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Building PPP time series

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Agenda

1. Detailed vs. global extrapolation from ICP 2011 for 2017 HFCE
2. Extrapolation vs. interpolation for Eurostat-OECD
3. Impact of changes in regional classification



Proposals

1. Build up time series from basic-heading level
2. Use extrapolation vs. interpolation analysis for Eurostat-OECD as a template
3. Use the 2017 regional classification for the 2011–2017 time series



General approach

- Current PPP time series rely on *global extrapolation*
 - Start with aggregate PPP and use overall price indices for extrapolation
- *Alternative*: estimate disaggregate expenditure and PPPs and aggregate in every year
 - *Principle*: build up from most detailed level, i.e. basic headings
 - *Practice*: expenditure data and CPI at the COICOP-12 level => assume constant expenditure patterns and common price trends below



Two phases

1. *Extrapolation*: Without PPP estimates at the end point, extrapolating forward is the only option:

$$PPP_{it} = PPP_{it-1} \times \frac{(CPI_{it}) / (CPI_{it-1})}{(CPI_{bt}) / (CPI_{bt-1})}$$

2. *Interpolation*: Once 2011 and 2017 PPPs are available, interpolation is attractive
 - Weighted geometric average of forward and backward extrapolation
 - Weight on new benchmark increases with proximity to new benchmark
- => Moving from phase 1 to 2 implies revisions to the time series



