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Accounting for Parallel Exchange Rates

December 7, 2022

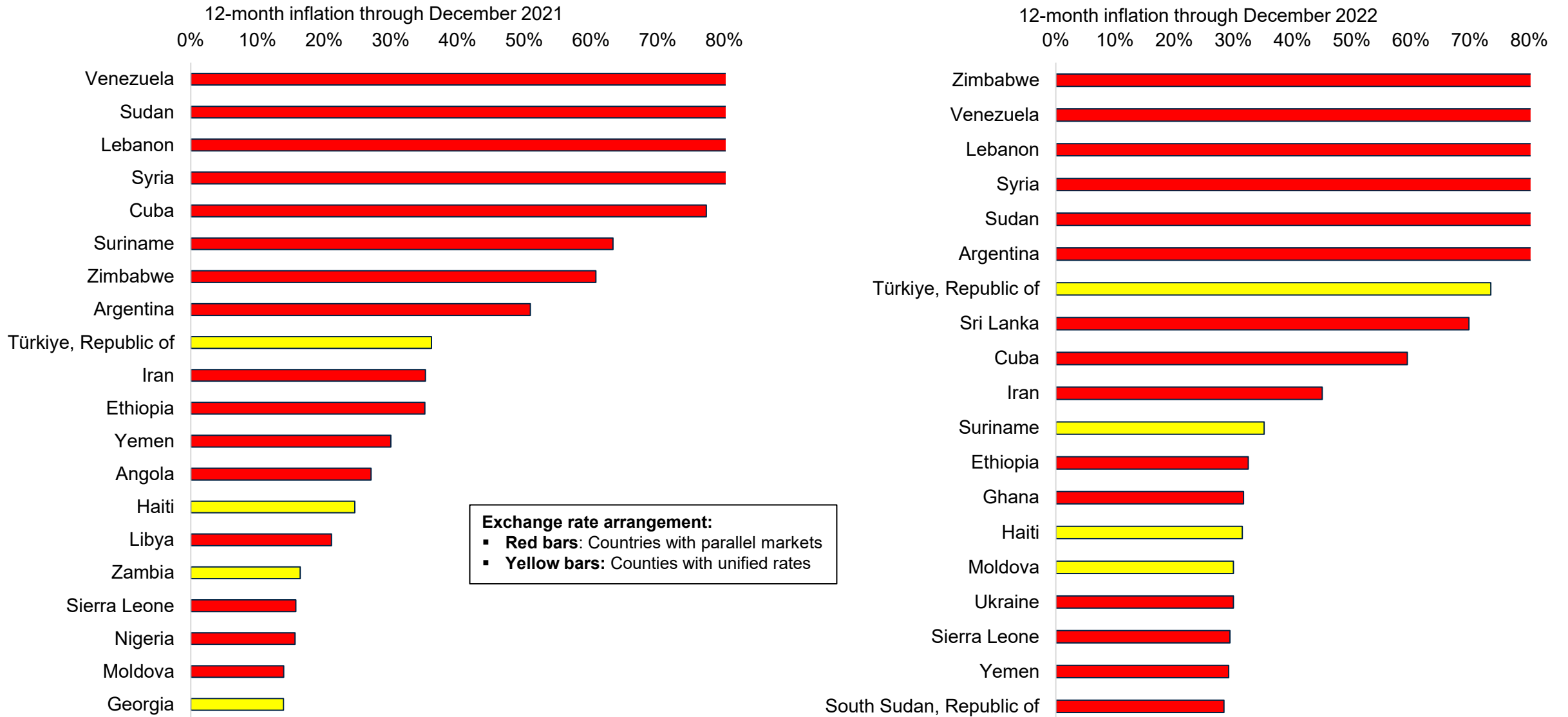
Background

- Official exchange rates do not always reflect economic reality. Parallel markets can arise due to explicit exchange rate regulations introduced by governments, or due to economic or policy conditions impacting international transactions leading to a significant unofficial market. This phenomenon is not static and can emerge and disappear at different points in history.
- The term Parallel exchange rates is used throughout this presentation to encompass all cases where more than one exchange rate is effectively in use:
 - Parallel exchange rates
 - Multiple/dual exchange rates
 - “Black market” exchange rates
 - Subsidized exchange rates or import/export surcharges in cases where specific categories of trade (imports or exports) may be bought or sold at rates other than the central official exchange rate

