



WP/19/65a

IMF Working Paper

Online Appendix to The External Balance Assessment
Methodology: 2018 Update

I N T E R N A T I O N A L M O N E T A R Y F U N D

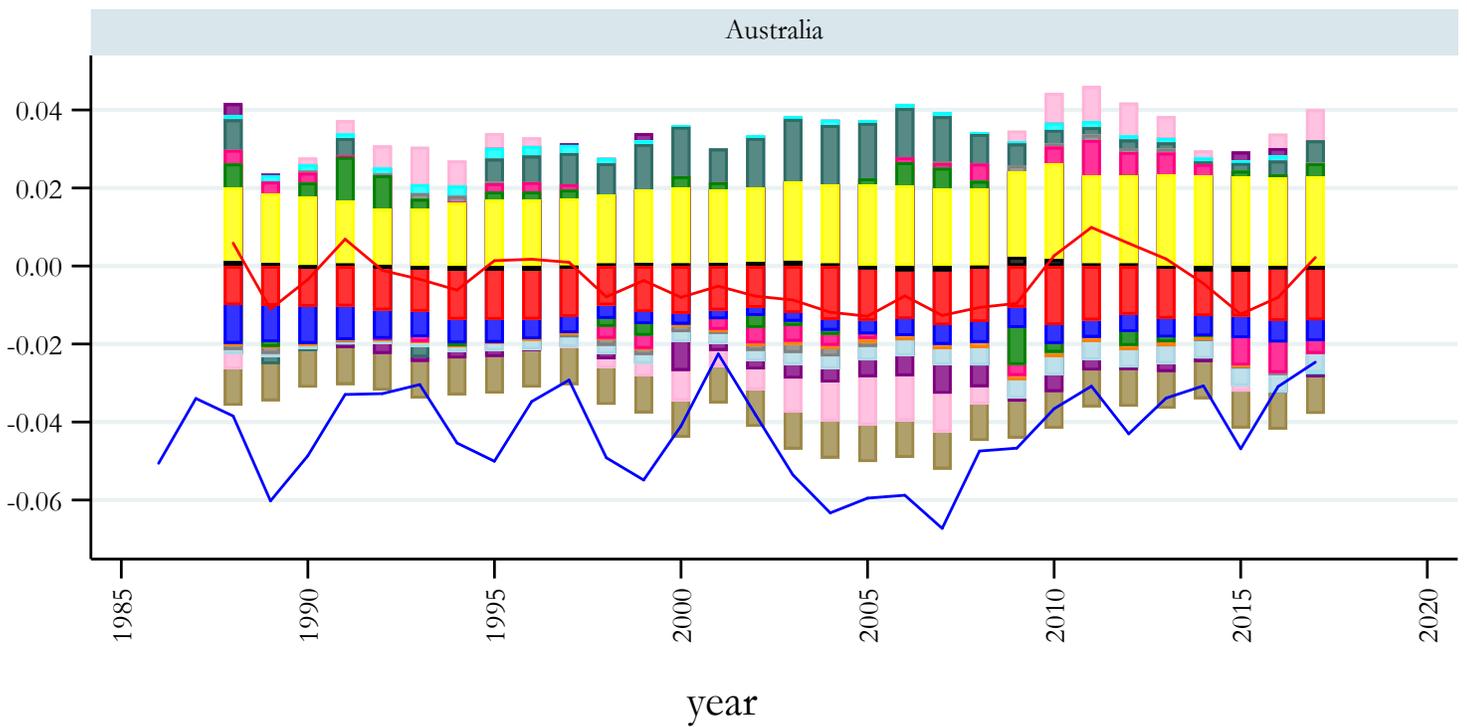
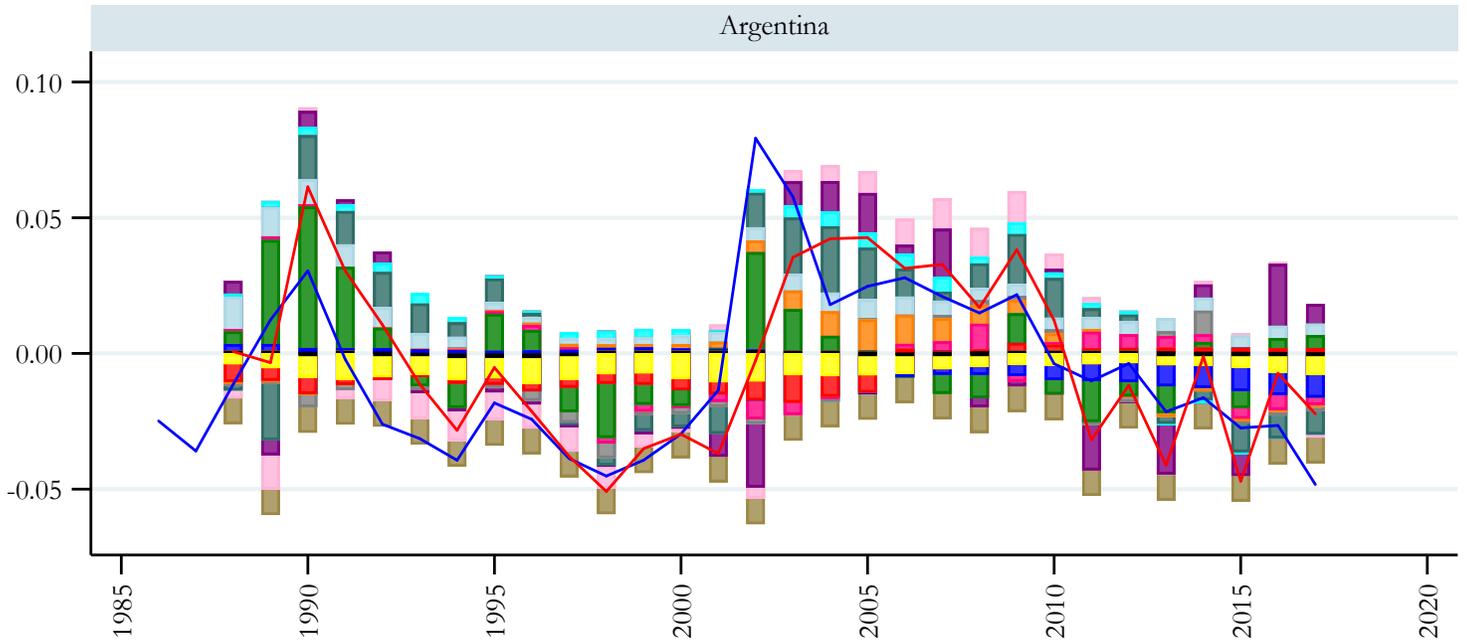
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I. EBA CA Model: Actual Values, Fitted Values, and Historical Decomposition

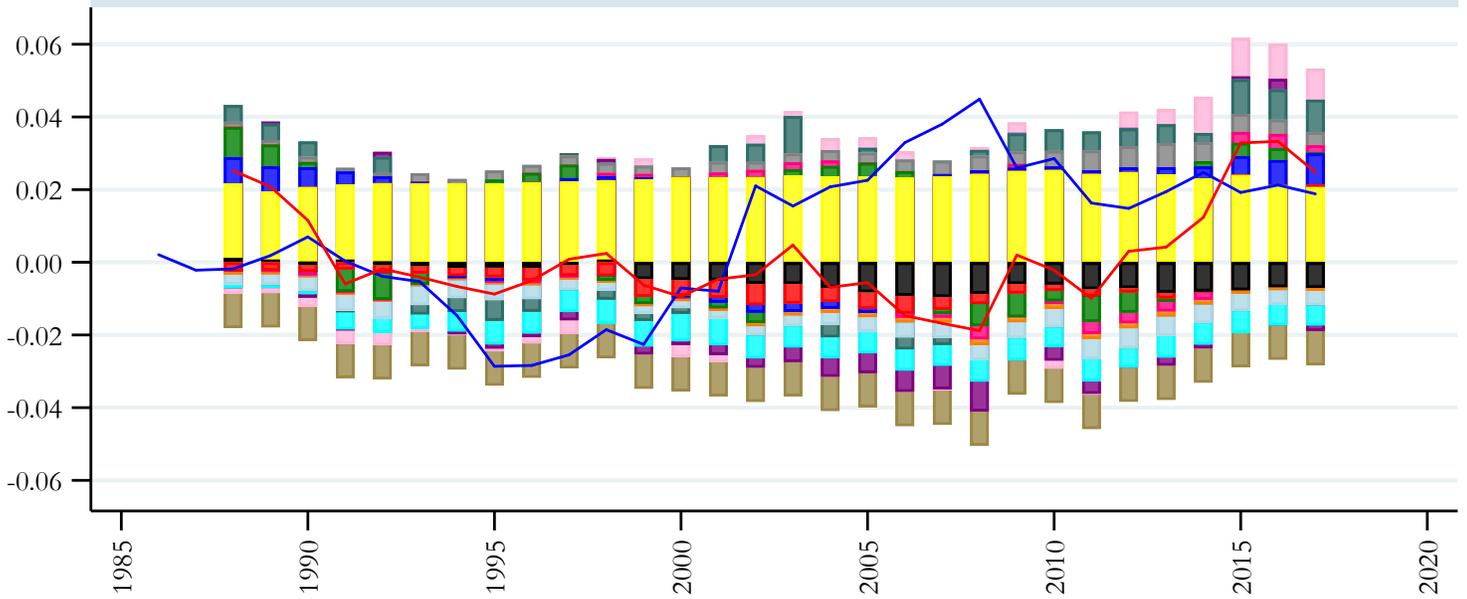
CA: Contributions to EBA Fitted Values



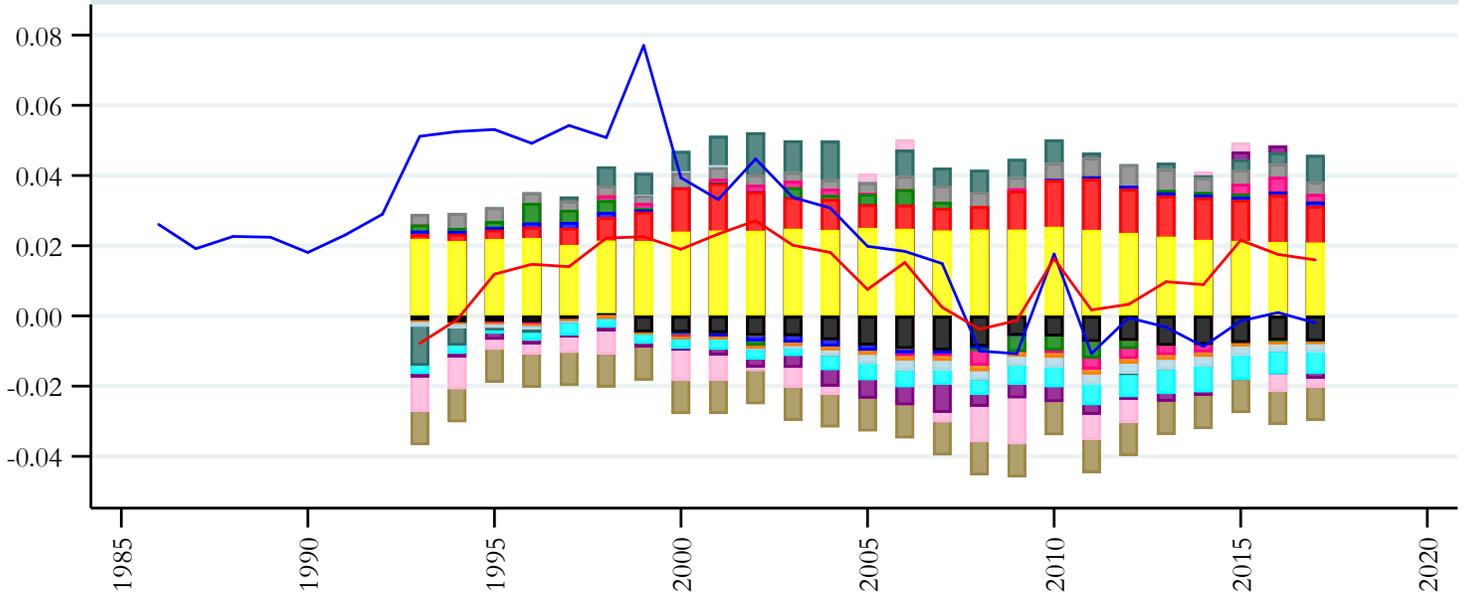
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| ■ $Kcon^*(Reserves\ chg.)/GDP$ | ■ Public Health Spending |
| ■ Cyclically adj. Fiscal Balance | ■ ICRG-12 Institution |
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| ■ Demographic terms | ■ NFA terms |
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| — Current Account to GDP ratio | — fitted_ca |