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Extrapolation



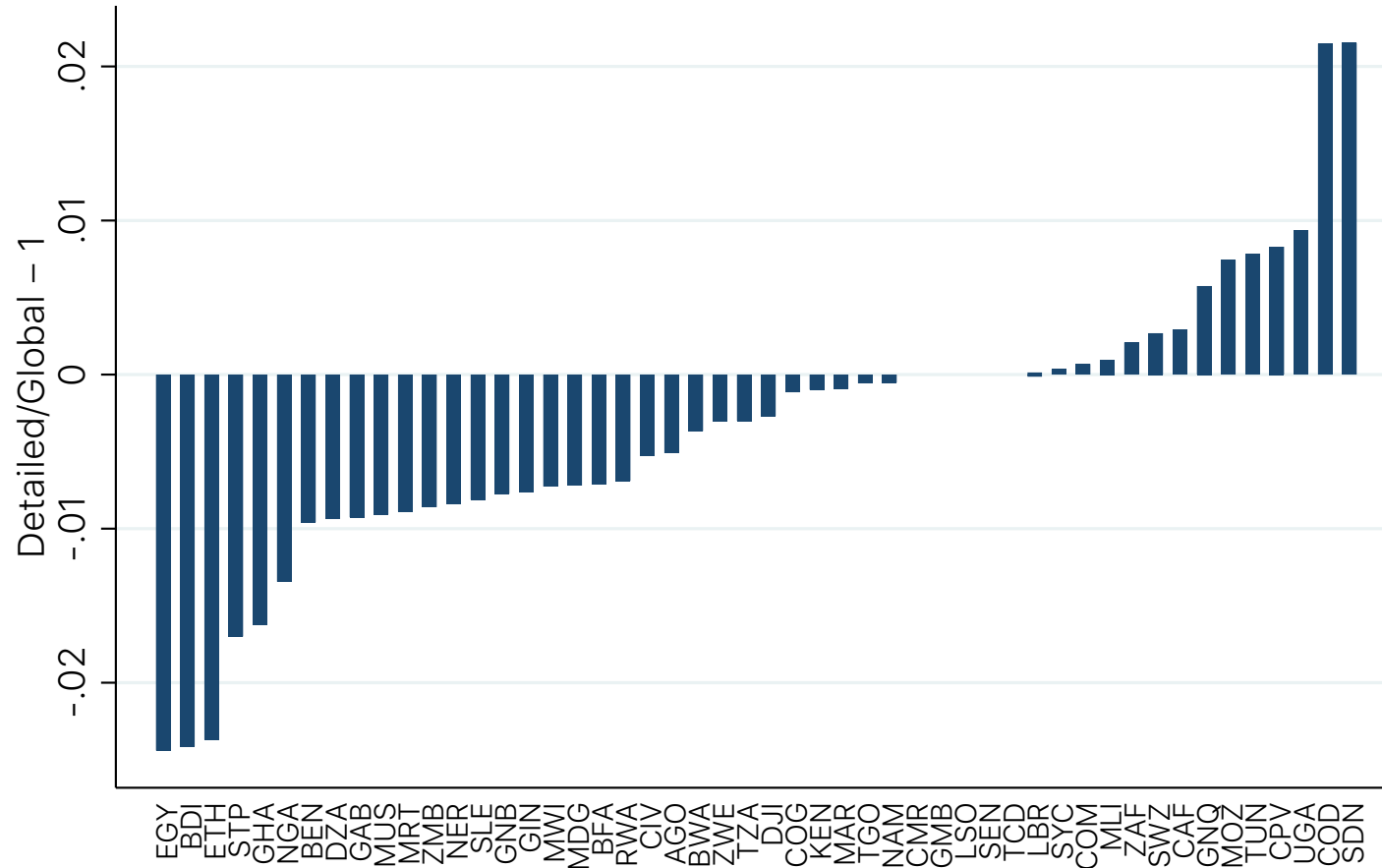
Phase 1 – Extrapolation from 2011

- Extrapolation database v16
 - Expenditure and CPI data at COICOP-12 level
 - Projected down to basic-heading level in 2017
 - 2017 basic heading classification
- Current exercise
