

Table 1 reports model performance. Across all dimensions, BERT models (both base and domain-adapted) surpass larger models including GPT-4o-mini and Llama 3.2 3B, and exceed word-count models. The domain-adapted model tends to perform best, achieving 87.0 percent accuracy on direction of change, comparable to human annotators' 90.7 percent. Appendix Tables C1–C5 report precision, recall, and F-1 scores.

2.2.3 Refining the Baseline Measures

While our approach aims for broad coverage, some entries may fall outside the IMF's reporting mandate. We refine the baseline by excluding four categories likely reported inconsistently: (i) exchange-regime descriptions (AREAER III.A–E),[22] (ii) national security-related restrictions (AREAER II.B), (iii) trade-related restrictions (AREAER VII.D–F, VIII.D–E), and (iv) domestic macroprudential measures (AREAER XII.A.4–6, XII.A.9.a, XII.B.1.c–d, XII.B.2.c–d, XII.B.3.c–d).[23]

[21] Prompts for generative LLMs are provided in Appendix D.1.

[22] These are comprehensively covered in Reinhart and Rogoff (2004).

[23] The IMF reports these in a separately administered survey; see https://www.elibrary-areaer.imf.org/Macroprudential/Pages/iMaPPDatabase.aspx.

We train LLMs to extend these refinements to the full historical sample using training examples from post-2016 narratives where AREAER categorical labels are available.[24] Appendix Table A2 provides model performance for each refinement label. Appendix Table A1 summarizes the distribution: the refined sample accounts for roughly 60 percent of all AREAER Changes entries, with trade-related measures representing 28 percent, domestic MPM 2.4 percent, national security 4.1 percent, and exchange regime 6.3 percent. We also address duplicated entries following the procedure detailed in Appendix C.5.

2.2.4 Constructing Numerical Measures

We construct two measures: iBoP-C (changes) and iBoP-S (stance).

The change index, iBoP-C. iBoP-C measures changes from 1950 to 2022 using information from the Changes section of the AREAER, which reports changes at the daily level. We aggregate by summing tightenings and subtracting loosenings at the country-year-category level, then cumulate from the first year.[25] Formally, for country i, year t, and category c:

$$iBoP\_C_{itc} = \sum_{\tau \leq t} \left(\sum_{k \in \mathcal{T}_{i\tau c}} Tightening_{k,i\tau c} - \sum_{l \in \mathcal{L}_{i\tau c}} Loosening_{l,i\tau c} \right) \tag{1}$$

where $\mathcal{T}$ and $\mathcal{L}$ denote the sets of tightening and loosening measures, varying across countries, time, and category. While we report annual results, analogous measures are available at quarterly, monthly, and daily frequencies.

The stance index, iBoP-S. iBoP-S leverages remaining AREAER sections providing stance information from 1995 onwards.[26] It identifies the existence or absence of restrictions for each subcategory. A key feature is that it respects the AREAER's hierarchical structure. At the lowest level, each subcategory s is a binary indicator $\mathcal{I}_{s,it} \in \{0, 1\}$. Intermediate categories aggregate their children by taking simple averages, ignoring missing values. Formally, let the AREAER define a hierarchy for

[24] Details on training sample construction and the two-step procedure for trade-related labels are provided in Appendix C.4.

[25] This does not account for differences in economic significance. We address this in Section 6.2 using intensity weights.

[26] In the 2022 AREAER, there are 232 relevant subsections. Given structural differences pre-1995, this measure starts in 1995. Future work aims to extend coverage to 1950.

each category c, where every node n has immediate child nodes $\mathcal{C}(n)$:

$$Stance_{it}(n) = \begin{cases} \mathcal{I}_{n,it}, & \text{if } \mathcal{C}(n) = \varnothing, \\ \dfrac{1}{|\mathcal{C}(n)|} \displaystyle\sum_{m \in \mathcal{C}(n)} Stance_{it}(m), & \text{if } \mathcal{C}(n) \neq \varnothing. \end{cases} \tag{2}$$

The stance index for top-level category c for country i in year t is $iBoP\_S_{itc} = Stance_{it}(c)$. Unlike iBoP-C, iBoP-S is available only at annual frequency.

2.2.5 Caveats and Limitations

While our measurement improves upon the literature by capturing direction and netting tightening and loosening changes, a limitation is that it weighs all changes equally. In Section 6.2, we extend our approach using intensity-based classifications implemented systematically with LLMs, in the spirit of Quinn (1997). Another characteristic of iBoP-C is that it identifies frequency and net direction of changes rather than absolute restrictiveness. Thus, while accurately documenting whether restrictions increased or decreased, it cannot rank countries by overall restrictiveness. We address absolute openness levels with iBoP-S from 1995 onward. A further limitation concerns reporting completeness and consistency in the AREAER, especially given evolving standards. Early reports may have less detailed reporting. Our methodology addresses this by deploying LLMs trained on the full AREAER text and carefully examining country-specific narratives in developing training samples.[27] Despite these caveats, our methodology substantially extends historical scope and granularity beyond previous datasets, while improving consistency, comparability, and reproducibility.

3 Stylized Facts

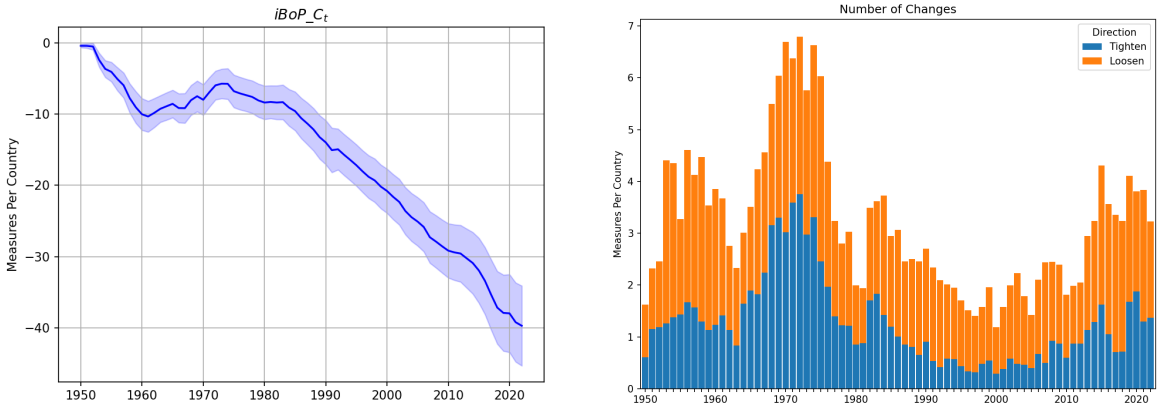
This section presents several stylized facts about the long-run evolution of cross-border flow restrictions using the iBoP-C index. First, we find that liberalization trends in cross-border flow restrictions have not evolved linearly over time. While countries have overall liberalized their financial flows over the past seven decades,

[27] As mentioned in the literature review, some studies use additional sources beyond the AREAER, but at the cost of covering smaller samples of countries and/or time periods.

periods of significant change in the global monetary system, notably the breakdown of Bretton Woods, saw a significant tightening of restrictions for several categories. Second, we document that financial liberalization has occurred at an uneven pace, with higher income countries liberalizing faster and to a greater extent than lower income countries. This pattern is robust across all categories of restrictions that we examine. Interestingly, disaggregating by income, we find a more extensive use of current account restrictions (i.e., import payment and export proceed restrictions) to manage cross-border flows around the end of the Bretton-Woods regime among low-income countries. Third, we find that liberalization of cross-border restrictions have primarily concerned quantity-based restrictions. Administrative-based and price-based measures restrictions saw some loosening over time, but at a relatively more modest pace. Finally, we document that the liberalization trend in BoP flows has been largely driven by the more rapid pace in loosening of outflow restrictions, relative to that of inflow restrictions.

3.1 A Long-Run Perspective: 1950-present

3.1.1 Stylized Fact 1: Liberalization trends in cross-border flow restrictions have not evolved linearly.



(a) Cumulative net tightening

(b) Number of changes

Figure 5: Left panel: Average cumulative net tightening index (iBoP-C) (negative values indicate net loosening). Right panel: Average number of tightening and loosening measures per country. Shaded area denotes the standard error of the mean ($SD_t/\sqrt{(N_t)}$ where SD_t is the standard deviation of Changes index. The overall series agregates all categories by country-year.

Cross-border restrictions display a clear stop-go pattern rather than a monotonic decline. After an initial period of liberalization in the 1950s, countries saw sharply tightened restrictions from the early 1960s through the early 1980s. This tightening coincided with rising pressures on the Bretton Woods system and then the transition to generalized floating, when many more countries relied more heavily on FX and financial sector regulations to manage balance-of-payment pressures and exchange rate volatility. Subsequent decades saw a gradual liberalization of cross-border flow restrictions. The liberalization continued even as the international policy consensus evolved, culminating in the IMF's 2012 Institutional View on capital flow management, which moved from treating capital controls as a non-starter to recognizing them as one policy tool among many.

The annual number of policy changes show pronounced clustering, with countries adjusting restrictions in a coordinated manner rather than randomly through time. This bunching behavior reflects episodes of systemic stresses in the international monetary system, a feature that we will explore further in Section 4.

Category-level evidence shows that the 1970s tightening was concentrated in FX and financial sector restrictions, with some increases in export-proceeds requirements (Figure 6). Despite these episodic reversals, most categories exhibit clear, sustained liberalization from the mid-1980s onwards, consistent with global financial deregulation and deeper integration of countries into international markets.

Category	Count	Share (%)
FX markets	4239	10.3
Payments and receipts	6040	14.7
Resident and non-resident accounts	3123	7.6
Import payments	4313	10.5
Export proceeds	2939	7.2
Invisible transactions	5114	12.5
Capital account transactions	8023	19.6
Financial sector	3102	7.6
Overall	41030	100.0

Table 2: Number of changes by category

Table 2 shows that policymakers rely on a wide array of instruments to manage cross-border flows, beyond the set of capital account restrictions typically focused in the literature (see for example Fernandez et al. (2016)). In our sample, capital

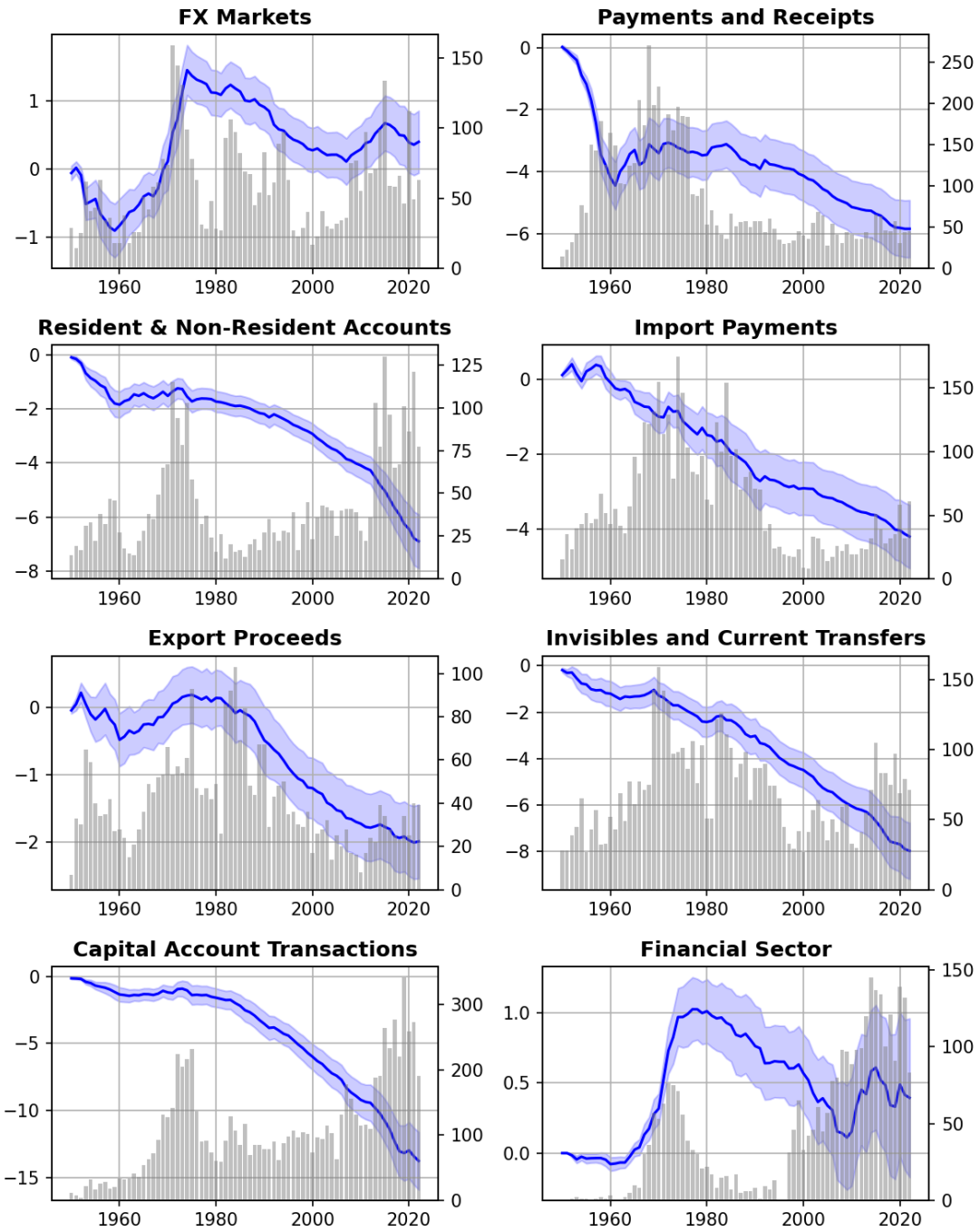


Figure 6: Blue lines show cumulative net tightening for each category (left axis); grey vertical bars show annual counts of policy measures (right axis).

account restrictions account for only 20 percent of all measures. On the other hand, a third of all measures are related to current-account payments (import, exports, and

invisibles), while the remainder relates to FX market and financial sector restrictions. Focusing solely on capital account measures would therefore overlook a substantial share of tools used historically to regulate cross-border flows.

3.1.2 Stylized Fact 2: Financial liberalization occurred unevenly, with high-income countries liberalizing faster and to a greater extent than lower-income countries.

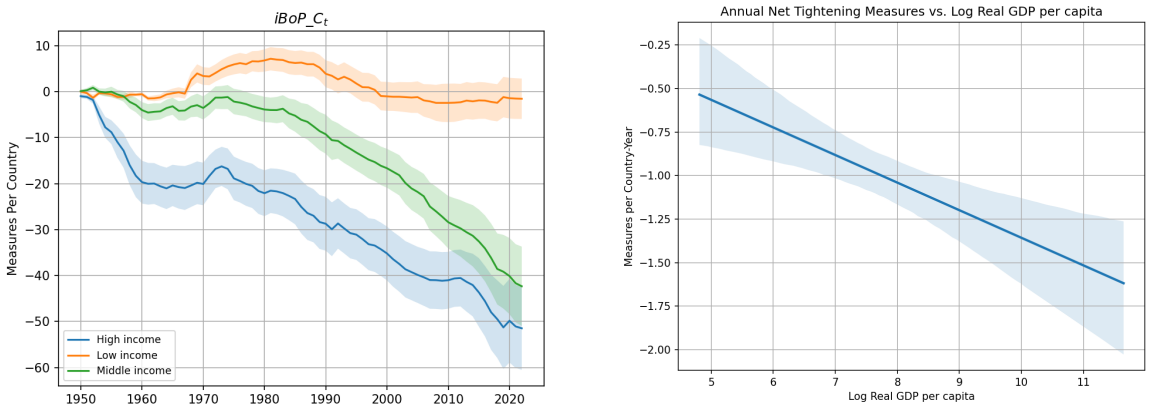


Figure 7: Left panel: average cumulative net tightening (iBoP-C) by income group (2024 World Bank Income Group Classification). Right panel: Annual net tightening measures per country-year vs log real GDP per capita (2015 USD). The line shows a linear regression fit, the error band shows the 95 percent confidence interval of the regression estimate.

There is substantial cross-country heterogeneity in the timing and extent of liberalization across country groups. High income countries began liberalizing in the 1960s and continued steadily thereafter, aside from a brief reversal during the Bretton Woods collapse. Middle income countries followed a similar trajectory but with a lag of nearly two decades. By contrast, low-income countries tightened restrictions in the 1970s and have remained comparatively restrictive even in recent decades[28]. In Section 4.3, we document how these patterns can be explained by differences in institutional quality as well as political, financial, and macroeconomic risk in the economy. Cross-sectional relationship between income per capital and net tightening actions reinforces these patterns. Countries with higher income levels loosen restric-

[28]These patterns align closely with de facto financial globalization measures documented in Capelle and Pellegrino (2025).

tions more frequently, consistent with the intuition that these countries have stronger capacity to manage cross-border flow volatility.

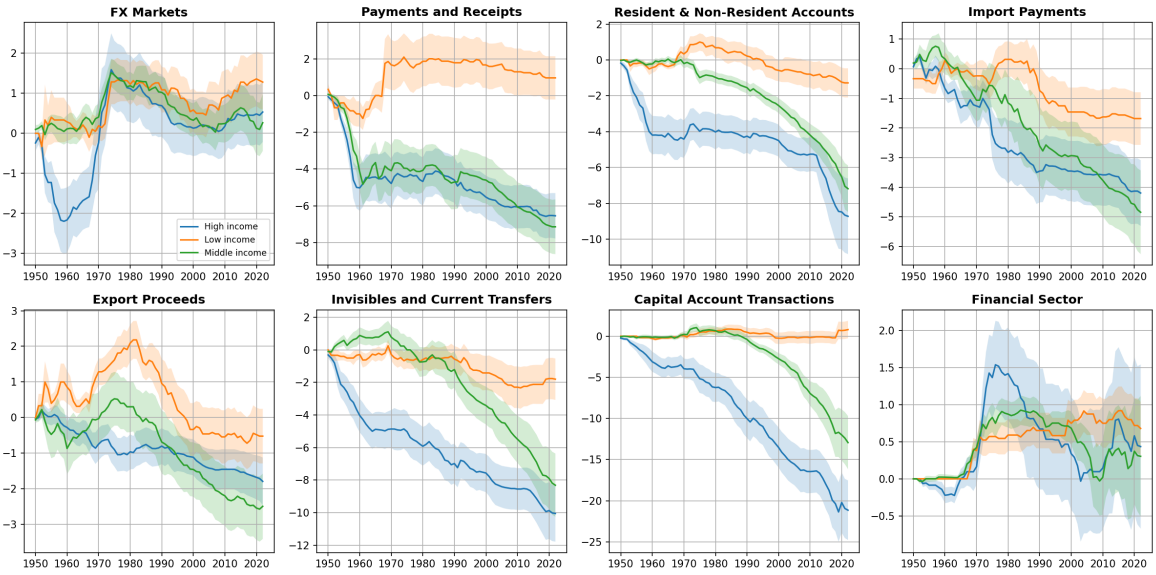


Figure 8: Average cumulative net tightening (iBoP-C) for each category, computed over countries within each income group (2024 World Bank classification).

Category-level results (Figure 8) show that high-income countries led liberalization across nearly all dimensions, especially on capital account measures and regulations on payments and receipts. Even so, these countries experienced targeted episodes of tightening in the 1970s, especially in FX market and financial sector restrictions. Middle-income countries followed similar sequencing with a lag, particular for capital account restrictions, whereas low-income countries saw limited liberalization and relied more heavily on current account restrictions (import and export-related measures). However, because cumulative changes do not capture initial restrictiveness, these results may not reflect differences in the absolute restrictiveness of cross-border flow restrictions across income groups.

3.1.3 Stylized Fact 3: Quantity-based and administrative-based restrictions have seen progressive loosening, while price-based restrictions tend to persist.

We further decompose restrictions into price-based restrictions, quantity-based restrictions, and administrative-based restrictions. Price-based restrictions directly alter the costs of transactions. These include taxes, fees, subsidies, interest premiums,

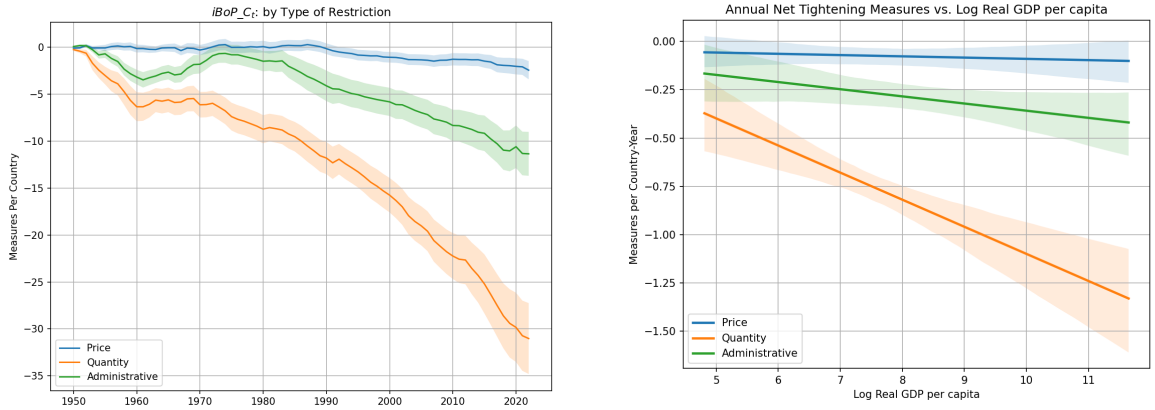


Figure 9: Left panel: Average cumulative net tightening (iBoP-C) by type of restriction (price-based, quantity-based, administrative). Right panel: Annual net tightening measures per country-year vs log real GDP per capita (2015 USD). The line shows a linear regression fit, the error band shows the 95 percent confidence interval of the regression estimate. See Appendix Figure A8 for category-level indices.

surrender and repatriation requirements, and reserve requirements. Quantity-based restrictions limit the volume or amount of transactions and encompass quotas, caps, bans and suspensions. Administrative restrictions impose procedural or institutional requirements that do not directly target cost or volume, such as licenses, authorization requirements, reporting requirements, maturity requirements, holding period requirements, or bilateral payments agreements.

Quantitative measures show the strongest long-run liberalization. These measures were widely used during the Bretton Woods period but were steadily liberalized starting in the 1980s as countries shifted toward more market-based allocation mechanisms. Administrative measures show mild tightening in the 1970s but broadly liberalized afterwards. By contrast, price based measures display little long-run variation.

There are also notable differences in the extent to which different types of measures are liberalized by income group. High income countries are more likely to report loosening all three types of measures, with a larger number of loosenings for quantity-based and administrative based measures. On the other hand, lower income countries exhibit fewer easings along each of these three types of measures.

3.1.4 Stylized Fact 4: Outflow restrictions have liberalized more rapidly than inflow restrictions

Our dataset allows us to classify restrictions by flow direction. Broadly, we distinguish between outflow restrictions (i.e., measures limiting flows out of a country) and inflow restrictions (i.e., measures limiting flows into a country). Figure 10 (left panel) shows that while both inflow and outflow restrictions have liberalized considerably after 1980, outflow restrictions were loosened earlier and more extensively. This asymmetry is consistent with longstanding policy justifications in the literature. In particular, outflow controls have historically been deployed as tools to contain capital flight and stabilize exchange rates during periods of financial stress (Chang et al. (2024b)). Once macroeconomic conditions normalize, these restrictions tend to be removed relatively quickly. By contrast, inflow restrictions are often used to manage financial stability risk, through mitigating excessive borrowing, which could lead to credit booms and busts. As a result, inflow measures tend to be more persistent and liberalized more gradually.

Nonetheless, there are notable differences across income groups. High income countries systematically loosen both inflow and outflow restrictions, with a greater likelihood of removing outflow restrictions. On the other hand, low income countries are less likely to loosen outflow restrictions, suggesting that these countries continue to rely heavily on these types of restrictions to manage external risks. We document the use of these types of measures during crises episodes in Section 4.2.

3.2 A More Granular View of the Past Seven Decades

We next examine a more granular breakdown of restriction subcategories in the AREAER to further understand specific policy tools countries have employed. While the AREAER has consistently reported broad categories, detailed subcategory information is systematically available only from 1995 onward, and even then, comprehensive classification was not consistently reported until after 2016.

To extend the subcategory classification to the full sample of measures, we employ our baseline LLM fine-tuned on the AREAER text (BERT-DAPT). The training and validation data is constructed using the subcategory classifications from the AREAERs in the post-1995 sample. To ensure there are sufficient examples for each subcategory, we manually group these subcategories based on their economic sim-

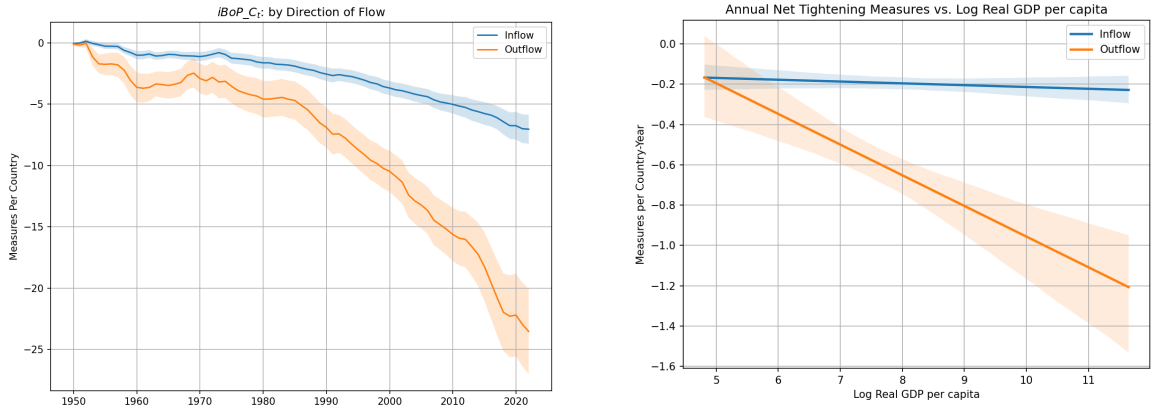


Figure 10: Left panel: Average cumulative net tightening (iBoP-C) for inflow and outflow restrictions. Right panel: Annual net tightening measures per country-year vs log real GDP per capita (2015 USD). Charts omit restrictions that affect both inflows and outflows or do not have clear flow implications. The line shows a linear regression fit, the error band shows the 95 percent confidence interval of the regression estimate. See Appendix Figure A9 for category-level indices.

ilarity. A separate multi-class classification head is then attached to the LLM and fine-tuned for each of the eight broad categories to distinguish between subcategories within a given broad category. We compare the performance of the model, trading off between achieving greater granularity in the subcategory classifications and the accuracy of the model. This iterative procedure leaves us with a final grouping of 24 distinct subcategories shown in Table 3.[29]

Figure 11 presents cumulative net tightening trends as well as a count of measures in each of the 24 subcategories over time. We observe several notable patterns. First, restrictions on the trade of gold and control of banknotes were significantly tightened around the end of Bretton Woods, indicating that it was a significant policy lever. We also see a pick up in repatriation and surrender requirements, both on export proceeds as well as on capital transactions during that period. Finally, we observe that financial sector restrictions tend to be more concentrated on commercial banking activity. While these restrictions have tightened in the recent years, particularly following the GFC, restrictions on the non-banking sector (institutional investors,

[29]Appendix Table A4 presents the performance metrics by category. The average model accuracy across categories is 83 percent. Note that since this classification task relies on the aggregate categories being available. Users should also account for classification errors arising from the classification of the eight broad categories.