Parallel Markets Concurrent with High Inflation

- There is evidence that parallel markets have become more prevalent in low-income countries over the past several years, intensifying recently as the COVID pandemic has impacted commodity prices and led to supply chain disruptions for critical goods and services.
- Economies with parallel exchange rates are notoriously inflationary.
 - Of the 20 countries with the highest inflation rates for 2021 and 2022, more than three-quarters have parallel markets.
 - From January through December 2021, of the total 28 countries with parallel exchange rate markets, 8 had 12-month inflation in excess of 40%, while none of the countries with unified exchange rate markets had an inflation rate of more than 40%.
 - From January through December 2022, of the total 30 countries with parallel exchange rate markets, 9 had 12-month inflation in excess of 40%, while just 1 of the countries with unified exchange rate markets had an inflation rate of more than 40%.

Parallel Markets Concurrent with High Inflation



Implications on Cross-National Comparisons

- When significant parallel exchange rate activity exists, it must be accounted for appropriately in cross-national comparisons. While information can be incomplete and measurement is challenging, the World Bank endeavors to account for the emergence of multiple markets to the best extent possible in:
 - Economic time series in the World Bank's World Development Indicators (WDI)
 - World Bank classifications of countries by income level, which is currently based on the Atlas Exchange Rate method.
- Exchange rates are also used by the ICP:
 - as a direct input to the Price Level Index (PPP divided by Exchange Rate)
 - as reference PPPs for the following headings:
 - Net purchases abroad
 - Acquisitions less disposals of valuables
 - Exports of goods and services
 - Imports of goods and services
- Historically, adjustments for parallel markets have been made in the ICP in serious cases, for example with Sudan in the 2017 cycle when the official rate yielded implausible results, so the NSO provided alternative exchange rates obtained from the Central Bank.

System of National Accounts (SNA) Standards

- Detailed guidance was published in a prior version of the SNA standards manual (SNA1993) but removed from the subsequent (SNA2008) version. On request of the ISWGNA, the same guidance will be reinstated in the next update (SNA2025).
- The SNA addresses a related circumstance: how individual NSOs should convert transactions in foreign currency to LCU, while our task is conversion of an aggregate variable to a common currency for cross-national comparisons.
- For transactions relevant in the measurement of a country's economic activity, the SNA recommends determining a "unitary rate" via a weighted average of all rates used for all external transactions and estimating imputed taxes or subsidies as the difference between transactions valued at the differential rates and the unitary rate.

Practices at International Organizations

- **IMF**

- Meetings with various country teams in March 2022
- General status is similar to the World Bank experience
 - the IMF continues to work on the issue and advocates a weighted average methodology but face challenges with data gaps, in particular for transaction weights.
 - Also face challenges implementing a universal solution, and methodologies are tailored to specific country circumstances.

- **United Nations**

- UNSD may estimate “relative price-adjusted” exchange rates in rare cases with extreme distortions (i.e. hyperinflation). The adjustment is calculated using relative GDP deflators for reference year t (a year with a distorted exchange rate) and $t-X$ (a “normal” year either before or after the distortion)
- We tested the two components of this methodology for distinct purposes:
 - Can the Market Exchange Rate Valuation index (MVI) be used to identify countries where parallel exchange rates exist? *Conclusion:* No. Results included many Type I & Type II errors
 - Can the Price-Adjusted Rate of Exchange (PARE) be a suitable stand-in for a weighted-average exchange rate if we are missing weight information? *Conclusion:* unlikely, choice of “normal year” can significantly impact the results, careful consideration would need to be made to justify this methodology in specific cases