CA: Contributions to EBA Fitted Values

Austria



Belgium

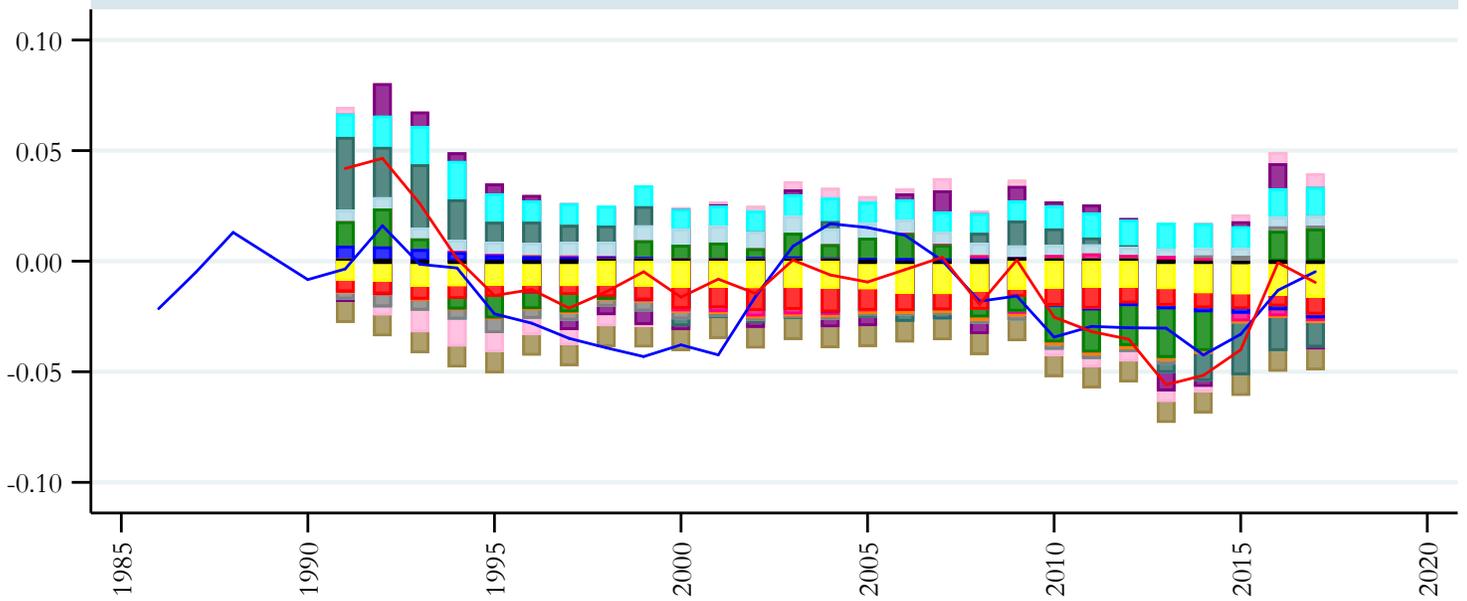


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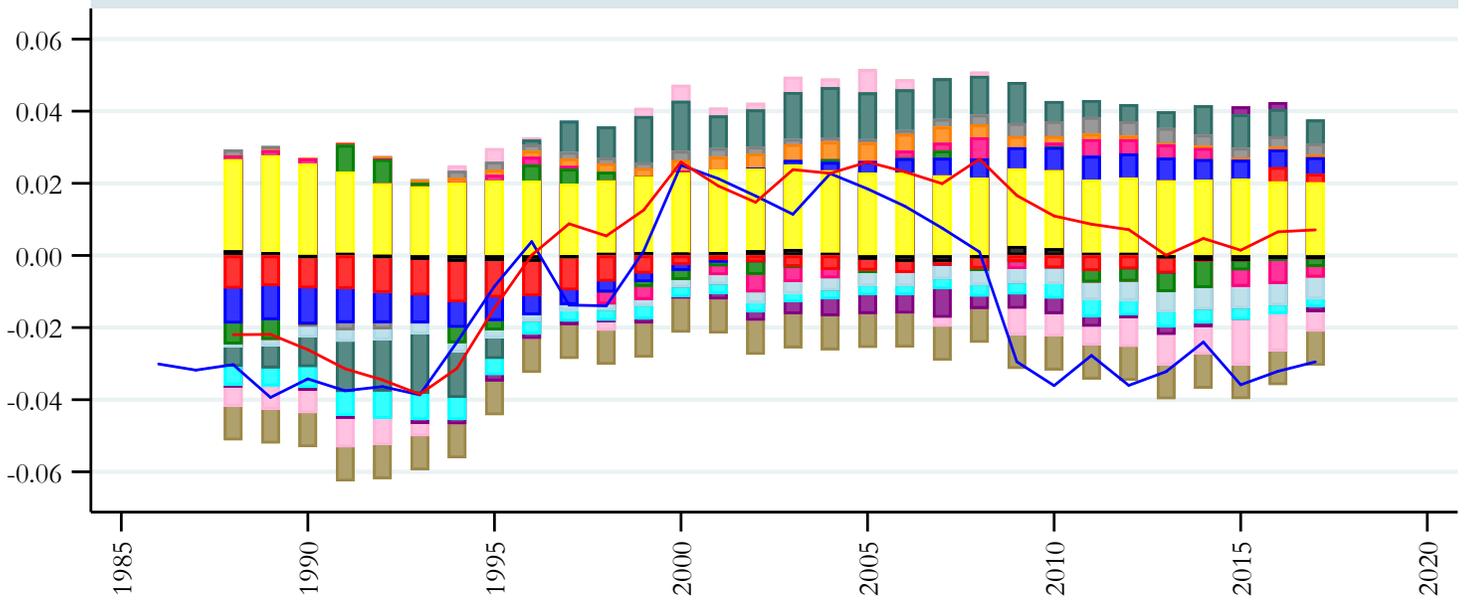
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CA: Contributions to EBA Fitted Values

Brazil



Canada

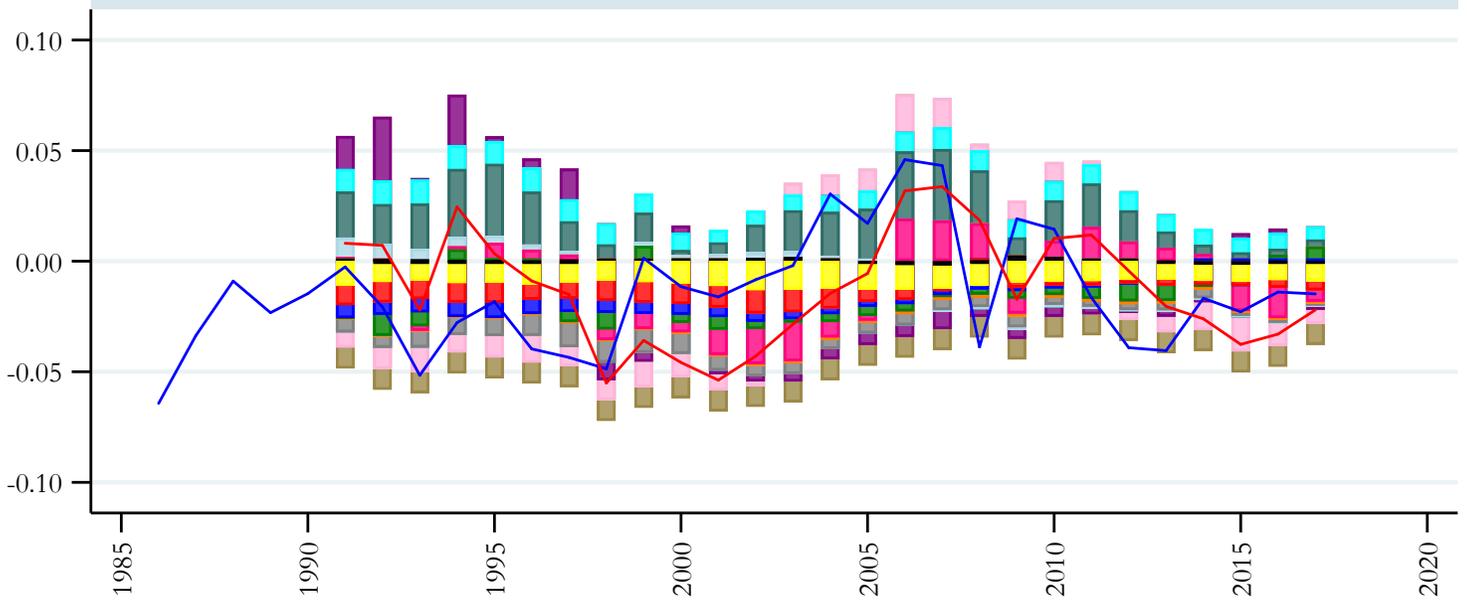


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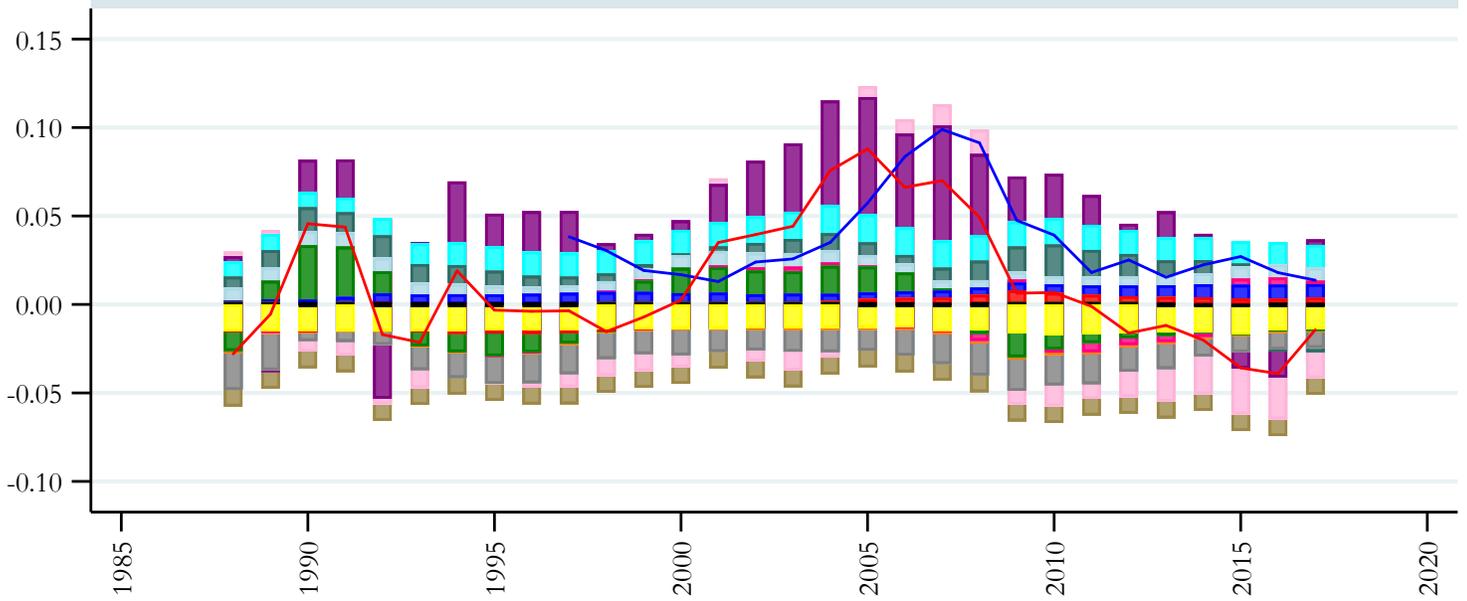
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Chile



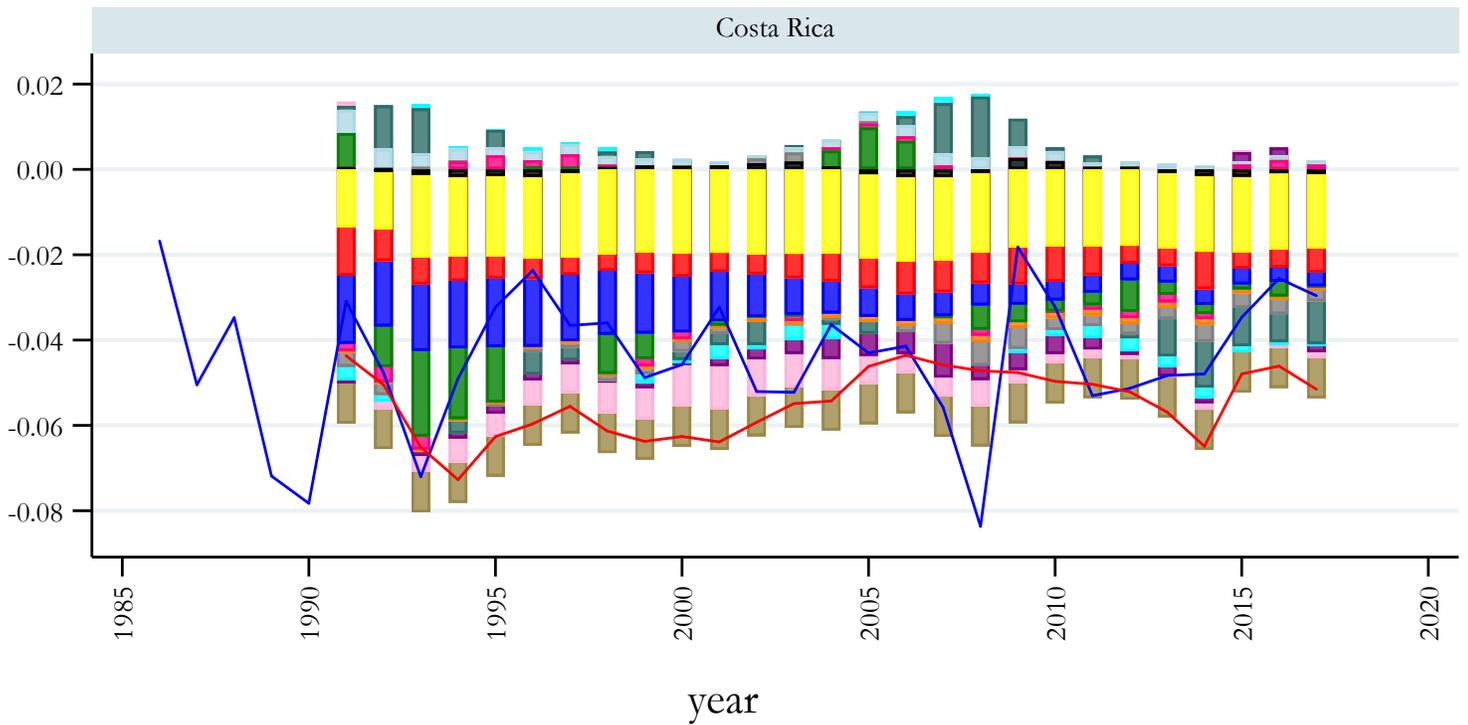
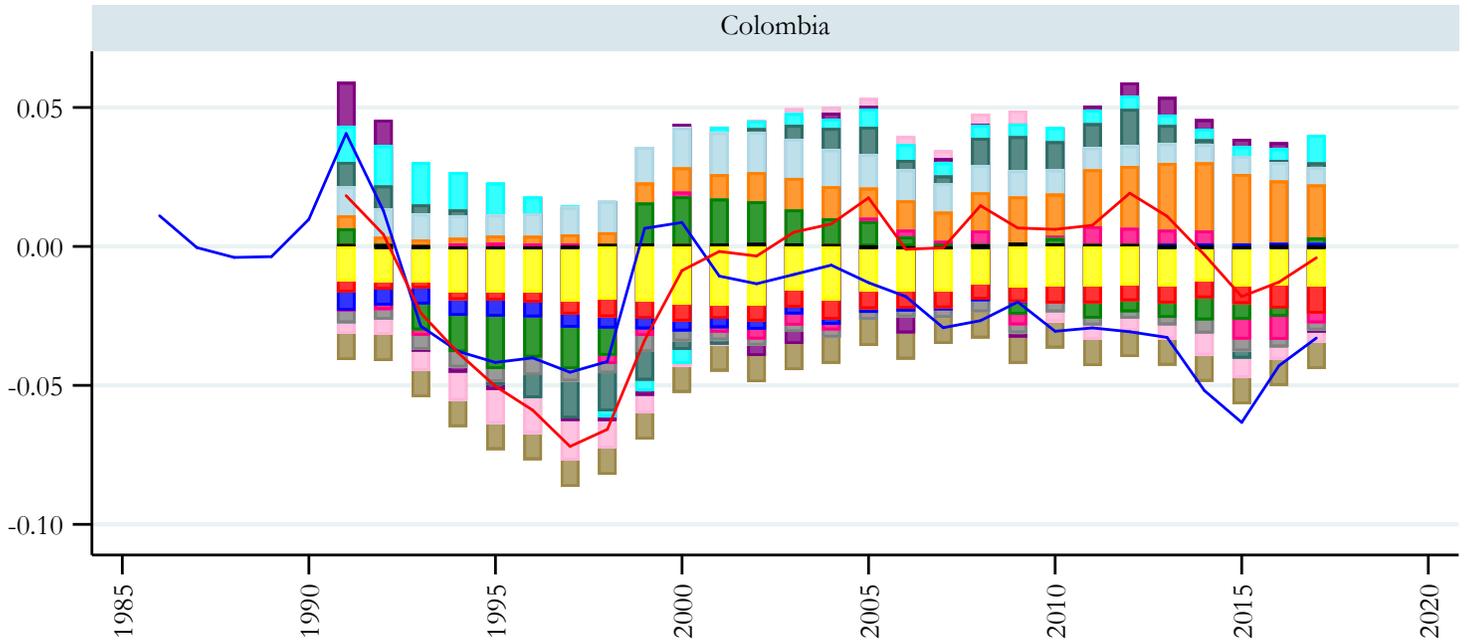
China