Subcategory	Count	Share (%)
Overall	41030	100.0
Exchange taxes and subsidies	271	0.7
Restrictions in the foreign exchange market	3968	9.7
Prescription of currency requirements	2575	6.3
Trade of gold	867	2.1
Control of banknotes	2598	6.3
Restrictions on resident accounts	1597	3.9
Restrictions on nonresident accounts	1526	3.7
Import financing requirements	3128	7.6
Import documentation requirements	1185	2.9
Repatriation and surrender requirement of export proceeds	2625	6.4
Export financing and documentation requirements	314	0.8
Invisible payments: trade and investment	771	1.9
Invisible payments: travel and personal	2962	7.2
Invisible proceeds	1381	3.4
Repatriation and surrender requirement on capital transactions	156	0.4
Capital account: capital and money market	2850	6.9
Capital account: credit operations	1777	4.3
Capital account: direct investment	2064	5.0
Capital account: real estate	507	1.2
Capital account: personal capital	669	1.6
Restrictions on commercial banks	2249	5.5
Restrictions on insurance companies	356	0.9
Restrictions on pension funds	284	0.7
Restrictions on investment and collective investment funds	213	0.5

Table 3: Number of changes by subcategory

pension funds, and collective investment funds) saw broad loosening over time.

3.3 Overview of the Stance Index, iBoP-S

Having discussed the stylized facts from the Changes index (iBoP-C), we now turn to the Stance index (iBoP-S). Whereas iBoP-C captures adjustments in restrictions, iBoP-S measures the extensive margin of cross-border flow restrictions. We report iBoP-S beginning in 1995, when the AREAER first introduced systematically disaggregated

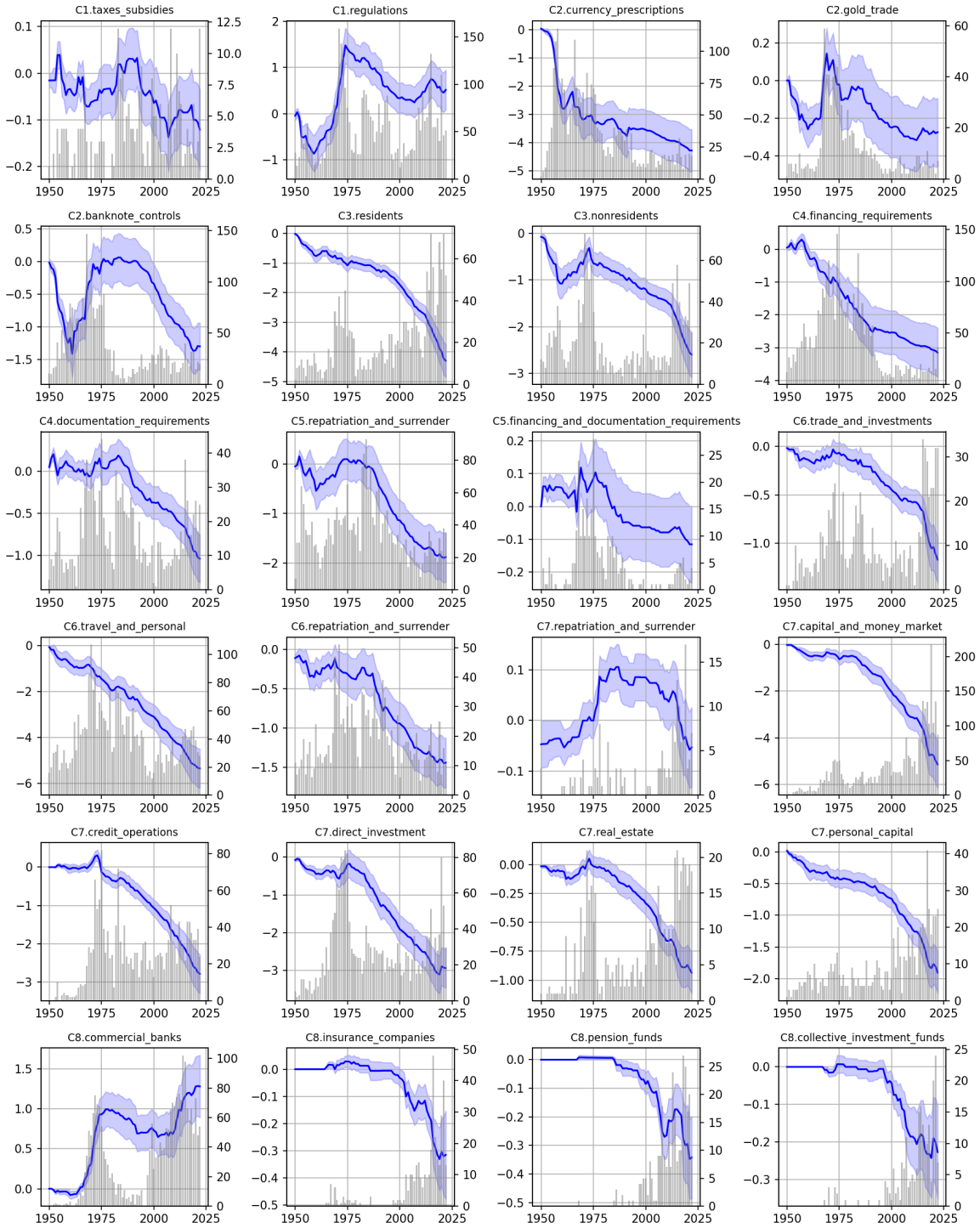


Figure 11: Average cumulative net tightening and number of measures by subcategory.

measures across all categories.[30]

To classify the stance of restrictions based on descriptions of restrictions, we employ a baseline LLM fine-tuned on AREAER texts (BERT-DAPT). The training and validation dataset is constructed from the binary "yes/no" indicators that reflect the presence of restrictions reported in the AREAERs. For capital account transactions, we replace these indicators with those from FKRSU to maintain consistency in the coding with the latter database. The per-category training sample is constructed using full de-duplicated narrative-indicator pairs from the 1995-2017 sample, while the per-category validation sample is constructed from 500 randomly selected de-duplicated narrative-indicator pairs from the 2018-2022 sample. To allow for the relationship between narrative-indicators to differ across categories, we train separate models for each category.[31]

We rely on predicted values instead of the raw yes/no indicators from AREAER reports for two reasons. First, textual descriptions often contain richer and more accurate information than the status columns, as noted by Fernandez et al. (2016). Second, the status columns are self-reported indicators, which may be inconsistent across countries and over time. Training a model on examples from multiple countries and periods ensures greater consistency. Where no narrative description is available, we fall back on the reported yes/no indicators, consistent with Fernandez et al. (2016).

Once predictions are generated, iBoP-S is constructed bottom-up by aggregating stance values across subcategories. At the most granular level, each subcategory takes a binary value (0 = no restriction, 1 = restriction in place). Missing information is treated as not available. We then average across subcategories within each group, moving upward until we obtain stance values for the eight broad categories. This approach parallels that of Fernandez et al. (2016) for capital account restrictions but extends it to the remaining seven categories reported in the AREAER.

Figure 12 illustrates the overall stance of restrictions (between 0 and 1), with lower values indicating a greater extent of liberalization. The left panel shows significant heterogeneity in the stance of restrictions across categories, with current account

[30]While the LLM can be used to extend the Stance index further back in time, the structural break in the reporting of the AREAERs in 1995 makes it difficult to generate a continuous Stance index over time. We leave the task for future extensions.

[31]Appendix Table A5 reports the model performance metrics across categories based on a held-out test sample. The average accuracy across categories is 0.92.

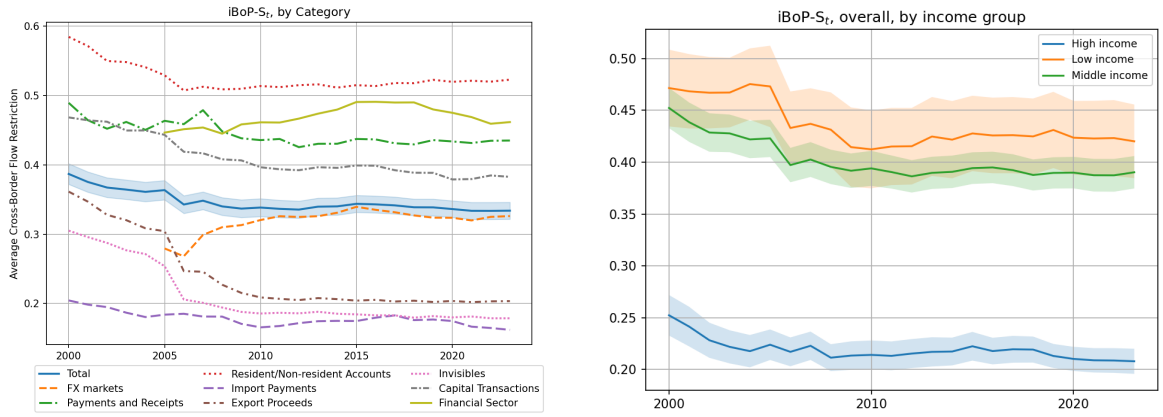


Figure 12: Left panel: Average overall stance (iBoP-S) by category. Right panel: Overall stance by income group.

(exports, imports, and invisibles) being the most open in general, whereas financial sector and resident/non-resident account restrictions being the least liberalized. Given that the stance index measures the extensive margin of restrictions, there tends to be more limited variation. Nonetheless, we continue to observe a trend towards greater openness over the past two decades.

The right panel shows that higher income countries tend to be the most liberalized, consistent with the results from the cumulative changes index (iBoP-C). Middle and low income countries appear to be twice as restrictive as high income countries. We find these stylized facts to be qualitatively similar at the category level (Appendix Figure A10). In some cases, such as for capital account restrictions, middle and low income countries appear to be three times as restrictive as low income countries. This suggest that there continues to be a gap in the degree to which countries deploy cross-border flow measures, with middle and low income countries relying on these measures to manage cross-border flows as compared to high income countries.

4 Use of cross-border flow restrictions

With comprehensive data on cross-border flow restrictions now available, it is important to reassess how these instruments are deployed. This has been done for capital flow measures (most prominently in Fernández et al. (2015), Eichengreen and Rose (2014) and Pasricha (2022)) and should be extended to the other seven categories of cross-border flow restrictions. As mentioned earlier, capital flow restrictions only

constitute less than 20% of all cross-border restrictions which is why focusing on them misses a significant share of policy tools used by countries to steer international flows. In addition to this, if capital flow measures are combined with tools from other categories, existing analyses could have attributed the total effect solely to the capital flow measure. While the preceding section documented aggregate patterns across countries and time, this section investigates the country-level use of these tools to manage the (political) economy.

This section presents novel evidence on the timing, crisis-related deployment, and cross-country heterogeneity in the use of cross-border restrictions. First, we document that these measures are rarely implemented in isolation; instead, they tend to cluster within narrow time windows. Over 70% of measures are accompanied by at least one additional measure within 30 days, indicating that policymakers employ a broad toolkit in rapid succession. Second, we find that the likelihood of imposing cross-border restrictions rises significantly during crises, particularly those involving sovereign debt or currency distress. Finally, cross-country heterogeneity analysis reveals that jurisdictions with weaker institutional quality and elevated macro-financial risks exhibit a markedly higher propensity to adopt cross-border restrictions.

4.1 Bunching and Staggering

We begin by analyzing the temporal clustering of measures at the country level. Several novel patterns emerge.

First, measures are rarely implemented in isolation. The first row of Table 4 reports the incidence of *bunching*, defined as the adoption of multiple measures on the same day: 35% of all measures coincide with at least one other measure. This indicates deliberate policy coordination, with some episodes involving extensive simultaneous interventions. Figure 13 complements this by showing that 62% of bunching events involve two measures, 29% involve three to five, and 6.3% involve six to ten. 2.7% of bunching events even record more than 10 measures used simultaneously.

Moving to the lower lines of Table 4, we look at wider time horizons and analyze whether countries do staggered interventions, i.e. they use more than one measure within a certain time frame. Unlike bunching, staggering may reflect sequential adjustments or recalibration following earlier interventions. Line 5 shows that almost 60% of measures are accompanied by another measure within 10 days, and 77%

Window	Single Measure	More than One Measure
± 0 days	65%	35%
± 1 days	59%	41%
± 3 days	54%	46%
± 5 days	49%	51%
± 10 days	40%	60%
± 20 days	30%	70%
± 30 days	23%	77%

Table 4: Share of measures in bunching and staggering for different horizons. This table shows the share of policy measures that are stand-alone, bunched with other measures, or staggered within ± 1, 3, 5, 10, 20 and 30 day windows.

within 30 days. This pervasive clustering complicates causal inference: when case studies analyze the effects of a cross-border measure on macroeconomic variables (such as capital flows or economic output), effects of closely spaced interventions might be falsely attributed to the event in question. While this complicates the evaluation of the policies, at least the new dataset can now provide full information needed to address these confounding factors.

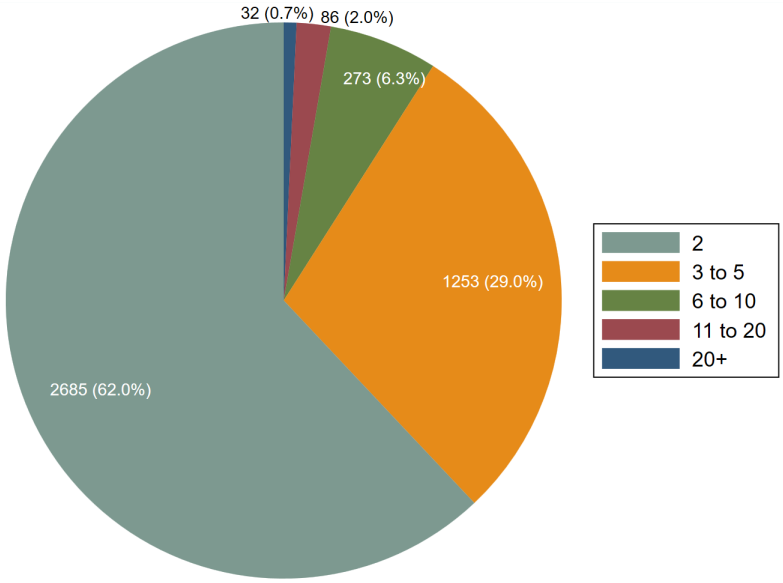


Figure 13: Number of measures on the same date. This figure shows the different types of bunching that occur within the dataset. Each category (2, 3 to 5, 6 to 10, 11 to 20, 20+) represents the number of measures adopted on the same day. The relative size of each category is conditional on there being at least two measures implemented on the same day.

As a second novel finding, we show in Table 5 that countries combine a very broad spectrum of tools. Each line focuses the share of other measures given that the measure was used in combination with at least one other measure within 30 days. While some tools - such as measures on capital accounts - are more common than others during staggering episodes, it shows that policy makers use literally all combinations possible. Very often, measures are also combined with another measures in the same category (diagonal elements in the table). This most likely reflects reflect sequential adjustments or recalibration. Finally, the data also shows that both, bunching and staggering happen over time and across countries with different stages of development and exchange rate regimes. In other words, they are not limited to a special episode or a specific countries, underscoring their global and persistent nature (Figure A13).

	FX Markets	Pyts & Rcpts	NR Act.	Import Pyts	Export Pcds	Invis Trans	Capital Act.	Fin. Sector
FX Markets	20	12	8	12	9	15	17	7
Pyts & Rcpts	9	27	11	11	7	13	17	5
NR. Acc	9	14	14	10	6	16	23	6
Import Pyts	10	12	8	22	12	17	16	4
Export Pcds	10	12	8	16	13	15	20	4
Inv. Tra	11	12	10	15	9	19	19	4
CapM	10	11	10	11	8	15	27	8
Fin. Sector	10	9	13	7	6	11	29	15
AVG	**11**	**14**	**10**	**13**	**9**	**15**	**21**	**7**

Table 5: Conditional shares of other measures used in a staggering episode (-30 to +30 days). This table shows the share of measures that are implemented within a ±30 day window, conditional on a measure from a certain category (listed on the LHS) being implemented.

4.2 Use of cross-border flows and crises

When do countries use these measures and how does this correlate with the occurrence of crises? To address this, we use the following specification:

$$\text{No of measures}_{i,t} = \alpha + \beta * Crisis_{i,t} + \gamma * \Delta realGDP_{i,t} + \mu_i + \mu_t + \epsilon_{i,t} \qquad (3)$$

where the left-hand side variable is the number of measures taken, either the total, inflows, outflows, tightenings, loosenings, or just the subcategories of measures for country i in year t. Since we want to focus on the active use of these policies, we use the sum of actions within t, rather than the stance that would be measured with the iBoP-C or iBoP-S. The coefficient of interest on the right-hand-side is β to show

whether countries use the measures significantly more during crises (as defined by Laeven and Valencia, 2018). In addition to real GDP growth, we also control for country as well as time fixed effects to account for unobservable determinants at those levels.

Table 6 shows in column (1) that countries adopt significantly more measures during crises. Usage is more than double the median annual use, which corresponds to one measure. This increase is driven by measures targeting FX markets, non-resident accounts, import payments, export proceeds, and invisible transactions. In contrast, financial sector and capital account measures do not exhibit a systematic crisis response. If a paper - like much of the existing literature - would focus only on the latter, an insignificant finding would present an incomplete picture. Table 7 disaggregates by direction and shows that crises trigger both tightening and loosening measures, albeit tightening measures are more prominent. When distinguishing by flow type, countries predominantly adopt outflow measures, consistent with existing literature (Chang et al., 2024b).[32] Finally, Table 8 differentiates crises by origin — banking, currency, or sovereign debt — and finds that the effect is concentrated in currency and sovereign debt crises, where tightenings and outflow measures dominate. The correlation with banking crises is not statistically significant. This contrast is intuitive as currency and sovereign debt crises often directly affect cross-border flows while banking crisis can often be contained domestically.

4.3 Use of cross-border restrictions and the political economy

Recent evidence suggests that non-advanced economies rely more heavily on cross-border restrictions than advanced economies (e.g., during the COVID-19 period, Bergant and Forbes (2023)). One potential mechanism for this could be higher levels of risk and lower levels of institutional quality. In addition to this, consistent with opportunistic political cycles, Müller (2023) shows that macroprudential policies are more often adjusted around elections. We test these hypotheses for cross-border flow restrictions using the following specification:

$$\text{No of measures}_{i,t} = \alpha + \beta * institutional_{i,t} + \gamma * \Delta realGDP_{i,t} + \mu_i + \mu_t + \epsilon_{i,t} \quad (4)$$

[32] We do not collapse by flow type and direction at the same time as this leaves us with a high share or zero values and therefore non-normality of the left-hand-side variable.

	(1) All	(2) FX	(3) Pay & Rec	(4) NR Acc	(5) Imp	(6) Exp	(7) Inv. Tra	(8) CapM	(9) FS
Crisis Dummy	1.263***	0.249***	0.077	0.179***	0.309***	0.121***	0.168**	0.144	0.014
	(0.31)	(0.06)	(0.06)	(0.06)	(0.07)	(0.04)	(0.07)	(0.11)	(0.05)
Pseudo R2	0.311	0.173	0.220	0.127	0.237	0.194	0.229	0.194	0.185
Observations	7989	7989	7989	7989	7989	7989	7989	7989	7989
△ 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

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

Table 6: Use of cross-border measures during crisis - split by categories. This table shows estimation results from specification (3). The dependent variable is the number of policy measures adopted by country i in year t. Columns (2)–(7) focus on the number of policy measures within each category. $Crisis_{i,t}$ is a dummy variable indicating the occurrence of a systemic banking crisis as defined by Laeven and Valencia (2018). All regressions include controls for real GDP growth, country and time fixed effects. Standard errors are in parentheses.

	(1) Tightening	(2) Loosening	(3) Net tightening	(4) Inflow	(5) Outflow	(6) Net inflow
Crisis Dummy	0.728***	0.452**	0.277	0.240***	0.580***	-0.340**
	(0.15)	(0.21)	(0.20)	(0.08)	(0.19)	(0.17)
Pseudo R2	0.269	0.256	0.148	0.239	0.237	0.183
Observations	7989	7989	7989	7989	7989	7989
△ 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

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

Table 7: Use of cross-border measures during crisis - split by direction. This table shows estimation results from specification (3). The dependent variable is the number of policy measures adopted by country i in year t. Each column corresponds to the type of policy measure adopted: tightening, loosening, net tightening (number of tightening - number of loosening measures), inflow, outflow & net inflow (number of inflow - number of outflow measures). All regressions include controls for real GDP growth, country and time fixed effects. Standard errors are in parentheses.

where we use the data in institutional quality provided by The PRS Group (2023) and data on elections provided by Scartascini et al. (2021). Table 9 first reports results without country fixed effects to capture cross-country heterogeneity while time fixed effects control for global shocks. Most institutional quality indicators are significantly negatively correlated with the use of cross-border measures: lower institutional quality (i.e. more conflicts, higher tensions, or higher risks) is associated with greater

	(1) All	(2) Tightening	(3) Loosening	(4) Inflow	(5) Outflow	(6) Net inflow
Banking Crisis	0.028	0.352	-0.391	0.016	-0.053	0.069
	(0.51)	(0.24)	(0.34)	(0.12)	(0.31)	(0.28)
Currency Crisis	1.507***	0.789***	0.629**	0.243**	0.700***	-0.457**
	(0.41)	(0.19)	(0.27)	(0.10)	(0.25)	(0.22)
Sovereign Debt Crisis	2.532***	1.586***	0.885*	0.335**	1.538***	-1.203***
	(0.70)	(0.33)	(0.47)	(0.17)	(0.42)	(0.38)
Pseudo R2	0.313	0.271	0.256	0.239	0.238	0.184
Observations	7989	7989	7989	7989	7989	7989
△ 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

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

Table 8: Use of cross-border measures during crisis - split by crisis type. This table shows estimation results from specification (3). The $Crisis_{i,t}$ regressor is categorized into 3 types: banking, currency and sovereign debt crises as defined by Laeven and Valencia (2018). The dependent variable is the number of policy measures adopted by country i in year t. Columns (2) - (6) focus on specific types of measures: tightening, loosening, inflow, outflow & net inflow. All regressions include controls for real GDP growth, country and time fixed effects. Standard errors are in parentheses.

reliance on restrictions. For example, countries that are not able to offer stable governments (measured by a government's ability to carry out declared programs) and investment policies (measured by contract viability, profits repatriation, and payment delays) often resort to more actions regarding cross-border restrictions. While the first 12 characteristics speak mainly to political risk, we also analyze the ICRG composite risk index, which combines political, financial, and economic risk.[33] We find that overall risk is strongly correlated with measure adoption—even after controlling for country fixed effects. Thus, within-country variation also matters: governments resort to more restrictions during periods of heightened risk. Finally, incorporating election data from Scartascini et al. (2021) reveals that countries adopt or adjust more cross-border restrictions in years of executive or legislative elections. This effect is significant across all categories and aligns with Müller (2023), who documents opportunistic use of macroprudential policies around elections.

[33]While economic risk contains the main macroeconomic indicators (output, inflation, fiscal budget), the financial risk focuses on variables such as exchange rate stability, import liquidity, and foreign debt.

Right-Hand-Side	Any Measure	Outflow Measures	Inflow Measures	Loosening	Tightening	Time FE	Country FE
Quality of Bureaucracy	-0.085	0.054	-0.048	0.031	-0.127***	Y	
Corruption	-0.447***	-0.218***	-0.226***	-0.059**	-0.202***	Y	
Democracy accountability	0.015	0.057	0.006	0.016	-0.037	Y	
Ethnic Tensions	-0.219**	-0.153**	-0.051	-0.103***	-0.053	Y	
External Conflicts	-0.296***	-0.186***	-0.164***	-0.021	-0.105***	Y	
Government Stability	-0.218**	-0.085	-0.087	-0.060**	-0.124***	Y	
International Conflict	-0.276***	-0.177***	-0.137***	-0.061***	-0.094***	Y	
Investment Profile	-0.408***	-0.211***	-0.218***	-0.053***	-0.183***	Y	
Law and Order	-0.233**	-0.084	-0.111*	-0.042*	-0.133***	Y	
Military in Politics	-0.091	-0.015	-0.009	-0.013	-0.064**	Y	
Religious Tensions	-0.255**	-0.206***	-0.109*	-0.093***	-0.053	Y	
Socioeconomic	-0.088	-0.032	-0.054	-0.004	-0.059**	Y	
Composite Risk Index	-0.048***	-0.021**	-0.027***	-0.007**	-0.026***	Y	
Composite Risk Index	-0.085***	-0.016***	-0.035*	-0.049***	-0.043***	Y	Y
Election Taking Place	0.529**	0.250*	0.298**	0.074	0.278***	Y	

Table 9: Correlation use of cross-border measures and institutional quality/election periods. This table shows estimation results from specification (4). The dependent variable is the number of policy measures adopted by country i in year t. The first 12 regressors measure factors of political risk: quality of bureaucracy, corruption, democratic accountability, ethnic tensions, external conflicts, government stability, international conflict, investment profile, law & order, military's involvement in politics, religious tensions and socioeconomic conditions. The ICRG Composite Index considers political, economic and financial risk factors. Higher scores indicate a higher level of institutional quality. *Election Taking Place*, constructed using election data from Scartascini et al. (2021), is a dummy variable which indicates the occurrence of executive or legislative elections in year t. Fixed effects are applied as noted in the last two columns.

5 Validation the LLM methodology

We validate the LLM-based methodology by comparing the constructed measures with existing manually coded measures of capital controls. The validation proceeds in two steps. First, we benchmark iBoP-S against the capital account indicators of Fernandez et al. (2016) (FKRSU). Because a subset of the indicators covered in iBoP-S encompasses all indicators covered by FKRSU, we are able to replicate their dataset directly. Second, we broaden the comparison by contrasting iBoP-C to other well-known indices, including Quinn and Toyoda (2008), Chinn and Ito (2006), and Ilzetzki et al. (2021), to assess how our more comprehensive coverage aligns with earlier approaches.

5.1 Comparison with FKRSU

We begin with a comparison of the iBoP-S capital account indicators with the indicators in FKRSU. Specifically, we focus on the overall stance of capital account restrictions (ka) and their inflow (kai) and outflow (kao) components, which covers 32 subcategories and six types of instruments: capital and money market securities, collective investment securities, derivatives, credit operations, direct investment, and real estate. The sample is restricted to the 100 countries from 1995 to 2019 available from FKRSU.