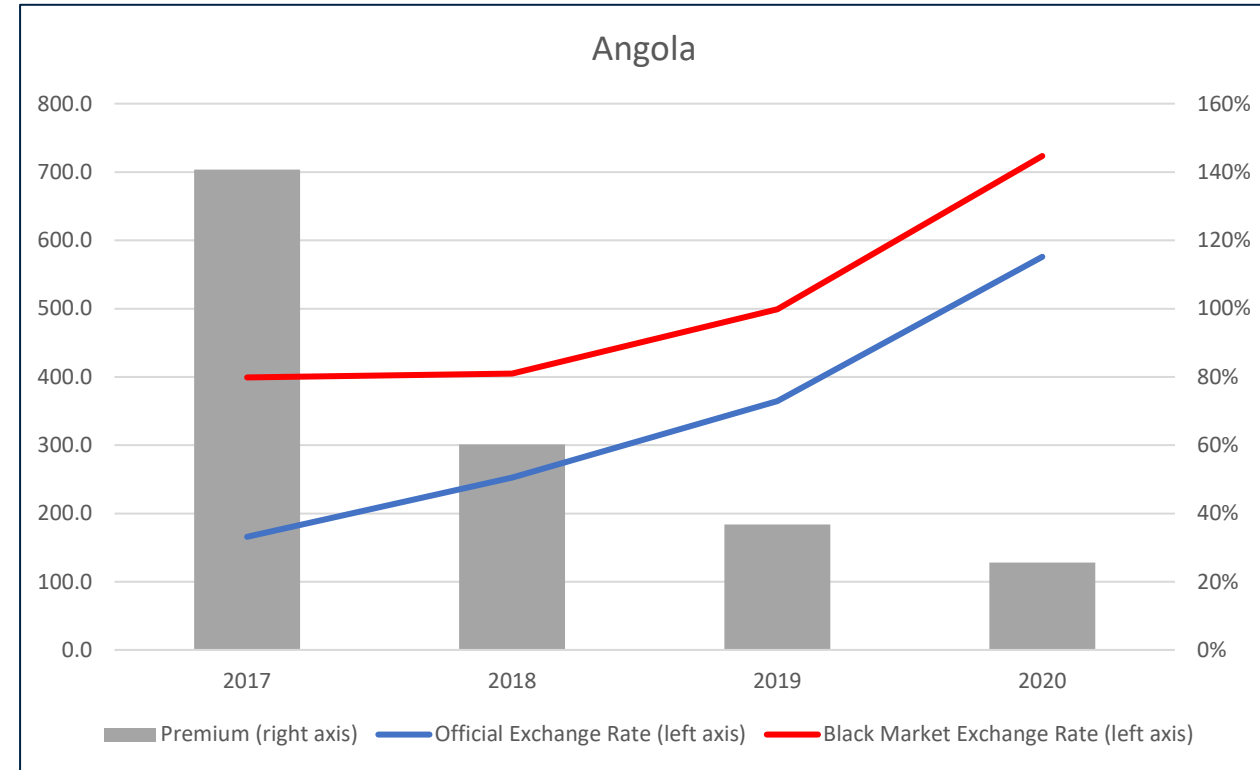
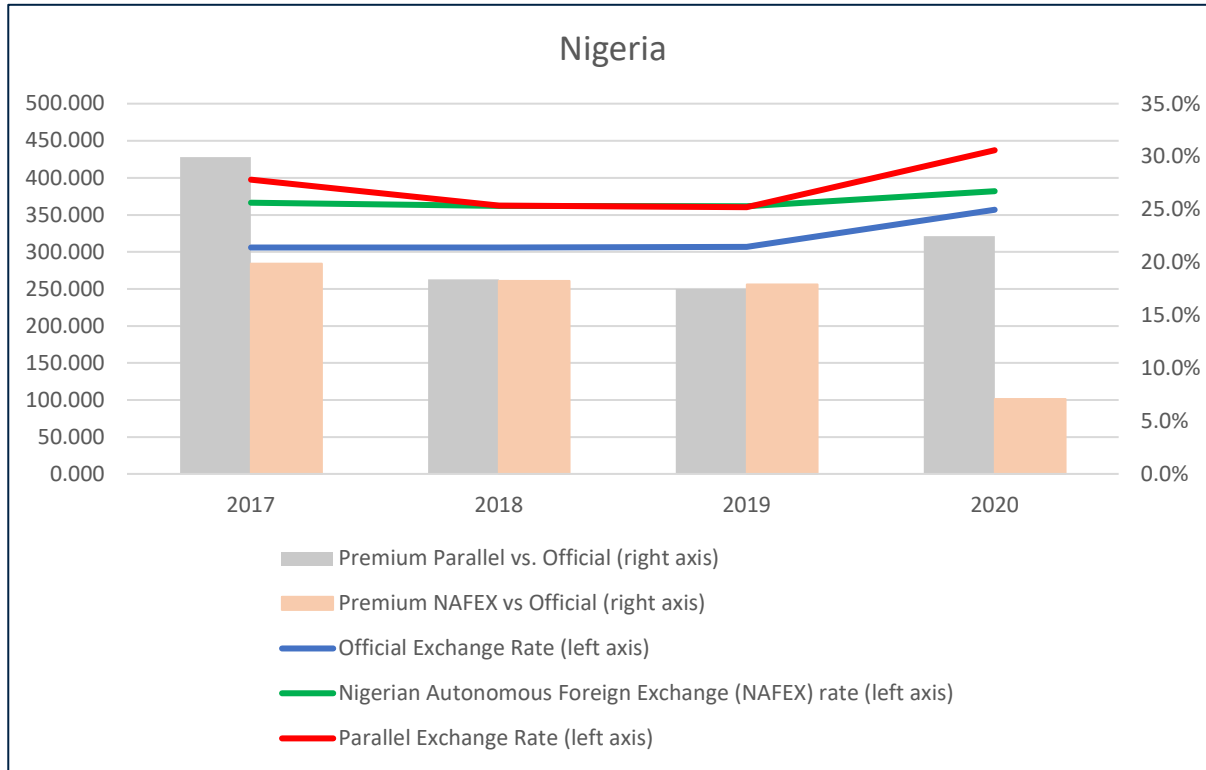
World Bank Efforts to Improve Measurement

