Overview

Ongoing debate about the role of exchange rates in facilitating external adjustment

2019 External Sector Report revisits role of exchange rate in external adjustment, with focus on:

- **Currency of invoicing**
  - Use of third-country (dominant) currencies in bilateral trade
    - Bilateral exchange rates become less relevant to trade volumes

- **Global value chains (GVC)**
  - Use of imported intermediate goods in production of goods for exports
    - Third-party (upstream and downstream) exchange rate movements become important
    - Production costs move in tandem with prices

✓ Special attention to **Short-** and **Medium-term** implications

Work builds on growing literature:
Currency of invoicing

Traditional View $\rightarrow$ (mostly) producer currency pricing (PCP)

Country A

Firms set prices in own currency $PX^A$

Demand $D(PM^A)$

$PM^A = \frac{PX^B}{e^{A,B}}$

Export vol

Import vol

Country B

Demand $D(PM^B)$

$PM^B = e^{A,B} \cdot PX^A$

Firms set prices in own currency $PX^B$

Traditional view of external adjustment
Currency of invoicing

A depreciation of country A’s currency $e^{A,B}$

Country A

Firms set prices in own currency $PX^A$

Demand $D(PM^A)$

$PM^A = \frac{PX^B}{e^{A,B}}$

Export vol

Import vol

Country B

Demand $D(PM^B)$

$PM^B = e^{A,B} \times \frac{PX^A}{e^{A,B}}$

Firms set prices in own currency $PX^B$

Export vol

Import vol

Expenditure-switching through exports and imports
Bilateral exchange rates less relevant. Prices depend on exchange rate vis-à-vis dominant currency (US$) in the near term.

**Country A**

Firms set prices in dominant currency: \( PM^A = \frac{PX^{US$}}{e^{A,US$}} \)

Demand: \( D(PM^A) \)

**Country B**

Firms set prices in dominant currency: \( PX^{US$} \)

Demand: \( D(PM^B) \)

\[ PM^B = e^{B,US$} \times PX^{US$} \]
A depreciation of country A's currency vis-à-vis all currencies: 

\[ e^{A,B} = e^{A,US$} \downarrow \overline{e^{B,US$}} \]

**Country A**
- Firms set prices in *dominant currency* \( PX^{US$} \)
- Demand: \( D_PM^A \)
- \( PM^A = \frac{PX^{US$}}{e^{A,US$}} \)

**Country B**
- Demand: \( D_PM^B \)
- \( PM^B = \overline{e^{B,US$} \cdot PX^{US$}} \)
- Firms set prices in *dominant currency* \( PX^{US$} \)

**Export vol** (\( \Delta \approx 0 \))

**Import vol**

**Expenditure-switching mainly through imports**
Currency of invoicing

USD dominates trade invoicing

Trade with US and trade invoiced in US Dollars
(share of total exports/imports)

Exports

Share of exports invoiced in USD (post-1999 average)

Share of exports to US (2001-15 average)

Imports

Share of imports invoiced in USD (post-1999 average)

Share of imports from US (2001-15 average)

EMDEs
non-EA AEs
EA

Sources: Gopinath (2015), WIOD 2016 and IMF staff calculations
Analysis of bilateral manufacturing trade prices and quantities based on and Gopinath and others (forthcoming).

- 37 advanced and emerging market economies
- Period 1990-2014

**Empirical Analysis**

- **Bilateral Trade Prices / Volumes**
- **Exchange Rate vis-à-vis US Dollar**
- **Trade balance** (share of GDP)

**Short-term (same year of shock) and medium-term (3 years after) effects**

**Controls for Bilateral and Global Demand/Supply shocks**

**ERPT and Volume elasticities**

**Trade openness**
Exchange Rate Pass-through (ERPT) to Export Prices (to prices in exporter currency, weighted regressions)

1. Average Effects

![Graph showing average effects of exchange rate pass-through to export prices.]

2. Effects by Degree of USD Invoicing

![Graph showing effects by degree of USD invoicing.]

Sources: IMF staff estimates based on dataset from Gopinath and others (2018). An increase in either exchange rate implies a depreciation of the domestic currency. The figure reports point estimates and 95 percent confidence bands.
**Currency of invoicing**

**USD dominance alters short-term adjustment**

**Contribution of trade volumes to change in trade balance 1/**
(response to 10% depreciation vis-à-vis all currencies, for median country, in %GDP)

1. **Average effects**

<table>
<thead>
<tr>
<th></th>
<th>Export volumes</th>
<th>Import volumes</th>
<th>Total effect on trade balance (includes prices)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short term</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muted export response</td>
<td>-0.6</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>More balanced adjustment</td>
<td>0.2</td>
<td>0.6</td>
<td></td>
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<tr>
<td><strong>Medium term</strong></td>
<td></td>
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<td>0.6</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

2. **Effects by degree of USD invoicing**

<table>
<thead>
<tr>
<th></th>
<th>Export Volumes</th>
<th>Import Volumes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low</strong></td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Sources: IMF staff estimates based on data sets from Gopinath and others (2018) and Boz and others (forthcoming).