year

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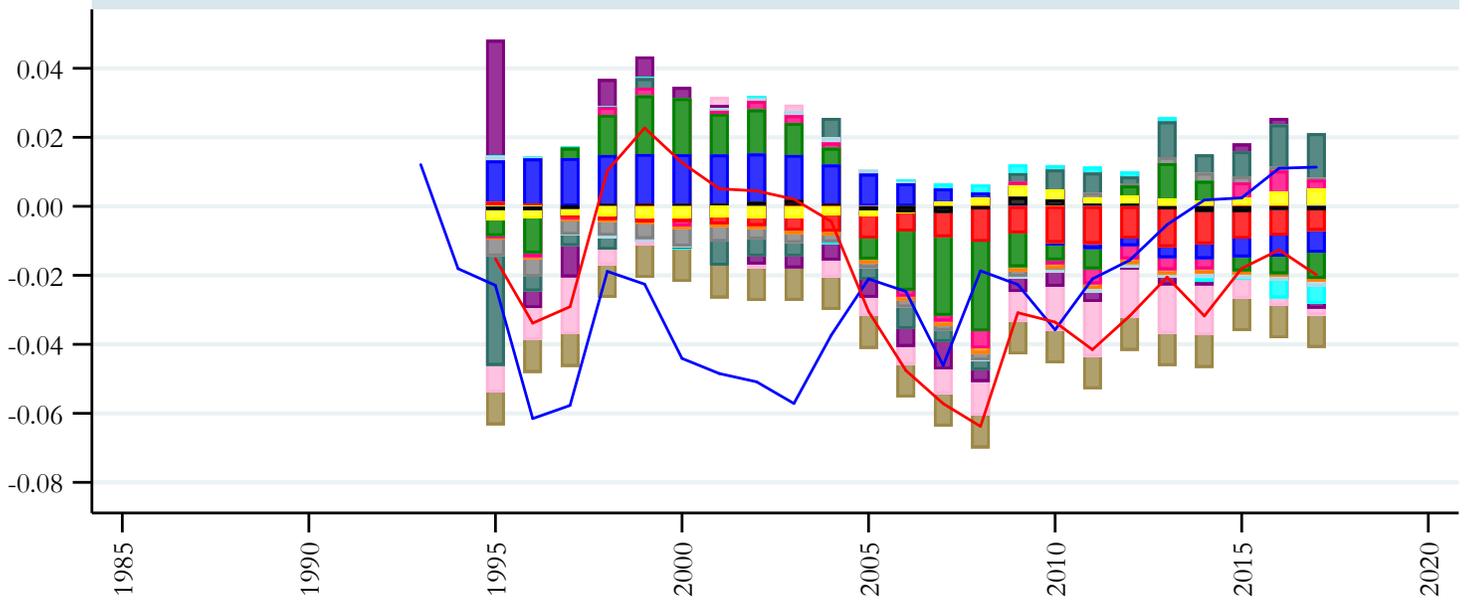
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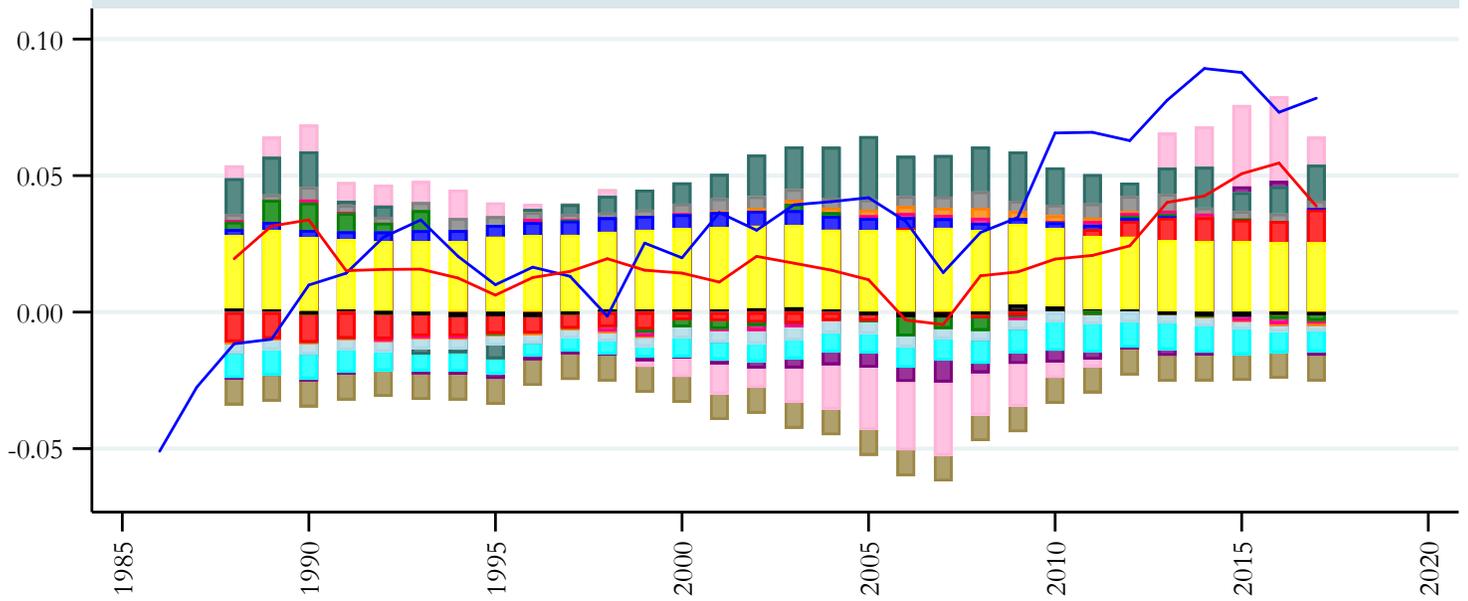
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CA: Contributions to EBA Fitted Values

Czechia



Denmark

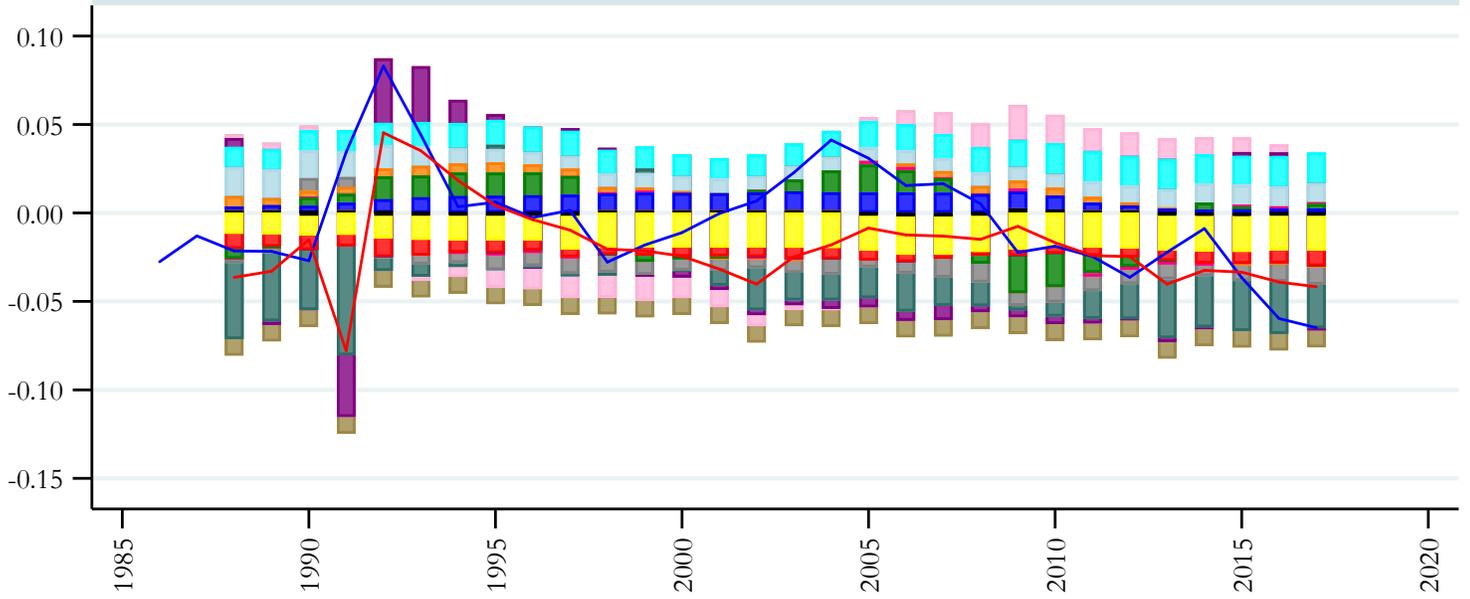


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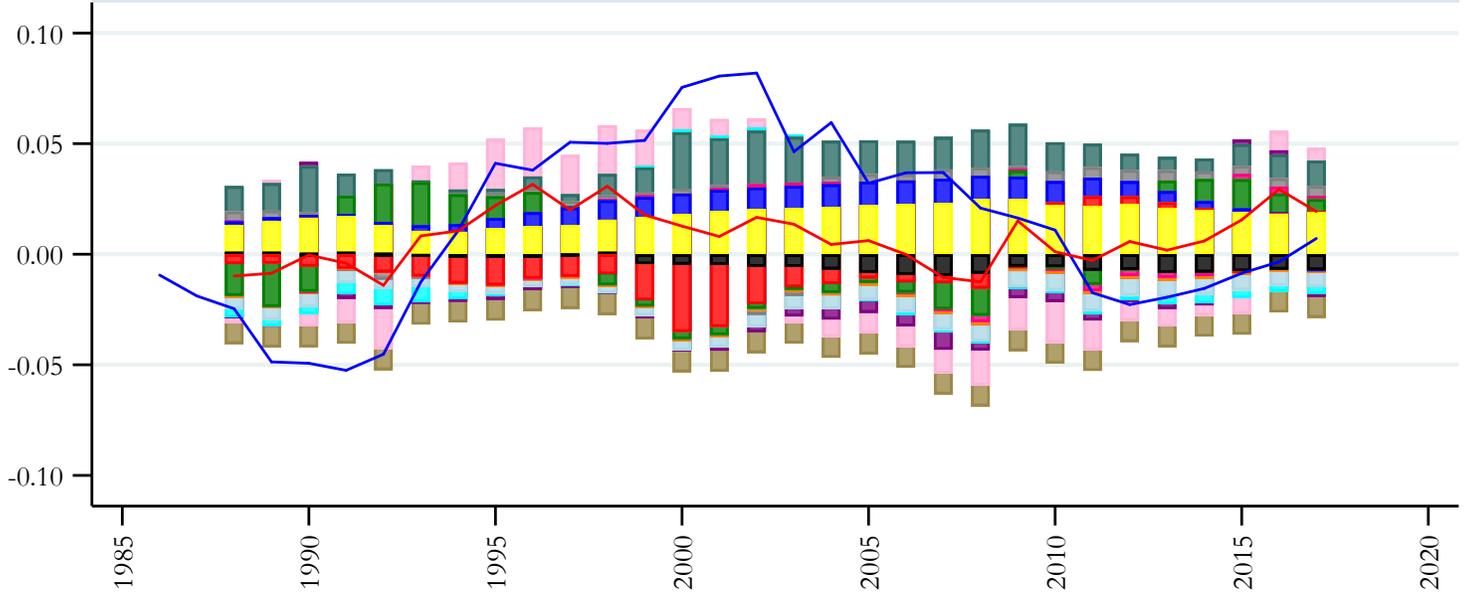
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Egypt