- The first pilot survey of World Bank country economists in July 2021 aimed to:
 - Confirm the use of parallel exchange rates on a significant scale for an initial list of 29 countries identified by the World Bank Chief Economist's office
 - Collect detailed information on how these can be averaged in each impacted country to calculate composite rates.
- This survey was then adapted into an ongoing collection strategy through the WDI surveys.
 - WB country economists are asked to identify evidence of parallel activity
 - DECDG collaborates with them to investigate the country context and available data on parallel rates and transaction weights along with options for deriving composite rates.

Findings for 2021 – Pilot Survey Results

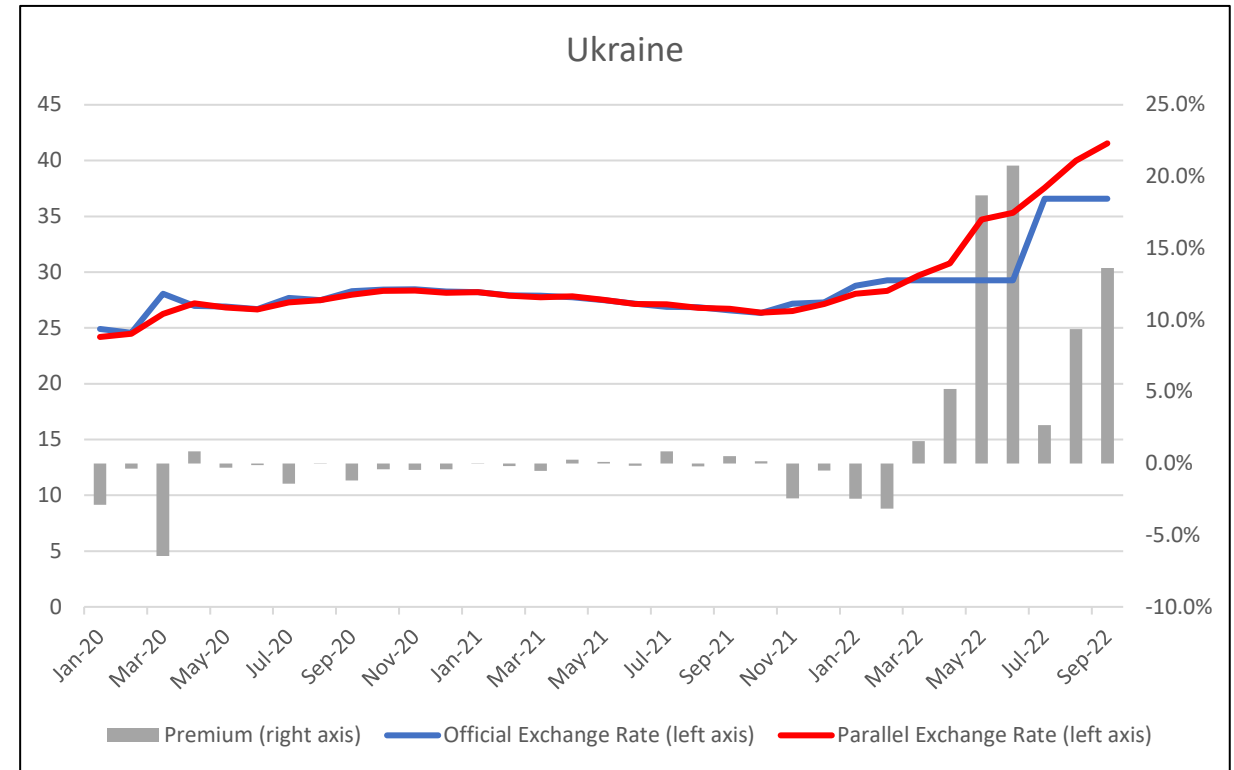
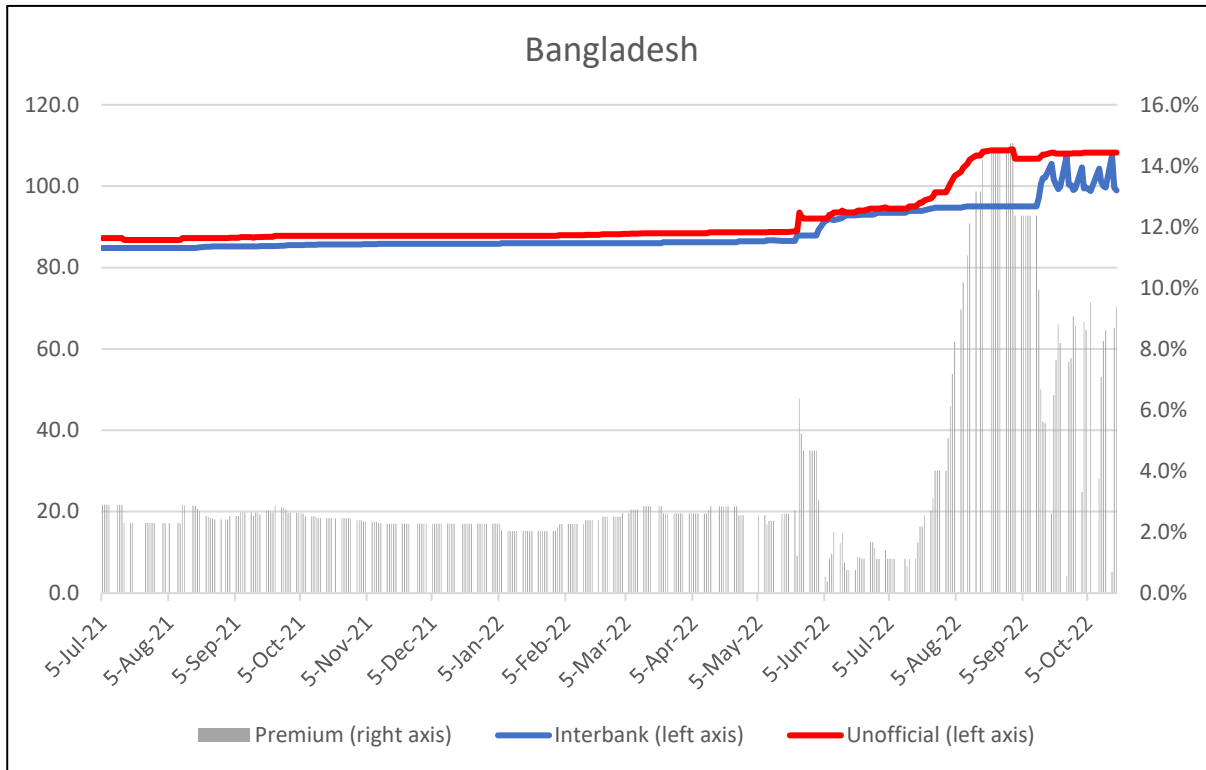
- Out of the 28 countries with significant parallel exchange rates:
 - Parallel exchange rate data was collected by WB country economists in 19 countries
 - Data not collected, but possible sources of information were identified in 3 countries
 - Transaction shares required for average exchange rates were estimated by country economists for 15 countries
- Data sources included Central Banks, specialized websites, private companies, and specific surveys conducted by WB country offices or other agencies.
- Estimation of shares was generally based on the volume of transactions in each market. Specific adjustments based on other considerations were made in some countries (Iran, Lebanon).
 - Average exchange rates were immediately derived for 14 countries, where both exchange rate data and transaction shares were available.
 - Estimation was not possible for 14 countries. Of these, exchange rate data was not available for 8 countries, and transaction shares could not be estimated for 13 countries.