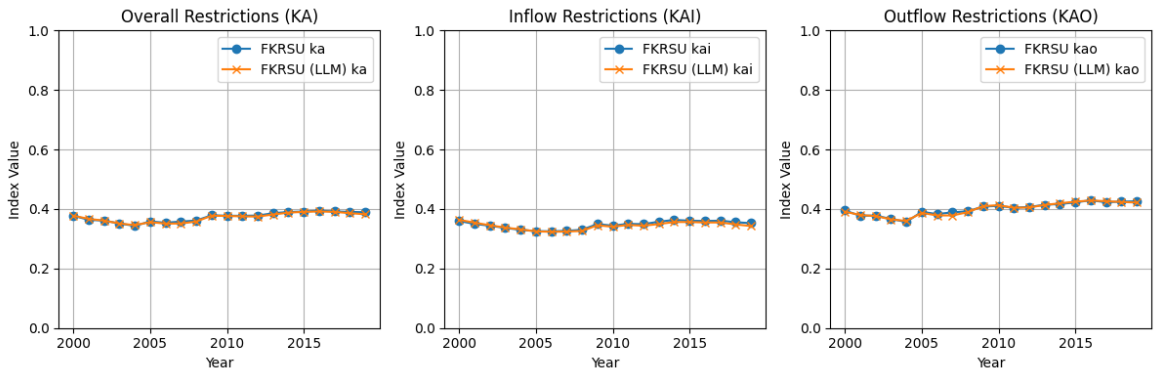


Figure 14: Average ka, kai, and kao indicators from the FKRSU (original) and FKRSU (LLM Extension). Sample restricted to 100 countries and 32 instruments from FRKSU (original) between 1995-2019.

Figure 14 shows that the average aggregated series from iBoP-S closely tracks the original dataset. Figure 15 plots the overall capital account restriction stance index (ka) by country-year. It shows most data points lie along the 45-degree line, indicating that the values of iBoP-S and FKRSU are highly consistent within the sample. Overall, this represents a compelling validation of the LLM methodology used in our work to construct cross-border flow restrictions.[34].

5.2 Comparison with other measures

We now compare our iBoP-C with measures coming from previous peer-reviewed studies that include a large panel of countries. Concretely, we focus on four well-known studies discussed in the Literature Review. The first three are the direct measures in Quinn and Toyoda (2008), Chinn and Ito (2006), and Fernandez et al.

[34]As part of the data release, we also provide users the updated and extended FKRSU indicators

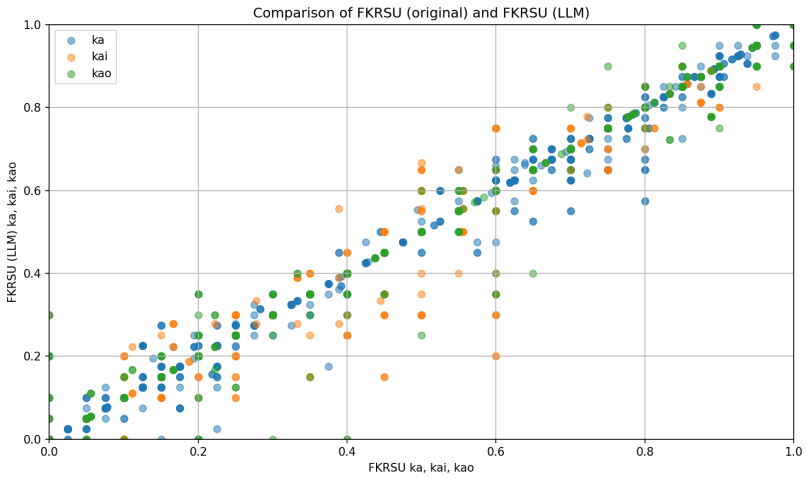


Figure 15: Comparison of capital restrictions (ka, kai, kao) values from FKRSU (original) and FKRSU (LLM Extension). Sample restricted to 100 countries and 32 instruments from FRKSU (original) between 1995-2019. Aggregated indices (ka, kai, kao) are reweighted using a similar methodology from FKRSU.

(2016))[35]. The fourth study is the indirect measures in Ilzetzki et al. (2021) who document the fraction of countries with dual, multiple or parallel exchange rates.[36]

Figure 16 presents the time series of the five measures and Table 10 presents the corresponding correlations. When computing these descriptive statistics, we pool the data across countries. The most salient feature that comes out of these statistics is that our new measure commoves with the ones in previous studies, but the correlation is not perfect. In fact, all correlations are above or close to 0.9. It is also noteworthy that our index captures well the increase in restrictions surrounding the collapse of Bretton Woods and a stronger liberalization after the mid 1980s. This partly reflects the fact that, as mentioned before, the new measure enables us to capture more comprehensively the variety of tools used and captured in the eight categories that

[35]When computing statistics with the measures put together by Quinn (1997) we use simple averages between the current and capital account measures to make it more comparable to ours. Likewise, when using the measures by Fernandez et al. (2016), we use the most aggregate measures that averages inflow and outflow restrictions.

[36]Their index also draws on the IMF's AREAER complimented with the publications by Franz Pick over 1946-1998 and Pick and Sedillot (1971). It assigns a value of 1 to a country in each year when any one of three criteria is met. First, the country has an official (*de jure*) dual market for foreign exchange. Second, the country has a *de jure* system of multiple exchange rates. Third, there is an informal parallel market (whether tolerated or illegal) and the parallel market has a premium of 10 percent or more within a 12-month moving window. The index takes a value of zero in any year when none of these three criteria is met.

we cover.

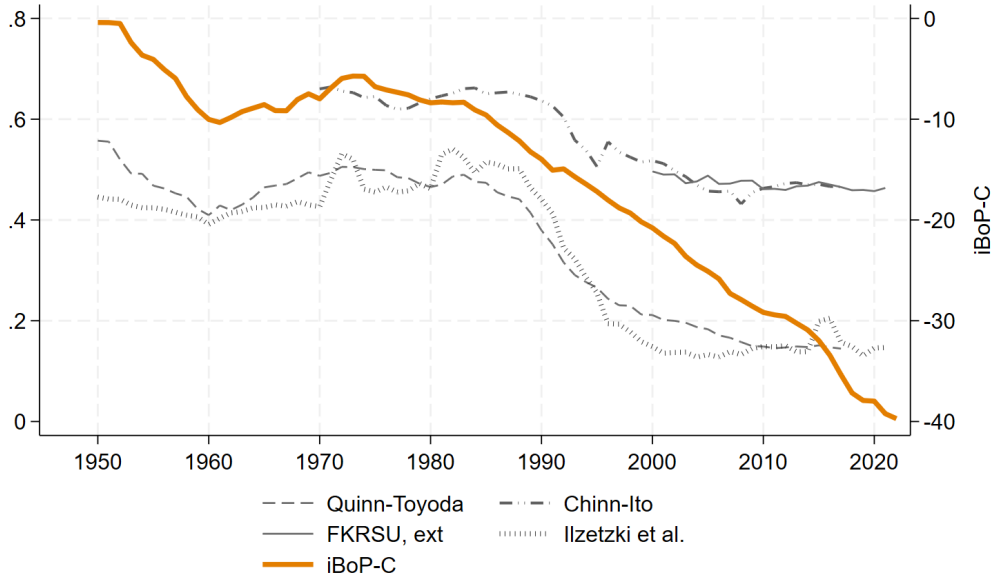


Figure 16: Comparison with other datasets mentioned in the text (Quinn and Toyoda 2008, Chinn and Ito 2006, Ilzetzki et al. 2021). "FKRSU, ext" refers to the measure by Fernandez et al. (2016) extended by our LLM as described in Section 5.1.

	Quinn-Toyoda	Chinn-Ito	FKRSU, ext	Ilzetzki et al.	iBoP-C
Quinn-Toyoda	1				
Chinn-Ito	0.9683	1			
FKRSU, ext.	0.8230	0.5152	1		
Ilzetzki et al.	0.9543	0.9641	-0.1212	1	
iBoP-C	0.9672	0.9413	0.8801	0.8803	1

Table 10: Comparison with other datasets mentioned in the text (Quinn and Toyoda 2008, Chinn and Ito 2006, Ilzetzki et al. 2021). "FKRSU, ext" refers to the measure by Fernandez et al. (2016) extended by our LLM as described in Section 5.1.

6 Extensions and Refinements

6.1 Motivations for Capital Controls

The imposition of capital controls has been a topic of significant academic interest, but there remains a notable gap in the literature regarding a systematic, empirical account of *why* controls are introduced. While existing models of optimal capital controls emphasize motivations such as overborrowing for the use of inflow controls (see Bianchi and Mendoza (2018)), or to coordinate foreign investors not to run in case of a crisis with outflow controls (see Chang et al. (2024b)), there is limited evidence on the actual reasons behind capital control measures as justified by government officials.

We systematically account for the official motivations in a subset of the measures considered. Our starting point is the work by Magud et al. (2018) who provide anecdotal evidence on the "*fears*" that drive policymakers to impose controls on cross-border flows.[37]

To explore the motivations for capital controls, we rely on a narrative approach utilizing official documents. Specifically, we analyze capital flow management (CFM) measures as categorized in the IMF taxonomy described before. This implies that we focus on the subset of measures labeled as "macro-critical" by IMF staff either introduced or changed post-2012. This includes 153 individual measures across 41 countries, spanning advanced economies, emerging markets, and developing economies.

Our approach involves a manual search for official statements from governments regarding the motivations behind these measures. These statements were sourced from speeches, financial and monetary stability reports, IMF Article IV consultations, social media (e.g., Twitter), and other relevant channels. In total, we found official statements for 138 of the measures (90%), from which we identified motivations for 117 (76%). For the remaining measures, we supplemented our findings using ChatGPT to extract motivations.

While some measures are motivated by a single reason, others may reflect overlapping motivations, as capital controls often address multiple concerns simultaneously.

[37] Their work highlights four fears: fear of exchange rate appreciation; fear of hot money; fear of large inflows; and fear of loss of monetary autonomy.

Below is a detailed explanation of each of the six categories:[38]

- **Fear of Overborrowing**. This category refers to the concern that large foreign inflows may encourage excessive risk-taking, fuel asset-price bubbles, and create vulnerabilities to sudden withdrawals. These measures are often introduced either proactively (ex-ante) or reactively during a surge in inflows to prevent financial instability.

- **Fear of Disruptive Outflows**. Policymakers may introduce capital controls to prevent large-scale outflows, particularly during times of crisis or heightened financial uncertainty. These measures serve as precautionary measures to safeguard a country's foreign reserves or to stabilize the financial system. In some cases, they are used to mitigate the effects of capital flight during periods of economic turmoil.

- **Fear of Floating**. The fear of exchange rate volatility is a significant motivation for capital controls. This category encompasses multiple concerns, including a fear of exchange rate volatility leading to uncertainty in the economy; fear of appreciation, which can harm export competitiveness; fear of depreciation, which may reduce purchasing power or increase the burden of foreign-denominated debt. Lastly, any measure aimed at supporting a pegged exchange rate or maintaining monetary policy autonomy in the face of capital mobility would enter into this category.

- **Geopolitics**. Capital controls may also be motivated by political or geopolitical considerations. These measures are often driven by national security concerns, including military conflicts or international sanctions. Governments may impose controls to restrict the flow of capital for strategic reasons or to comply with international mandates.

- **Long-term Goals**. Some capital controls are not reactive to short-term economic pressures but are instead aimed at long-term goals, such as fostering the stability and depth of domestic financial markets, or increasing capital account

[38] Our classification expands the four fears in Magud et al. (2018) framework to capture a broader range of economic, geopolitical, and long-term considerations that surfaced throughout our analysis. While Magud et al. (2018)'s fears of appreciation and loss of monetary autonomy overlap with our fear of floating, their fears of large inflows and of hot money bear resemblance to our fears of overborrowing and of disruptive outflows.

openness. These measures are designed to strengthen investor confidence and increase the resilience of the financial system, often leading to greater international connectedness over time. Despite regulating capital flows, these controls may de facto increase openness by fostering a more stable environment for investment.

- **Miscellaneous**. This category includes measures that do not fit neatly into the above classifications. Motivations for these measures include increasing tax revenues, or addressing other unique economic conditions not covered by the other categories.

Figure 17 reveals several key trends in the motivations behind the imposition of capital controls from our systematic analysis. The most common reasons for imposing restrictions are driven by concerns about disruptive outflows or volatile currency movements with 37% of the cases found to have this characteristic. This is followed by a fear of floating (31%) and of overborrowing (22%). Long-term goals not associated to business cycles are next with 20% of cases, and geopolitics and miscellaneous are the less frequent motivations with 13% and 3%, respectively.[39] It is notable, therefore, that about 1/3 of the motivations are not linked to the state of the business cycle.

Figure 18 explores how the motivations are related to income levels across countries, types of tools, direction of the flow, and the *de facto* exchange rate regime from Ilzetzki et al. (2021). Fears of floating and of disruptive outflows are more pervasive in low and middle income countries. Fear of overborrowing, in contrast, is more pervasive in high income countries (panel a). Bans and limits are the two types of controls mostly used across all the motivations, with the exception of taxes, which is the most used in the case of fears of overborrowing. Surrender and repatriation requirements are the second most relevant type in the case of fears of disruptive outflows (panel b).

Fears of disruptive outflows, fear of floating, and geopolitical drivers are more characteristic of the motivations behind outflow measures compared to inflow measures. As expected, fear of overborrowing disproportionally impacts more inflow controls. Long-term goals are equally distributed among types of flows (panel c). Lastly, fears of overborrowing are more frequent in freely floating countries. "Freely

[39] As mentioned, the 6 types of motivations are not mutually exclusive, hence the percentages do not add to 100.

falling" cases, as defined by Ilzetzki et al. (2021), are more pervasive when fears of floating and of disruptive outflows are identified (panel d).

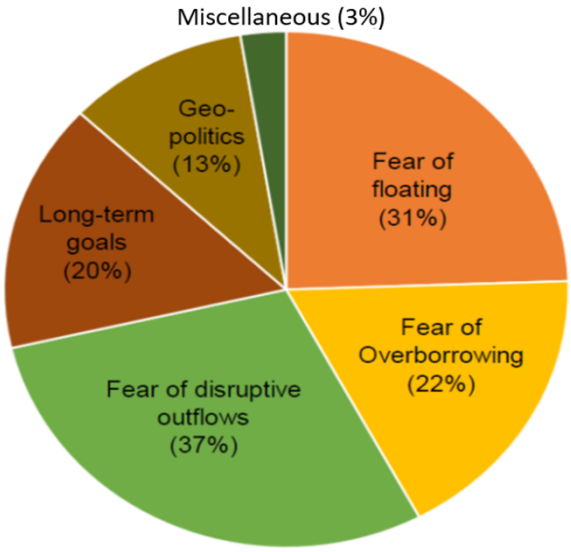
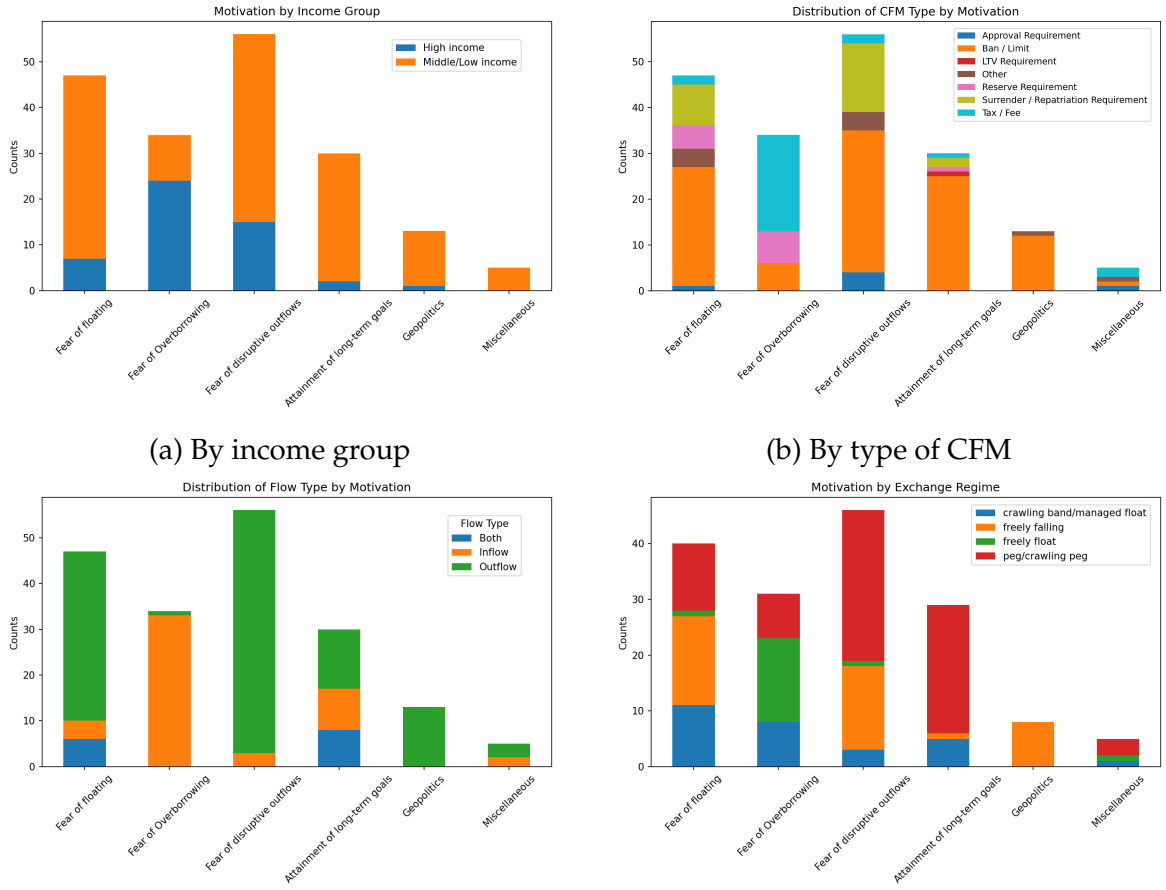


Figure 17: Motivations for use of Capital Controls.

6.2 Incorporating Intensity

A common limitation of existing capital control measures is that they often capture only an extensive margin, e.g. through binary variables capturing the presence or not of controls, without measuring their economic *intensity*. By capturing changes to already active restrictions, the iBoP-C partly addresses this limitation insofar as the changes can capture the recalibration of already active restrictions that extensive margin measures would miss. However, because the measures are ultimately also binary (i.e., tightening/loosening) without accounting for the magnitude or severity of the measure, it continues to treat all reported changes as equal, regardless of their intensity. As a result, a minor documentation requirement and a sweeping prohibition receive the same weight, potentially biasing assessments of policy trends and their effects.

Previous work, most notably Quinn (1997), has emphasized that incorporating a measure of intensity can yield a more accurate depiction of policy restrictiveness. Quinn's methodology assigns an ordinal scoring of restrictions based on a subjective assessment of their scope, coverage, and severity. Such approach, however, has not



(a) By income group

(b) By type of CFM

(c) By direction of flow

(d) By exchange regime

Figure 18: Motivations of CFM policies in the Taxonomy, by income, type, direction of flow, and exchange regime.

been systematically extended to the breadth of instruments and historical coverage we analyze.

To address this limitation, we recompute our iBoP-C measure by weighting each reported change according to its intensity. Our methodology draws inspiration from Quinn's ordinal scoring approach but adapts it to the multi-category, multi-decade AREAER dataset. Each change in restriction is assigned an intensity score, $\alpha \in (0.1, 0.25, 0.5, 0.75, 1)$, based on the scope and nature of the measure: notification/-documentation, tax, quantitative limit, approval requirement, ban, respectively. The scoring thresholds were calibrated using a combination of expert review of AREAER entries and a generative LLM (GPT-4o-mini), supplemented with in-context examples, ensuring consistency across categories. The classification rules are customized

to the eight categories of restrictions we track and were developed using hand-coded examples and Large Language Model (LLM) prompted on category-specific criteria (see Appendix D.2 for details). For instance, a complete prohibition on a broad class of capital transactions receives $\alpha = 1$, whereas a notification/documentation requirement receives $\alpha = 0.1$. Loosening measures are scored based on the intensity of the restriction being removed; tightening measures are scored based on the intensity of the new restriction. The resulting intensity-weighted iBoP-C aggregates net tightenings and loosenings as before, but with each measure scaled by its α-value.

Figure 19 compares the baseline (unweighted) and intensity-weighted iBoP-C. Many of the patterns documented at the category levels using the unweighted measures continue to hold when examining the intensity-weighted index. However, there are some interesting differences. Relative to the unweighted index, we find a slightly more pronounced tightening in the 70s and 80s and a more gradual liberalization trend in the subsequent periods. This indicates that many of tightenings put in place during the 1970s and 80s were more restrictive than the subsequent loosenings in the decades that followed. Complementary evidence presented in the Appendix (Fig. A11) decomposes the trend into the various levels of intensity ($\alpha's$) and shows how the stronger tightening in the 70s is associated with relatively more reliance on bans and approvals. The intensity weighted index indicates that the average country effectively loosened restrictions by around 10 measures as compared to around 40 measures by 2023 as implied by the unweighted measure.[40] Nonetheless, an important finding of this section is the findings established using our baseline unweighted measure largely hold even after accounting for different intensities across measures.

At the category level, we find that the intensity-weighted measures present a picture that is qualitatively consistent with those of the unweighted measures. This indicates that assigning each change an equal value as in our iBoP-C is a good approximation as there are no periods or countries that systematically use more/less intense controls. As with the aggregate iBoP-C index, we similarly find a more gradual liberalization over the past seven decades across all categories, except for FX markets and financial sector restrictions. Nonetheless, some differences emerge. We find a sharper tightening of FX market and financial sector restrictions among high income countries during the 1970s and 80s. We also find a more pronounced tightening in the intensity-weighted iBoP-C index for financial sector restrictions in

[40]This feature of the data can also be explained to some extent by the assignment of weights less than one on average across measures, which modulates variation in the measure over time.

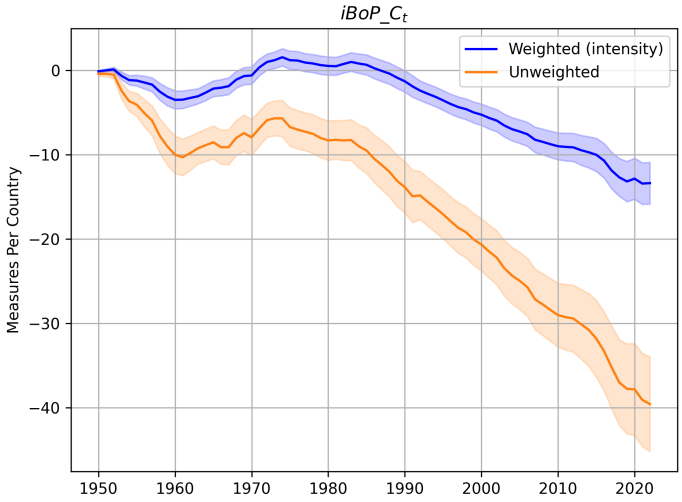


Figure 19: Cumulative net tightening, average, weighted by intensity

the post-2010 sample for middle income countries. Finally, the intensity weighted measure suggest that outflow restrictions began to be effectively loosened starting from the 1990s, while the unweighted measure indicates a gradual loosening starting from the 1970s. We present an intensity-weighted version of the long-run stylized facts in Appendix B.2.

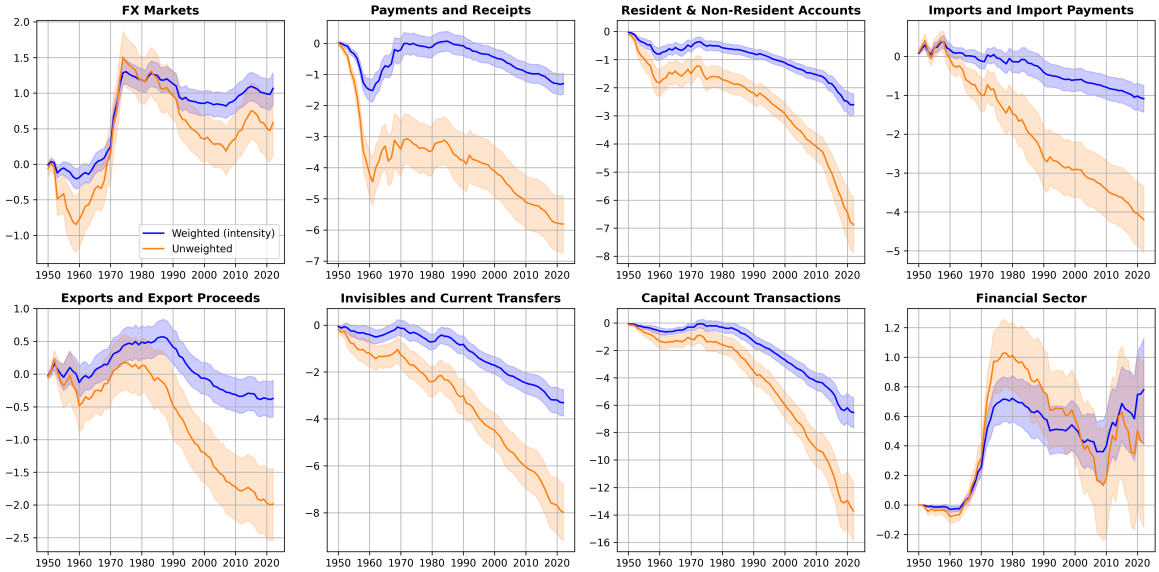


Figure 20: iBOP-C, weighted by intensity of restrictions by category

7 Conclusion

In this paper, we provide a detailed, systematic account of cross-border flow restrictions over the past seven decades, using modern machine learning techniques to analyze semi-structured official documents. By developing a new, high-resolution measure of restrictions, the iBoP, we are able to document the evolution of policies that have shaped the international monetary system, tracing changes across different countries and time periods with unprecedented granularity.

We document several stylized facts about the long-run evolution of cross-border flows and their use over time. First, we document that policymakers have relied on a broad set of tools to regulate cross-border flow restrictions, beyond those that directly impact the capital account. By systematically mapping this wider universe of policy tools, our work expands the conventional borders of what counts as a restriction on cross-border flows, offering a more comprehensive and empirically grounded view of countries' regulatory choices. These include restrictions related to current account transactions (import payments, export proceeds, and invisible transactions), but also measures targeted at the FX and financial markets, and methods of payments (use of gold and banknotes). We note a significant tightening of these restrictions during the end of the Bretton Woods era, a pattern that shows up only after considering these broader set of restrictions. Finally, we find significant heterogeneity in the use of cross-border flow restrictions across countries and over time. Higher income countries were more aggressive in pursuing the liberalization of these measures compared to lower income countries. Outflow restrictions were also the focus of most liberalization over time, but lower income countries continue to rely more heavily on outflow restrictions than higher income countries.

We also document how countries use the tools included in our new dataset. Its high frequency nature reveals that countries rarely use any of these tools in isolation, with over half of measures having a neighbouring action within ±10 days and over three-quarters within ±30 days—patterns. We also find that countries double their use during crisis, particularly outflow measures, where the effects are concentrated during sovereign debt and currency crises. Our simple regression framework also indicates that countries with lower institutional quality resort to BoP restrictions relatively more frequently, potentially compensating for other frictions in their policy tool kit.

