Modeling a Rule-Based SDR Allocation System and the Potential Effects on the Global South

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The Role of SDRs for Global Stability
and Sustainable Economic Transformation
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Paper

- *"This paper develops a rules-based framework for systematic SDR allocations grounded in the IMF's own long-term reserve-need assessments"*
- Methods
  - Uses the Fund's reserve adequacy evaluations from 2009, 2011, 2016, and 2021 to determine annual allocations
- Results
  - Our modeled rule estimates an additional $2,292.4 billion in liquidity to emerging markets and developing countries (EMDCs) between 2009–2025
  - Improves traditional reserve benchmarks

Motivation

An annual, rule-based SDR allocation would be very positive for EMDCs

1. There is a global need for reserves
   - The IMF estimated an unmet need of about $1.3 trillion from 2021–2025
2. Reserve accumulation is costly for non-reserve currency issuing EMDCs
   - Necessary to insure against capital outflows, external debt obligations, and exchange rate pressures but has domestic costs (e.g., less investment)
3. There is substantial asymmetry between EMDCs and advanced economies in international liquidity provision
   - Reserve currency issuing countries use swap lines and other guarantees to backstop non-reserve currency issuing advanced economies

Why SDRs?

- SDRs are an underutilized and valuable tool; SDRs are "inherently superior" to endogenously generated reserves
  - Costless, continuously available, continuously liquid and not pro-cyclical if sold, can be accumulated without contributing to global imbalances, better store of value, likely lower interest rate than debt markets, no conditionality etc.
- SDRs should not be a tool only used in crises
  - Using SDRs to meet reserve needs is consistent with Article XVIII of the IMF Articles of Agreement
- SDRs are effective, and were the largest source of support for EMDCs during the pandemic

Why SDRs? (cont.)

Article XVIII

Section 1. Principles and considerations governing allocation and cancellation

(*a*) In all its decisions with respect to the allocation and cancellation of special drawing rights the Fund shall seek to meet the long-term global need, as and when it arises, to supplement existing reserve assets in such manner as will promote the attainment of its purposes and will avoid economic stagnation and deflation as well as excess demand and inflation in the world.

(*b*) The first decision to allocate special drawing rights shall take into account, as special considerations, a collective judgment that there is a global need to supplement reserves, and the attainment of a better balance of payments equilibrium, as well as the likelihood of a better working of the adjustment process in the future.

Why SDRs? (cont.)

SDRs are effective despite not being allocated frequently

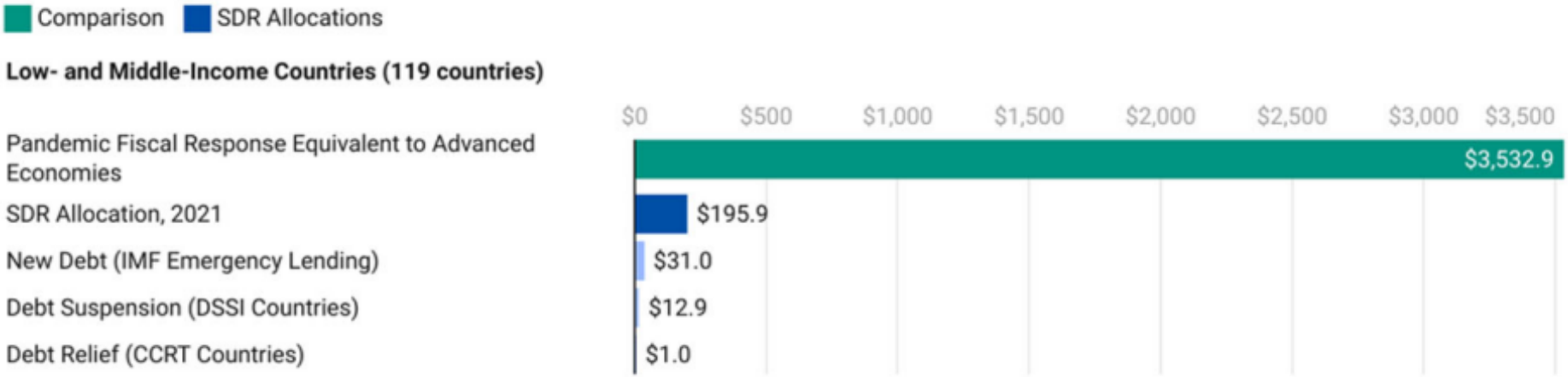


Figure: Cashman et al. (2022)