Finland

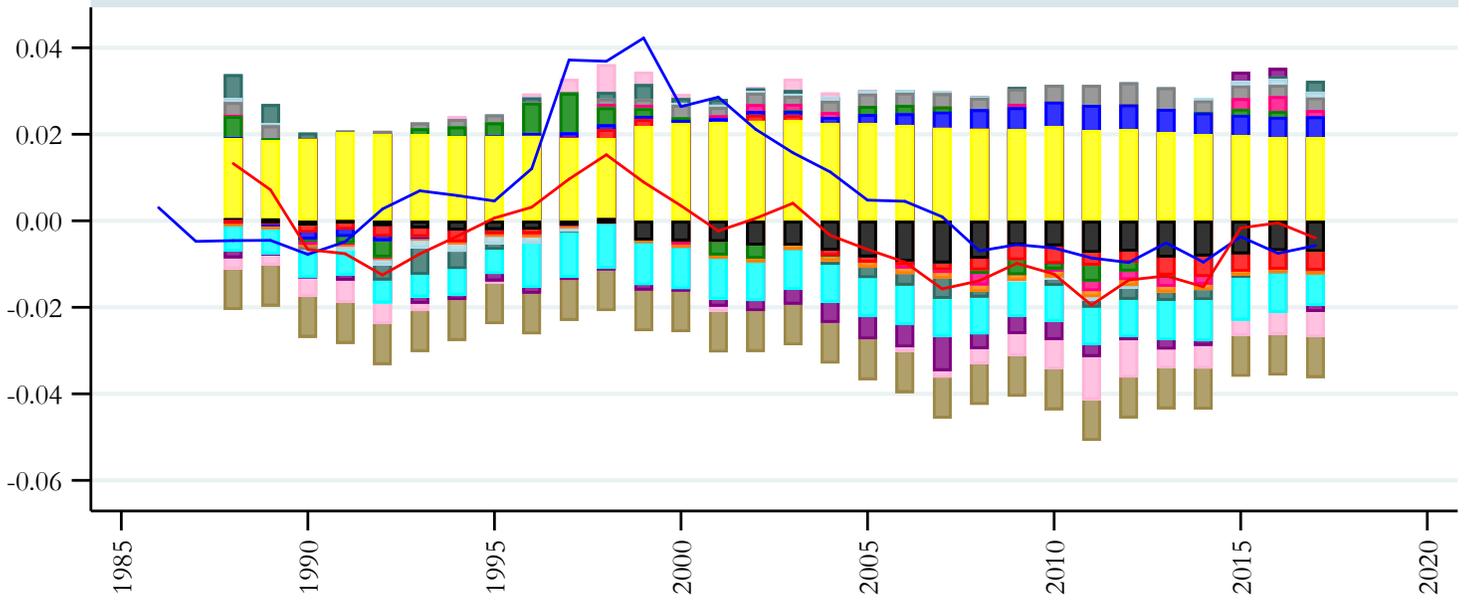


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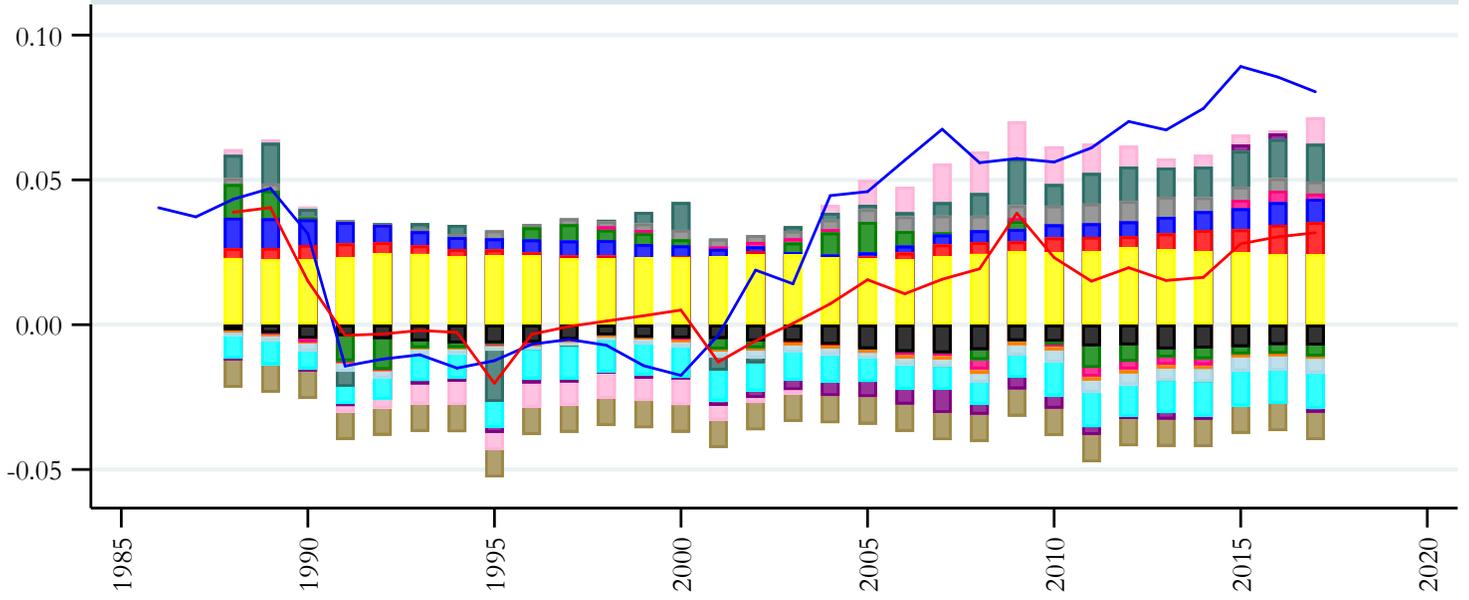
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| — Current Account to GDP ratio | — fitted_ca |

CA: Contributions to EBA Fitted Values

France



Germany

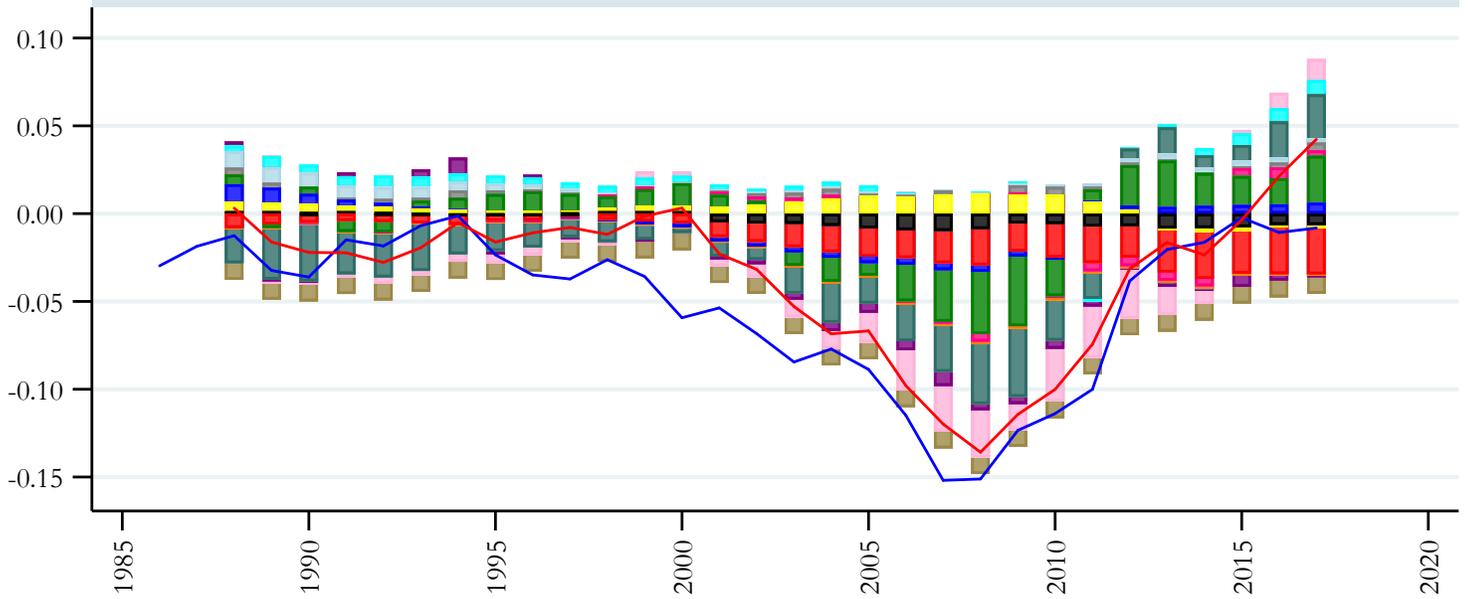


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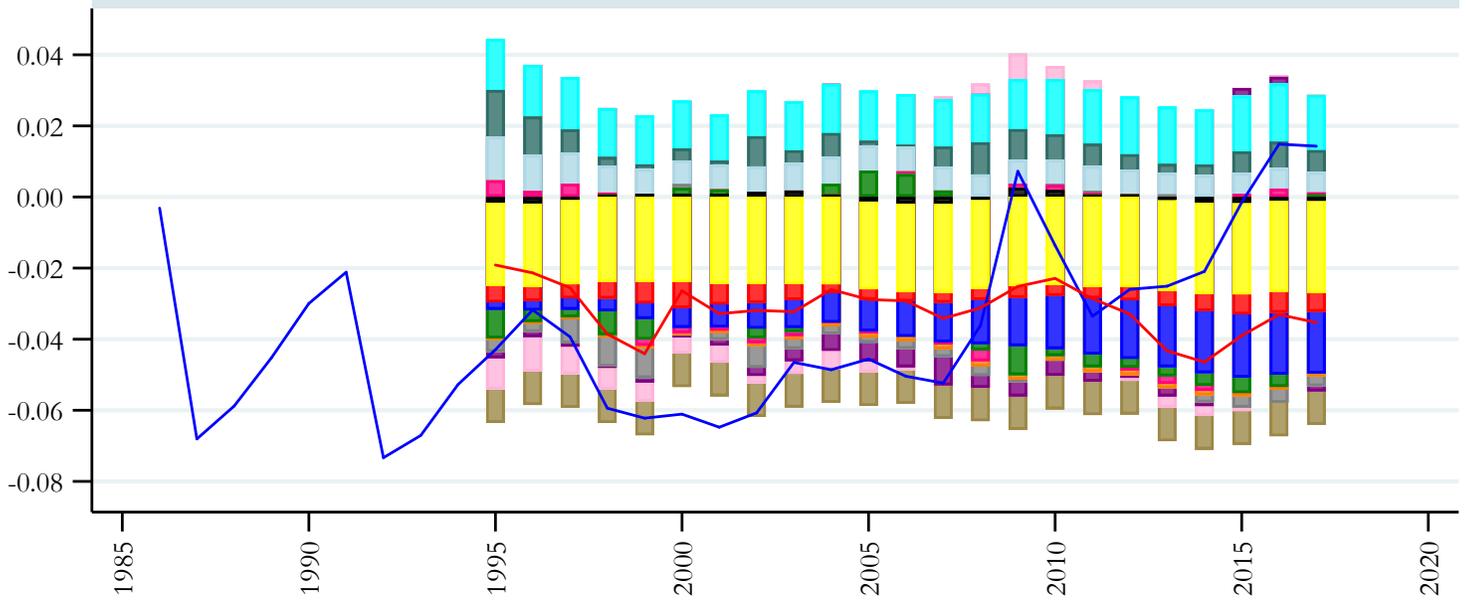
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Greece