We complement the construction of the new indices with a set of validation

exercises and extensions that broaden their analytical value. First, we conduct a direct validation test by restricting iBoP-S to the subset of categories used in Fernandez et al. (2016). In this controlled setting, our LLM-based classifications reproduce the FKRSU series almost perfectly. Second, we compare the full iBoP-C series with the leading indicators of capital account regulation and show that while the indices co-move strongly, iBoP-C delivers substantially richer cross-country and time-series variation owing to its broader scope and higher frequency. Third, we extend the analysis by systematically extracting policymakers' stated motivations for adopting restrictions and, separately, by incorporating intensity weights that differentiate minor procedural changes from sweeping prohibitions. These refinements reveal a smoother long-run liberalization and sharper tightening episodes—especially during the Bretton Woods collapse—than suggested by unweighted measures. Together, these exercises confirm both the accuracy of our methodology and the additional insight gained from exploiting the full richness of the AREAER.

Looking ahead, several promising avenues remain. A natural next step is to further leverage LLMs to construct a comprehensive stance index that extends back to the 1950s, consolidating information on both the frequency and intensity of restrictions into a unified measure. Future work could also evaluate how newer language models perform on our data, opening the door for further improvements in classification accuracy. Our dataset also opens the door to empirical applications assessing the effectiveness of restrictions in shaping capital flows, exchange rate pressures, and crisis dynamics, and to studying their interactions with monetary and macroprudential policies. Finally, the approach can be adapted to capture not only the *de jure* but also the *de facto* dimension of cross-border restrictions, thus offering a more complete picture of international financial integration. These extensions will deepen our understanding of how countries manage capital mobility and the implications for the stability of the international monetary system.

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Appendix

A Additional Figures and Tables

A.1 Sources

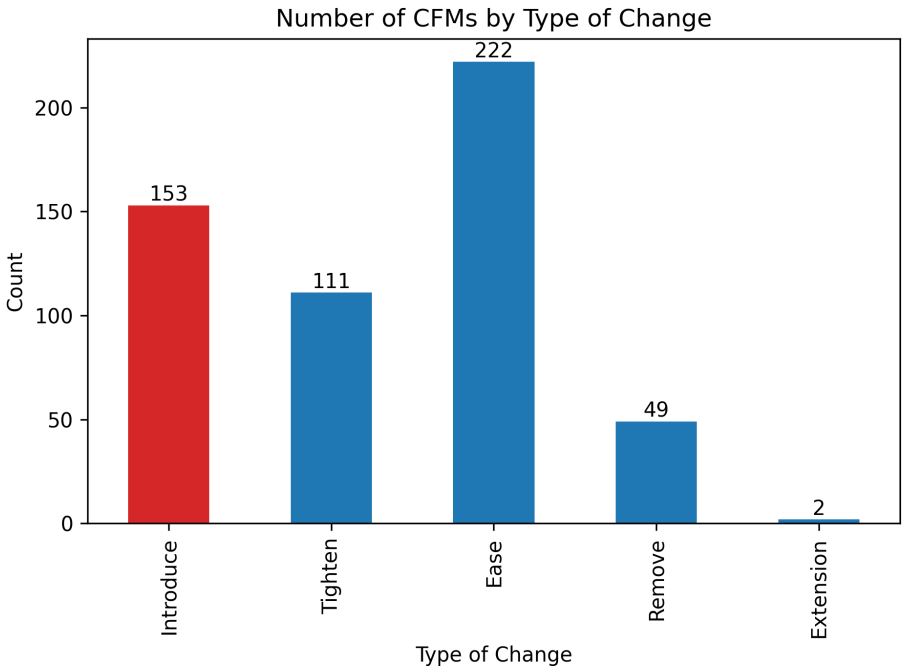


Figure A1: Number of changes in the IMF's CFM Taxonomy, by type of change.

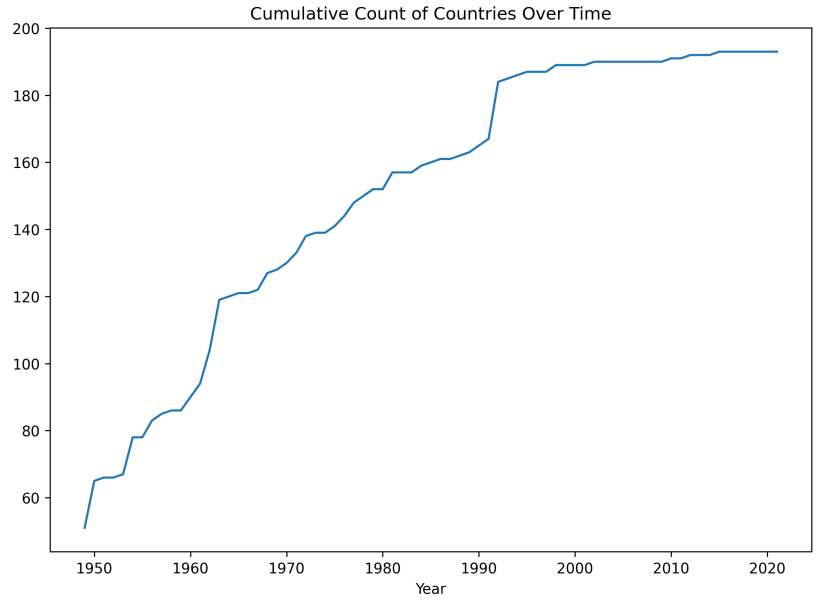


Figure A2: Number of IMF member countries covered in the AREAER over time.

A.2 Methodology: classification

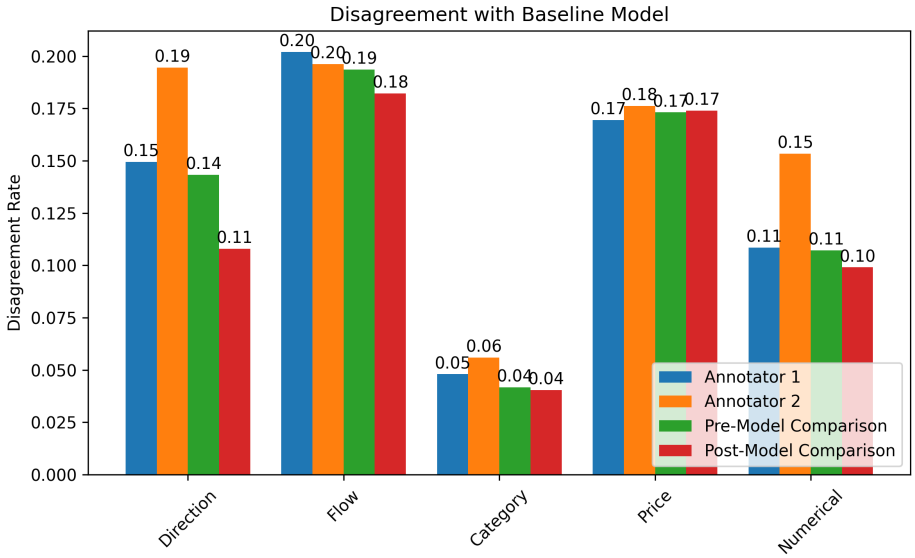


Figure A3: Disagreement rates between annotators and the zero-shot prompted LLM. "Pre-model comparison" refers to manually annotated labels after resolving disagreements between annotators. "Post-model comparison" refers to labels after resolving disagreements with the LLM. The sample consists of observations from the pre-1995 AREAER sample.

A.3 Methodology: refinements

	Refined	Trade-Related	Domestic MPM	Sanctions	Exchange Regime
Overall	59.50	27.70	2.40	4.10	6.30
FX markets	43.30	0.00	0.00	12.80	43.80
Payments and Receipts	90.50	0.00	0.00	9.50	0.00
Resident & Nonresident Accounts	97.10	0.00	0.00	2.90	0.00
Import Payments	22.50	75.80	0.00	1.60	0.00
Export Proceeds	37.50	59.60	0.00	2.90	0.00
Invisible Transactions	99.70	0.00	0.00	0.30	0.00
Capital Account Transactions	98.70	0.00	0.00	1.30	0.00
Financial Sector	64.60	0.00	34.10	1.40	0.00

Table A1: Share of refined labels by category.

Class	Observations	Accuracy	Precision	Recall	F1
Exchange Regime	313	0.949	0.949	0.949	0.949
Trade related	344	0.991	0.991	0.991	0.991
Payment related	225	0.991	0.991	0.991	0.991
Sanctions related	137	0.978	0.978	0.978	0.978
Domestic MPM	372	0.844	0.848	0.844	0.843

Table A2: Performance metrics based on held-out test sample. Precision, recall, and F1-score metrics are weighted by the number of true instances for each label.

Label	No. Labels	Train Sample	Test Sample	Train + Test	Full Sample
Direction	3	2964	742	3706	70817
Flow	3	2964	742	3706	70817
Category	8	19669	4918	24587	70817
Price	3	2244	562	2806	70817
Numerical	2	2241	561	2802	70817

Table A3: Number of training examples by dimension.

A.4 Stylized Facts

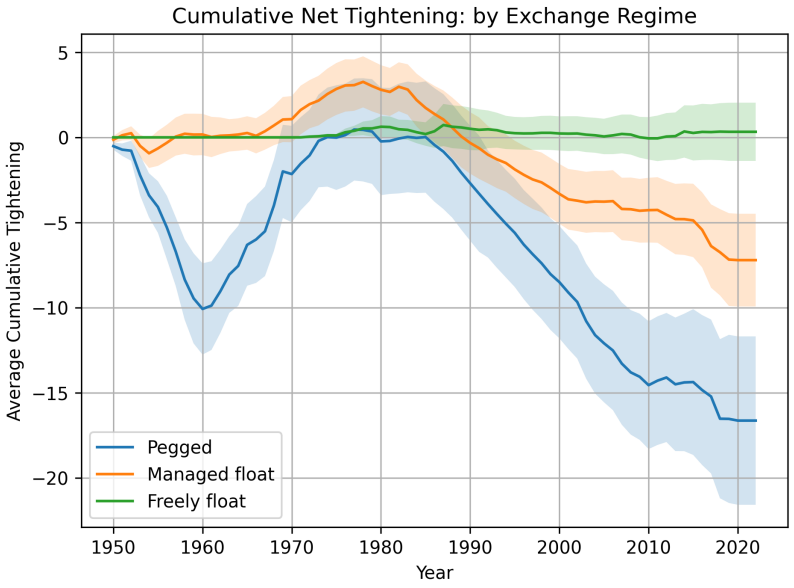


Figure A4: Cumulative tightening by exchange regime.

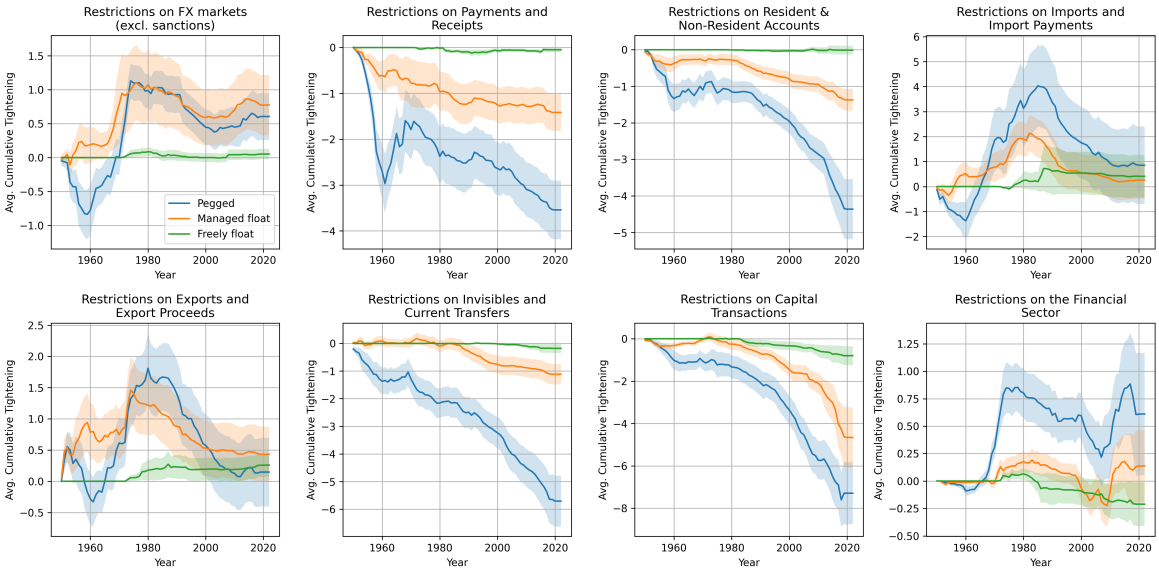


Figure A5: Cumulative tightening by exchange regime, category level.

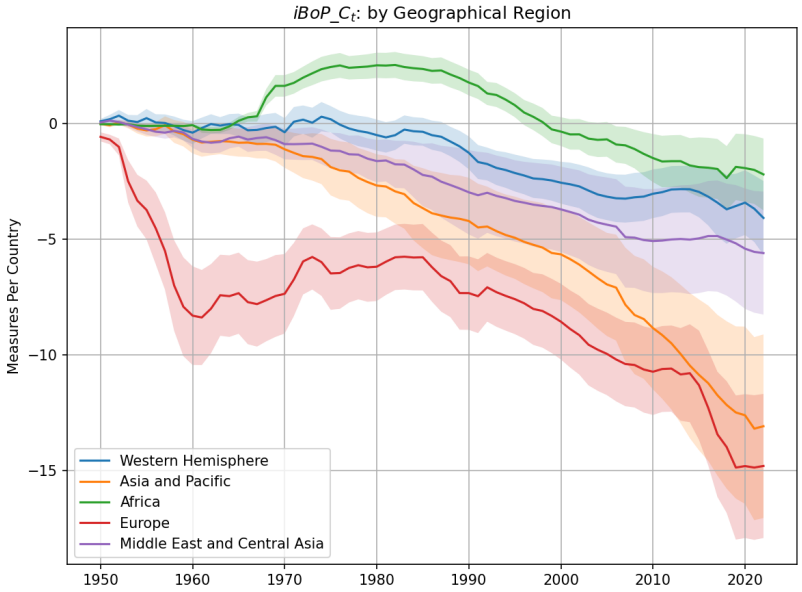


Figure A6: Cumulative tightening by geographical region

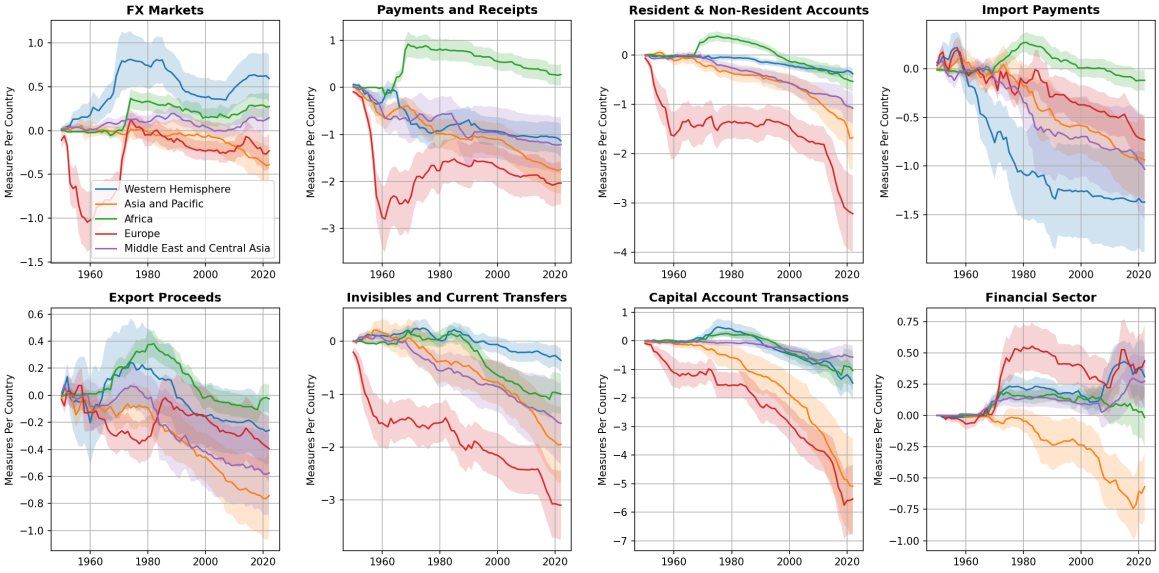


Figure A7: Cumulative tightening by geographical region, category-level.

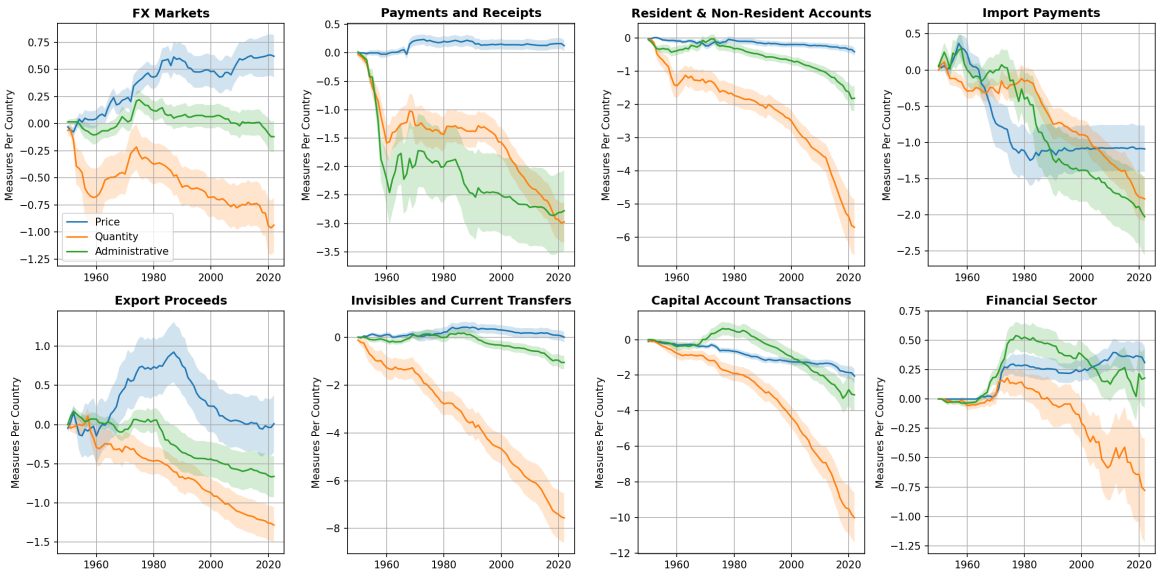


Figure A8: Cumulative tightening by type of restriction.

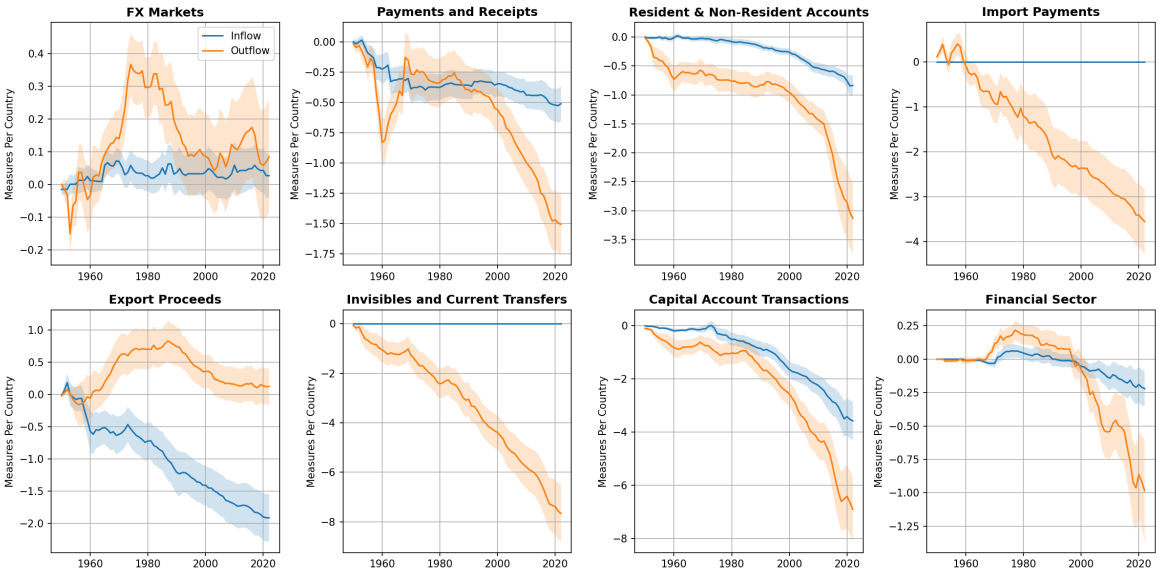


Figure A9: Cumulative tightening by direction of flow impacted. Note that, by construction, none of the restrictions that fall under the import payments and invisible and current transfers categories are related to inflow transactions.

A.5 A More Granular View

Category	Observations	Accuracy	Precision	Recall	F1
FX Markets	92	0.935	0.935	0.935	0.935
Payments and Receipts	153	0.922	0.922	0.922	0.922
Resident & Non-Resident Accounts	596	0.678	0.678	0.678	0.678
Import Payments	114	0.737	0.737	0.737	0.737
Export Proceeds	86	0.907	0.907	0.907	0.907
Invisibles and Current Transfers	423	0.905	0.905	0.905	0.905
Capital Account Transactions	4824	0.915	0.915	0.915	0.915
Financial Sector	564	0.947	0.947	0.947	0.947

Table A4: Performance metrics based on held-out test sample. Precision, recall, and F1-score metrics are weighted by the number of true instances for each label.

A.6 Stance Index

Category	Observations	Accuracy	Precision	Recall	F1
FX Markets	500	0.992	0.993	0.992	0.992
Payments and Receipts	500	0.856	0.861	0.856	0.847
Residents & Non-Residents Accounts	500	0.962	0.960	0.962	0.961
Import Payments	500	0.922	0.924	0.922	0.923
Export Proceeds	500	0.950	0.946	0.950	0.946
Invisibles and Current Transfers	500	0.906	0.907	0.906	0.906
Capital Account Transactions	500	0.888	0.882	0.888	0.884
Financial Sector	500	0.892	0.888	0.892	0.881

Table A5: Performance metrics based on held-out test sample. Precision, recall, and F1-score metrics are weighted by the number of true instances for each label.

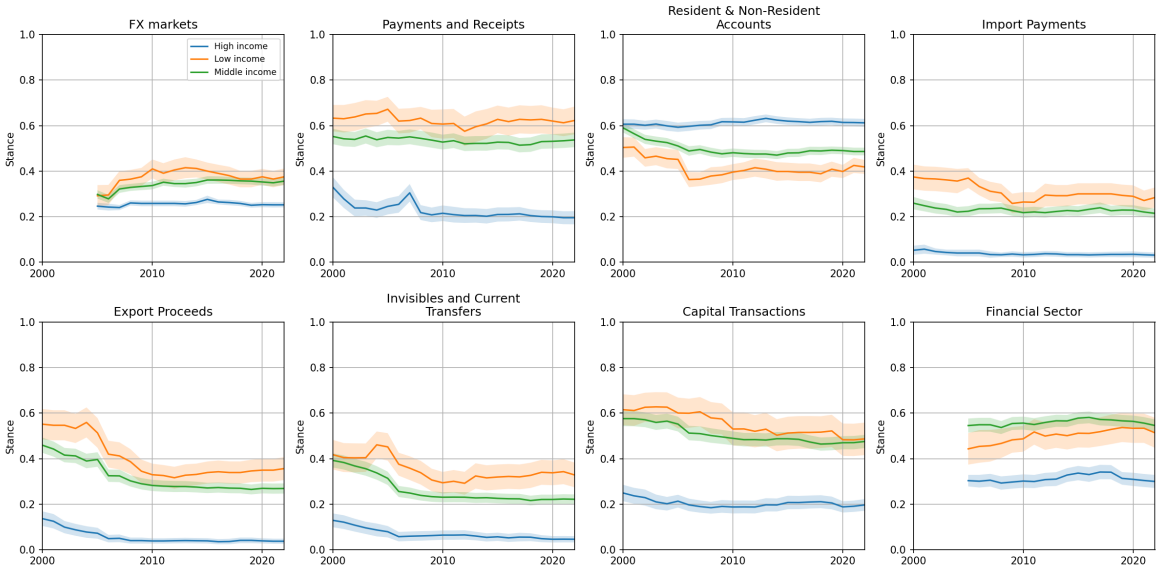


Figure A10: Average stance of restrictions (iBoP-S), by category and income group.

A.7 Extensions: Incorporating Intensity

- $\alpha = 0.1$ **(Minimal Restriction / Administrative Measure)**: only notification, documentation, or procedural requirements.
- $\alpha = 0.25$ **(Marginal Restriction)**: single low tax $< 10\%$ or minimal tweak to an existing tight limit.
- $\alpha = 0.5$ **(Moderate Restriction)**: heavy tax or quantitative limit; repatriation requirement without surrender; ambiguous cases.
- $\alpha = 0.75$ **(Severe Restriction)**: heavy tax plus quantitative limit; approval requirements; partial repatriation & surrender; narrow bans.
- $\alpha = 1$ **(Complete Prohibition)**: broad bans or full repatriation & surrender requirements.

Additional Details:

1. The prompt includes (1) a set of rules used to assign an intensity score, (2) hand-coded examples tailored to each category of restriction, and (3) metadata identifying the country, year, and restriction category associated with each measure.

2. The classification rules are customized to each of the eight categories. These were refined through review of 104 labelled examples sampled across categories.