Previous calls for systematic allocations

Based on reserve needs

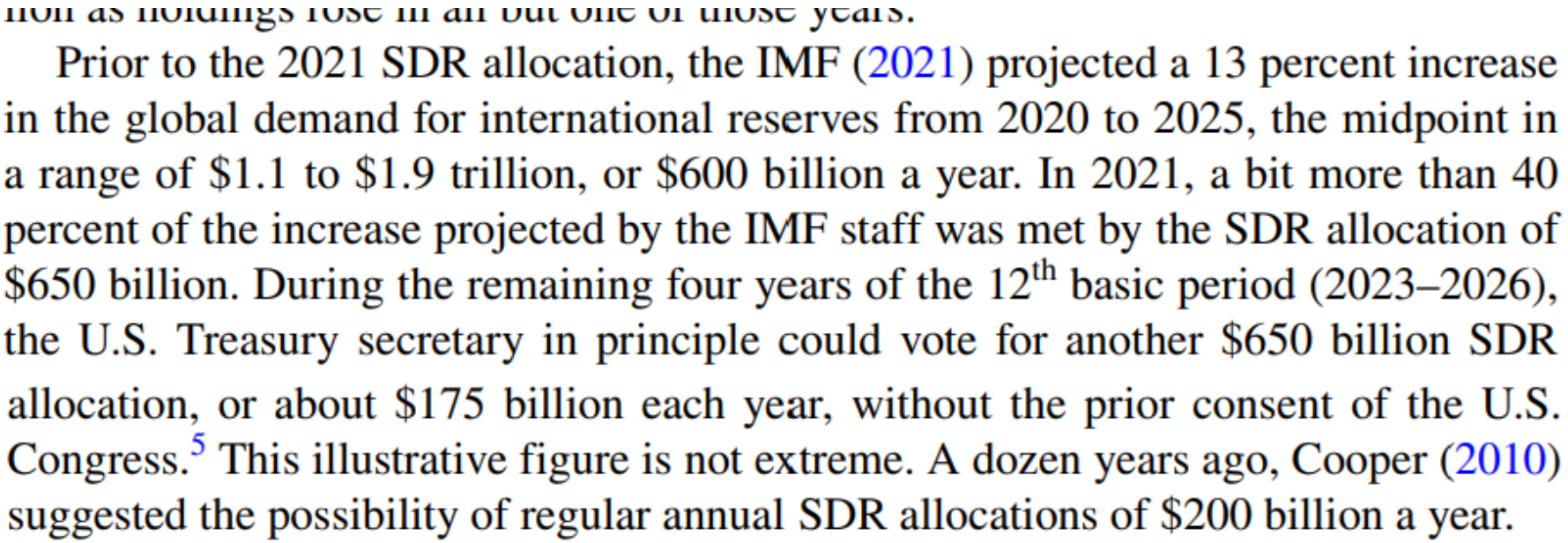
Table 2: Estimates of SDR Allocations in Chronological Order

Study	Method of estimation	Proposed Amount to Issue
International Monetary Fund (June 2011)	Precautionary demand for reserves estimated based on (i) imports, (ii) short-term external debt, and (iii) broad money	US$117–133 billion annually for three years beginning in 2014
Ocampo (2011)	Close to but slightly less than average reserve accumulation in 2003-08 (excluding China and Japan)	US$250-300 billion annually
Stiglitz and others (2011)	Recommendation based on the previous issue of SDRs equivalent to 250 billion by the IMF in 2009	SDR 150-250 billion annually over the next three years, which equals US$240-400 billion at current exchange rates
International Monetary Fund (January 2011)	Half of the average precautionary demand for reserves over 2000-09 (Obstfeld, Taylor, and Shambaugh, 2008)	US$200 billion annually

Figure: UN DESA ST/ESA/2013/DWP/126

Previous calls for systematic allocations (cont.)

Truman (2023) mentions using the IMF reserve needs assessments as a yardstick



Prior to the 2021 SDR allocation, the IMF (2021) projected a 13 percent increase in the global demand for international reserves from 2020 to 2025, the midpoint in a range of $1.1 to $1.9 trillion, or $600 billion a year. In 2021, a bit more than 40 percent of the increase projected by the IMF staff was met by the SDR allocation of $650 billion. During the remaining four years of the 12th basic period (2023–2026), the U.S. Treasury secretary in principle could vote for another $650 billion SDR allocation, or about $175 billion each year, without the prior consent of the U.S. Congress.[5] This illustrative figure is not extreme. A dozen years ago, Cooper (2010) suggested the possibility of regular annual SDR allocations of $200 billion a year.