 - Household final consumption expenditure (HFCE) PPPs for 2017
 - Based on 2011 regional classification & aggregation scheme
 - Comparing detailed to global extrapolation => differences due to changing expenditure shares and relative price changes



Phase 1 – Extrapolation from 2011

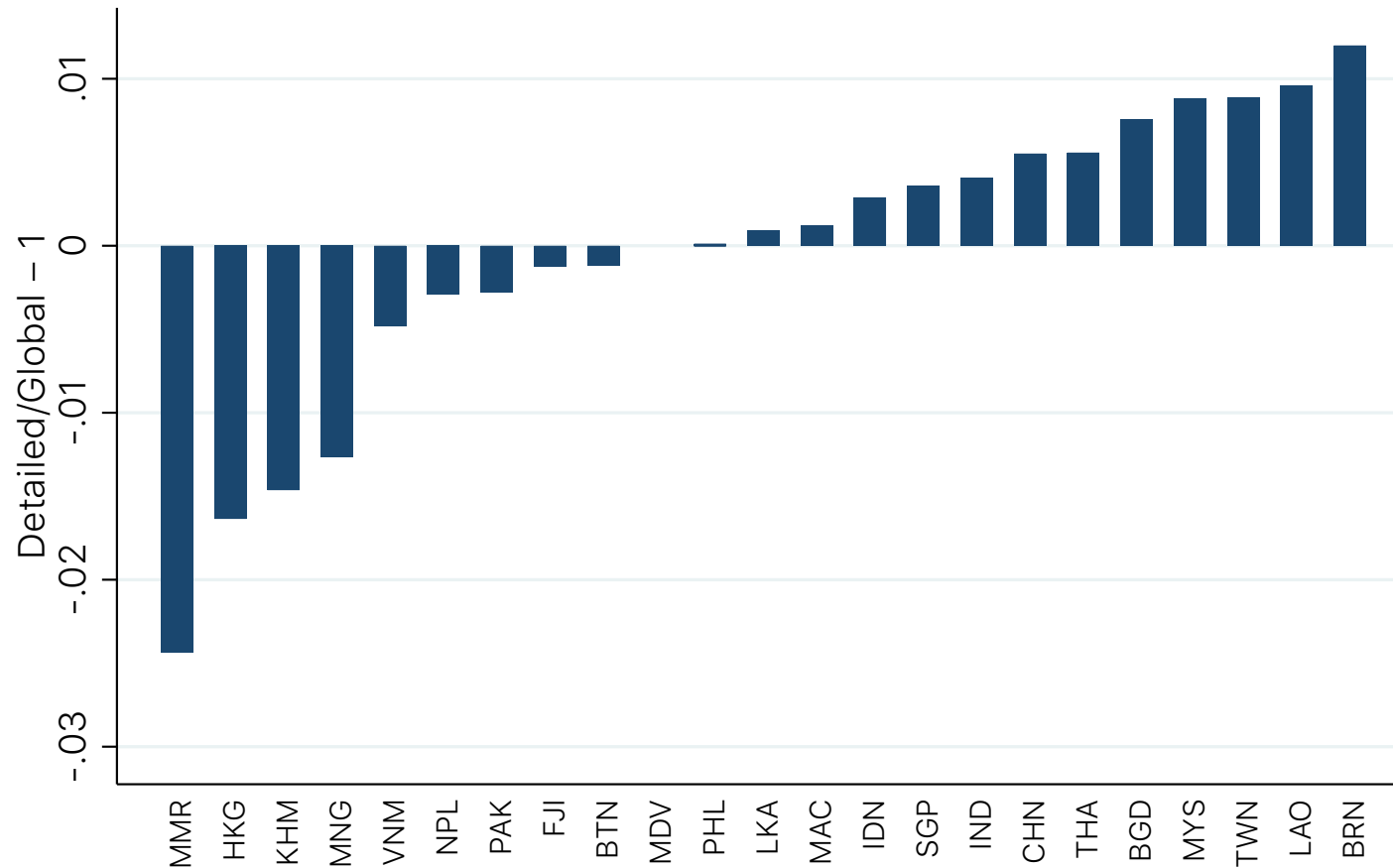
Detailed vs. global extrapolation, 2017 HFCE PPP
 Africa