3. To guide the model's reasoning, each prompt includes labelled examples drawn randomly from the 1995–2022 sample.

4. The baseline model is GPT-4o mini.

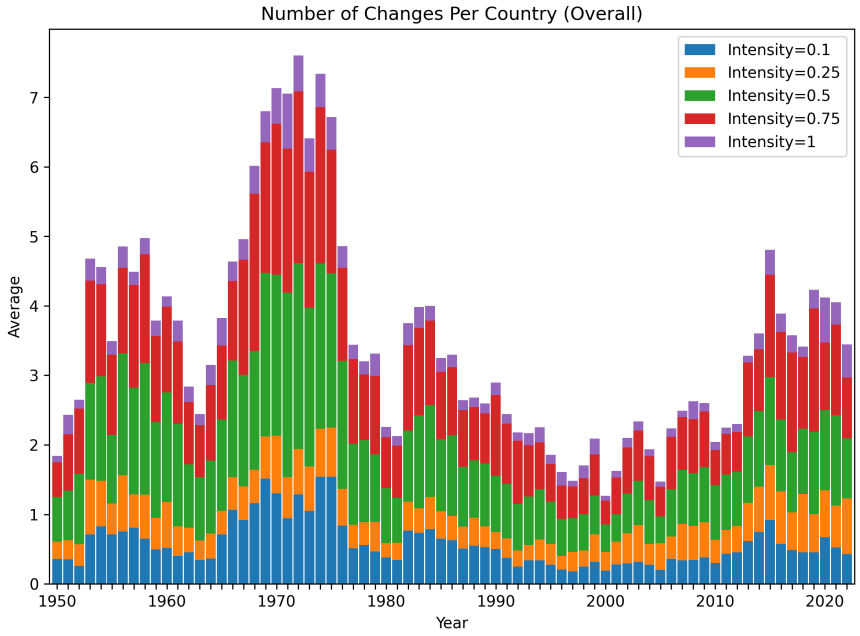


Figure A11: Number of changes, by category of intensity

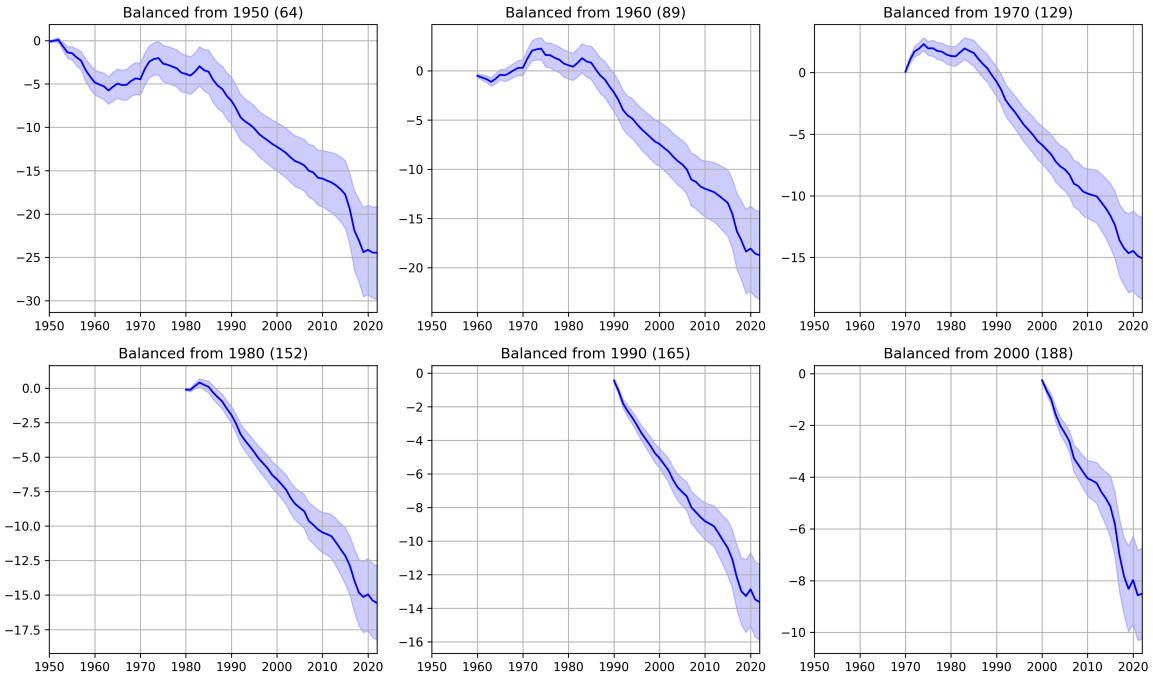


Figure A12: Cumulative net tightening, average, weighted by intensity, balanced panel

A.8 Use of cross-border flow measures

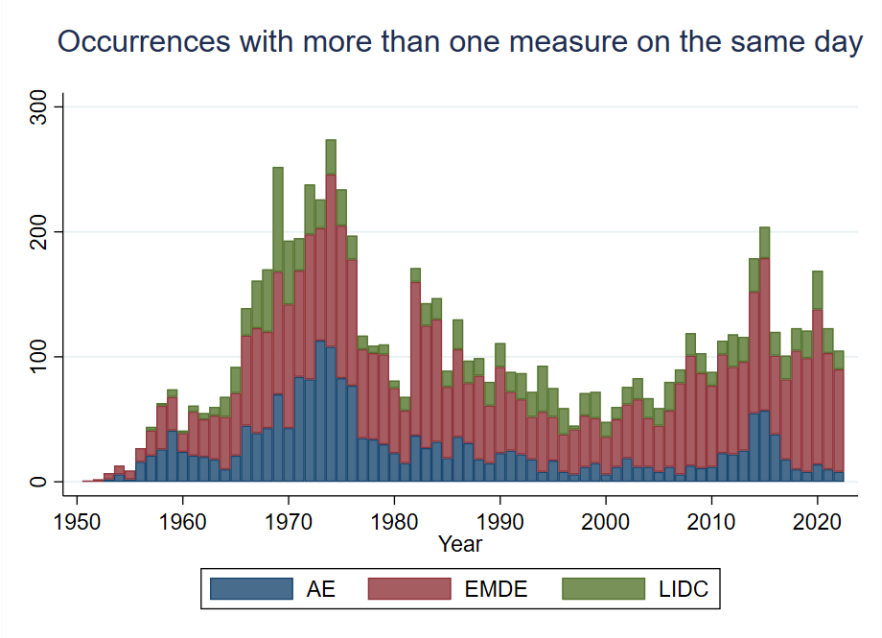


Figure A13: Bunching occurrences: number of measures with at least one other measure on the same day.

B Robustness Analysis

B.1 Balanced panel: Cohort of countries from 1960 onwards.

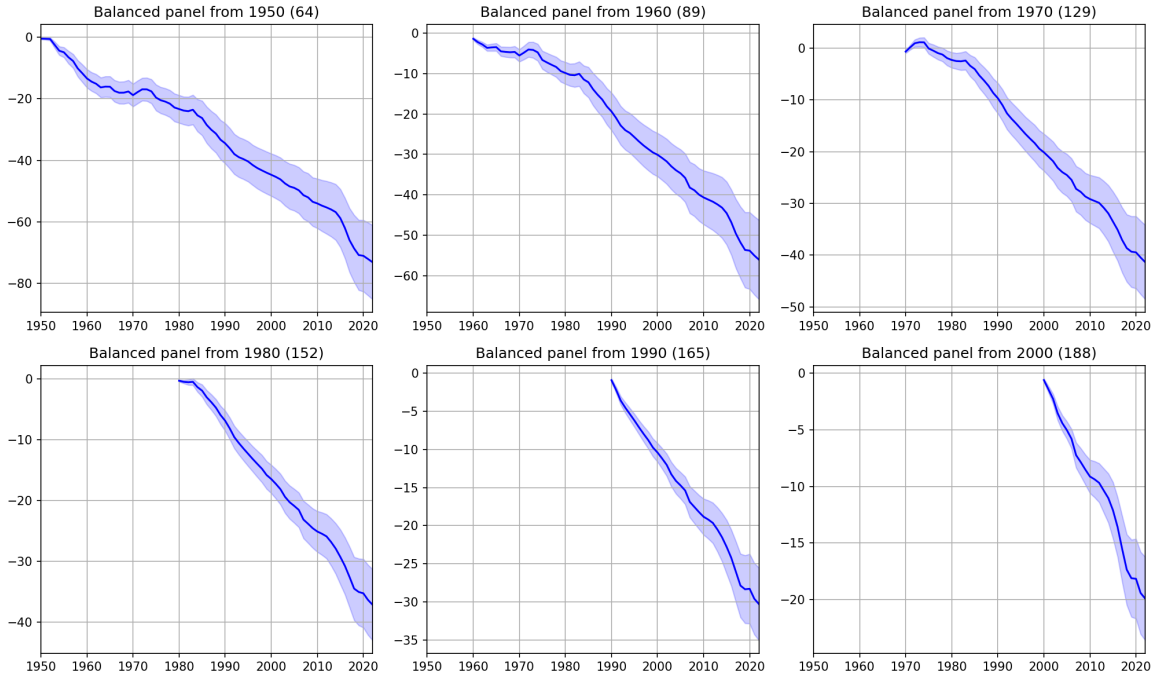


Figure B1: Cumulative net tightening, overall restrictions, balanced panel over time.

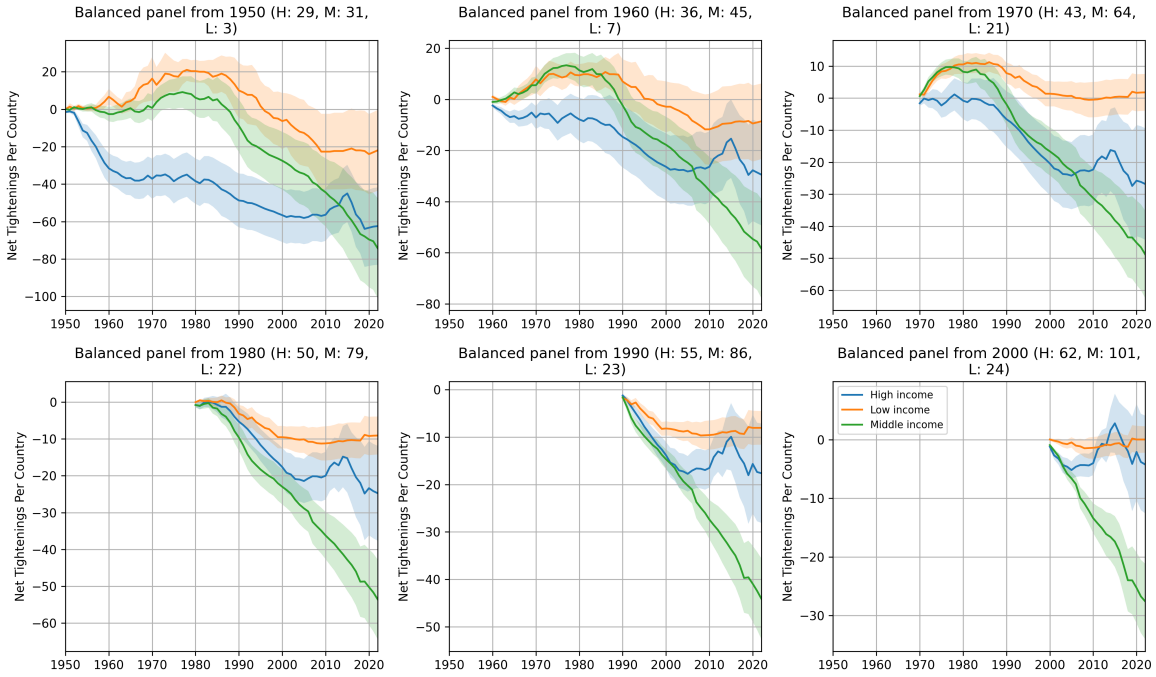
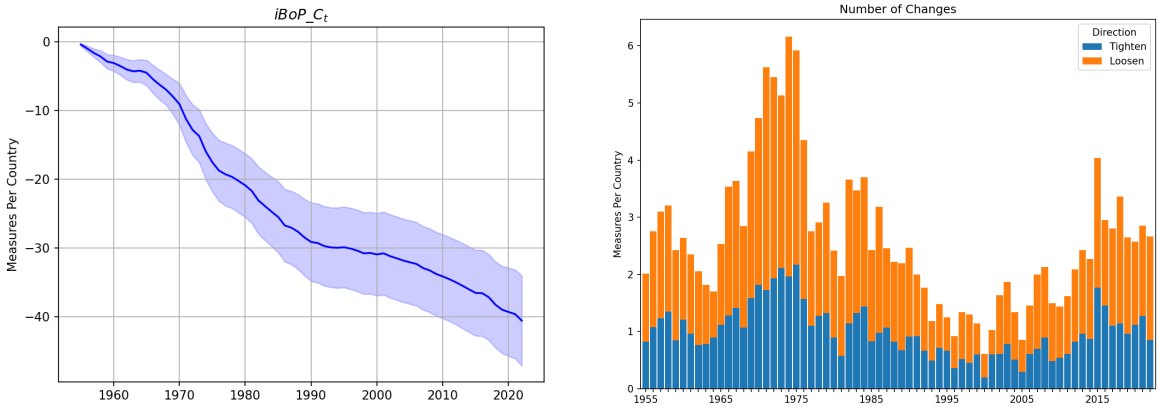


Figure B2: Cumulative net tightening, balanced panel over time, by income group.



(a) Cumulative net tightening

(b) Number of changes

Figure B3: Left panel: Average cumulative net tightening index (iBoP-C) (negative values indicate net loosening). Right panel: Average number of tightening and loosening measures per country. Shaded area denotes the standard error of the mean ($SD_t/\sqrt{(N_t)}$ where SD_t is the standard deviation of Changes. The overall series agregates all categories by country-year. Sample restricted to countries reporting to the AREAERs since 1955.

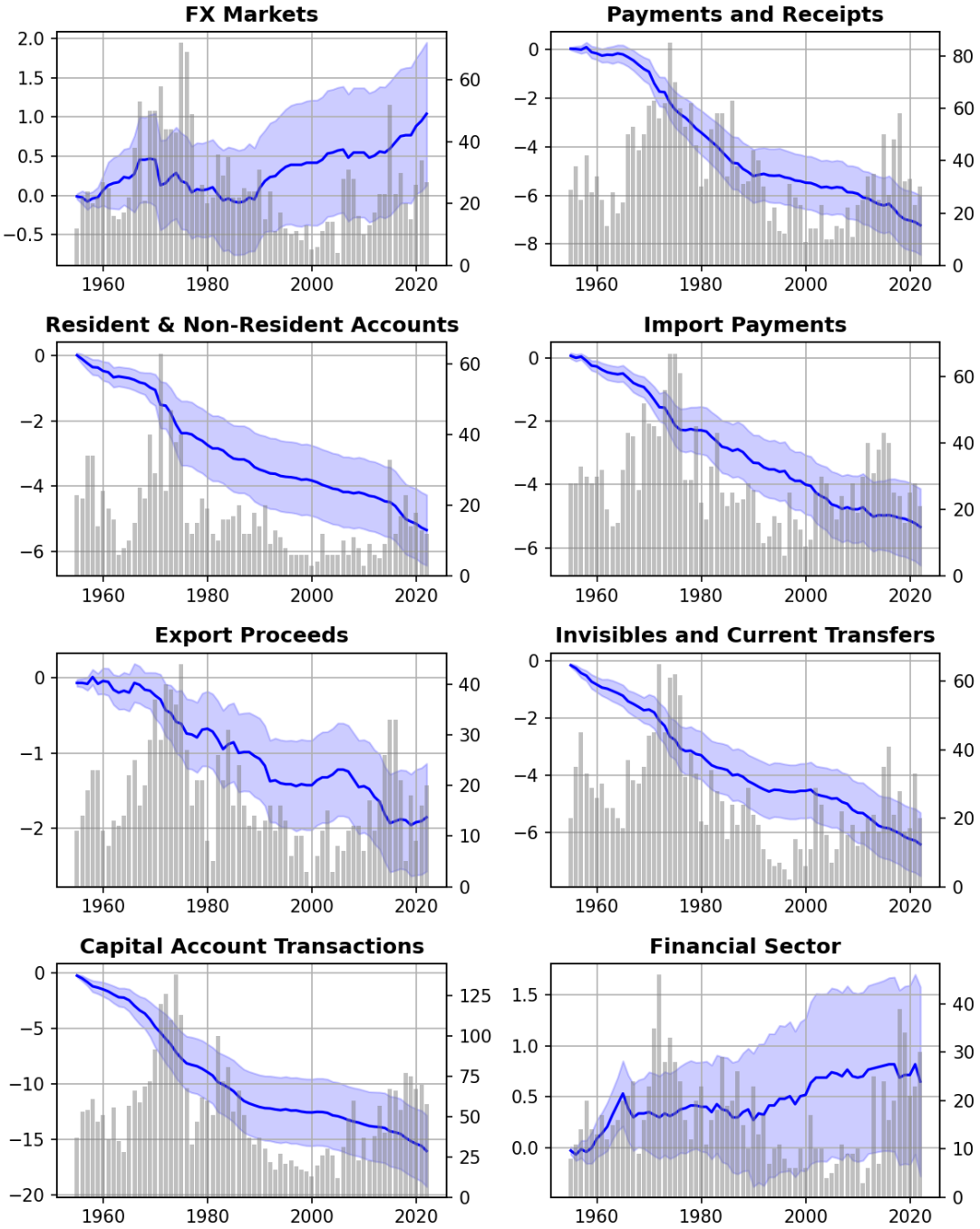


Figure B4: Blue lines show cumulative net tightening for each category (left axis); grey vertical bars show annual counts of policy measures (right axis). Sample restricted to countries reporting to the AREAERs since 1955.

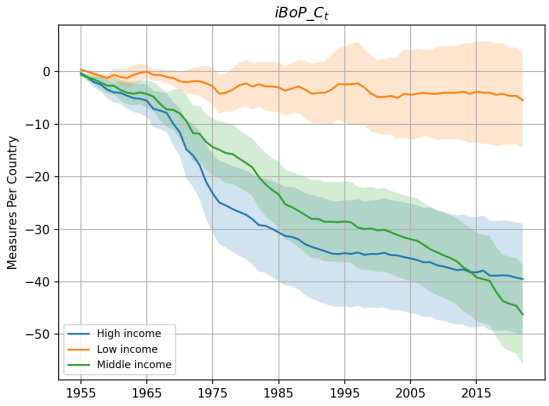


Figure B5: Average cumulative net tightening (iBoP-C) by income group (2024 World Bank Income Group Classification). Sample restricted to countries reporting to the AREAERs since 1955.

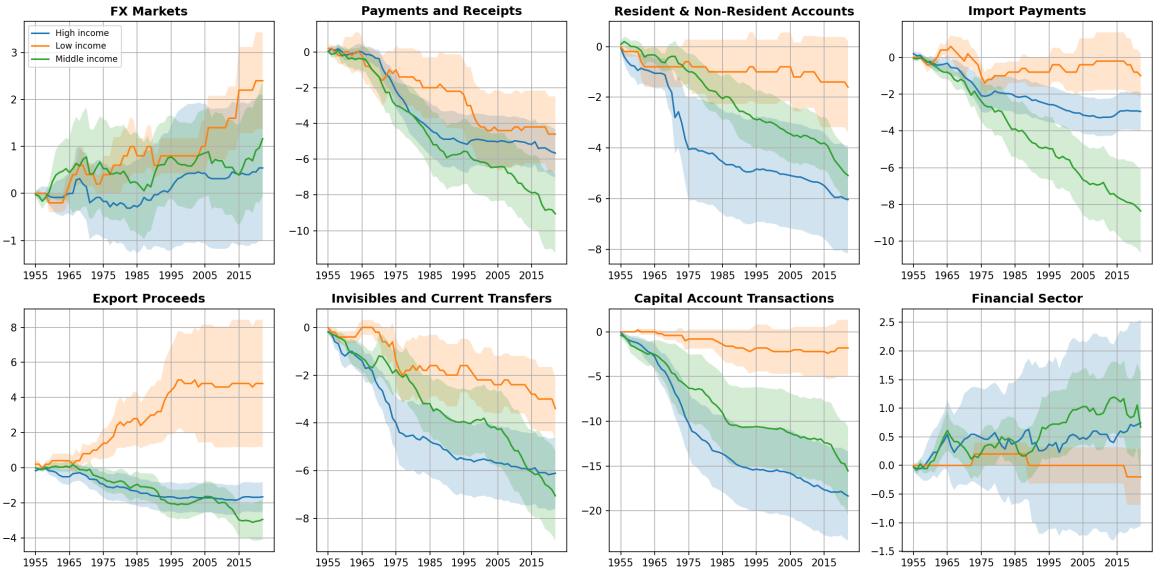


Figure B6: Average cumulative net tightening (iBoP-C) for each category, computed over countries within each income group (2024 World Bank classification). Sample restricted to countries reporting to the AREAERs since 1955.

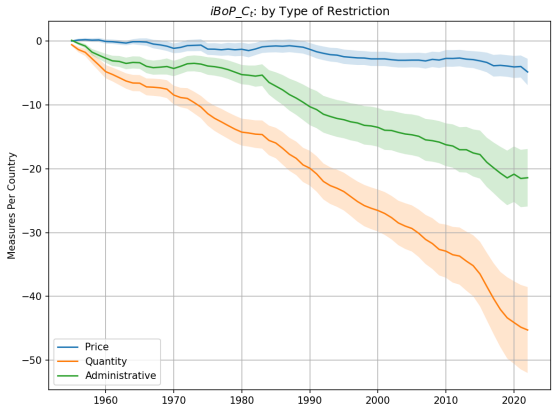


Figure B7: Average cumulative net tightening (iBoP-C) by type of restriction (price-based, quantity-based, administrative). Sample restricted to countries reporting to the AREAERs since 1955.

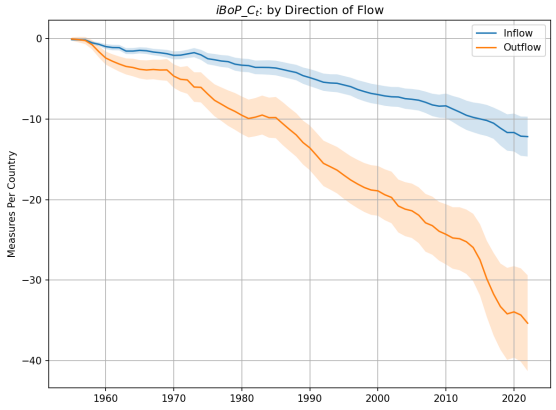


Figure B8: Average cumulative net tightening (iBoP-C) for inflow and outflow restrictions. Charts omit restrictions that affect both inflows and outflows or do not have clear flow implications. Sample restricted to countries reporting to the AREAERs since 1955.

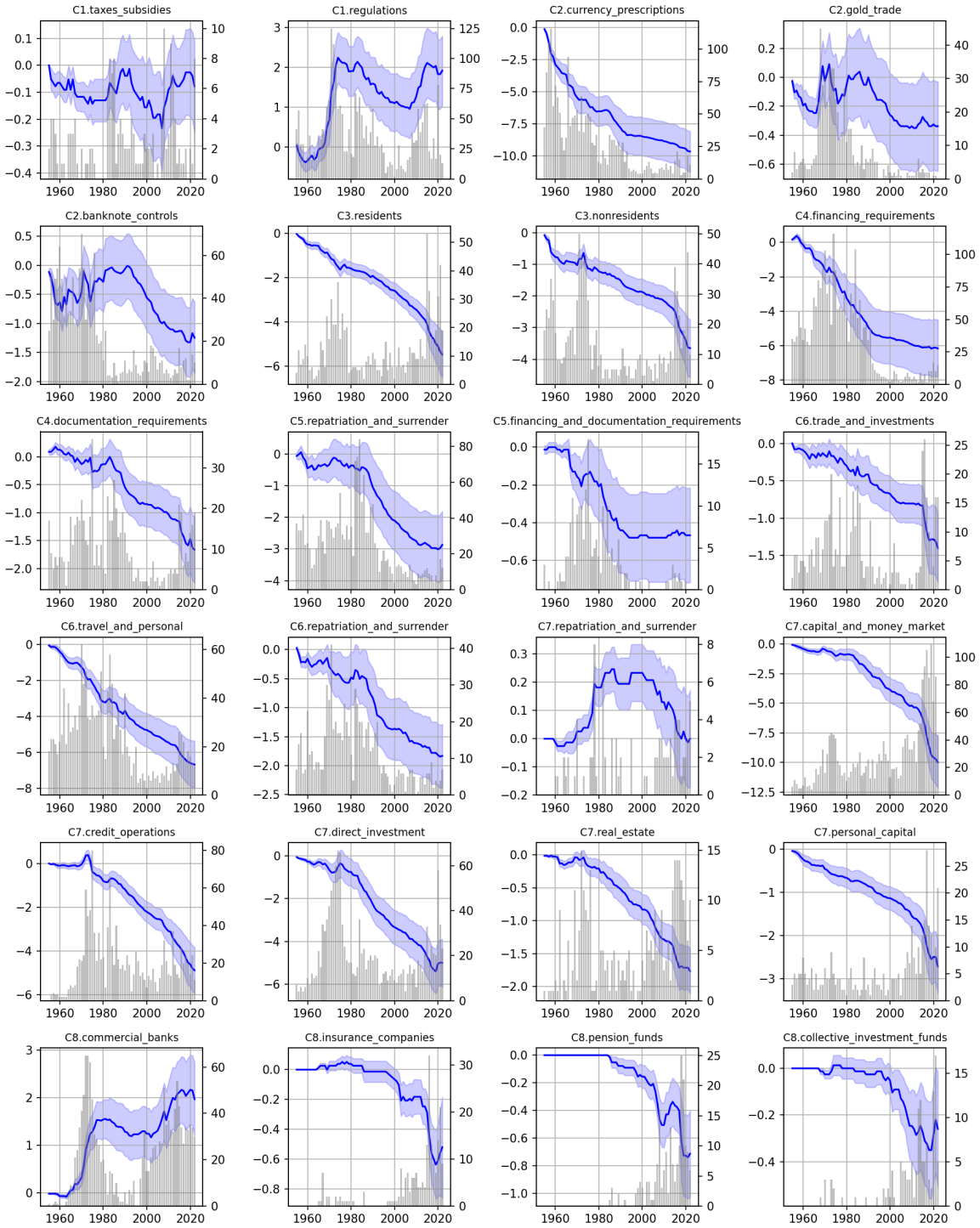
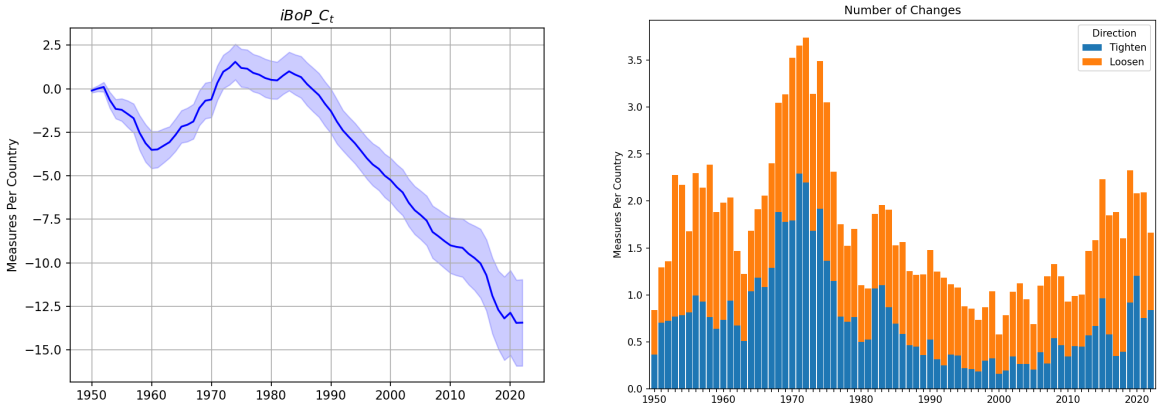


Figure B9: Average cumulative net tightening and number of measures by subcategory. Sample restricted to countries reporting to the AREAERs since 1955.

B.2 Intensity-weighted panel.



(a) Cumulative net tightening

(b) Number of changes

Figure B10: Left panel: Intensity-weighted cumulative net tightening index (iBoP-C) (negative values indicate net loosening). Right panel: Intensity-weighted number of tightening and loosening measures per country. Shaded area denotes the standard error of the mean ($SD_t / \sqrt{(N_t)}$ where SD_t is the standard deviation of Changes. The overall series agregates all categories by country-year.