Figure: Truman (2023)

IMF Article XVIII and reserve-need assessments

- Article XVIII also requires the IMF to assess the long-term global need to supplement reserves each basic period
- The IMF produces quantitative assessments of EMDC reserve needs, reserve needs of non-reserve currency issuing advanced economies, and estimates of endogenous reserve creation

Methods

We operationalize IMF reserve-need assessments into annual SDR allocations and evaluate the effects on EMDC reserve adequacy

TABLE 1: Allocation assessments for EMDCs, USD billion

Assessment year	SDR allocation, total	SDR allocation, EMDCs	Estimated reserves demanded, 5 years, midpoint, EMDCs	Other reserve sources, 5 years, EMDCs	Other Reserve Sources Adjusted, 5 Years, EMDCs	Net reserves demanded, 5 years, EMDCs
2009	252.1	98.8	800.5	475.0	368.1	333.6
2011			1197.5	395.2	306.3	891.2
2016			1750.0	208.5	161.6	1588.4
2021	647.5	250.9	2000.0	449.0	348.0	1401.1

Source and notes: Authors' calculations and International Monetary Fund 2009, 2011a, 2016, 2021. The 2009 allocation is the general allocation only. EMDCs are emerging markets and developing countries, excluding China, Russia, and fuel exporters. Reserves demanded use the IMF's traditional methodology and are pre-allocations (if applicable). The 2021 reserves demanded amount is estimated from the ARA methodology. 2011 EMDC Other Reserve Sources data is estimated using shares from 2009 and 2016; 2021 EMDC data is estimated using the non-reserve currency issuing advanced economies-to-EMDCs share of reserves demanded from the prior assessment.

Methods (cont.)

- We take the midpoint of IMF reserve assessments and determine the EMDC share and the EMDC share of endogenous reserve creation
  - Requires imputation in some years
  - Global South = EMDCs = EMDCs without China and fuel exporters = 125 countries
  - We focus on assessments based on traditional reserve adequacy metrics, not the ARA metric
  - Focus on EMDCs is consistent with currency hierarchy theory
  - We assume a reduction in endogenous reserve creation from the expectation of annual SDR allocations
- Subtracting endogenous reserves from needed reserves yields net reserves needed

Methods (cont.)

- Starting in 2009, we spread net reserves needed over the basic period into five equal allocations, which would cover 100% of net reserves needed for EMDCs
- At the next assessment, we subtract any new allocations and any general allocations (2021 in this case) from net reserves needs for the next five-year period, and spread the result over the next five years
- We then scale EMDC allocation needs to all members
- The model gives us aggregate EMDC results, but we also use current quota shares to determine impact on individual EMDCs

Allocations

TABLE 2: Annual allocation modeling based on net reserves demanded

Allocation year	Existing allocations, total		Cumulative existing allocations, total		Additional allocations, EMDCs		Cumulative additional allocations, EMDCs		Additional allocations, total		Updated cumulative allocations, total	
	SDR billion	USD billion	SDR billion	USD billion	SDR billion	USD billion	SDR billion	USD billion	SDR billion	USD billion	SDR billion	USD billion
1970–1972	9.3	9.3	9.3	9.3							9.3	9.3
1979–1982	12.1	15.8	21.4	27.9							21.4	27.9
2009	182.7	285.9	204.1	321.3	43.3	66.7	43.3	66.7	111.7	172.2	315.8	321.3
2010					43.7	66.7	43.7	133.5	112.9	172.2	428.7	493.5
2011					96.0	151.6	139.7	285.0	247.7	391.1	676.4	884.6
2012					98.9	151.6	238.7	436.6	255.3	391.1	931.8	1275.7
2013					99.7	151.6	338.4	588.1	257.4	391.1	1189.2	1666.8
2014					99.8	151.6	438.2	739.7	257.4	391.1	1446.6	2057.9
2015					108.3	151.6	546.5	891.2	279.5	391.1	1726.1	2449.0
2016					119.5	166.1	666.0	1057.4	308.4	428.7	2034.6	2877.8
2017					119.8	166.1	785.8	1223.5	309.2	428.7	2343.7	3306.5
2018					117.3	166.1	903.2	1389.6	302.8	428.7	2646.5	3735.2
2019					120.2	166.1	1023.4	1555.7	310.3	428.7	2956.8	4163.9
2020					119.3	166.1	1142.7	1721.9	307.8	428.7	3264.6	4592.6
2021	456.5	647.5	660.6	937.0	80.1	114.1	1222.8	1836.0	206.7	294.4	3927.8	5534.5
2022					85.3	114.1	1308.1	1950.1	220.1	294.4	4147.9	5829.0
2023					85.5	114.1	1393.6	2064.2	220.7	294.4	4368.6	6123.4
2024					85.9	114.1	1479.5	2178.3	221.8	294.4	4590.4	6417.9
2025					84.0	114.1	1563.5	2292.4	216.8	294.4	4807.2	6712.3

Source and notes: Adapted from Truman, E. M. (2023) and authors' calculations. See text for methodology. SDR exchange rate for 2025 is the value on November 19. EMDCs are emerging markets and developing countries, excluding China, Russia, and fuel exporters.