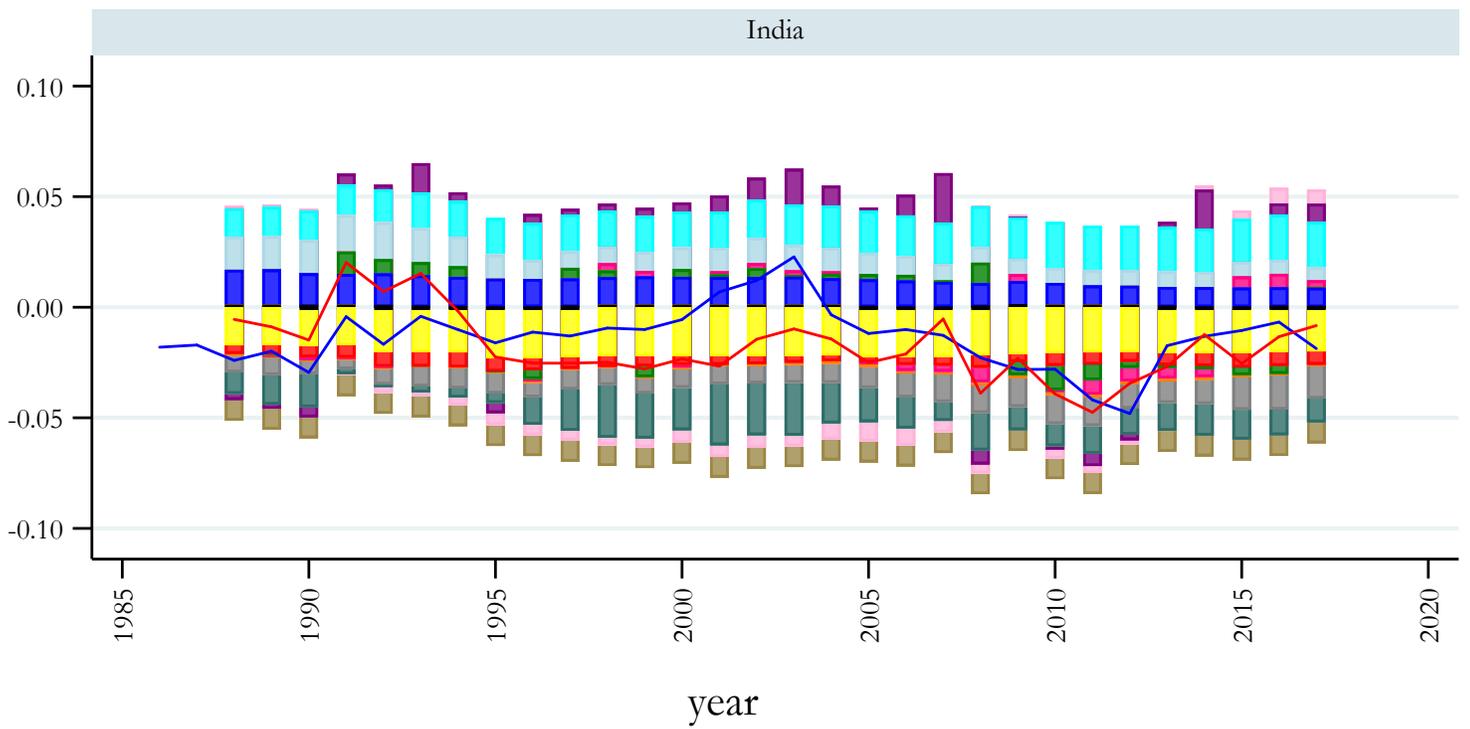
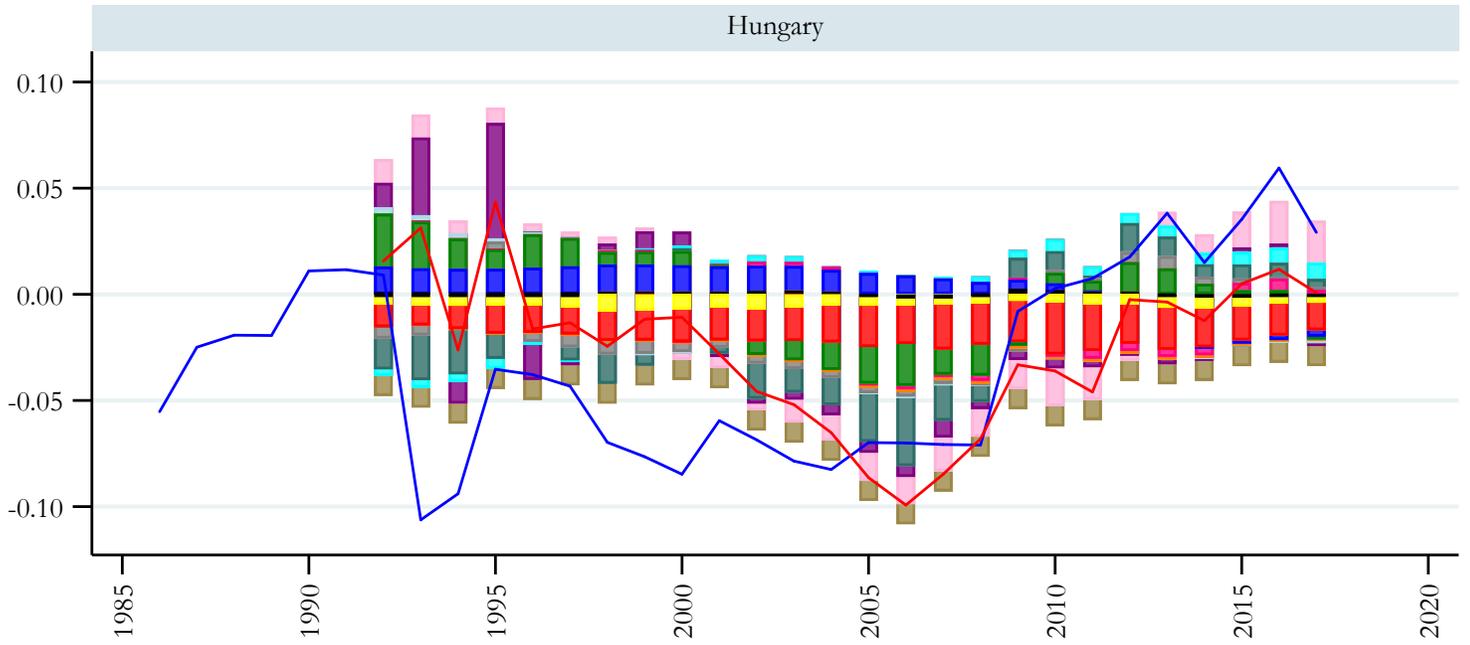
Guatemala



year

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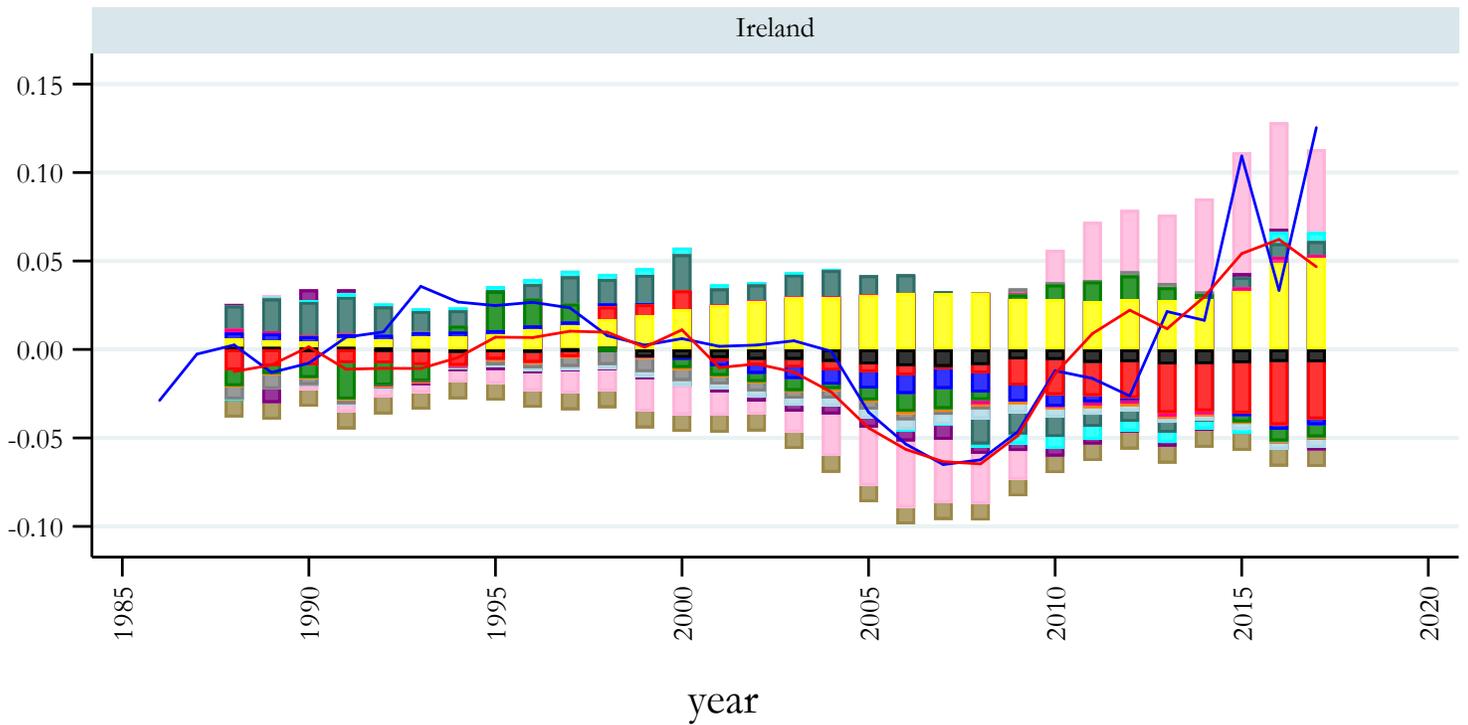
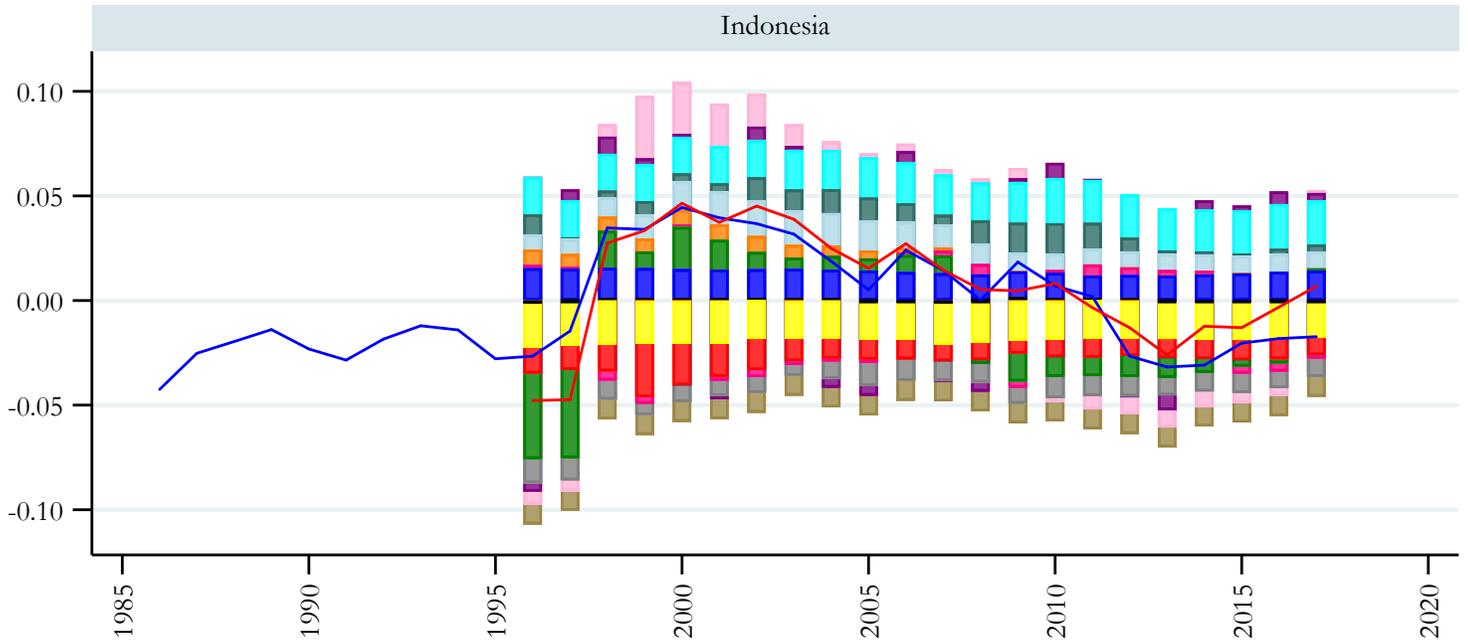
CA: Contributions to EBA Fitted Values