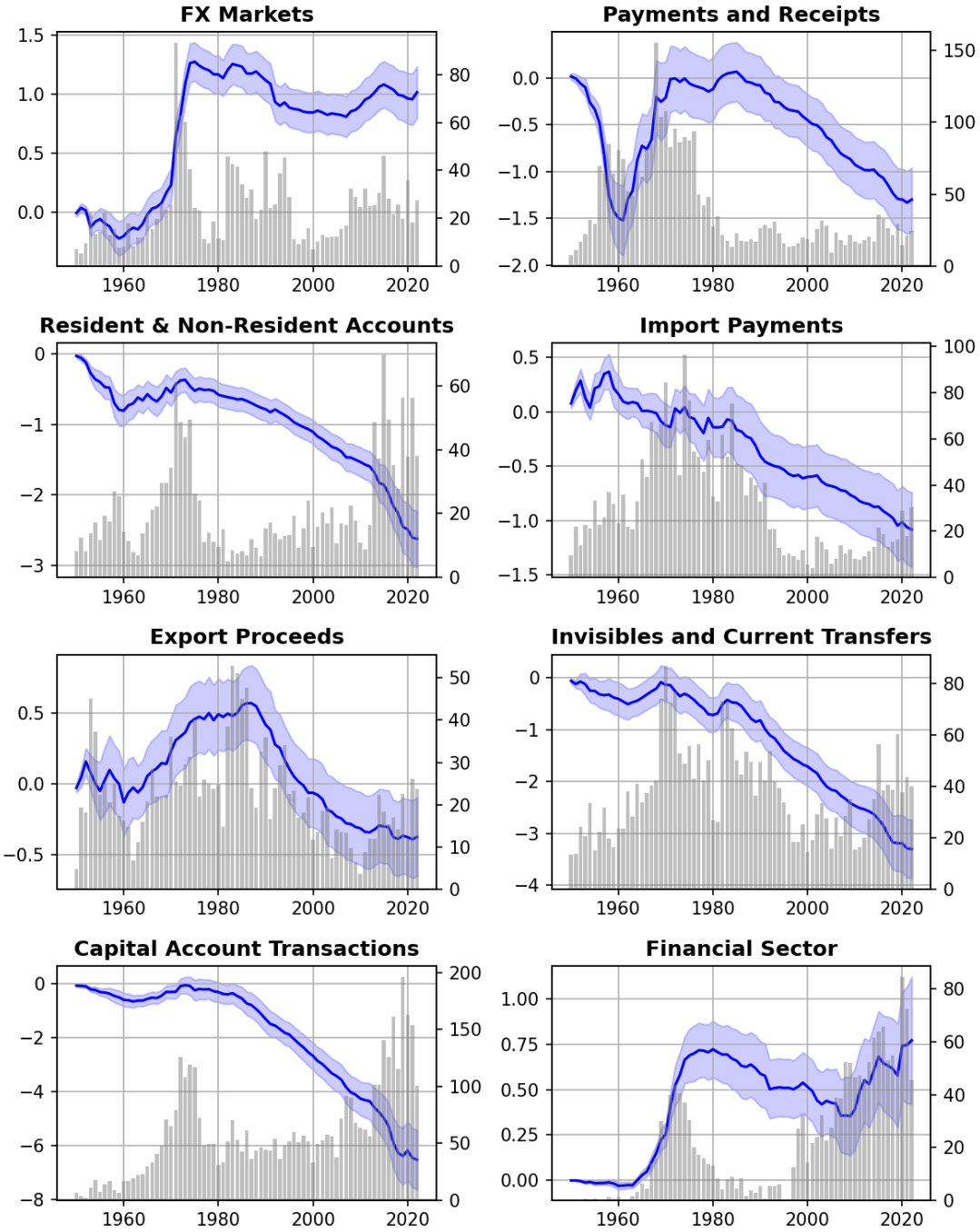


Figure B11: Blue lines show intensity-weighted cumulative net tightening for each category (left axis); grey vertical bars show annual intensity-weighted counts of policy measures (right axis).

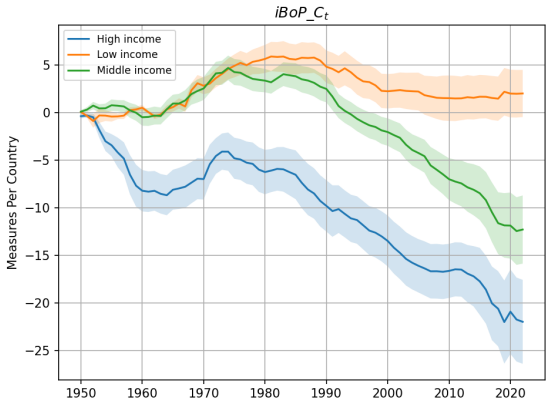


Figure B12: Intensity-weighted cumulative net tightening (iBoP-C) by income group (2024 World Bank Income Group Classification).

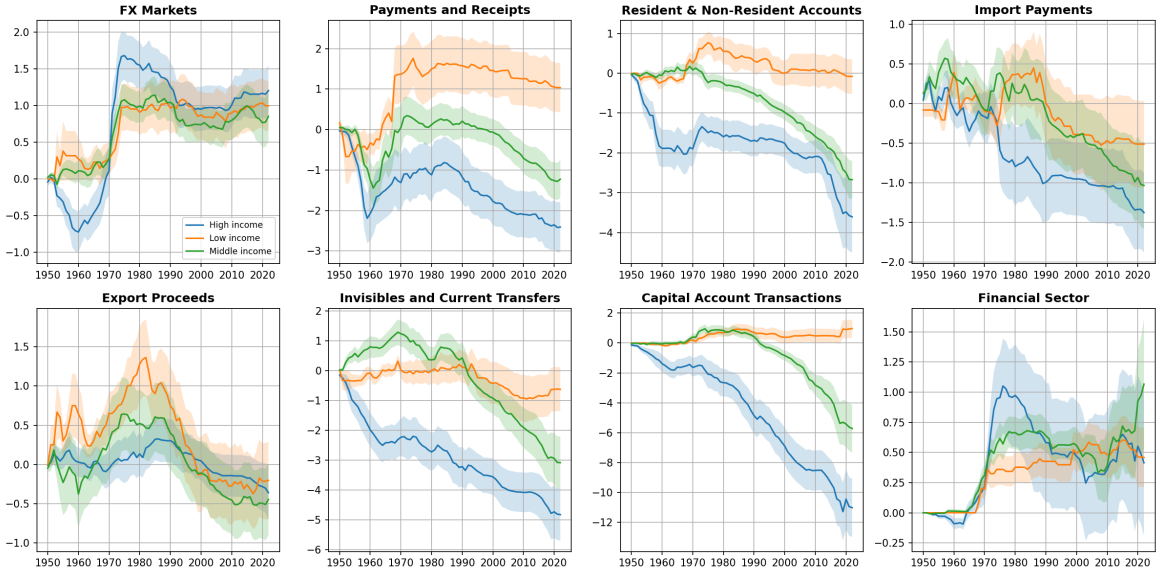


Figure B13: Intensity-weighted cumulative net tightening (iBoP-C) for each category, computed over countries within each income group (2024 World Bank classification).

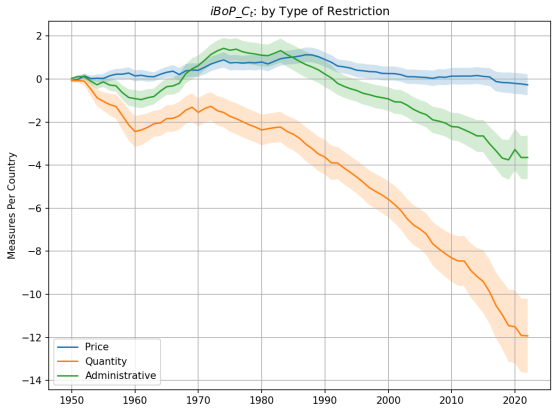


Figure B14: Intensity-weighted cumulative net tightening (iBoP-C) by type of restriction (price-based, quantity-based, administrative).

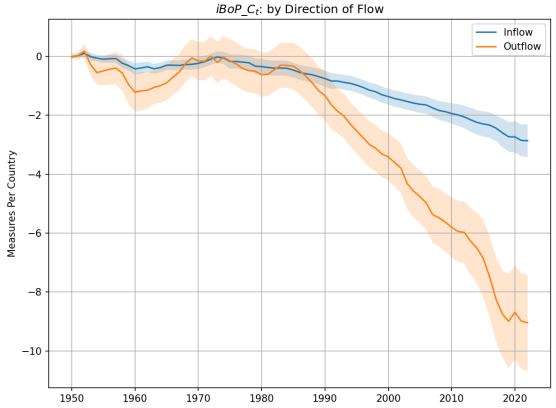


Figure B15: Intensity-weighted cumulative net tightening (iBoP-C) for inflow and outflow restrictions. Charts omit restrictions that affect both inflows and outflows or do not have clear flow implications.

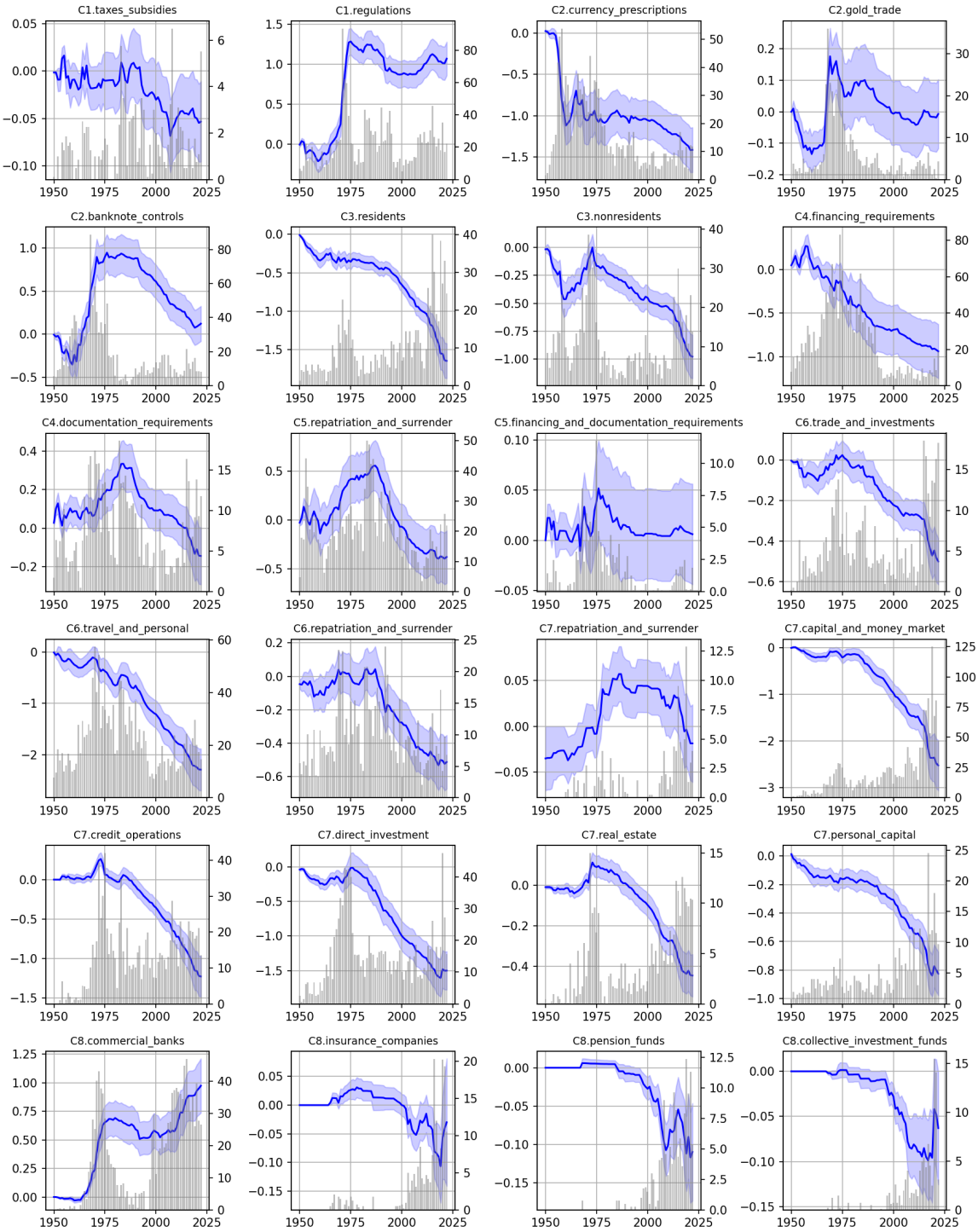


Figure B16: Intensity-weighted cumulative net tightening and number of measures by subcategory.

C Data and Methodology: Additional Tables and Figures

C.1 Mapping Between AREAER Sections and Categories

The mapping between the 2023 AREAER and our eight categories is as follows:

- FX markets: Sections II and III.F-H
- Arrangements for payments and receipts: Section IV
- Residents and non-resident accounts: Sections V and VI
- Imports and import payments: Section VII
- Exports and export proceeds: Section VIII
- Invisible transactions and current transfers: Sections IX and X
- Capital account transactions: Section XI
- Provisions specific to the financial sector: Section XII

Since 1950, Sections have varied in number and scope (see Figure 2).

C.2 Detailed Category Definitions

1. **FX markets**
   Includes (1) exchange restrictions and multiple currency practices (MCPs) maintained by a member country, (2) foreign exchange transactions subject to a special tax, fees, or other mandatory cost, (3) foreign exchange transactions subsidized using separate, non-market exchange rates, (4) restrictions imposed on foreign exchange markets. We exclude measures related to exchange rate arrangements or monetary policy frameworks.

2. **Arrangement for payments and receipts**
   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 with foreign countries, (4) regulations governing the physical movement of means of payment between countries. We exclude text referring to arrangements related to the use of foreign exchange among residents, the administration of control, and controls on domestic ownership of currency and gold.

3. **Residents and non-resident accounts**
   Indicates (1) whether resident accounts maintained in national or foreign currency abroad are allowed and describes their treatment and limitations, (2) whether local nonresident accounts maintained in national or foreign currency are allowed and describes their treatment and limitations. We exclude restrictions on resident accounts held domestically.

4. **Import payments**
   Describes the nature and extent of exchange and trade restrictions on import payments. Includes: (1) foreign exchange budgets, (2) financing requirements of imports, and (3) documentation requirements for the release of foreign exchange for imports. We exclude restrictions that directly impact the trade of goods and services (e.g., import licenses, taxes, and tariffs).[41]

5. **Export proceeds**
   Describes restrictions on the use of export proceeds. Includes: (1) repatriation and surrender requirements for exporters, (2) export financing requirements, and (3) export documentation requirements. We exclude restrictions directly impacting trade of goods and services (e.g., export licenses and taxes).

6. **Invisible transactions and current transfers**
   Describes (1) procedures for effecting payments abroad in connection with current transactions in invisibles, with reference to prior approval requirements, quantitative and indicative limits, and/or bona fide tests, and (2) regulations governing exchange receipts from transactions in invisibles, including limitations on their conversion into domestic currency and use.

[41] While the AREAER reports trade-related measures, we exclude them from our baseline categories. A detailed review revealed that these are likely recorded inconsistently across countries and over time, reflecting the IMF's Articles of Agreement mandate for balance-of-payments–relevant financial flows, not trade policy measures.

7. **Capital account transactions**
   Describes regulations influencing both inward and outward capital flows. Includes (1) repatriation and surrender 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.

8. **Provisions specific to the financial sector**
   Describes (1) regulations specific to commercial banks and other credit institutions, such as monetary, prudential, and FX market restrictions, (2) controls specific to institutions, such as insurance companies, pension funds, investment firms, and other securities firms. We include those pertaining to cross-border flows, and exclude primarily *domestic* macro-prudential policy measures, including restrictions on local FX lending, purchases of locally issued securities, treatment of FX deposit accounts, reserve requirements, liquid asset requirements, interest rate controls, and credit controls.[42]

In choosing these eight categories, we exclude: detail information about a country's status with the IMF (Section I in the 2023 AREAER vintage); description of monetary policy framework and exchange rate regimes (Sections III.A to III.E); and restrictions on digital currencies and crypto assets (Section XIII), added only in 2022.

subsectionManual Annotation Dimensions

Human annotators label observations across five dimensions:

1. **Direction of Change (tighten / loosen / neutral)**
   Indicates whether the measure tightens or loosens capital flow restrictions. Measures that do not affect existing restrictions, or where the direction is unclear, are labeled as "neutral."

2. **Direction of Flow (inflow / outflow / neutral)**
   Specifies whether a policy measure affects capital inflows, outflows, or both. If the measure impacts both inflows and outflows equally, or its focus cannot be determined, the label is "neutral."

[42] A section explicitly gathering provisions to the financial sector appears in the AREAER only from 1995. This topic, however, is pervasive since the start of the AREAERs. The LLM focuses on substance despite it not appearing explicitly before that year.

3. **Category of Restriction**
   Identifies which of the eight categories is being restricted: FX markets, payments and receipts, resident/non-resident accounts, import payments, export proceeds, invisible transactions and current transfers, capital account transactions, or financial sector restrictions. A single measure may affect multiple categories.[43]

4. **Type of Restriction (price / quantity / administrative)**
   Classifies whether the restriction uses a price-based instrument (e.g., taxes, duties, fees), quantity-based instrument (e.g., limits, quotas, surrender or repatriation requirements), or an administrative instrument (e.g., licensing, approval requirements). Measures can combine all three types.

5. **Numerical Information (numerical / non-numerical)**
   Indicates whether the textual description contains explicit numerical information, such as a limit on price or duration.

C.3 Domain-Adapted BERT Training Details

We used the WordPiece tokenizer from bert-base-uncased to process the text, splitting on subword units at a maximum sequence length of 128. For each 128-token chunk, 20 percent of tokens are randomly masked as part of the training objective. The model is trained on 20 epochs of the entire corpus. Perplexity, a common measure of how well a language model predicts a sample (lower is better), evaluated on a held-out sample showed a reduction from 17.28 to 2.19, indicating a substantial improvement in the model's predictive accuracy.

C.4 Refinement Classification Procedure

The training sample for each refinement label consists of positive and negative examples from relevant AREAER categories, restricted to post-2016 narratives where categorical labels are available. Positive examples consist of examples from the AREAER categories defined under each refinement label. Negative examples consist of examples from the same category of restriction (Categories 1-8) that do not

[43]Category labels are systematically available only from 1995 onward, though partial data exists for earlier years. For post-1995 observations, we use official category labels provided in the AREAER reports.

fall under the AREAER categories classified as positive examples. For national security-related restrictions, we use examples from across all eight categories since these restrictions may appear in any category. We randomly down-sample negative examples to match the number of positive examples for balanced panels.

For trade-related labels, we impose an additional two-step procedure. In the first step, we construct a training sample with positive examples from trade-related categories (AREAER VII.D–F, VIII.D–E) and negative examples from other entries in Categories 4 and 5. These examples train a model classifying trade-related measures. In the second step, we filter for restrictions explicitly referring to payments by matching trade and payment keywords. Restrictions that are trade-related in the first step or not payment-related in the second are excluded from the final sample.

C.5 Treatment of Duplicated Entries

The raw dataset contains approximately 8 percent of narratives with similar country-date identifiers. Of these, approximately 4 percent also have similar category identifiers. For narratives sharing similar country-date-category metadata, we keep a unique entry. These narratives are otherwise undistinguishable using AREAER information. For narratives sharing similar country-date metadata but different category metadata, we keep all entries in constructing numerical measures, as countries may record multiple entries for a given measure if they assess these measures apply to multiple categories. In Section 4, we retain only unique narratives since the application focuses on bunching and staggered use.

C.6 Additional Figures and Tables

C.6.1 Annotator disagreement rates

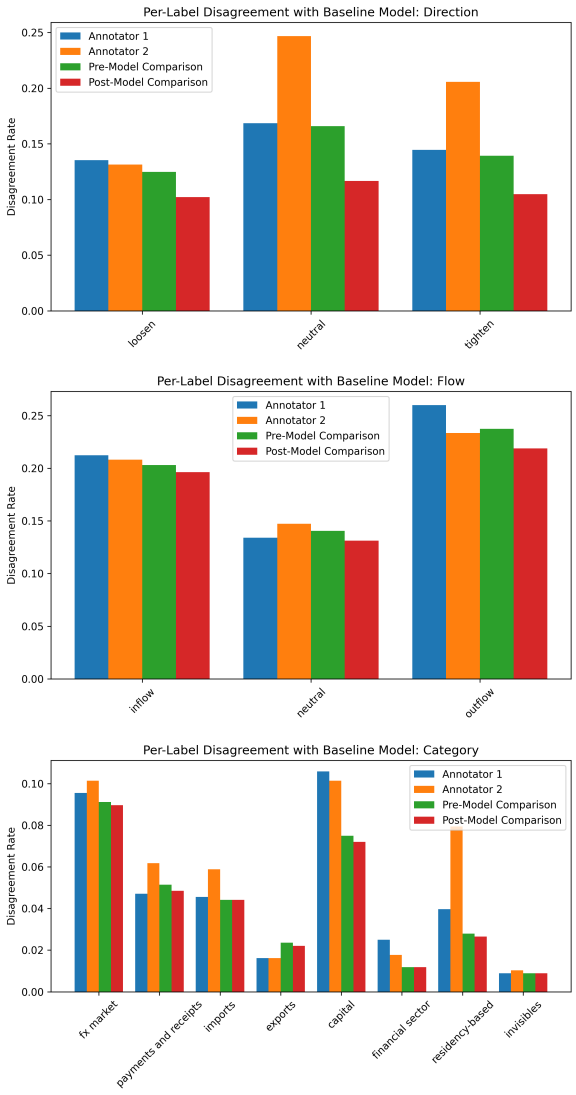


Figure C1: Disagreement rates between annotators and the LLM. "Pre-model comparison" refers to manually annotated labels after resolving disagreements between annotators. "Post-model comparison" refers to labels after resolving disagreements with LLM. The sample consists of post-1995 AREAER observations.