Phase 1 – Extrapolation from 2011

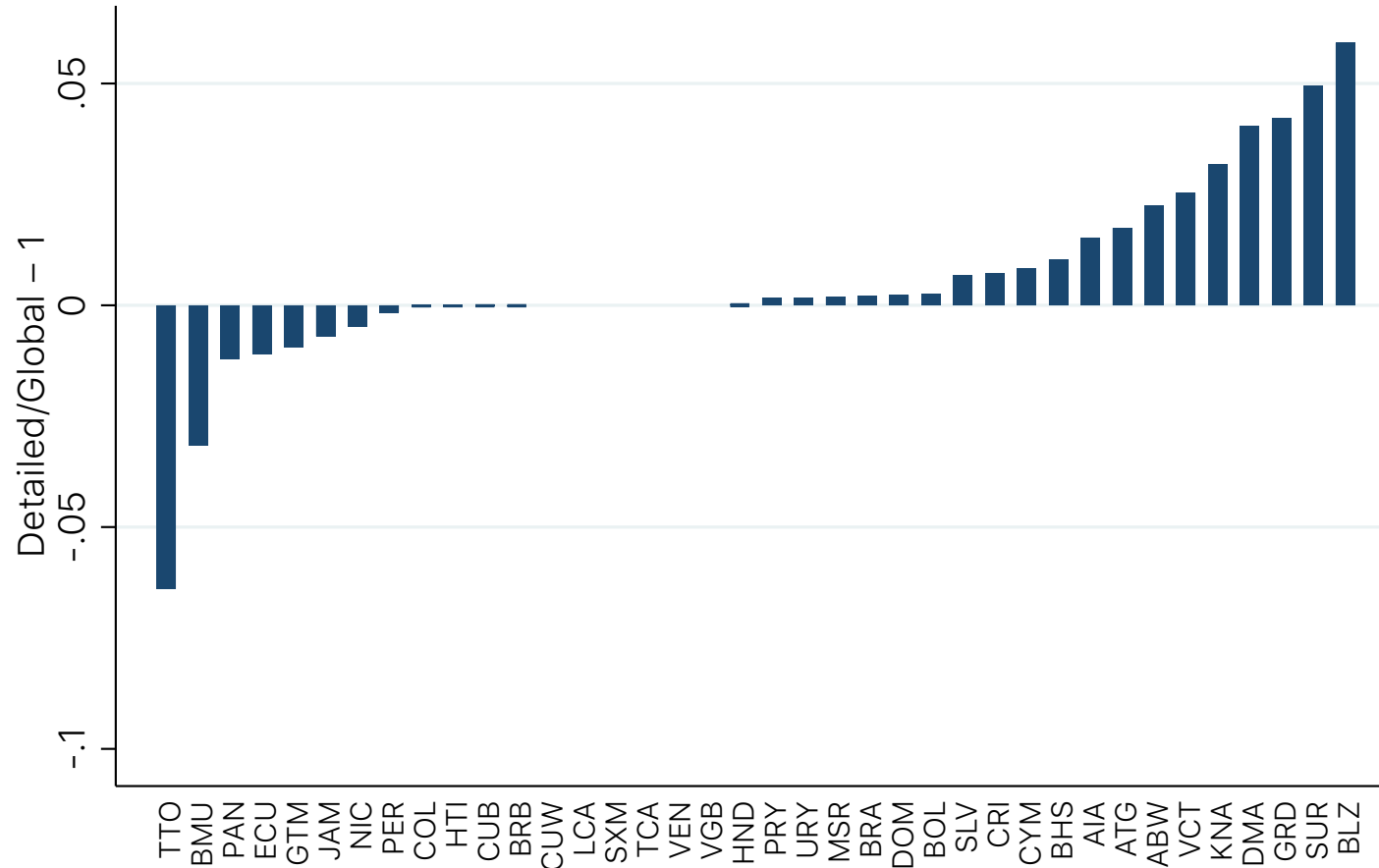
Detailed vs. global extrapolation, 2017 HFCE PPP
Asia-Pacific