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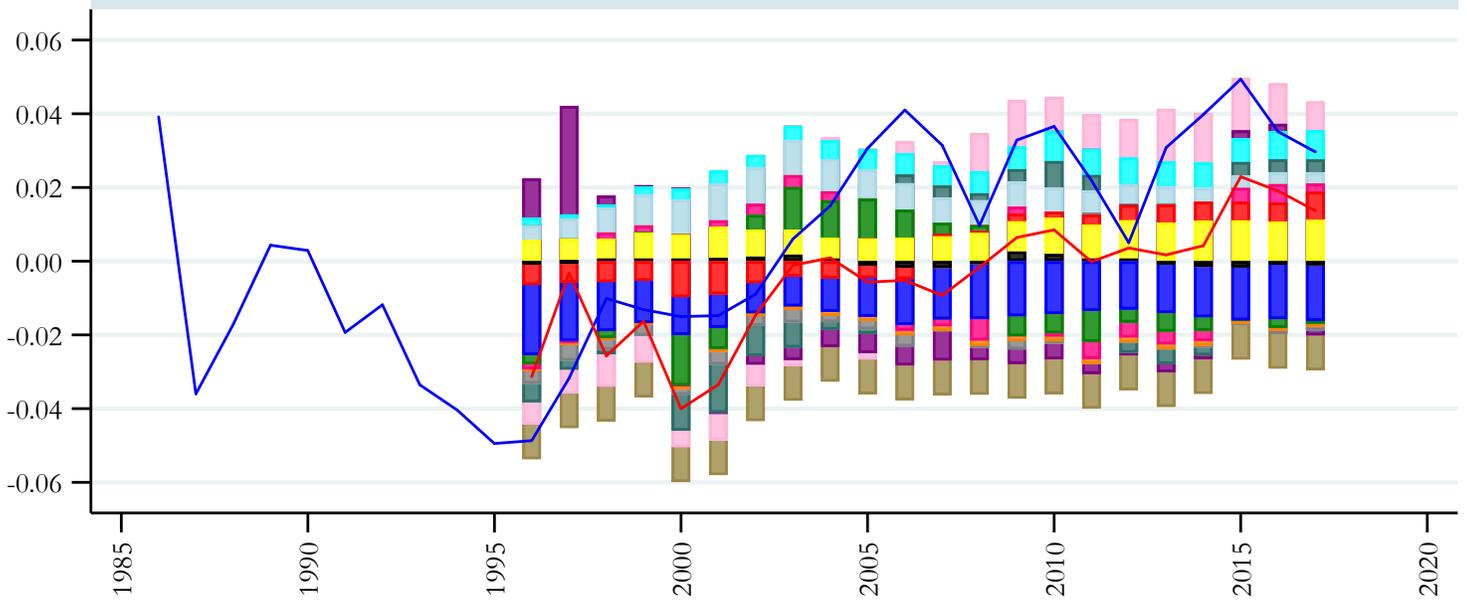
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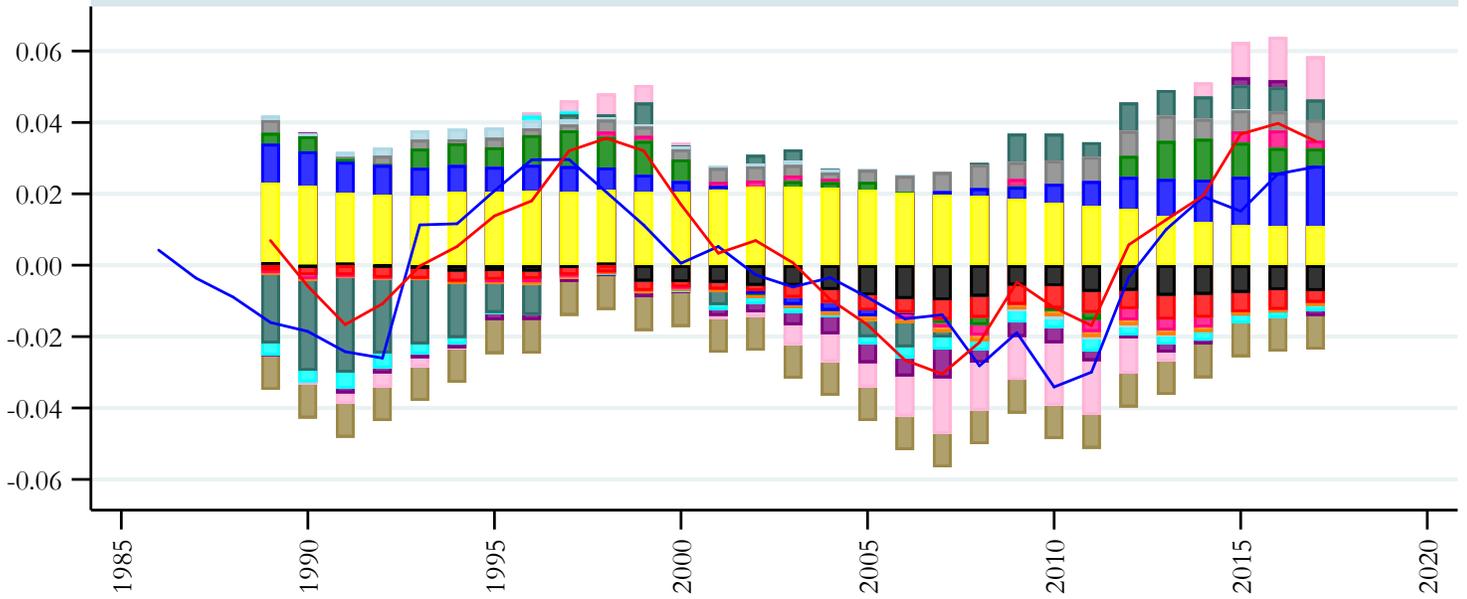
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CA: Contributions to EBA Fitted Values

Israel



Italy

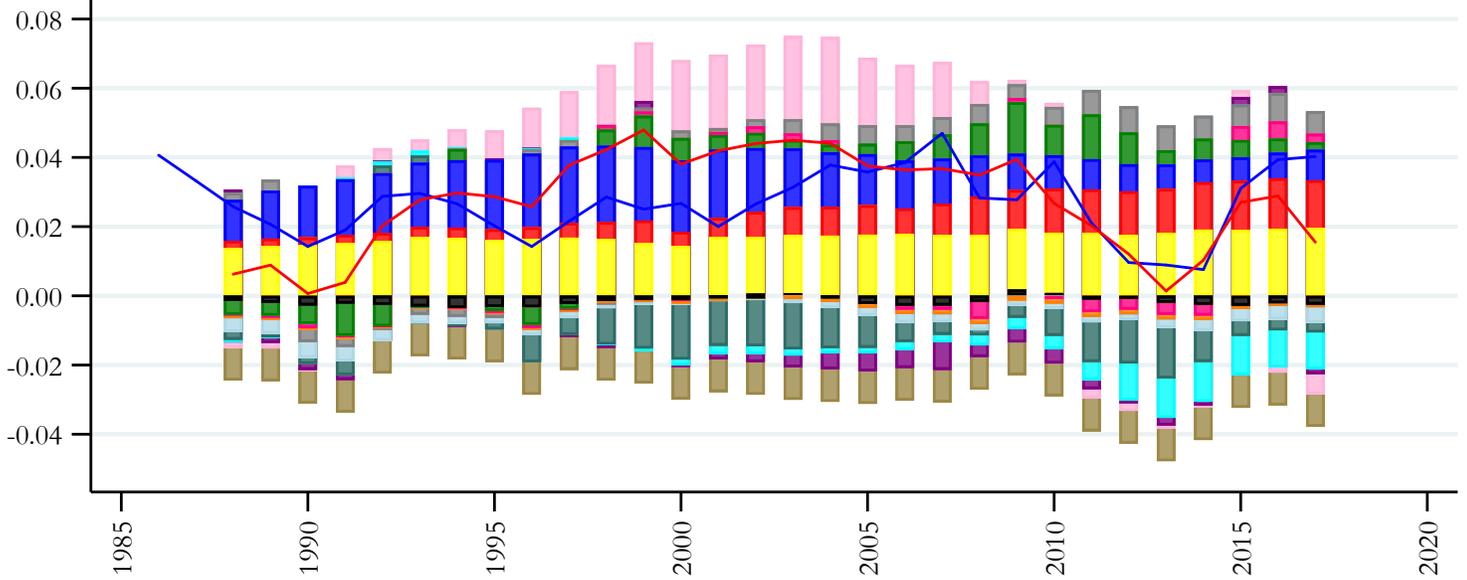


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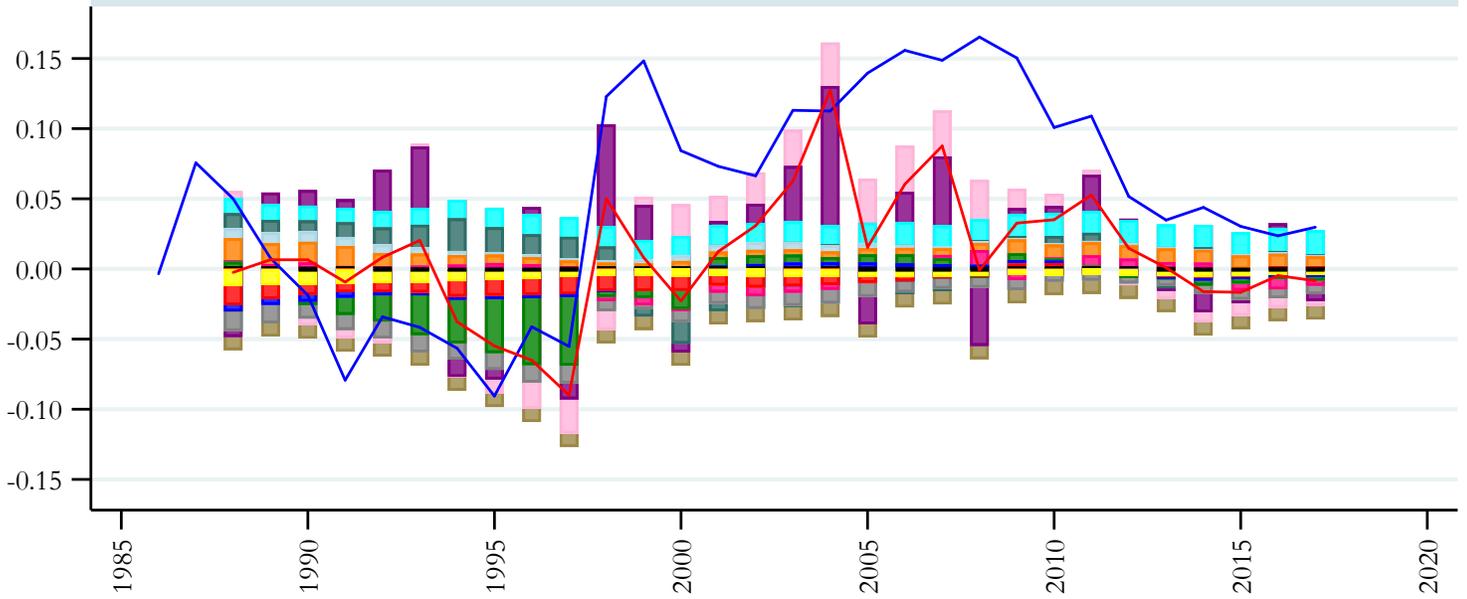
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Japan



Malaysia

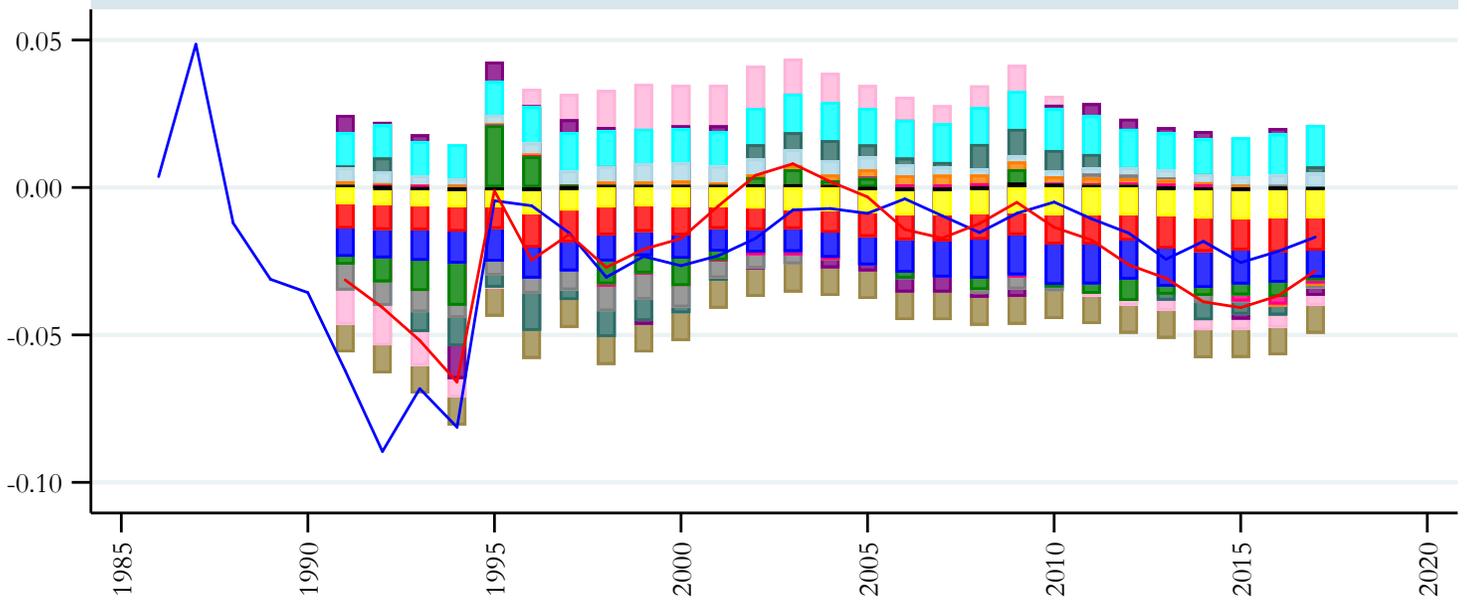


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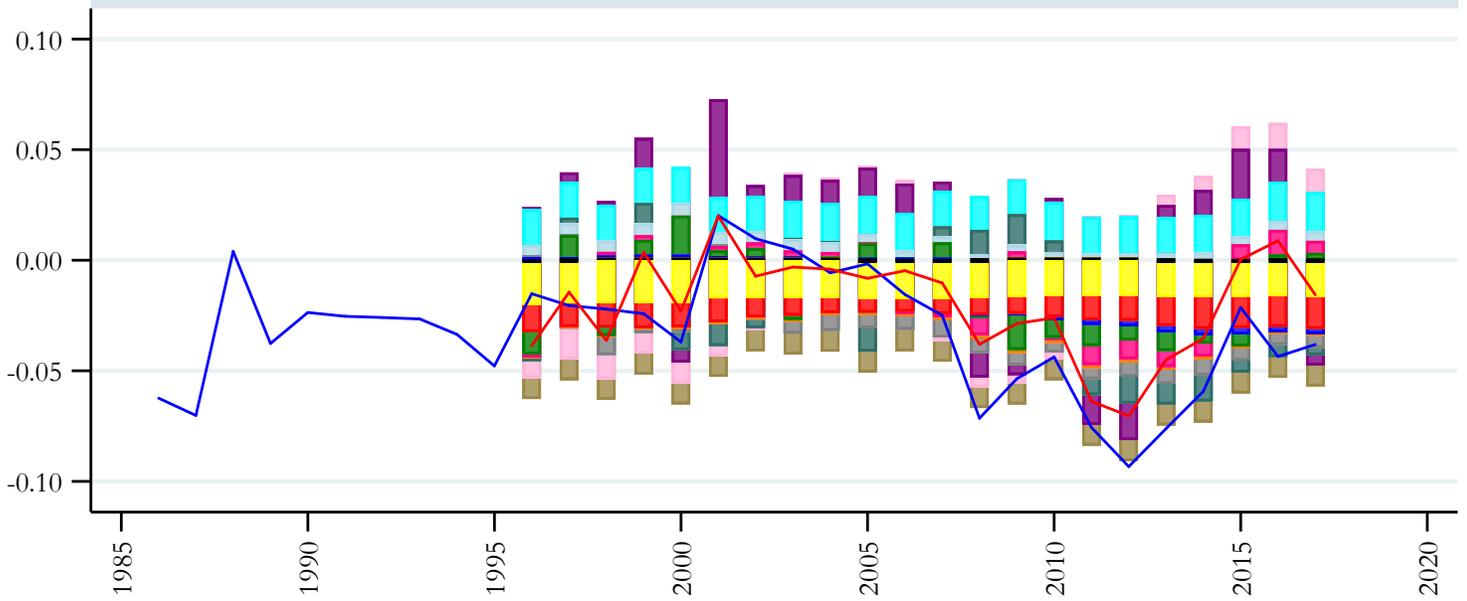
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Mexico