Allocations (cont.)

- 2009 assessment: $66.7 billion allocation to EMDCs, $172.2 total allocation
- 2011 assessment: $151.6 billion, $391.1 billion
- 2016 assessment: $166.1 billion, $428.7 billion
- 2021 assessment: $114.1 billion, $294.4 billion
- Cumulatively: $2.29 trillion from 2009–2025 to EMDCs

EMDC Reserve Adequacy Benchmarks

- Months of imports: proxy for vulnerabilities related to external income
- Short-term debt: debt rollover
- Broad money: resident capital outflow risks

TABLE 3: Traditional reserve adequacy benchmarks for EMDCs

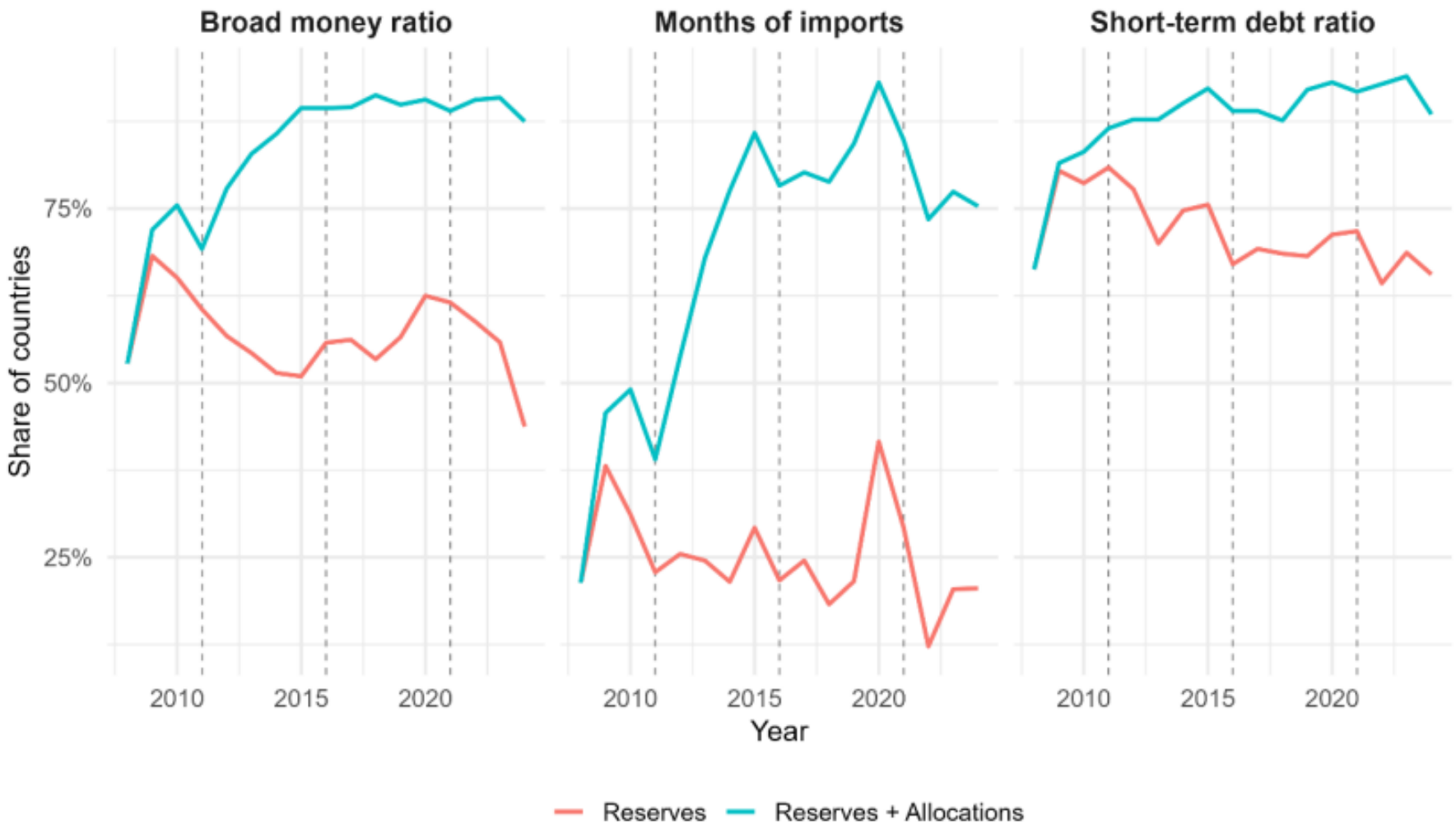
Assessment year	Months of imports	Short-term external debt	Broad money
2009	6.1	200%	28.3%
2011	6.2	167%	32.0%
2016	7.8	212%	33.0%
2021	n.a	n.a	n.a.