Phase 1 – Extrapolation from 2011

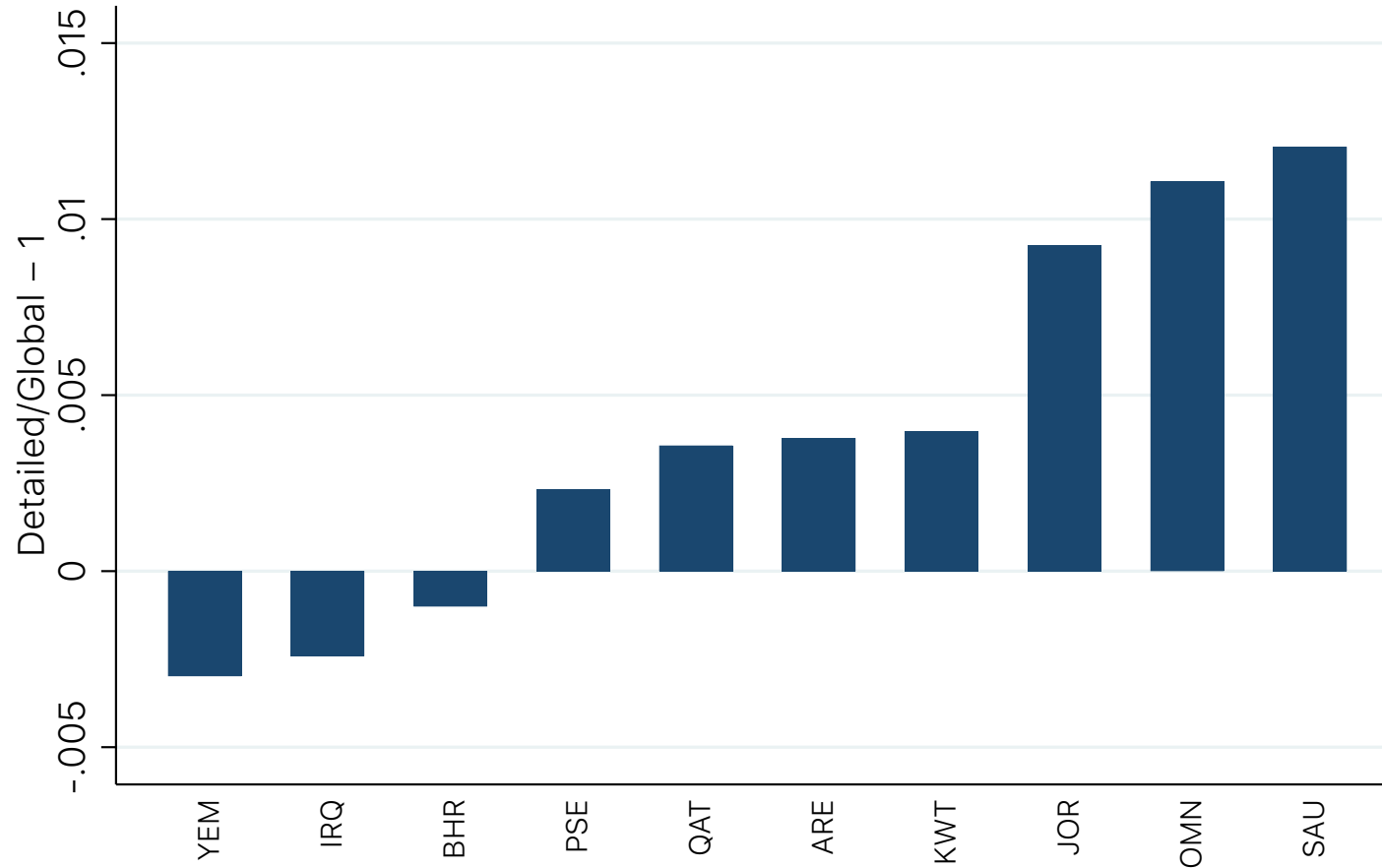
Detailed vs. global extrapolation, 2017 HFCE PPP
 Latin America & Caribbean