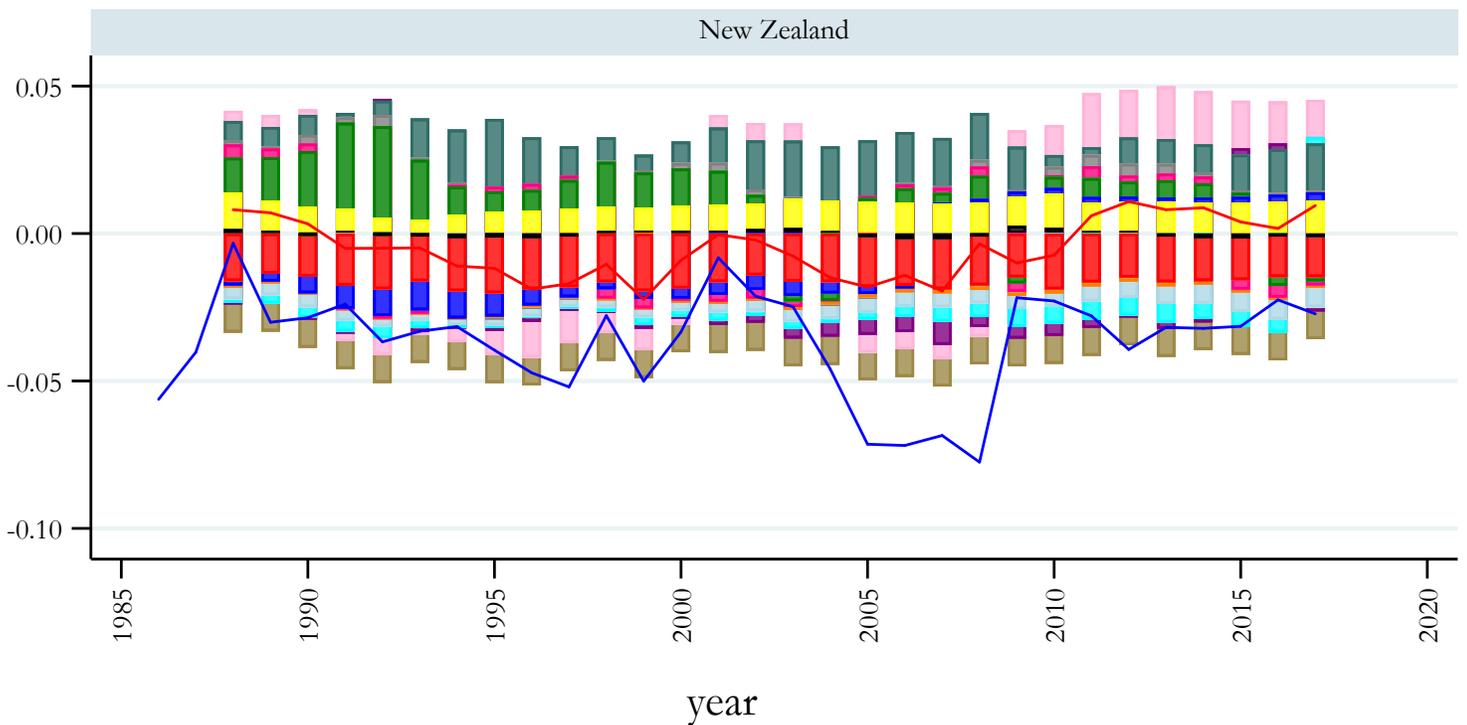
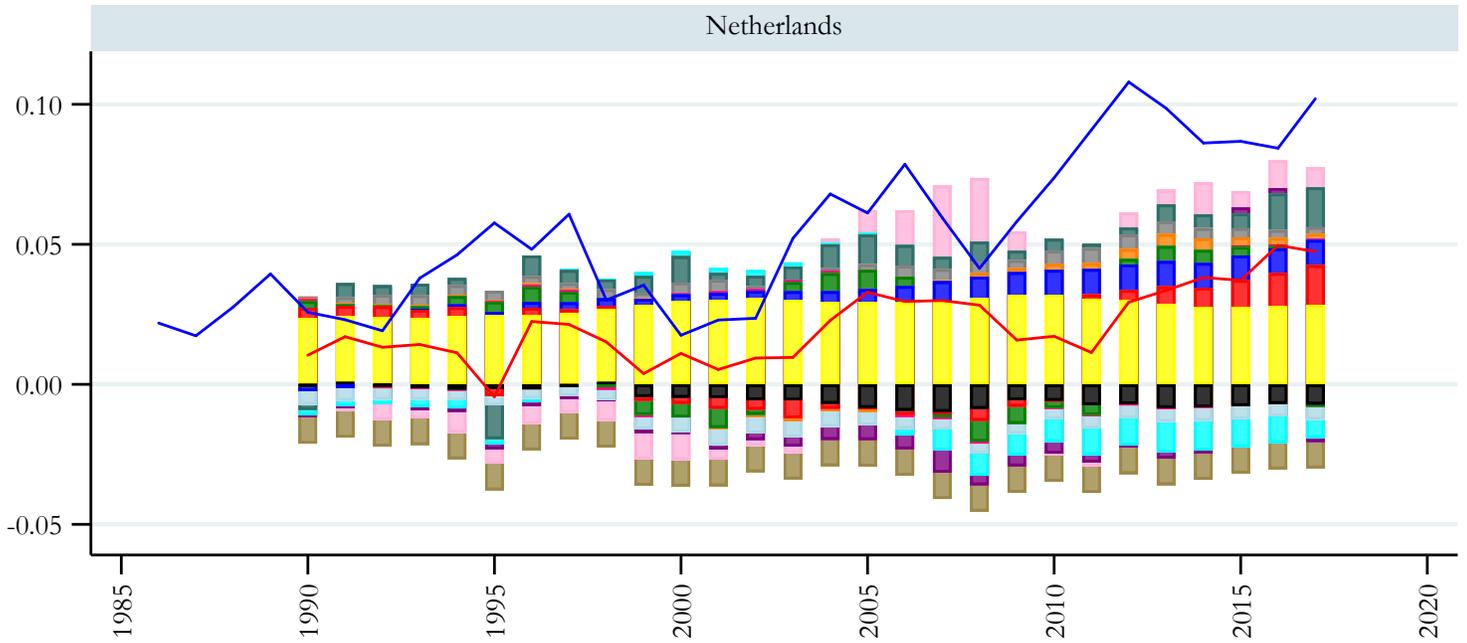
Morocco



year

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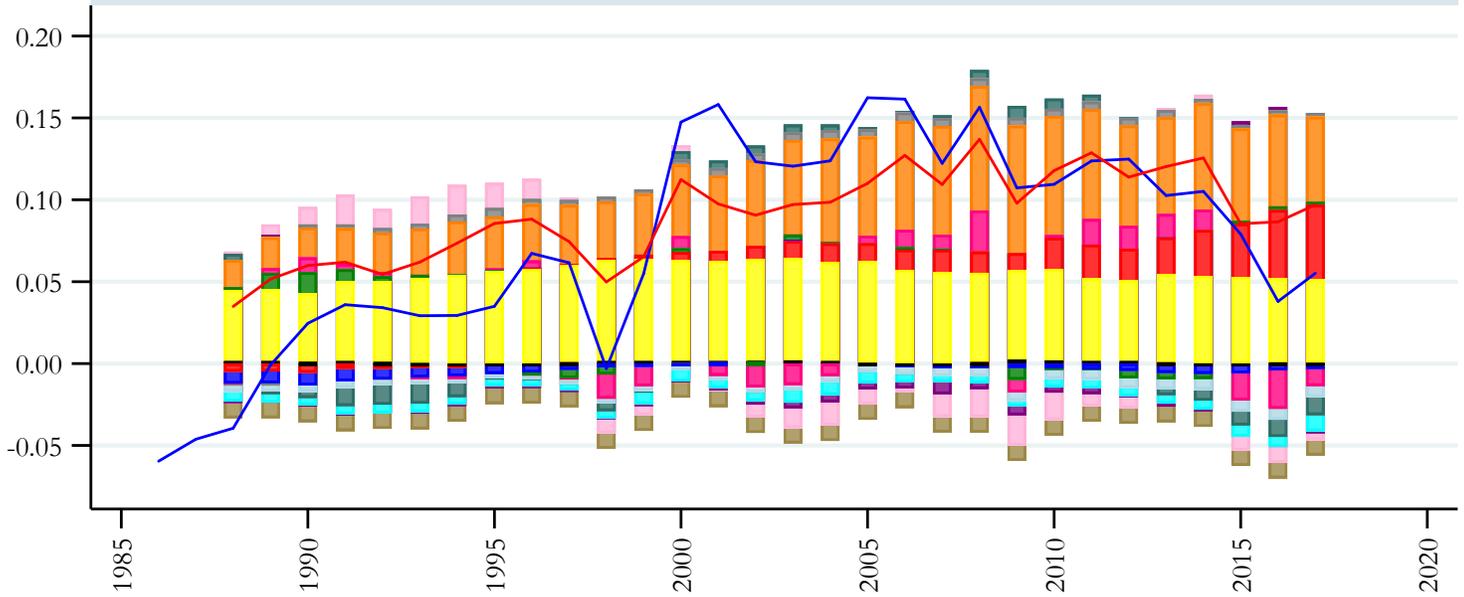
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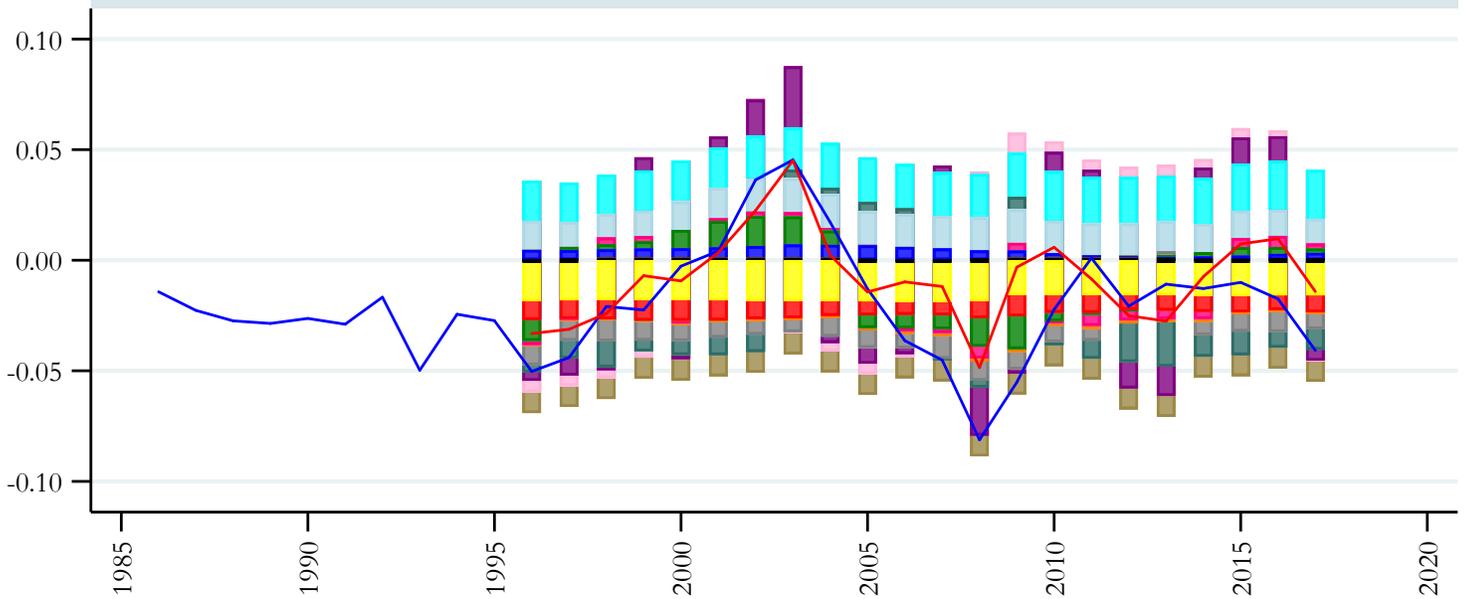
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CA: Contributions to EBA Fitted Values