Source and notes: International Monetary Fund 2009; 2011; 2016; 2021. The 2016 benchmark data is used for 2021. EMDCs are emerging markets and developing countries, excluding China and fuel exporters.

Aggregate EMDC results

SDRs consistently raise the share of countries meeting benchmarks

FIGURE 2: Share of EMDCs meeting traditional reserve benchmarks before and after SDR allocations



Aggregate EMDC results (cont.)

Broad money

- 91 of 110 countries (with complete data) meet the broad money benchmark in at least in one year using reserves alone, and 103 do so when SDRs are added
- The number that are adequate in a majority of years rises from 66 to 97

Imports

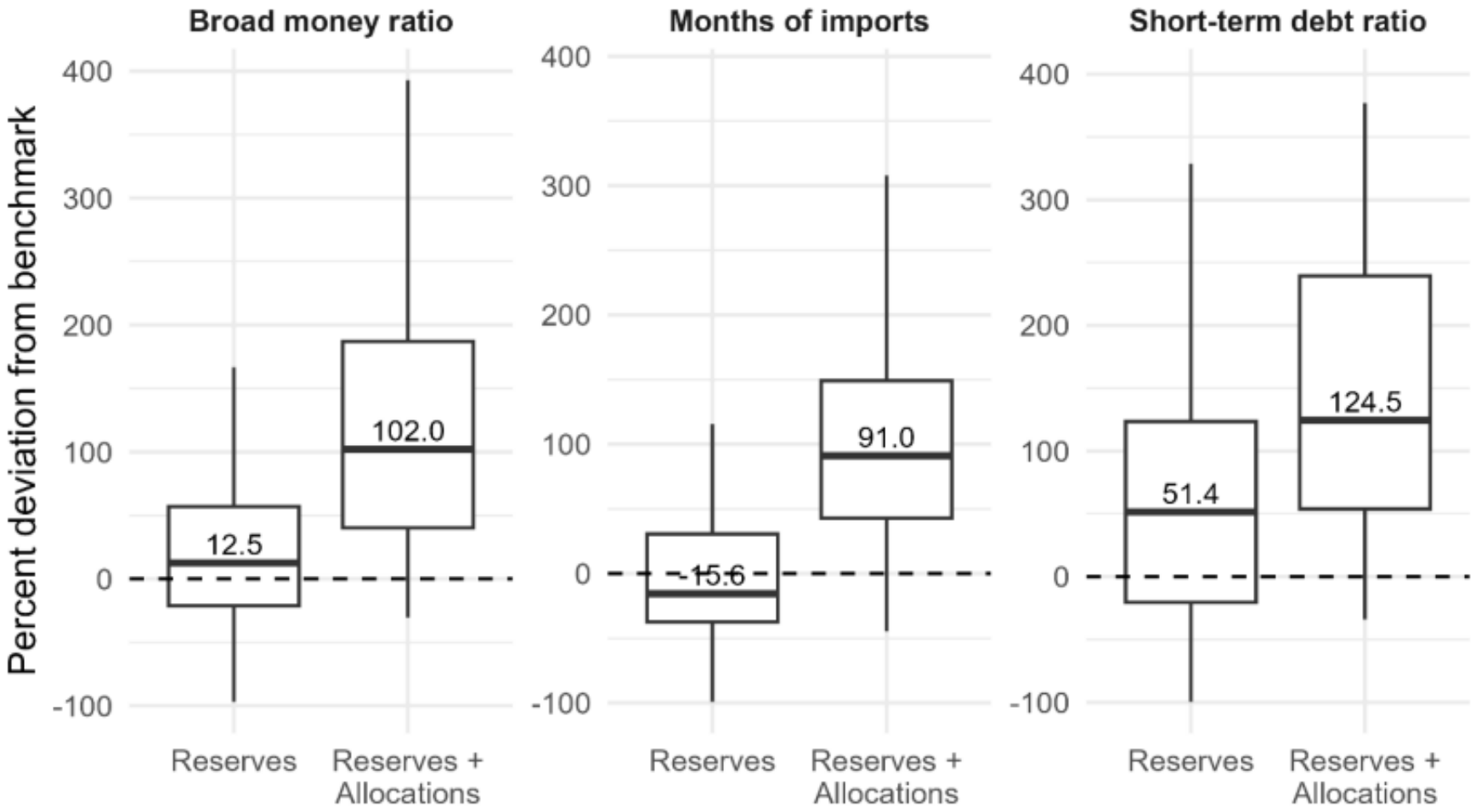
- 64 of 108 –> 103 of 108 in any year
- 23 of 108 –> 85 of 108 in a majority of years