Findings for 2021 – Pilot Survey Results



Findings for 2022

- Main difference for this collection: the survey was sent to WB country economists for all WB operational countries, not just the list of 29 where evidence of parallel rates already existed
- New cases include Bangladesh and Ukraine



Methodology Options to Account for Parallel Exchange Rates

- Conversion from LCU to US dollars should be undertaken with a composite factor reflecting exchange rates in which transactions have occurred, i.e., a weighted average of exchange rates effectively in use.
- To derive this composite rate, information is needed on the exchange rates themselves, along with an understanding of the nature of transactions to which they apply.
- Since local circumstances can differ significantly, the appropriate method to account for parallel exchange rate activity is determined on a case-by-case basis depending on the availability of exchange rate data and weight information.

Method 1: Accounting for imports of critical goods & services

- In this example, there are three categories of imported goods and services: highly critical, critical, and other. Each category is subject to different exchange rates, sanctioned officially in policies or regulations:
 - Highly critical imports (C1) imported at the official exchange rate (E_o).
 - Critical imports (C2) imported at a preferential exchange rate (E_c).
 - All other imports, including all services (C3) are traded at an unofficial parallel market exchange rate (E_b).
- Defining:
 - RC1 the ratio of highly critical goods imported to total imports, in value,
 - RC2 the ratio of critical goods imported to total imports, in value, and
 - RC3 the ratio of all other goods and services imported to total imports, in value.
- Based on the above, the average exchange rate becomes:

$$\text{AER} = \text{RC1} * \text{E}_o + \text{RC2} * \text{E}_c + \text{RC3} * \text{E}_b$$

Method 2: GDP component shares

- In this example, local information can be leveraged to understand the nature of transactions undertaken at official vs. parallel market exchange rates. This, in turn, can be used to estimate expenditure shares for the components of GDP which, when adjusted for net property income flows to non-residents, gives the GNI.
- Defining:
 - FCE Final consumption expenditure
 - GCF Gross Capital Formation
 - NEX Net Exports of Goods and Services
 - GDP Gross domestic product
 - E_o Official exchange rate
 - E_b Parallel market exchange rate
 - S_{XXXi} Share of imported content of XXX (FCE, GCF, NEX) imported at exchange rate i (E_o, E_b)
- Based on the above, the average exchange rate becomes:

$$\text{AER} = (\text{SFCEE}_o * \text{E}_o + \text{SFCEE}_b * \text{E}_b) * \text{FCE}/\text{GDP} + (\text{SGCFE}_o * \text{E}_o + \text{SGCFE}_b * \text{E}_b) * \text{GCF}/\text{GDP} + (\text{SNEXE}_o * \text{E}_o + \text{SNEXE}_b * \text{E}_b) * \text{NEX}/\text{GDP}$$

Current Adjustments for Known Impacted Countries

Angola	2019	2020	2021
Official exchange rate (source: Haver)	364.8	575.9	623.9
Secondary market exchange rate (source: Haver)	377.4	580.0	-
Private dealer exchange rate (source: Haver)	496.9	719.8	-
Street market exchange rate (source: Haver)	490.8	671.5	720.7
Premium (street market vs. official)	35%	17%	16%
Composite exchange rate	437.6	631.0	678.0
Estimated transaction weights	Weights (18/27/2/53% for 2019 and 2020, 47/53% for 2021) based on estimated GDP transaction shares		