Phase 1 – Extrapolation from 2011

Detailed vs. global extrapolation, 2017 HFCE PPP
Western Asia





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Interpolation



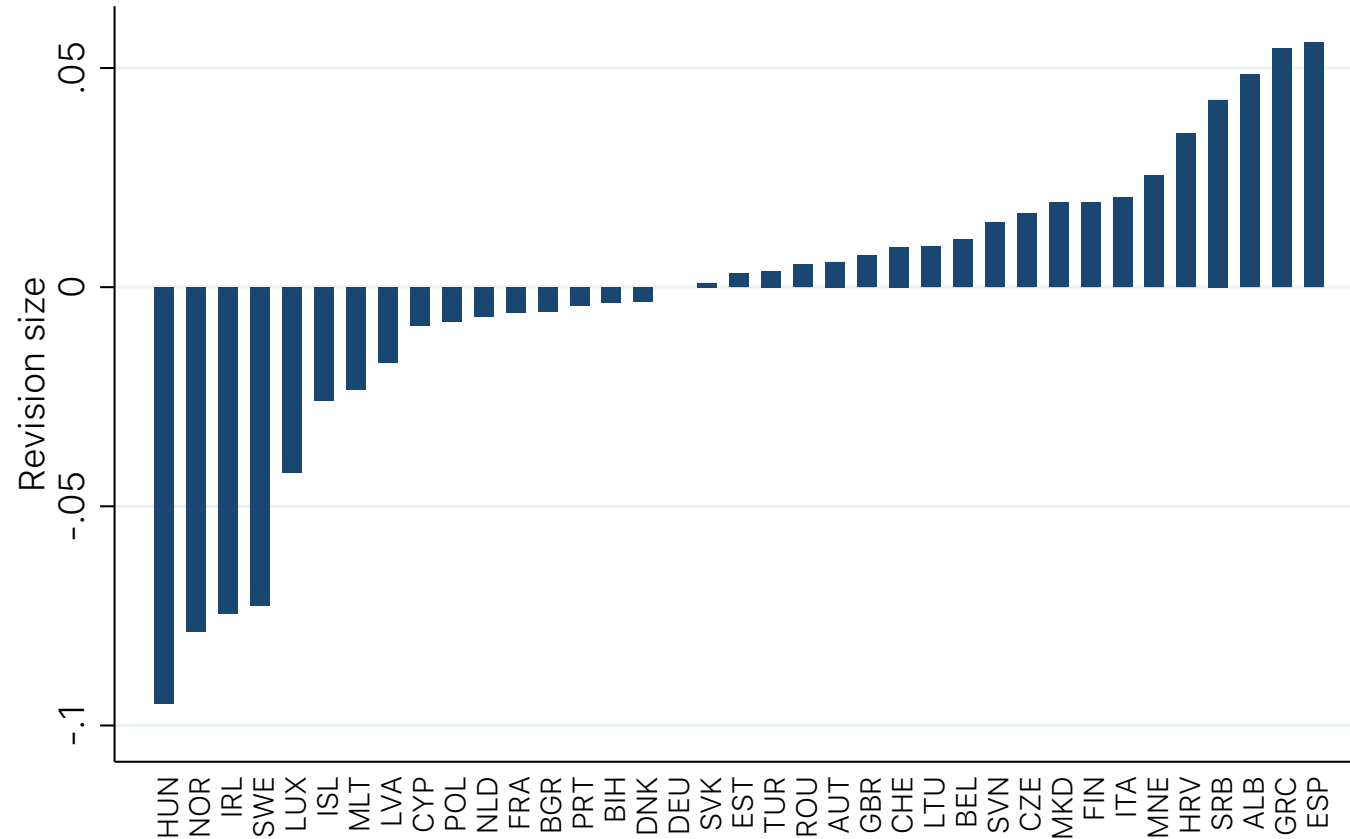
Phase 2 – Interpolation

- Allows for comparison between:
 - Global vs. detailed extrapolation
 - Extrapolation vs. interpolation
- Exercise for 47 Eurostat-OECD countries
 - Use only 2011 and 2017 PPPs rather than annual series
 - Illustrate scope of revisions



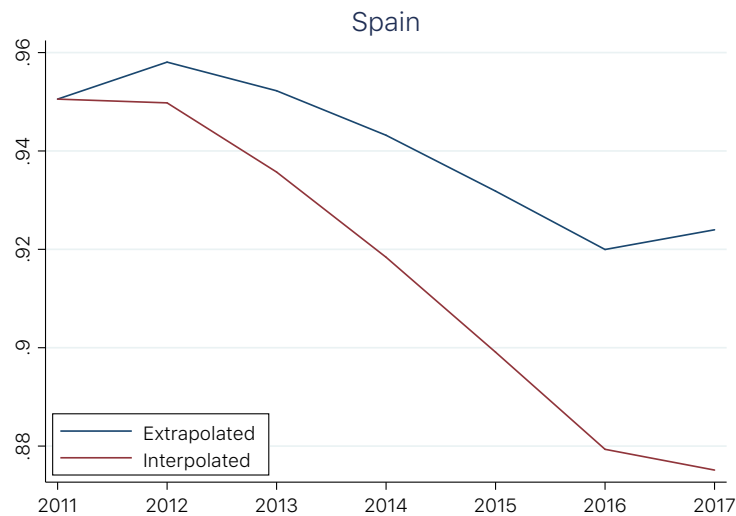
Summary results – detailed extrapolation vs. realization