Short-term debt

- 87 of 94 –> 92 of 94 in any year
- 70 of 94 –> 88 of 94 in a majority of years

Aggregate EMDC results, 2020

FIGURE 1: Distance from reserve adequacy benchmarks before and after SDR allocations for EMDCs, 2020



Source and notes: Author's calculations and International Monetary Fund 2009; 2011a; 2016; 2021. EMDCs are emerging markets and developing countries, excluding China, Russia, and fuel exporters.

Aggregate EMDC results, 2020 (cont.)

TABLE 4: Aggregate EMDC summary results, 2020

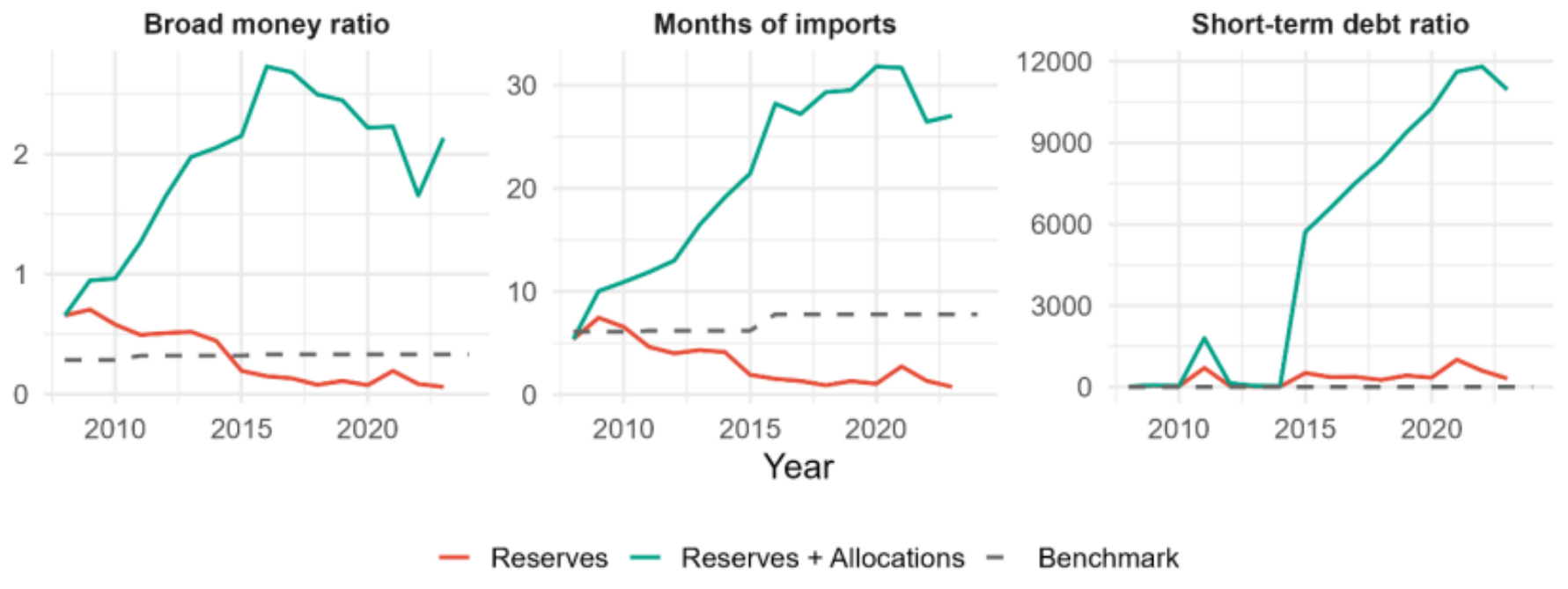
Metric	Distance from reserve adequacy benchmarks for median country, percent	Share of countries above benchmark
Broad money ratio		
Reserves	12.5%	62.5%
Reserves + SDRs	102.0%	90.6%
Months of imports		
Reserves	-15.6%	41.6%
Reserves + SDRs	91.0%	93.1%
Short-term debt ratio		
Reserves	51.4%	71.3%
Reserves + SDRs	124.5%	93.1%

Source and notes: Author's calculations and International Monetary Fund 2009; 2011a; 2016; 2021. EMDCs are emerging markets and developing countries, excluding China, Russia and fuel exporters. For the distances from benchmarks, the median country is above the benchmark when the value is positive and below when negative.