Iran	2019	2020	2021
Official exchange rate (source: IFS)	42,000	42,000	42,000
“NIMA” ⁽¹⁾ exchange rate (source: Central bank)	113,767	208,799	230,003
Premium	171%	397%	448%
Composite exchange rate	94,532	170,152	185,632
Estimated transaction weights	Weights based on estimated import transactions at official vs. NIMA rates (Implicit weights: 27%/73% in 2019, 23%/77% in 2020, 24%/76% in 2021)		

(1) Persian acronym for an online currency system launched by the Central Bank in April 2018.

Current Adjustments for Known Impacted Countries

Ghana	2019	2020	2021
Official exchange rate (source: IFS)	5.22	5.60	5.81
Forex bureau exchange rate (source: Central bank)	5.48	5.79	5.97
Premium	5.0%	3.4%	2.8%
Composite exchange rate ⁽²⁾	-	-	5.92
Estimated transaction weights	Weights (31%/69%) based on estimated import transactions at each rate		

(2) Not computed for 2019 and 2020.

Burundi	2019	2020	2021
Official exchange rate (source: IFS)	1845.6	1915.0	1976.0
Parallel market exchange rate (source: local survey)	2922.1	3003.4	3365.3
Premium	58%	57%	70%
Composite exchange rate	2157.8	2230.7	2378.9
Estimated transaction weights	Weights (71%/29%) based on estimated import transactions at each rate		

Current Adjustments for Known Impacted Countries

Syrian Arab Republic	2019	2020	2021
Official exchange rate (source: Central Bank)	438.0	889.7	2198.0
Parallel market exchange rate (source: Syrian Pound Today)	609.3	1989.6	3346.1
Premium	39%	124%	52%
Composite exchange rate	517.1	1522.9	2913.4
Estimated transaction weights	Weights based on household final consumption, accounting for import content (Implicit weights: 54%/46% in 2019, 42%/58% in 2020, 38%/62% in 2021)		

Zimbabwe	2019	2020	2021
Official exchange rate (source: IFS)	8.2 ⁽³⁾	51.3	88.6
Parallel market exchange rate (source: local survey)	11.3	76.9	148.1
Premium	38%	50%	67%
Composite exchange rate	9.7	64.1	112.4
Estimated transaction weights	Weights based on estimated shares of transactions undertaken at different rates in household final consumption (52%/48% in 2019, 50%/50% in 2020, 60%/40% in 2021)		

(3) Source: Central Bank

Current Adjustments for Known Impacted Countries

Lebanon	2019	2020	2021-7 ⁽⁴⁾	2021-5 ⁽⁵⁾	2021
Official exchange rate (source: IFS)	1,507	1,507	1,507	1,507	1,507
“Sayrafa” exchange rate ⁽⁶⁾ (source: Lirarate)	-	-	-	17,525	17,525
Parallel exchange rate (source: Lirarate)	1,629	5,733	12,768	20,984	16,212
Premium (parallel vs. official)	8%	280%	747%	1292%	975%
Composite exchange rate	1,554	3,688			11,755
Estimated transaction weights	Weights based on household final consumption, accounting for import content (61%/39% in 2019)				

(4) From January to July

(5) From August to December

(6) From July 26, 2021

Suriname ⁽⁷⁾	2019	2020	2021
Official exchange rate (source: IFS)	7.46	9.31	18.24
Parallel exchange rate	8.09	15.01	20.33
Premium	8%	61%	11%
Composite exchange rate (source: IMF)	7.90	13.30	19.70
Estimated transaction weights	Weights (30%/70%) based on external trade		

(7) Official and parallel market exchange rates converged in June 2021.

Next steps

- Continue to work with WB country economists to refine methods and improve coverage.
- Maintaining a database of available information on parallel exchange rates in consistent time series
- Establishing transaction weights and obtaining historical rate data remains challenging issues.
- Work with partners to establish best practices – proposed seminar in early 2023.



Thank you!

References:

- [Accounting for parallel exchange rates in World Bank classifications of countries by income level](#)
- [The pitfalls of parallel currency markets: higher inflation and lower growth](#)