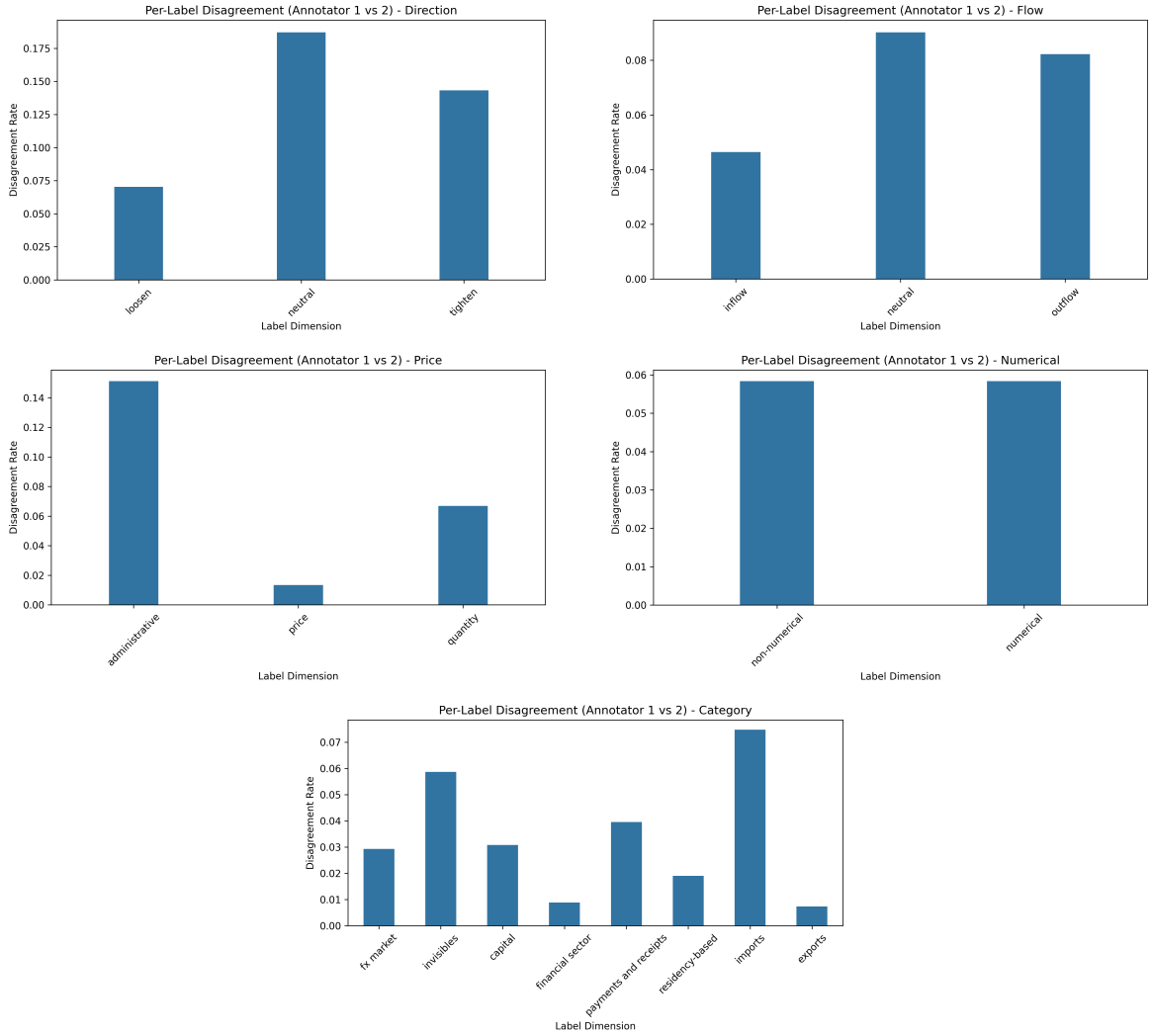


Figure C2: Annotator disagreement by label dimensions

C.6.2 Distribution of annotated labels

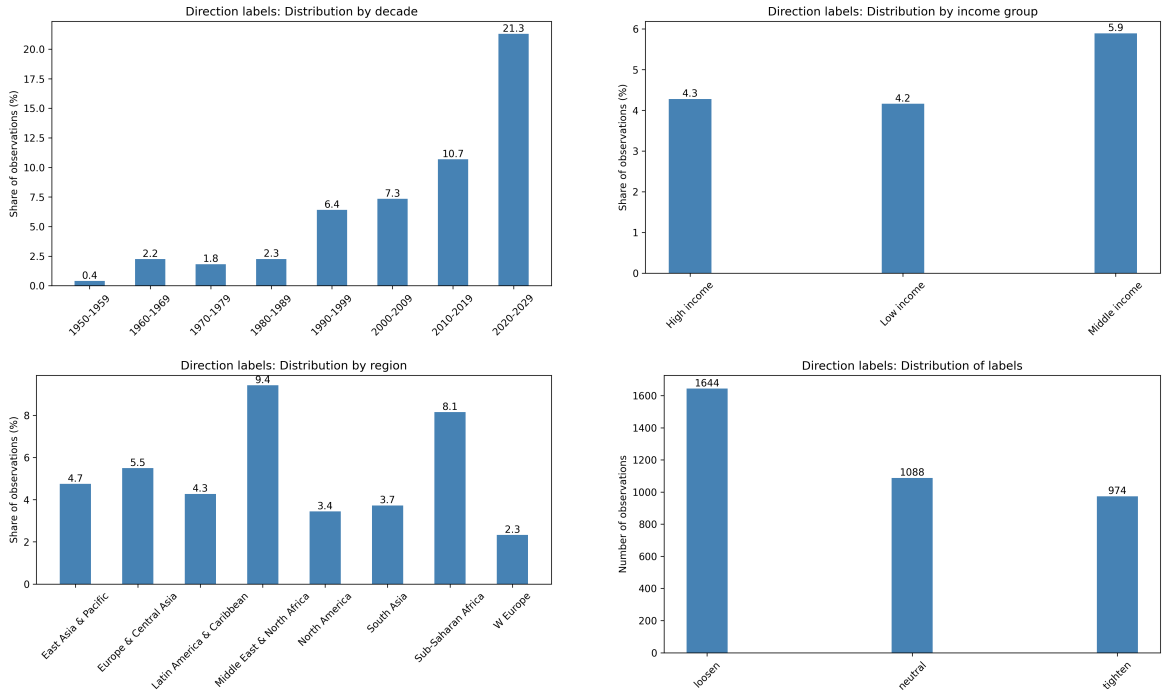


Figure C3: Distribution of labels: direction of change

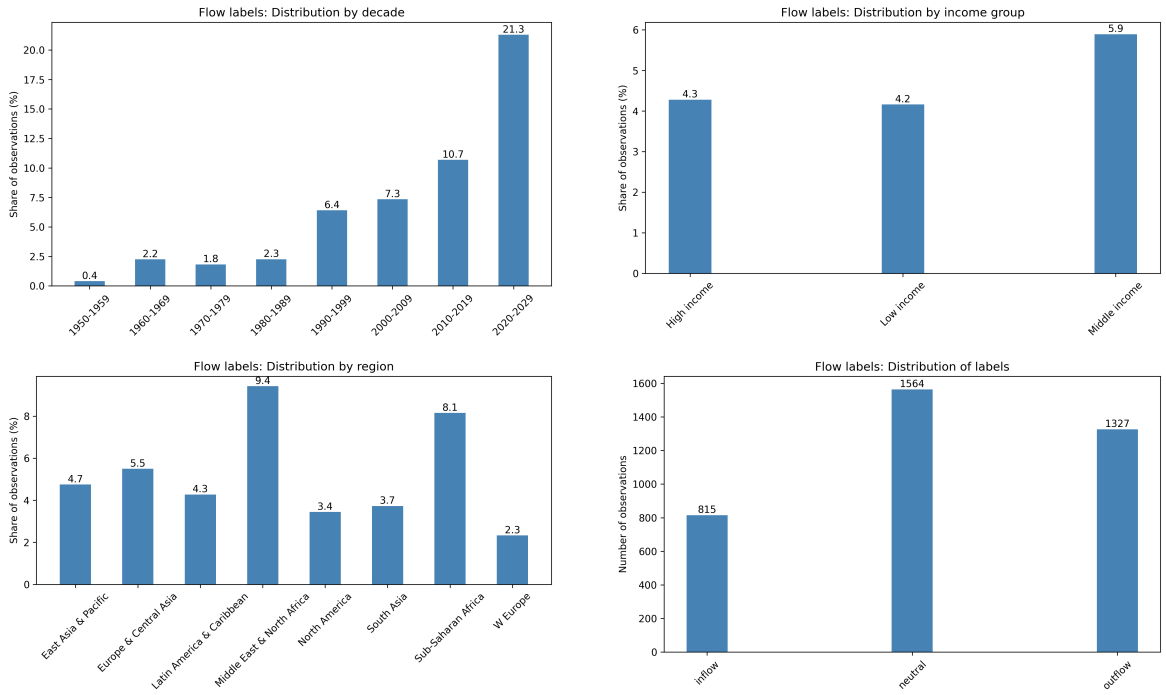


Figure C4: Distribution of labels: direction of flow

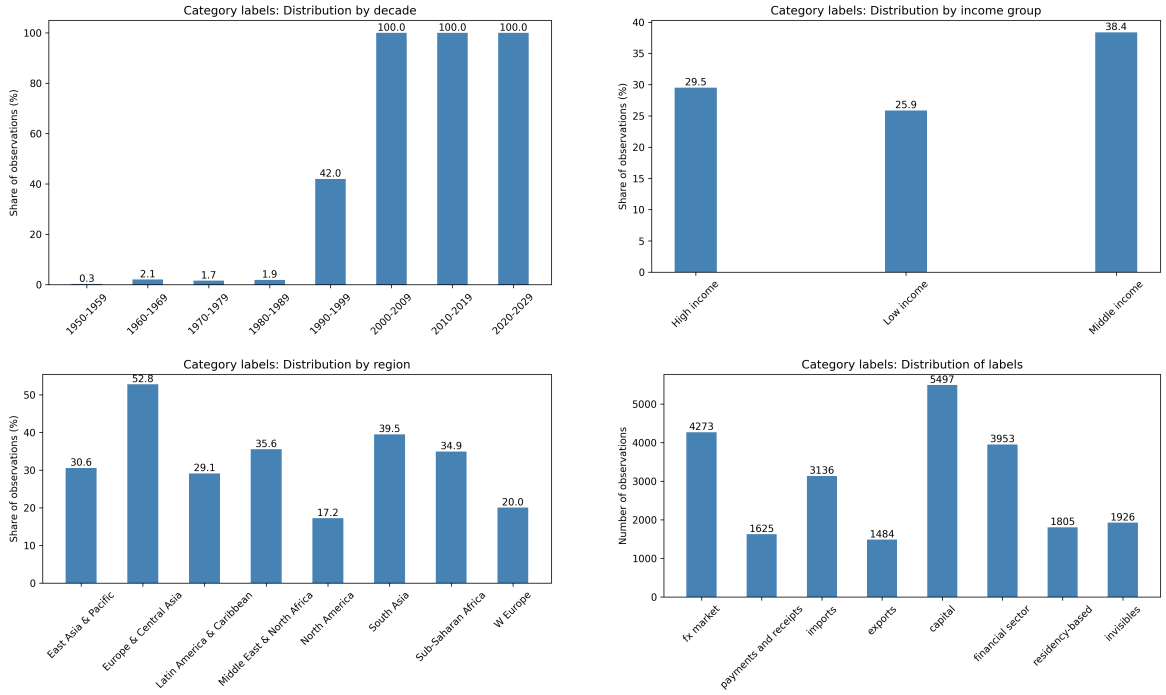


Figure C5: Distribution of labels: category of restriction

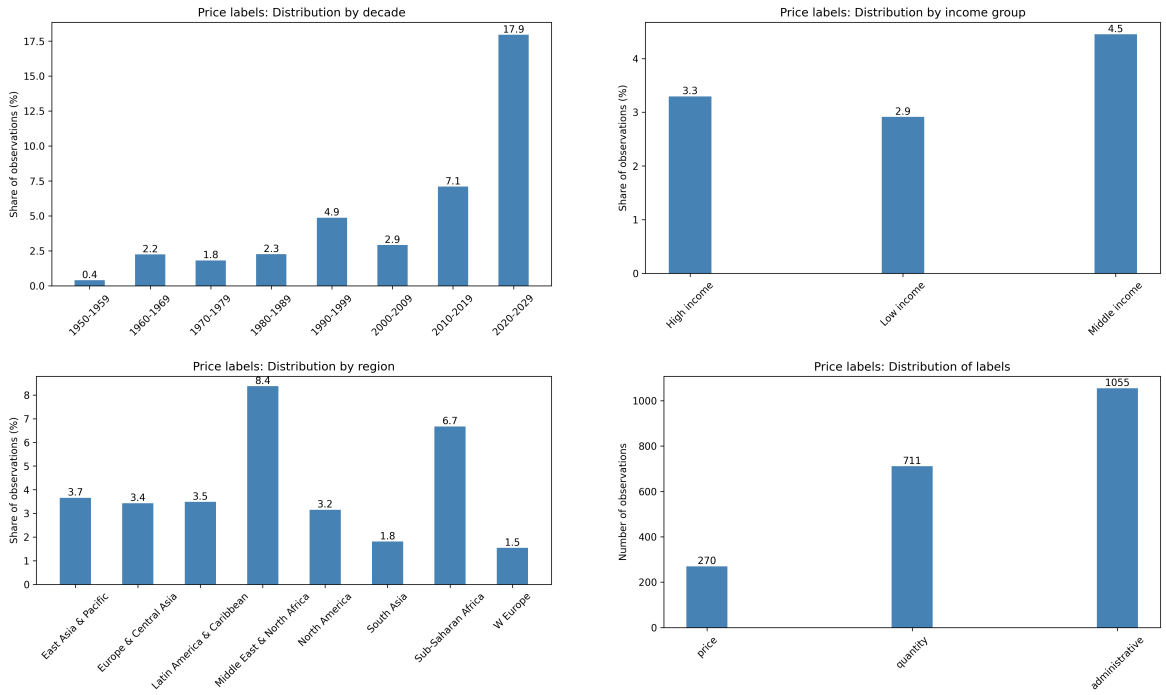


Figure C6: Distribution of labels: type of restriction

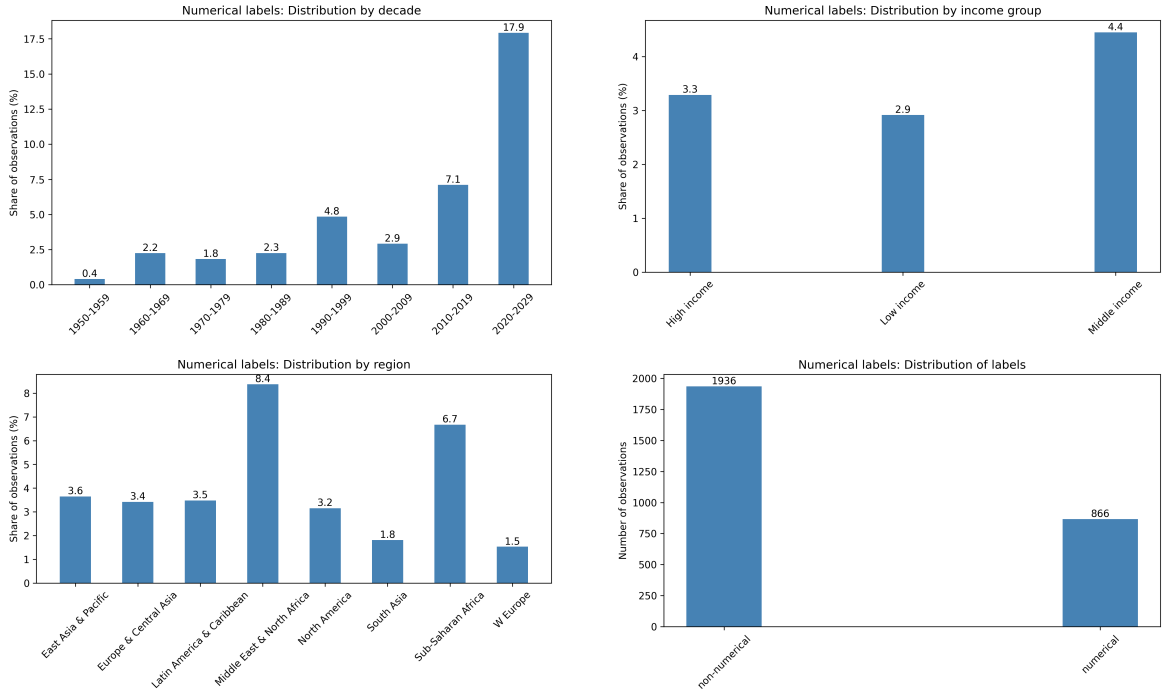


Figure C7: Distribution of labels: numerical information

C.6.3 Performance metrics

Model	Accuracy	Precision	Recall	F1
BERT (DAPT)	0.870	0.832	0.796	0.812
GPT 4o mini	0.857	0.754	0.778	0.764
BERT (base)	0.854	0.781	0.808	0.792
Llama 32 3B	0.854	0.792	0.741	0.760
TFIDF + SVC	0.772	0.715	0.693	0.703
TFIDF + Logistic Reg.	0.752	0.683	0.688	0.685
TFIDF + RF	0.738	0.697	0.631	0.653

Table C1: Performance metrics: direction

Model	Accuracy	Precision	Recall	F1
BERT (DAPT)	0.806	0.803	0.787	0.794
BERT (base)	0.797	0.793	0.780	0.784
TFIDF + SVC	0.770	0.763	0.751	0.756
TFIDF + Logistic Reg.	0.758	0.747	0.733	0.738
Llama 32 3B	0.742	0.731	0.755	0.738
TFIDF + RF	0.734	0.738	0.700	0.707
GPT 4o mini	0.679	0.662	0.663	0.662

Table C2: Performance metrics: flow

Model	Accuracy	Precision	Recall	F1
BERT (base)	0.822	0.755	0.732	0.703
BERT (DAPT)	0.816	0.723	0.722	0.714
Llama 32 3B	0.761	0.732	0.754	0.691
TFIDF + SVC	0.755	0.888	0.700	0.760
TFIDF + Logistic Reg.	0.687	0.608	0.611	0.605
GPT 4o mini	0.638	0.594	0.729	0.610
TFIDF + RF	0.546	0.581	0.406	0.466

Table C3: Performance metrics: category

Model	Accuracy	Precision	Recall	F1
BERT (DAPT)	0.767	0.874	0.868	0.868
BERT (base)	0.696	0.850	0.773	0.798
Llama 32 3B	0.658	0.789	0.733	0.742
TFIDF + SVC	0.651	0.853	0.691	0.741
TFIDF + Logistic Reg.	0.638	0.840	0.697	0.745
TFIDF + RF	0.600	0.845	0.624	0.686
GPT 4o mini	0.567	0.724	0.741	0.720

Table C4: Performance metrics: type of restriction

Model	Accuracy	Precision	Recall	F1
BERT (base)	0.949	0.947	0.952	0.949
BERT (DAPT)	0.942	0.940	0.944	0.941
TFIDF + RF	0.919	0.930	0.910	0.916
GPT 4o mini	0.917	0.916	0.924	0.916
TFIDF + SVC	0.904	0.910	0.896	0.901
Llama 32 3B	0.899	0.904	0.891	0.896
TFIDF + Logistic Reg.	0.899	0.901	0.893	0.896

Table C5: Performance metrics: numerical

D Prompts for Generative LLM applications

D.1 Measurement: Baseline labels

D.1.1 Type of restriction

```
You are an expert in analyzing IMF AREAER reports. You will be
   provided with some information regarding the status of a
   balance of payments measure or restriction. Your task is to
   evaluate the information provided, without introducing any
   external knowledge.

### Categories:
```

```
- price: A restriction that directly affects the cost or rate of
    a transaction (examples: taxes, fees, duties, surcharges,
   subsidies, stamp duties, interest premiums, etc.).
- quantity: A restriction that places a limit or quota on the
   volume or amount of transactions (examples: quotas,
   repatriation requirements, surrender requirements, reserve
   requirements, or any caps/ceilings).
- administrative: A restriction that neither sets prices nor
   imposes explicit volume limits. These are typically
   administrative or regulatory measures (examples: approval
   requirements, licensing, documentation, reporting, holding
   period requirements, sanctions, state monopolies, trade/
   financial agreements).
- n.a.: The type of restriction cannot be determined or does not
    clearly fit into price, quantity, or non-price. In addition,
    any measure referring to an exchange arrangement
   should automatically be classified as n.a.

### Instructions:
1. If a measure involves more than one of these categories, list
    all applicable categories in the `"answer"` field, separated
    by commas (for example: `"price,quantity"`).
2. If the measure specifically references exchange arrangements,
    classify it as n.a.
3. If you cannot determine the category based on the information
   , or it does not fit clearly into the first three categories,
    use n.a.
4. Do not introduce external details or commentary.

### Output Format:
Your response must be valid JSON with two keys:

- `"explanation"`: A string explaining your reasoning solely
   from the information given.
- `"answer"`: A string that can be `"price"`, `"quantity"`, `"
   administrative"`, `"n.a."`, or a comma-separated combination
   of those if multiple apply.
```

```
### Example of a Valid Response:
{{
"explanation": "The text mentions both a cap on foreign exchange
   transactions (quantity) and a new fee (price).",
"answer": "price,quantity"
}}

Here is the information you should analyze:\n\n
```{text}```\n
```

D.1.2 Numerical information

```
You are an expert in analyzing IMF AREAER reports. You will be
   provided with a text segment enclosed by triple backticks
   (```).
Your task is to extract and classify any numerical information
   present in the text.

### Instructions:
1. Extract Numerical Information
- Identify and extract any numerical data (e.g., percentages,
   amounts, or other figures) from the given text.
- Do not include dates.
- Present the extracted numerical information in a concise,
   structured sentence.

2. Classify the Text
- Determine whether the given text contains numerical
   information.
- Return one of two possible classifications:
    - "numerical" if the text contains numerical data.
    - "non-numerical" if no numerical data is present.

Ensure all quotes are properly escaped. Avoid adding any
   information beyond what is required.
```
```

```
Example of Expected Output:
{{
    'explanation': 'Tax␣rate␣increase␣from␣10␣percent␣to␣15␣
       percent',
    'answer': "numerical'
}}

Here␣is␣the␣information␣you␣should␣analyze:\n\n
‘‘‘{text}‘‘‘\n
```

D.1.3 Flow

```
You are an expert in analyzing IMF AREAER reports. You will be
   provided with a question and a description regarding the
   status of a balance of payment restriction. Your task is to
   evaluate the information in the description and answer the
   question solely based on the details provided, without
   introducing any external knowledge.

Your answer must be one of the following choices:
- inflow: A restriction that affects inflows of funds into a
   country. Examples of inflow transactions are exports of goods
    and services, income from foreign investments, foreign
   direct investment, foreign aid, and loans received from
   abroad.
- outflow: A restriction that affects outflows of funds from a
   country. Examples of outflow transactions are imports of
   goods and services, payments of interest or dividends to
   foreign investors, outward foreign direct investment, and
   remittances sent abroad.
- neutral: A restriction that affects both inflows and outflows
   of funds into and from a country, or the direction of flow
   impacted is unclear or cannot be determined.

Format your response as a JSON object with keys:
```

```
- 'explanation': A string explaining the reasoning behind your
   decision, grounded in the description.
- 'answer' A string representing your answer, restricted to one
   of the options: 'inflow', 'outflow', or 'neutral'

Ensure all quotes are properly escaped. Avoid adding any
   information beyond what is required.

Example of Expected Output:
{{
    'explanation': 'The␣change␣limits␣transfers␣of␣proceeds␣
       abroad␣by␣nonresidents,␣which␣is␣a␣restriction␣on␣the␣
       outflow␣of␣funds.',
    'answer': 'outflow'
}}


Here is the information you should analyze:\n\n
```{text}```\n
```

D.1.4 Direction

```
You are an expert in analyzing IMF AREAER reports. You will be
   provided with a question and a description regarding the
   status of a balance of payment restriction. Your task is to
   evaluate the information in the description and answer the
   question solely based on the details provided, without
   introducing any external knowledge.

Your answer must be one of the following choices:
- tighten: A change that further tightens the relevant
   restrictions.
- loosen: A change that further loosens the relevant
   restrictions.
- neutral: A change that does not significant modify the
   relevant restrictions, or cannot be determined.
```
```

```
Format your response as a JSON object with keys:
- 'explanation': A string explaining the reasoning behind your
   decision, grounded in the description.
- 'answer' A string representing your answer, restricted to one
   of the options: 'tighten', 'loosen', or 'neutral'

Ensure all quotes are properly escaped. Avoid adding any
   information beyond what is required.

Example of Expected Output:
{{
    'explanation': 'The␣change␣in␣policy␣treated␣hotels,␣motels,
       ␣and␣guesthouses␣as␣commercial␣real␣estate,␣subjecting␣
       them␣to␣capital␣controls.',
    'answer': "tighten'
}}


Here␣is␣the␣information␣you␣should␣analyze:\n\n
‘‘‘{text}‘‘‘\n
```

D.1.5 Category of restriction

```
You are an expert in analyzing IMF AREAER reports. You will be
   provided with some information regarding the status of a
   balance of payment restriction. Your task is to evaluate the
   information provided, without introducing any external
   knowledge.

Your answer must be one or more of the following choices:
- fx market: (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, nonmarket exchange rates, (5) restrictions imposed on foreign exchange markets.

- payments and receipts: (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.
- resident accounts: 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.
- nonresident accounts: 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.
- imports: 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.
- exports: describes restrictions on the use of export proceeds, as well as regulations on exports. Includes: (1) repatriation requirements for exporters, (2) export financing requirements, (3) export documentation requirements, (4) export licenses, (5) export taxes.
- invisibles payments: 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.
- invisibles proceeds: 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.
- capital: 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.
- financial sector: (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.
- n.a.: The category of restriction cannot be determined.

Format your response as a JSON object with keys:
- 'explanation': A string explaining the reasoning behind your
   decision, grounded in the description.
- 'answer' A string representing your answer, restricted to one
   or more of the options: 'fx␣market', 'payments␣and␣receipts',
    'resident␣accounts', 'nonresident␣accounts', 'imports', '
   exports', 'invisibles␣payments', 'invisibles␣proceeds', '
   capital', 'financial␣sector', 'n.a.'.

Ensure all quotes are properly escaped. Avoid adding any
   information beyond what is required. If more than one options
    are chosen, separate each choice with a comma (,)

Example of Expected Output:
{{
```

```
    'explanation': 'The␣change␣requires␣that␣exporters␣
       repatriate␣export␣proceeds␣from␣abroad␣within␣30␣days,␣so
       ␣is␣related␣to␣exports.',
    'answer': "exports'
}}


Here␣is␣the␣information␣you␣should␣analyze:\n\n
```{text}```\n
```

D.2 Incorporating intensity

```
SYSTEM ROLE
You are an expert on IMF AREAER measures.
Your job is to assess the alpha of the change in restriction
   described in the text delimited by ```, which characterizes
   how restrictive the affected policy was before or after the
   change.

CONTEXT
Country  : {metadata['country']}
Year     : {metadata['year']}
Category : {metadata['cat_name']}

SIGNIFICANCE RULES
{metadata['cat_rules']}

INSTRUCTIONS
1. Identify what type of restriction is being changed (e.g.,
   approval requirement, quantitative limit, ban, documentation
   requirement, etc.)
2. Determine the alpha of the change using the significant rules
    above.  Higher alphas imply that the change in policy
   implied  by the measure is more significant.
   - If a restriction was removed or loosened, score it based on
       the restrictiveness of the measure that was in place
```
```

```
      before the change.
   - If a restriction was introduced or tightened, score based
      on the newly imposed measure.
3. Return **only** this JSON:
{{
  "explanation": "...cite␣the␣bullet(s)␣you␣matched...",
  "answer": "0" | "0.25" | "0.5" | "0.75" | "1"
}}

INPUT TEXT
```{text}```

EXAMPLES
{examples_str}
```

FX markets

```
alpha = 0 if:
- The regulation pertains solely to notification or
   documentation obligations, or
- The notification concerns the procedures governing market
   operations.
alpha = 0.25 if:
- Transactions are permitted, but there is merely one relatively
    minor tax (below 10%, even if it impacts several nations),
   or
- A quantitative limitation or tax is adjusted but only slightly
    on an already stringent restriction.
alpha = 0.5 if:
- There is a multiple currency practice (MCP), a penalty, or a
   restriction/measure on exchanges, or
- There is a significant tax or multiple taxes across markets (
   not countries), or
- The nation has entered or exited a free trade agreement,
   customs union, or economic union, or
```
```

```
- The importance of the restriction is unclear based on its
   description.
alpha = 0.75 if:
- There are several MCPs, sanctions, or exchange restrictions/
   measures, or
- There is a significant tax or multiple taxes across markets (
   not countries), in addition to quantitative restrictions, or
- Legislation imposes one or more quantitative or regulatory
   limitations such as licenses, or
- Legislation requires approval processes.
alpha = 1 if:
- The regulation outright prohibits trading in foreign exchange
   markets.
```

Payments and receipts

```
alpha = 0 if:
- The regulation exclusively addresses notification or
   documentation obligations, or
- The notification pertains to the management of control.

alpha = 0.25 if:
- Transactions are permitted, but there exists only one
   relatively minor tax (under 10%, even if it is applicable to
   multiple countries), or
- A quantitative limit or tax is altered but only slightly on an
    already stringent restriction.

alpha = 0.5 if:
- There is a significant tax or several taxes across markets (
   not across countries), or
- Legislation enforces a quantitative restriction (e.g., limits)
    on a single market, or
- The country has entered or exited a free trade agreement,
   customs union, or economic union, or
```

```
- The importance of the restriction is unclear based on its
   description.

alpha = 0.75 if:
- There is a significant tax or several taxes across markets (
   not across countries), along with quantitative restrictions,
   or
- Legislation imposes multiple quantitative restrictions across
   markets, or one very stringent quantitative restriction, or
- Legislation mandates approval requirements.

alpha = 1 if:
- The regulation entirely prohibits the use of specific
   currencies or payment methods.
```

Resident and Non-resident accounts

```
alpha = 0 if:
- The regulation pertains solely to notification or
   documentation obligations.
alpha = 0.25 if:
- Transactions are permitted but subject to a single relatively
   low tax (below 10%), or
- A quantitative limit or tax has been adjusted but only
   slightly on an already stringent restriction.
alpha = 0.5 if:
- A significant tax or multiple taxes exist across accounts, or
- Regulations or laws enforce a quantitative limit, or
- The nation has entered or exited a free trade agreement,
   customs union, or economic union, or
- The importance of the restriction is unclear based on its
   description.
alpha = 0.75 if:
- A significant tax or multiple taxes are present across
   accounts, alongside a quantitative limitation, or
- Regulations or laws enforce multiple quantitative limits, or
```

```
- Regulatory restrictions necessitate approvals for accounts and
   /or currencies.
alpha = 1 if:
- Regulations, laws, or additional regulatory restrictions
   prohibit accounts and/or currencies.
```

Import payments

```
alpha = 0 if:
- The regulation pertains solely to notification or
   documentation obligations.
alpha = 0.25 if:
- Transactions are permitted, but there is merely one relatively
    minor tax (below 10%), or
- A quantitative limit or tax is adjusted, but only slightly on
   an already tight restriction.
alpha = 0.5 if:
- There is a significant tax or several taxes across various
   products or markets, or
- Regulations or laws affect the quantitative limit (including
   import payment requirements) for a specific product or market
   , or
- The nation has either entered or exited a free trade agreement
   , customs union, or economic union, or
- The importance of the restriction is unclear based on its
   description.
alpha = 0.75 if:
- There is a significant tax or multiple taxes across different
   products or markets, alongside a quantitative restriction or
   limit (including import payment requirements), or
- Regulations or laws influence multiple quantitative limits (
   including import payment requirements), or
- Regulatory restrictions require approvals for a specific
   product or market, or
- The regulation addresses a ban on one product or a narrowly
   defined market.
```

```
alpha = 1 if:
- The regulation pertains to a ban on more than one product or a
    narrowly defined market, or a broadly defined market.
```

Export proceeds

```
alpha = 0 if:
- The regulation pertains solely to notification or
   documentation requirements.
alpha = 0.25 if:
- Transactions are permitted but there is merely one relatively
   low tax (below 10%), or
- A quantitative limit or tax is modified, but only slightly on
   an already stringent restriction.
alpha = 0.5 if:
- There is a substantial tax or multiple taxes across various
   products or markets, or
- Regulation or laws influence the quantitative limit for a
   specific product or market, or
- This is solely a repatriation requirement (without a surrender
    requirement), or
- The change in days relates to a partial repatriation or
   surrender requirement, or
- The country has entered or exited a free trade agreement,
   customs union, or economic union, or
- The importance of the restriction is unclear based on its
   description.
alpha = 0.75 if:
- There is a substantial tax or multiple taxes across products
   or markets, along with a quantitative restriction or limit,
   or
- Regulation or laws affect multiple quantitative limits, or
- Regulatory restrictions necessitate approvals for a specific
   product or market, or
- The regulation is about a ban on a single product or a narrow
   market, or
```

```
- This involves a partial repatriation and surrender requirement
   , or
- The change in days pertains to a full repatriation and
   surrender requirement.
alpha = 1 if:
- The regulation addresses a ban on multiple products or a
   narrow market, or one broadly defined market, or
- This pertains to a full repatriation and surrender requirement
   .
```