Case studies: Burundi

Low-income country with no market access

FIGURE 3: Reserve adequacy metrics with and without annual SDR allocations: Burundi

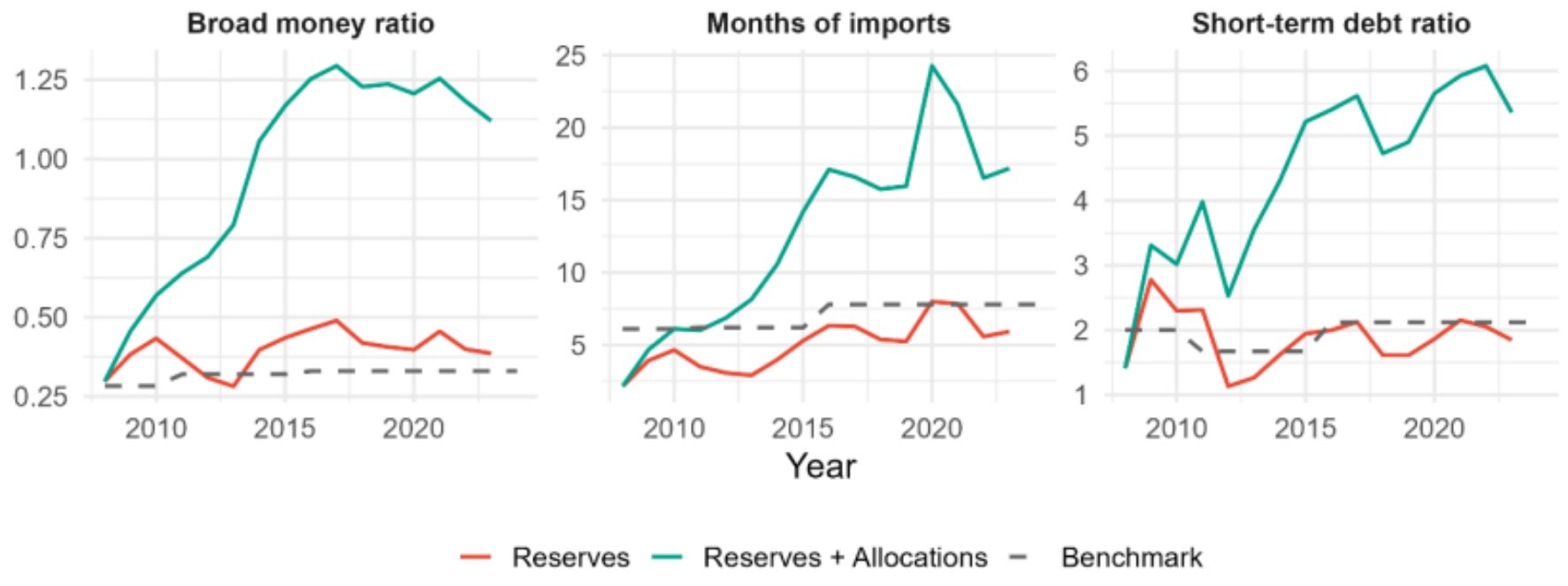


Source and notes: Author's calculations and International Monetary Fund 2009; 2011a; 2016; 2021.

Case studies: Jamaica

A small upper-middle income island country

FIGURE 4: Reserve adequacy metrics with and without annual SDR allocations: Jamaica