1/ Contributions of export and import volumes to change in trade balance, in percent of GDP, in response to 10 percent depreciation vis-à-vis all currencies. Computed for median export- and import-to-GDP ratio.
Global Value Chains

GVC integration reduces (increases) the relevance of bilateral (third-party) ERs

Traditional view of trade:

Trade with GVC integration:

GVC measures

**Backward:** \( \sum_c \omega^B_{c,ab} d e_{ac} \)

\( \omega^B_{c,ab} \) import content of \( c \) in exports from \( a \) to \( b \)

**Forward:** \( \sum_d \omega^F_{d,ab} d e_{bd} \)

\( \omega^F_{d,ab} \) share of exports from \( a \) to \( b \) reexported to \( d \)
Global Value Chains

Cross-section heterogeneity but limited change since early 2000s

Multilateral Measures of Global Value Chain Integration in Manufacturing 1/

Backward Integration (Share of exports)

Forward Integration (Share of imports)

Sources: WIOD 2016 and IMF staff calculations
1/ Trade weighted average of bilateral GVC measures.
Global Value Chains

Analysis of bilateral manufacturing trade prices and quantities;
Global input-output tables (WIOD 2016).
- 37 advanced and emerging market economies
- Period 2001-14

Bilateral Exchange Rate (stand-alone/direct)
- Stand-alone/direct
- Through backward GVC linkages
- Through forward GVC linkages

Exchange Rate vis-à-vis USD (stand-alone/direct)
- Stand-alone/direct
- Through backward GVC linkages
- Through forward GVC linkages

Controls for Bilateral and Global Demand/Supply shocks
Global Value Chains

GVC integration lowers gross trade elasticities but increases trade flows

Impact of GVC and Trade Openness on Trade Balance Response
(Response to a 10 percent depreciation vis-à-vis all currencies)

Sources: IMF staff estimates based on dataset from Gopinath and others (2018), WIOD 2016.
1Openness fixed at the level of the median economy.
2Backward and forward GVC integration fixed at the level of the median economy.
Global Value Chains

Limited changes over time

Evolution of Trade Balance Response for Average Economy 1/
(Response to 10 percent depreciation vis-à-vis all currencies, %GDP)

Distribution of Trade Balance Responses, 2001 and 2014 1/
(Response to a 10 percent depreciation vis-à-vis all currencies, %GDP)

Sources: IMF staff estimates based on dataset from Gopinath and others (2018), WIOD 2016.  
1/ Response of the average economy in the sample, with time-varying GVC integration or trade openness (i.e., one at the time) or both (net effect).

Sources: Gopinath and others (2018), WIOD 2016 and IMF staff estimations.  
1/Density of medium-run trade balance responses to a 10 percent depreciation vis-a-vis all currencies across all countries in the sample. Cross-section and time series differences reflect countries varying degrees of GVC integration and trade openness.
## Takeaways and Policies

<table>
<thead>
<tr>
<th>Greater GVC participation</th>
<th>USD dominance in trade invoicing</th>
</tr>
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<tbody>
<tr>
<td>- Lower gross trade elasticities, but unchanged overall sensitivity of trade balance to ER</td>
<td>- Muted effects of exchange rates in the short term (esp. on export volumes)</td>
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<tr>
<td></td>
<td>- Less of a factor in the medium term</td>
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</tbody>
</table>

### Short term.
- **Where external imbalances are excessive**, achieving near-term external adjustment
  - larger ER movements —possible adverse balance sheet and inflation effects.
  - other macroeconomic policies —complement ER flexibility or mitigate effects.
- **In cases with no evident external imbalances**
  - other policy tools to achieve full employment in the event of a negative shock.

**Supply-side policies can help enhance exchange rate mechanisms**
- Access to credit; adequate transportation infrastructure

### Medium term.
**Exchange rate flexibility remains useful to facilitate durable external adjustment**

Further research. Services trade; role of balance sheet effects; etc.
Thank you!
Global Value Chains

GVC integration dampens gross trade elasticities

Overall trade volume and price responses 1/
(response to 10 percent depreciation vis-à-vis all currencies)

![Graph showing trade volume and price responses]

Higher ERPT (esp. for exports)

<table>
<thead>
<tr>
<th>Short term</th>
<th>Medium term</th>
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<tr>
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Sources: IMF staff estimates, Gopinath and others (2018), WIOD 2016.
1/ Weighted regressions.