Invisibles and current transfers

```
alpha = 0 if:
- The regulation pertains solely to notification or
   documentation obligations.
alpha = 0.25 if:
- Transactions are permitted but accompanied by a single
   relatively low tax (under 10%), or
- A quantitative limit or tax has been altered but only slightly
    on an already stringent restriction.
alpha = 0.5 if:
- A significant tax or multiple taxes exist across various
   products or markets, or
- Regulations or laws affect the quantitative limit for a single
    product, market, or payment type, or
- This pertains solely to a repatriation requirement (without a
   surrender obligation), or
- The change in days applies to a partial repatriation or
   surrender obligation, or
- The nation has joined or exited a free trade agreement,
   customs union, or economic union, or
- The importance of the restriction is unclear based on its
   description.
alpha = 0.75 if:
- There is a substantial tax or several taxes across various
   products, markets, or payment types, along with a
```

```
   quantitative restriction or limit, or
- Regulations or laws affect multiple quantitative limits (
   across different products, markets, or payment types), or
- Regulatory constraints necessitate approvals for a single
   product, market, or payment type, or
- The regulation involves a prohibition on one product, a
   limited market, or a payment type, or
- This relates to a partial repatriation and surrender
   obligation, or
- The change in days applies to a complete repatriation and
   surrender obligation.
alpha = 1 if:
- The regulation involves a prohibition on multiple products or
   a limited market, or a broadly defined market, or
- This pertains to a complete repatriation and surrender
   obligation.
```

Capital account transactions

```
alpha = 0 if:
- The regulation solely addresses notification or documentation
   obligations.
alpha = 0.25 if:
- Transactions are permitted but there exists a relatively low
   tax or reserve requirement (under 10%) on a single asset, or
- A quantitative limit or tax/reserve requirement is altered but
    only slightly on an already stringent restriction.
alpha = 0.5 if:
- There is a substantial tax or reserve requirement, or multiple
    such requirements across different asset categories, or
- Regulations or laws affect the quantitative limit for a
   specific asset category or a narrow sector, or
- This pertains solely to a repatriation requirement (without a
   surrender requirement), or
- The modification to the days pertains to a partial
   repatriation or surrender requirement, or
```

```
- The nation has either joined or exited a free trade agreement,
    customs union, or economic union, or
- The significance of the restriction is unclear based on its
   description.
alpha = 0.75 if:
- There is a substantial tax or reserve requirement, or multiple
    such requirements across asset categories, along with a
   quantitative restriction or limit, or
- Regulations or laws impact multiple quantitative limits across
    asset categories, or
- Regulatory restrictions necessitate approval(s) for a single
   asset category, or
- This involves a partial repatriation and surrender requirement
   , or
- The adjustment to the days pertains to a full repatriation and
    surrender requirement.
alpha = 1 if:
- This involves a prohibition on one or more asset categories,
   or on a significant part of the maturity profile of
   investments, or
- This relates to a complete repatriation and surrender
   requirement.
```

Financial markets

```
alpha = 0 if:
- The regulation pertains solely to notification or
   documentation obligations.
alpha = 0.25 if:
- Transactions are permitted but accompanied by a relatively low
    tax or reserve requirement (under 10%) affecting a single
   institution or asset category, or
- A quantitative limit or tax/reserve requirement is modified
   but only slightly on an already stringent restriction, or
- Regulation or laws have minimal effects on the balance sheets
   of financial institutions.
```

```
alpha = 0.5 if:
- There is a substantial tax or reserve requirement, or several
   requirements across different asset categories or
   institutions, or
- Regulation or laws influence the quantitative limit for a
   specific asset category or institution, or
- The importance of the restriction is unclear based on its
   description, or
- The country has joined or exited a free trade agreement,
   customs union, or economic union, or
- Regulation or laws partially affect the balance sheets of
   financial institutions.
alpha = 0.75 if:
- There is a substantial tax or reserve requirement, or multiple
    ones across asset categories or institutions, along with a
   quantitative restriction or limit, or
- Regulation or laws affect several quantitative limits (across
   asset categories or institutions), or
- Regulatory restrictions necessitate approvals for one asset
   category or institution, or
- Regulation or laws significantly impact the balance sheets of
   financial institutions.
alpha = 1 if:
- The regulation involves a prohibition on one or more asset
   categories or institutions.
```

E Description of Datasets

This document describes the dataset presented in Bergant, Katharina, Andrés Fernández, Ken Teoh, and Martín Uribe. 2025. "Expanding the Landscape of Cross-Border Flow Restrictions: Modern Tools and Historical Perspectives". The data can be used freely and without further permission as long as explicit reference is made to the above paper.[44]

Disclaimer: The data reflect the authors' interpretation and codification of information provided in the IMF's Annual Report on Exchange Rate Arrangements and Restrictions (AREAER) and do not represent the views of the IMF, its Executive Board, or IMF Management.

Overview of released datasets

Table E1 summarizes the main datasets released with the paper and their coverage.

Table E1: Overview of datasets

Dataset	Frequency	Coverage	Description
iBoP-C	Monthly / quarterly / annual	190 countries, 1950–2023	Cumulative net tightenings of cross-border flow restrictions.
iBoP-C Intensity	Monthly / quarterly / annual	190 countries, 1950–2023	Same as iBoP-C, but weighting each policy measure by an intensity score based on a subjective assessment of the measure's economic impact on cross-border flows.
iBoP-C Subcategories	Monthly / quarterly / annual	190 countries, 1950-2023	Same as iBoP-C, but categories are further disaggregated to 24 subcategories. Intensity weighted version is available upon request.
Daily Policy Measures	Daily	190 countries, 1950–2023	This data provides daily information on individual policy measures.

[44]These datasets will be made publicly available via the authors' website and may also be accessed here: BFTU Data

iBoP-S	Annual	195 countries, 1995–2023	This data captures the overall stance of restrictions at the extensive margin. It is similar to FKRSU (LLM extension), but expanded to all eight categories of cross border flow restrictions. Additional disaggregated subcategories are available upon request.
FKRSU (LLM extension)	Annual	195 countries, 1995–2023	The data expands and updates the dataset provided in Fernandez, Andres, Michael Klein, Alessandro Rebucci, Martin Schindler, and Martin Uribe, "Capital Control Measures: A New Dataset," IMF Economic Review 64, 2016, 548-574.

iBoP-C Index: BFTU_iBoPC.xlsx

The change index, iBoP-C, measures changes in cross-border restrictions over time, starting from 1950 until 2023. The index relies on information from the Changes section of the AREAER. As previously discussed, this section reports changes in restrictions from all sections in the AREAER at the daily level starting from 1950. Moreover, the reporting structure has remained consistent until today. After classifying these changes, our baseline measure aggregates these changes by summing all tightenings reported at the country-time-category level and subtracting all loosenings reported at the same country-year-category level. We then cumulate these net tightenings from the first year until the most recent year. Formally, for country i in time t and category c, iBoP-C is given by

$$iBoP\_C_{itc} = \sum_{\tau \leq t} \left(\sum_{k \in \mathcal{T}_{i\tau c}} Tightening_{k,i\tau c} - \sum_{l \in \mathcal{L}_{i\tau c}} Loosening_{l,i\tau c} \right) \tag{5}$$

where $Tightening_{k,itc}$ is the k change that tightens restrictions in country i, category c and year t, and similarly $Loosening_{l,itc}$ is the l change that tightens restrictions in country i, category c and year t. The set of measures are captured in $\mathcal{T}$ and $\mathcal{L}$, which can vary across countries, time and category. While we report results at the

annual frequency, we also provide indices at a quarterly and monthly level. Variable definitions are described in table E2.

iBoP-C - Intensity Index: BFTU_iBoPC_Intensity.xlsx

The iBoP-C Intensity Index extends the baseline iBoP-C measure by allowing each change in cross-border restrictions to have a different impact depending on its subjectively assessed severity. As with the baseline index, this measure draws on the Changes section of the AREAER, which documents daily changes to cross border restrictions by country and categories from 1950 to present. After classifying changes into tightenings and loosenings, each measure is assigned an intensity score $\alpha = \{0.1, 0.25, 0.5, 0.75, 1\}$. These scores reflect the scope and nature of the measure, with higher values corresponding to measures judged to have larger economic impacts on cross-border flows. Details of the scoring methodology are described further in section 6.2.

Once intensity weights are assigned, the index aggregates intensity-weighted tightenings and loosenings at the country-time-category level and then cumulates the resulting net changes over time. Formally, for country i in time t and category c, iBoP-C Intensity is given by

$$iBoP\_C^{Int}_{itc} = \sum_{\tau \leq t} \left(\sum_{k \in \mathcal{T}_{i\tau c}} \alpha_{k,i\tau c} Tightening_{k,i\tau c} - \sum_{l \in \mathcal{L}_{i\tau c}} \alpha_{l,i\tau c} Loosening_{l,i\tau c} \right) \quad (6)$$

where $\alpha_{k,i\tau c}$ and $\alpha_{l,i\tau c}$ are the intensity weights assigned to tightening k and loosening l respectively, $Tightening_{k,itc}$ is the k change that tightens restrictions in country i, category c and year t, and similarly $Loosening_{l,itc}$ is the l change that tightens restrictions in country i, category c and year t. The set of measures are captured in $\mathcal{T}$ and $\mathcal{L}$, which can vary across countries, time and category. As with the baseline measure, we report results at the annual, quarterly, and monthly frequencies. Variable definitions are described in table E2.

iBoP-C - Subcategories Index: BFTU_iBoPC_Subcategories.xlsx

The iBoP-C Subcategories Index further extends the baseline iBoP-C measure to 24 subcategories. This disaggregated index takes advantage of the more granular classifications of the Changes section in the AREAERs. While the AREAER began

reporting these granular categories from 1999, measures in the Changes section have only been classified along these granular categories starting from 2016. As discussed in Section 3.2, we employ our ML methodology to extend these classifications for all measures reported in the Changes section back to 1950. The number of subcategories are chosen to trade-off the desire for greater granularity and the model's ability to accurately distinguish between subcategories. Variable definitions are described in table E3.

Daily Policy Measures: `BFTU_Daily_Policy_Measures.xlsx`

This dataset contains the individual policy measures used in the construction of the iBoP-C and iBoP-C-Intensity indices. Each measure is associated with several labels constructed using the LLM methodology outlined in Section **??** of the paper. The characteristics include: the date the measure was implemented, the category of restriction, direction of change (whether the policy tightened or loosened restrictions), an intensity-weighted measure of each policy, whether restrictions are being applied to inflows or outflows, and type of restriction implemented (price-based, quantity-based, or administrative). The dataset also contains duplicate markers to indicate identical narratives within a given country-date. This is further detailed in section 2.2.3, and users of the dataset can choose whether or not to keep these duplicated values or just unique ones. Variable definitions are described in table E4.

iBoP-Stance Index: `BFTU_iBoPS.xlsx`

The stance index, iBoP-S, summarizes the level of cross-border restrictions in place for each country-year-category, based on the stance information provided in the AREAER. In contrast to iBoP-C, which relies on daily changes, the iBoP-S identifies the existence of restrictions for each subcategory reported in the AREAER stance sections. These granular classifications is available starting from 1995.

A key feature of the iBoP-S construction is that it respects the hierarchical structure of the AREAER. The AREAER organizes restrictions in a nested taxonomy: broad categories (e.g. capital and money market instruments) contain subcategories (e.g. equity inflows and outflows), which themselves contain more granular subcategories (e.g., equity purchases by non-residents and equity sales by residents abroad). The stance index mirrors this structure and is constructed using a bottom up approach.

At the lowest level, each subcategory s is a binary indicator $\mathcal{I}_{s,it} \in 0, 1$, with 1 indicating that a restriction exists and 0 indicating that no or minimal restrictions exist. Intermediate parent categories aggregate their children categories by taking a simple average of the stance indicators of all nodes directly below them. Missing values or non-numerical values are ignored in computing the averages. Higher-level categories aggregate the stance values of their immediate children categories in the same way.

Formally, let the AREAER define a hierarchy for each category c, where every node n has a set of immediate child nodes $\mathcal{C}(n)$. The stance value for any node is defined recursively as

$$Stance_{it}(n) = \begin{cases} \mathcal{I}_{n,it}, & \text{if } \mathcal{C}(n) = \varnothing, \\ \dfrac{1}{|\mathcal{C}(n)|} \displaystyle\sum_{m \in \mathcal{C}(n)} Stance_{it}(m), & \text{if } \mathcal{C}(n) \neq \varnothing. \end{cases} \tag{7}$$

The stance index for a top-level AREAER category c—the same eight categories used in the iBoP-C index—for country i in year t is then defined as

$$iBoP\_S_{itc} = Stance_{it}(c). \tag{8}$$

Thus, the value of each category is an equally weighted average over all subcomponents, where weights arise naturally from the nested structure of the taxonomy. Unlike the iBoP-C, iBoP-S index is available only at the annual frequency, because the stance of restrictions is reported annually in the AREAER.

FKRSU (LLM Extension): `FKRSU_LLM.xlsx`

The FKRSU index focuses on the overall stance of capital account restrictions (ka) and their inflow (kai) and outflow (kao) components. These indices are composed of 32 subcategories, covering 6 types of instruments: capital and money market securities, collective investment securities, derivatives, credit operations, direct investment and real estate. This index replicates and expands upon Fernandez et al. (2016) using our LLM-based approach. Whilst the original FKRSU index covers 100 countries from 1995 to 2019, this index expands coverage until 2023 for 195 countries. Comparisons between the original FKRSU and the LLM version can be found in section 5.1.

Variable definitions are described in table E6.

Table E2: Variable definitions for the iBoP-C & iBoP-C - Intensity indices.

Variable	Description
total	Cumulative number of net tightening measures across all eight categories (c1-c8).
total_in	Cumulative number of inflow-related net tightening measures across all eight categories (c1-c8).
total_out	Cumulative number of outflow-related net tightening measures across all eight categories (c1-c8).
total_neutral	Cumulative number of neutral net tightening measures across all eight categories (c1-c8).
c1.fx_markets	Cumulative number of net tightening measures related to foreign exchange markets. These include exchange restrictions and multiple currency practices maintained by a member country, foreign exchange transactions subject to a special tax, fees, or other mandatory cost, and foreign exchange transactions subsidized using separate, non-market exchange rates. We exclude measures related to exchange rate arrangements or monetary policy frameworks. These correspond to Sections II.A and III.F-H in the 2023 AREAERs.
c2.payments_and _receipts	Cumulative number of net tightening measures related to arrangements for payments and receipts. These include official requirements affecting the selection of currency and the method of settlement for transactions with other countries, agreements that prescribe specific rules for payments to each other, including cases in which private parties are also obligated to use specific currencies, separate rules for trading in gold with foreign countries, and regulations governing the physical movement of means of payment between countries. We exclude policies related to the use of foreign exchange among residents, the administration of control, and controls on domestic ownership of currency and gold. These correspond to Section IV in the 2023 AREAERs.

c3.residency_accounts	Cumulative number of net tightening measures related to residents and non-residents accounts. Policies on resident and non-resident accounts include controls on whether resident accounts that are maintained in the national currency or in foreign currency abroad are allowed, the facilities and limitations attached to these resident accounts, controls on whether local nonresident accounts maintained in the national currency or in foreign currency are allowed and the facilities and limitations attached to these non-resident accounts. We exclude restrictions on resident accounts held domestically. These correspond to Section V and VI in the 2023 AREAERs.
c4.import_payments	Cumulative number of net tightening measures related to import payments. These include restrictions on foreign exchange budgets, financing requirements of imports, and documentation requirements for the release of foreign exchange for imports. We exclude restrictions that directly impact the trade of goods and services (e.g., import licenses, taxes, and tariffs). These correspond to Section VII in the 2023 AREAERs.
c5.export_proceeds	Cumulative number of net tightening measures related to export proceeds. These include repatriation and surrender requirements for exporters, export financing requirements, and export documentation requirements. We exclude restrictions that directly impact the trade of goods and services (e.g., export licenses and taxes). These correspond to Section VII in the 2023 AREAERs.
c6.invisibles	Cumulative number of net tightening measures related to invisible transactions (payments and receipts) and current transfers. These include 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 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. These correspond to Sections IX and X in the 2023 AREAERs.

c7.capital_account	Cumulative number of net tightening measures related to capital account transactions. These include repatriation and surrender requirements, controls on capital and money market securities, controls on credit operations, controls on direct investment, controls on real estate transactions, and controls on personal capital transactions. These correspond to Section XI in the 2023 AREAERs.
c8.financial_sector	Cumulative number of net tightening measures related to the financial sector. These include regulations specific to commercial banks and other credit institutions, such as monetary, prudential, and FX market restrictions, 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). When classifying restrictions in this category we include those that pertain to cross-border flows, and exclude primarily *domestic* macro-prudential policy measures, including restrictions on local FX lending, purchases of locally issued securities, treatment of FX deposit accounts, reserve requirements, liquid asset requirements, interest rate controls, and credit controls. These correspond to Section XII in the 2023 AREAERs.

Table E3: Variable definitions for the iBoP-C subcategories indices.

Variable	**Description**
total	Cumulative number of net tightening measures across all subcategories.
total_in	Cumulative number of inflow-related net tightening measures across all subcategories.
total_out	Cumulative number of outflow-related net tightening measures across all subcategories.
total_neutral	Cumulative number of neutral net tightening measures across all subcategories
c1.taxes_subsidies	Cumulative number of net tightening measures related to exchange taxes and subsidies. These correspond to Sections II.A and III.F-G in the 2023 AREAERs.

c1.regulations	Cumulative number of net tightening measures related to FX market restrictions. These correspond to Section III.H in the 2023 AREAERs.
c2.currency_prescriptions	Cumulative number of net tightening measures related to the prescription of currency requirements and bilateral payment arrangements. This corresponds to Sections IV.A-B and D in the 2023 AREAERs.
c2.gold_trade	Cumulative number of net tightening measures related to the trade of gold. This correspond to Section IV.E. in the 2023 AREAERs.
c2.banknote_controls	Cumulative number of net tightening measures related to banknotes. This correspond to Section IV.F in the 2023 AREAERs.
c3.residents	Cumulative number of net tightening measures related to resident accounts. This corresponds to Section V in the 2023 AREAERs.
c3.nonresidents	Cumulative number of net tightening measures related to non-resident accounts. This corresponds to Section VI in the 2023 AREAERs.
c4.financing_requirements	Cumulative number of net tightening measures related to import financing requirements. This corresponds to Section VII.A-B in the 2023 AREAERs.
c4.documentation_requirements	Cumulative number of net tightening measures related to import documentation requirements. This corresponds to Section VII.C in the 2023 AREAERs.
c5.repatriation_and_surrender	Cumulative number of net tightening measures related to repatriation and surrender requirements of export proceeds. This corresponds to Section VIII.A in the 2023 AREAERs.
c5.financing_and_documentation_requirements	Cumulative number of net tightening measures related to financing and documentation requirements of exports. This corresponds to Section VIII.B-C in the 2023 AREAERs.
c6.trade_and_investments	Cumulative number of net tightening measures related to trade and investment-related invisible payments and current transfers. This corresponds to Sections IX.A.1-2 in the 2023 AREAERs.

c6.travel_and_personal	Cumulative number of net tightening measures related to travel and personal-related invisible payments and current transfers. This corresponds to Sections IX.A.3-6 in the 2023 AREAERs.
c6.repatriation_and_surrender	Cumulative number of net tightening measures related to repatriation and surrender requirements of invisible proceeds. This corresponds to Section X in the 2023 AREAERs.
c7.repatriation_and_surrender	Cumulative number of net tightening measures related to the repatriation and surrender requirements of capital account transactions.
c7.capital_and_money_market	Cumulative number of net tightening measures related to capital and money market securities. This corresponds to Section XI.A.1-3. in the 2023 AREAERs.
c7.credit_operations	Cumulative number of net tightening measures related to credit operations. This corresponds to Section XI.A.4. in the 2023 AREAERs.
c7.direct_investment	Cumulative number of net tightening measures related to direct investments. This corresponds to Section XI.A.5-6. in the 2023 AREAERs.
c7.real_estate	Cumulative number of net tightening measures related to real estate transactions. This corresponds to Section XI.A.7 in the 2023 AREAERs.
c7.personal_capital	Cumulative number of net tightening measures related to personal capital transactions. This corresponds to Section XI.A.8. in the 2023 AREAERs.
c8.commercial_banks	Cumulative number of net tightening measures specific to commercial banks. This corresponds to Section XII.A. in the 2023 AREAERs.
c8.institutional_investors	Cumulative number of net tightening measures specific to insurance companies. This corresponds to Section XII.B.1. in the 2023 AREAERs.
c8.pension_funds	Cumulative number of net tightening measures specific to pension funds. This corresponds to Section XII.B.2. in the 2023 AREAERs.

c8.collective_investment_funds	Cumulative number of net tightening measures specific to investment firms and collective investment funds. This corresponds to Section XII.B.3. in the 2023 AREAERs.

Table E4: Variable List - Daily policy measures

Variable	**Description**
master index	Unique identifier
c1.fx_markets	Policies related to foreign exchange market
c2.payments_and_receipts	Policies related to arrangements for payments and receipts
c3.residency_accounts	Policies related to resident and non-resident accounts
c4.import_payments	Policies related to import payments
c5.export_proceeds	Policies related to export proceeds
c6.invisibles	Policies related to invisible transactions and current transfers
c7.capital_account	Policies related to capital account transactions
c8.financial_sector	Policies related to financial sector regulations
direction	Direction of change (whether the policy tightened or loosened restrictions)
intensity	Intensity-weighted score of each policy, α, based on the scope and nature of the measure.
flow	Type of restriction implemented (outflow-oriented or inflow-oriented)
price	Type of restriction implemented (price-based, quantity-based and/or administrative)
duplicated id	Identical narratives share the same duplicate ID.

Table E5: Variable definitions for the iBoP-S indices. Additional subcategory breakdowns are available upon request.

Variable	**Description**
total	Average stance across all eight categories.
total_in	Average stance across inflow-related subcategories within each of the eight categories (c1-c8).
total_out	Average stance across outflow-related subcategories within each of the eight categories (c1-c8).

total_neutral	Average stance across neutral subcategories within each of the eight categories (c1-c8).
c1.fx_markets	Average stance of restrictions related to foreign exchange markets.
c2.payments_and _receipts	Average stance of restrictions related to arrangements for payments and receipts.
c3.residency_accounts	Average stance of restrictions related to residents and non-residents accounts.
c4.import_payments	Average stance of restrictions related to import payments.
c5.export_proceeds	Average stance of restrictions related to export proceeds.
c6.invisibles	Average stance of restrictions related to invisible transactions (payments and receipts) and current transfers.
c7.capital_account	Average stance of restrictions related to capital account transactions.
c8.financial_sector	Average stance of restrictions related to the financial sector.

Table E6: Variable definitions for the FKRSU (LLM Extension).

Variable	**Description**	**Formula**
ka	Overall restrictions index (all asset categories)	Average(kai, kao)
kai	Overall inflow restrictions index (all asset categories)	Average(eqi, boi, mmi, cii, dei, cci, fci, gsi, dii, rei)
kao	Overall outflow restrictions index (all asset categories)	Average (eqo, boo, mmo, cio, deo, cco, fco, gso, dio, reo)
eq	Average equity restrictions	Average(eqi, eqo)
eqi	Equity inflow restrictions	Average(eq_plbn, eq_siar)
eqo	Equity outflow restrictions	Average(eq_siln, eq_pabr)
eq_plbn	Purchase locally by nonresidents (equity)	
eq_siln	Sale or issue locally by nonresidents (equity)	
eq_pabr	Purchase abroad by residents (equity)	
eq_siar	Sale or issue abroad by residents (equity)	
bo	Average bond restrictions	Average(boi, boo)
boi	Bond inflow restrictions	Average(bo_plbn, bo_siar)
boo	Bond outflow restrictions	Average(bo_siln, bo_pabr)
bo_plbn	Purchase locally by nonresidents (bonds)	
bo_siln	Sale or issue locally by nonresidents (bonds)	
bo_pabr	Purchase abroad by residents (bonds)	
bo_siar	Sale or issue abroad by residents (bonds)	

mm	Average money market restrictions	Average(mmi, mmo)
mmi	Money market inflow restrictions	Average(mm_plbn, mm_siar)
mmo	Money market outflow restrictions	Average(mm_siln, mm_pabr)
mm_plbn	Purchase locally by nonresidents (money market instruments)	
mm_siln	Sale or issue locally by nonresidents (money market instruments)	
mm_pabr	Purchase abroad by residents (money market instruments)	
mm_siar	Sale or issue abroad by residents (money market instruments)	
ci	Average collective investments restrictions	Average(cii, cio)
cii	Collective investments inflow restrictions	Average(ci_plbn, ci_siar)
cio	Collective investments outflow restrictions	Average(ci_siln, ci_pabr)
ci_plbn	Purchase locally by nonresidents (collective investments)	
ci_siln	Sale or issue locally by nonresidents (collective investments)	
ci_pabr	Purchase abroad by residents (collective investments)	
ci_siar	Sale or issue abroad by residents (collective investments)	
de	Average derivatives restrictions	Average(dei, deo)
dei	Derivatives inflow restrictions	Average(de_plbn, de_siar)
deo	Derivatives outflow restrictions	Average(de_siln, de_pabr)
de_plbn	Purchase locally by nonresidents (derivatives)	
de_siln	Sale or issue locally by nonresidents (derivatives)	
de_pabr	Purchase abroad by residents (derivatives)	
de_siar	Sale or issue abroad by residents (derivatives)	
cc	Average commercial credits restrictions	Average(cci, cco)
cci	Commercial credits inflow restrictions	
cco	Commercial credits outflow restrictions	
fc	Average financial credits restrictions	Average(fci, fco)
fci	Financial credits inflow restrictions	
fco	Financial credits outflow restrictions	

gs	Average guarantees, sureties and financial backup facilities restrictions	Average(gsi, gso)
gsi	Guarantees, sureties and financial backup facilities inflow restrictions	
gso	Guarantees, sureties and financial backup facilities outflow restrictions	
di	Average direct investment restrictions	Average(dii, dio)
dii	Direct investment inflow restrictions	
dio	Direct investment outflow restrictions	
ldi	Direct investment liquidation restrictions	
re	Average real estate restrictions	Average(rei, reo)
rei	Real estate inflow restrictions	re_plbn
reo	Real estate outflow restrictions	Average(re_pabr, re_slbn)
re_pabr	Purchase abroad by residents (real estate)	
re_plbn	Purchase locally by nonresidents (real estate)	
re_slbn	Sale locally by nonresidents (real estate)	

PUBLICATIONS

Expanding the Landscape of Cross-Border Flow Restrictions: Modern Tools and Historical Perspectives
Working Paper No. WP/2026/098