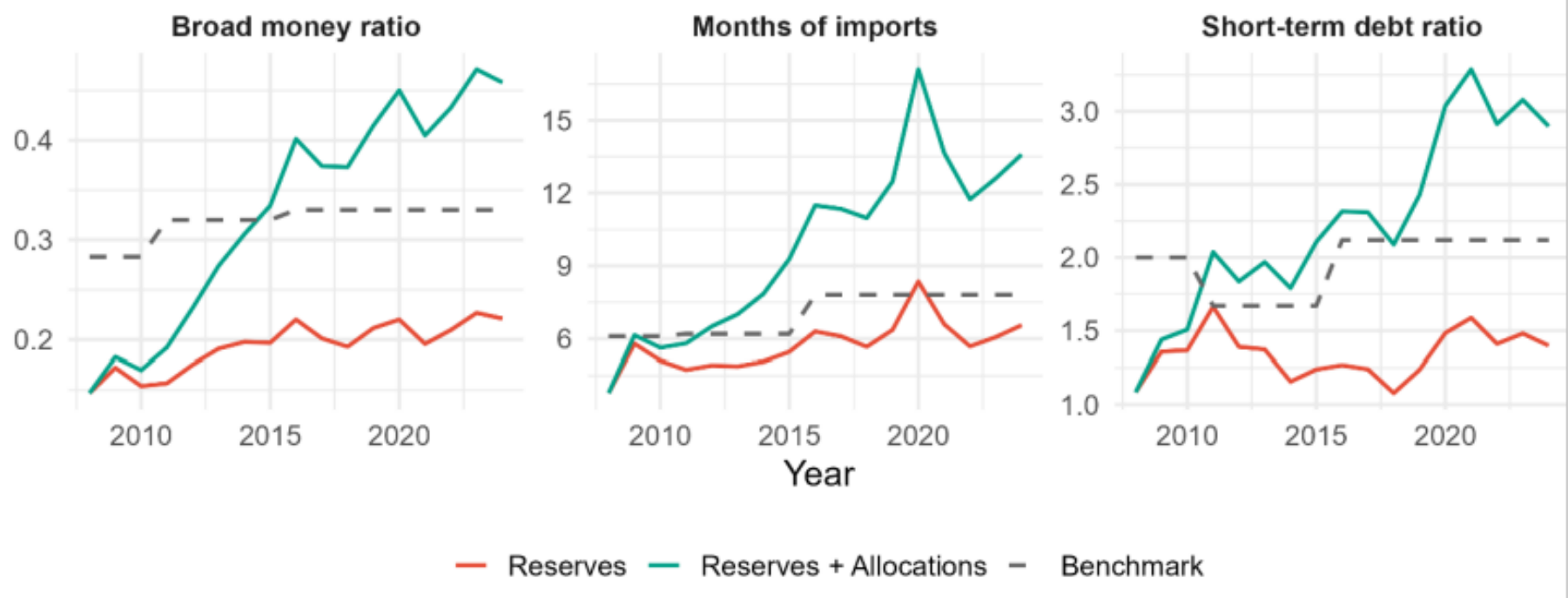


Source and notes: Author's calculations and International Monetary Fund 2009; 2011a; 2016; 2021.

Case studies: South Africa

A large emerging market

FIGURE 5: Reserve adequacy metrics with and without annual SDR allocations: South Africa



Source and notes: Author's calculations, International Monetary Fund 2009; 2011a; 2016; 2021.

Discussion

- SDRs under this rule-based system function not only as a source of crisis liquidity but as a predictable, structural component of a more stable international monetary environment
- Consistent with the institutional and legal requirements governing SDR allocations
  - Would not require amendments to the Articles of Agreement or fundamental changes to the operational structure of the SDR system
  - Provides a transparent mechanism for determining allocation size based on published IMF data rather than political discretion
- SDRs at the international level cannot be wasted because need has to be shown to use them
- Reduces structural asymmetries between reserve-issuing and non-reserve-issuing economies by creating a multilateral source of liquidity that is not subject to the selectivity or political constraints of central bank swap lines

Assumptions and limits

- Only use of SDRs is as reserves; we do not model other uses or the effects other uses would have on reserve need and other macroeconomic factors like GDP growth
- Assumes the United States Treasury would approve annual SDR allocation
- Relies on IMF staff estimates, and increasingly, the IMF is using the ARA metric for estimating both reserve adequacy and reserve needs (which may be less suited to quantifying reserve need and has less country coverage)
- Quota system does not direct reserves to EMDCs that need them, so although 100% of estimated reserves need are allocated in the aggregate, not every EMDC receives an amount that makes them adequate
- Relies on the appropriateness of traditional reserve metrics

Conclusion

- IMF already quantifies multi-year EMDC reserve gaps; we transform these into a transparent, rule-based SDR allocation path that concretely shows the benefits of such a system
- From 2009–2025, the rule would have delivered large about $2.29 trillion in additional reserves to EMDCs
- This amount would significantly help EMDCs, as the case studies and aggregate data show
- SDRs are the natural tool to use for this, and implementation is technically straightforward and legally compatible with the existing framework; the key constraints are political
- Future work could model macro effects, other reserve uses, use more sophisticated techniques, etc.

Thank you