Revision from extrapolation for 2017 HFCE
Eurostat-OECD

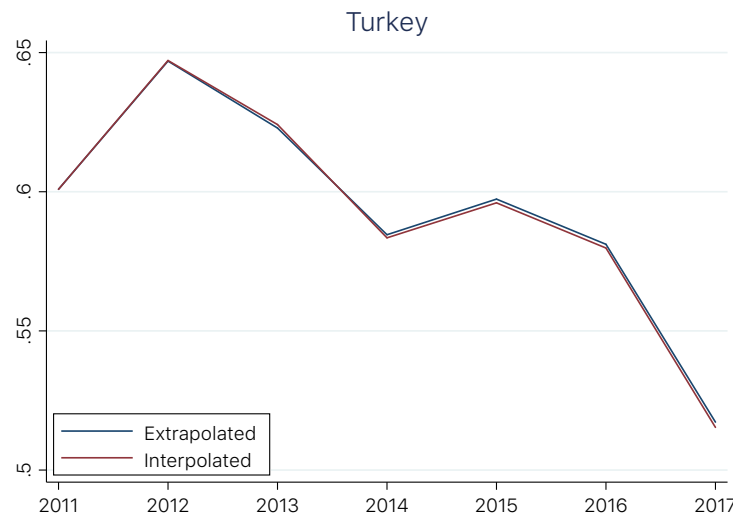




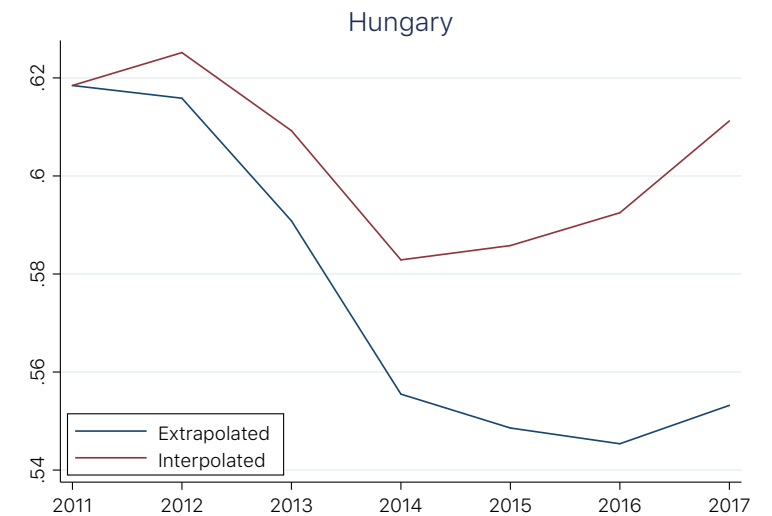
Sample results



Largest downward revision, 5%



No revision



Largest upward revision, 10%

Interpolation method ensures revisions are evenly distributed



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Regional classification



Changes in regional classification

Country	Region in 2011	Region in 2017
Colombia	LAC	EUO
Costa Rica	LAC	EUO
Georgia	SIG	EUO
Iran	SIG	WAS
Ukraine	CIS	EUO



Changes in regional aggregation

For aggregation above basic heading

1. CIS as normal region, no longer linked through Russia
 2. No Singleton countries
 3. Open question: Caribbean on equal footing to Latin America
 - Not implemented here
- => Net result: greater transparency

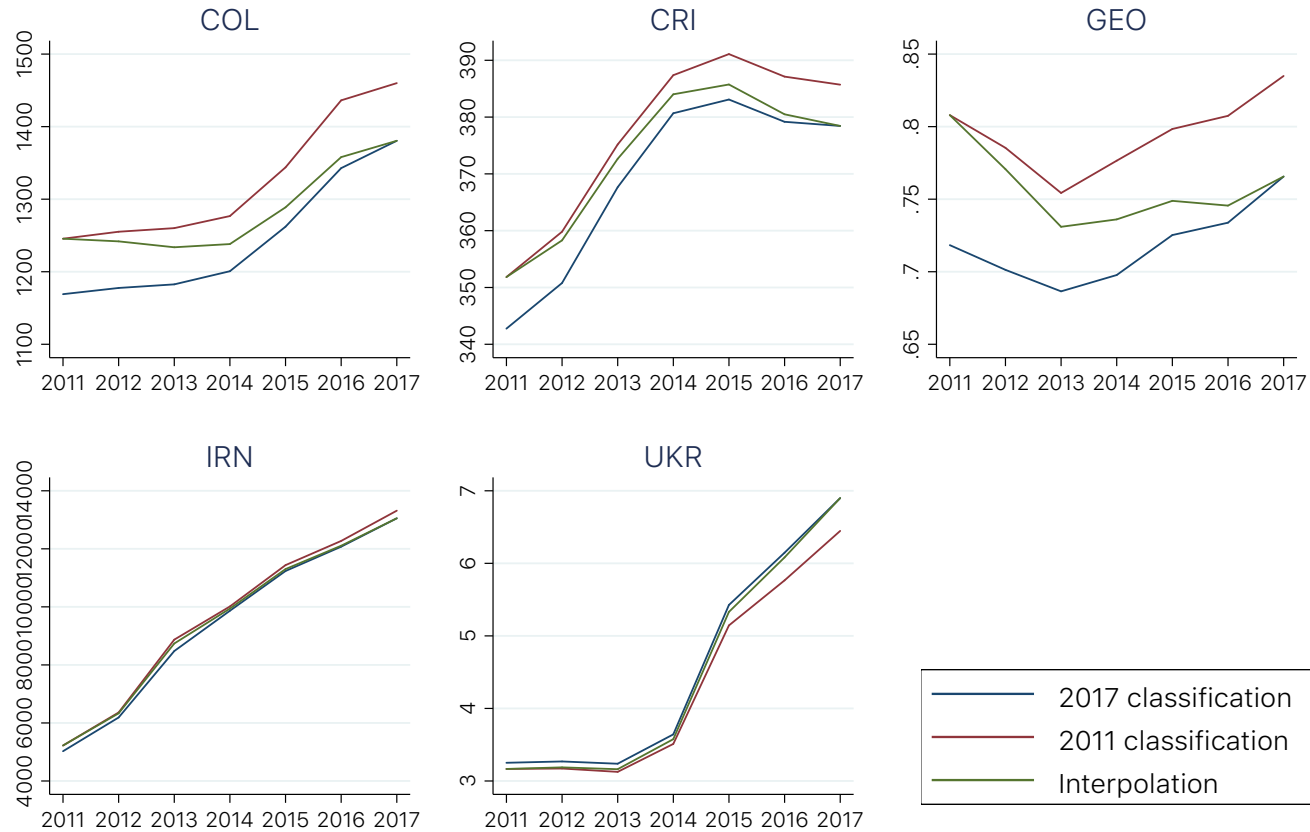


Two options

1. ICP 2011 and 2017 based on 2017 regional classification
2. ICP 2011 based on 2011 regional classification, ICP 2017 based on 2017 region classification and interpolate



Impact of regional change



Impact on non-switchers:
Average difference: 0%
Largest decrease: -0.7%
Largest increase: 1.8%

- Most affected countries:
- Caribbean countries
 - Kazakhstan
 - Ecuador
 - Uruguay
 - Dominican Rep.



Which to choose?

1. Notable changes for 2011 in Colombia, Costa Rica and Georgia => revisions need to be explained
2. With interpolation, time series deviates substantially from extrapolation path => needs to be explained, too
3. Single regional classification implies greater simplicity and transparency



Proposals

1. Build up time series from basic-heading level
 - Makes maximum use of available data
2. Use extrapolation vs. interpolation analysis for Eurostat-OECD as a template
3. Use the 2017 regional classification for the 2011–2017 time series
 - Only applies to aggregation above basic heading