Norway



Pakistan

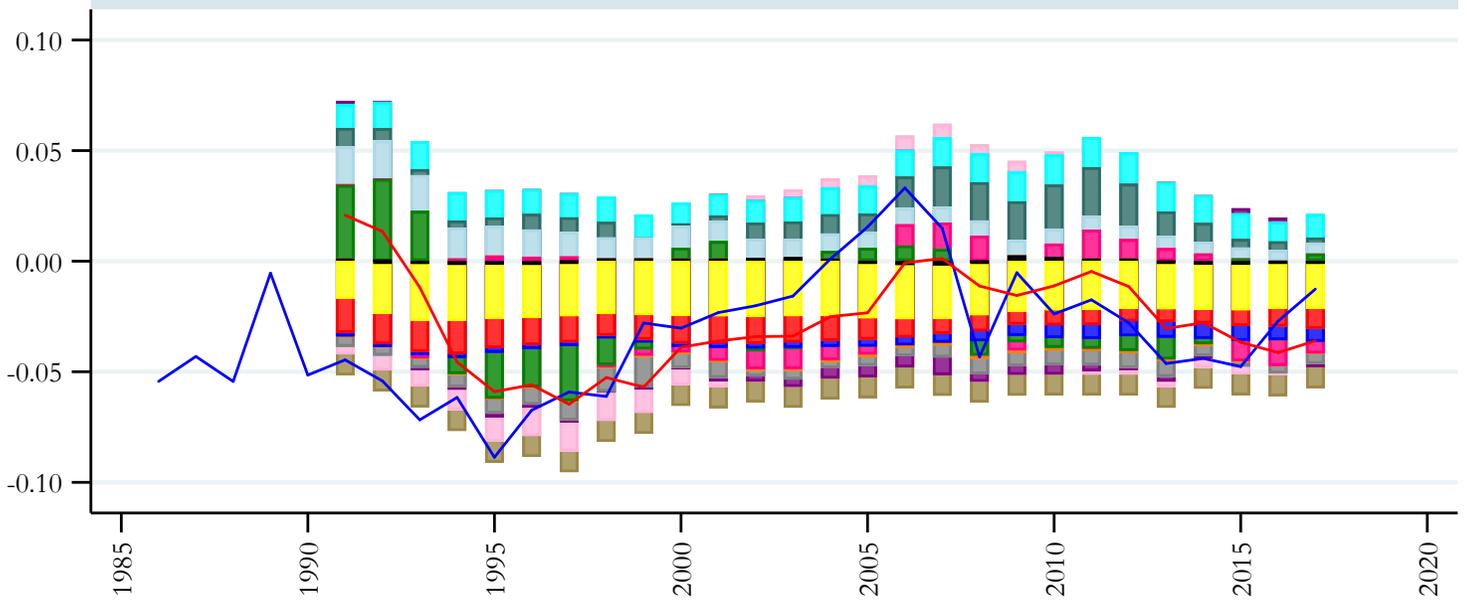


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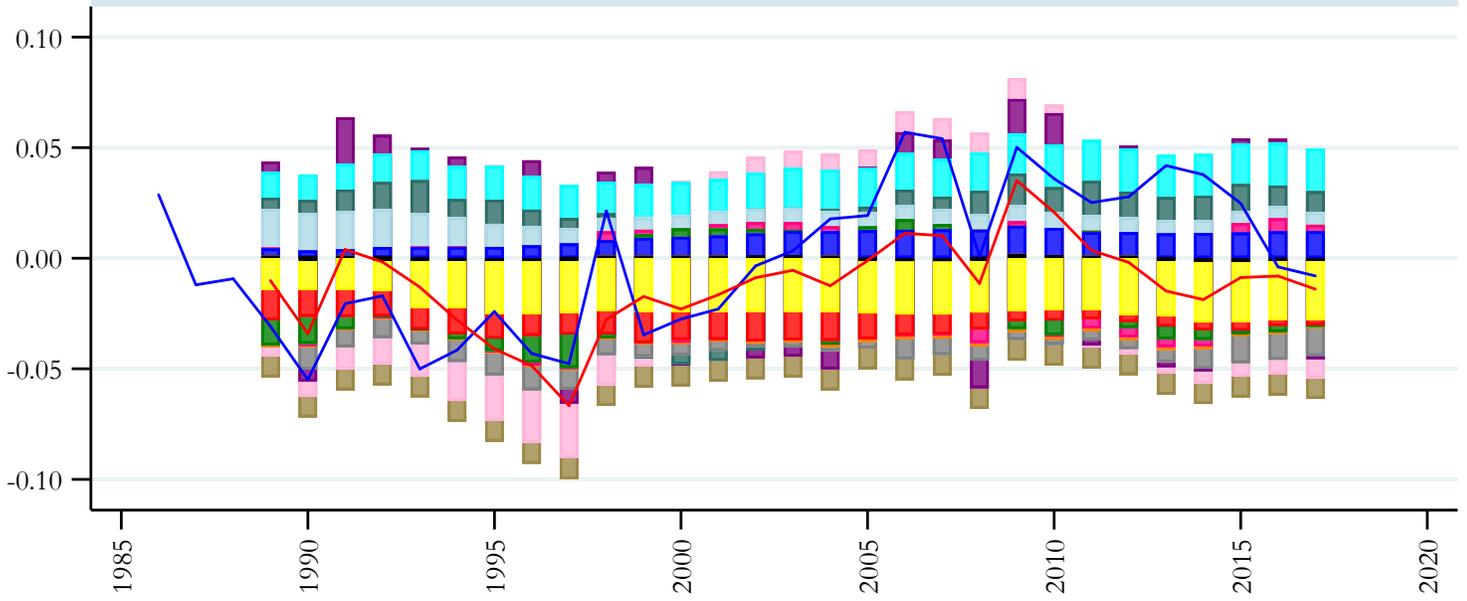
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Peru



Philippines

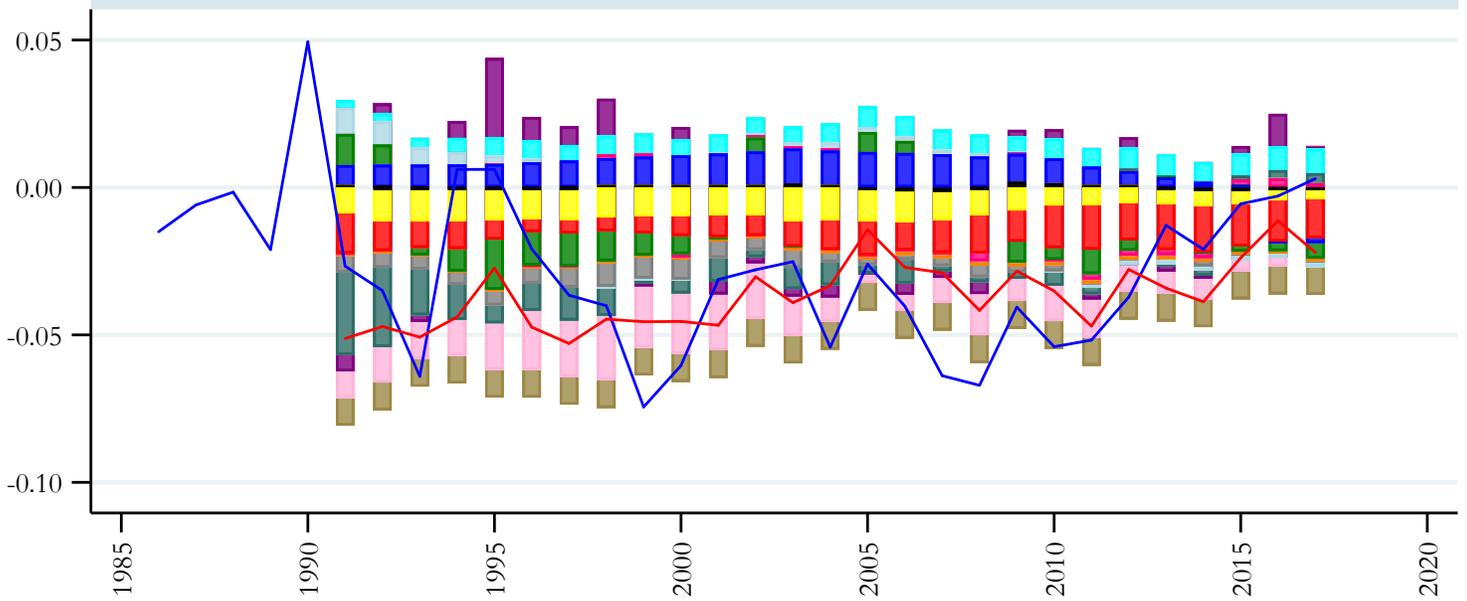


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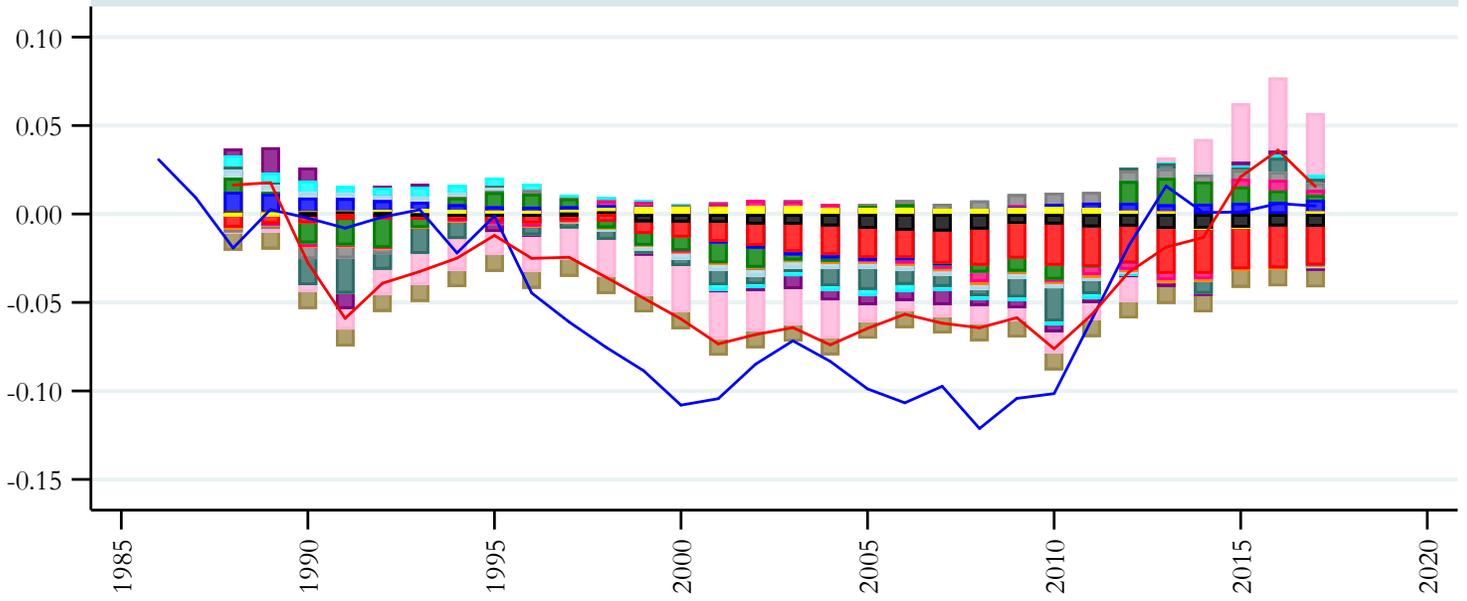
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CA: Contributions to EBA Fitted Values

Poland



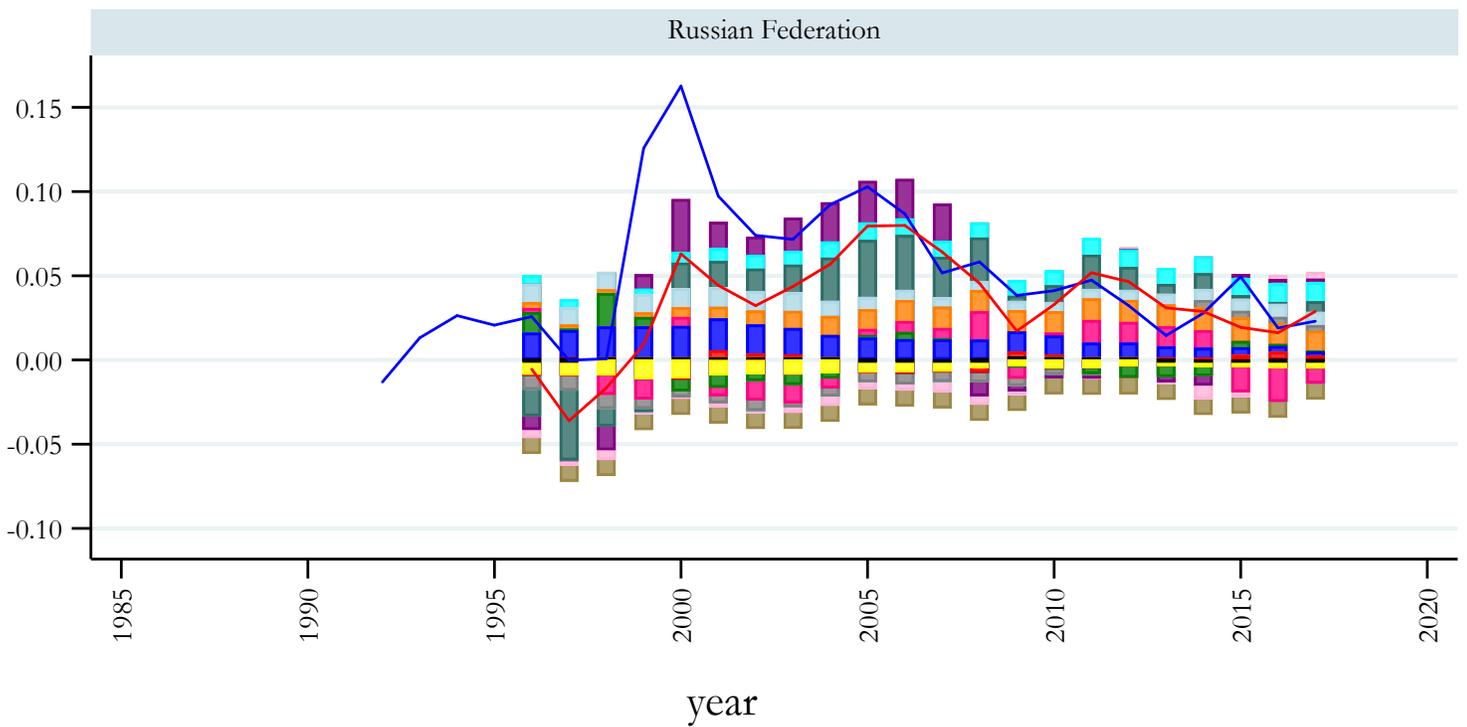
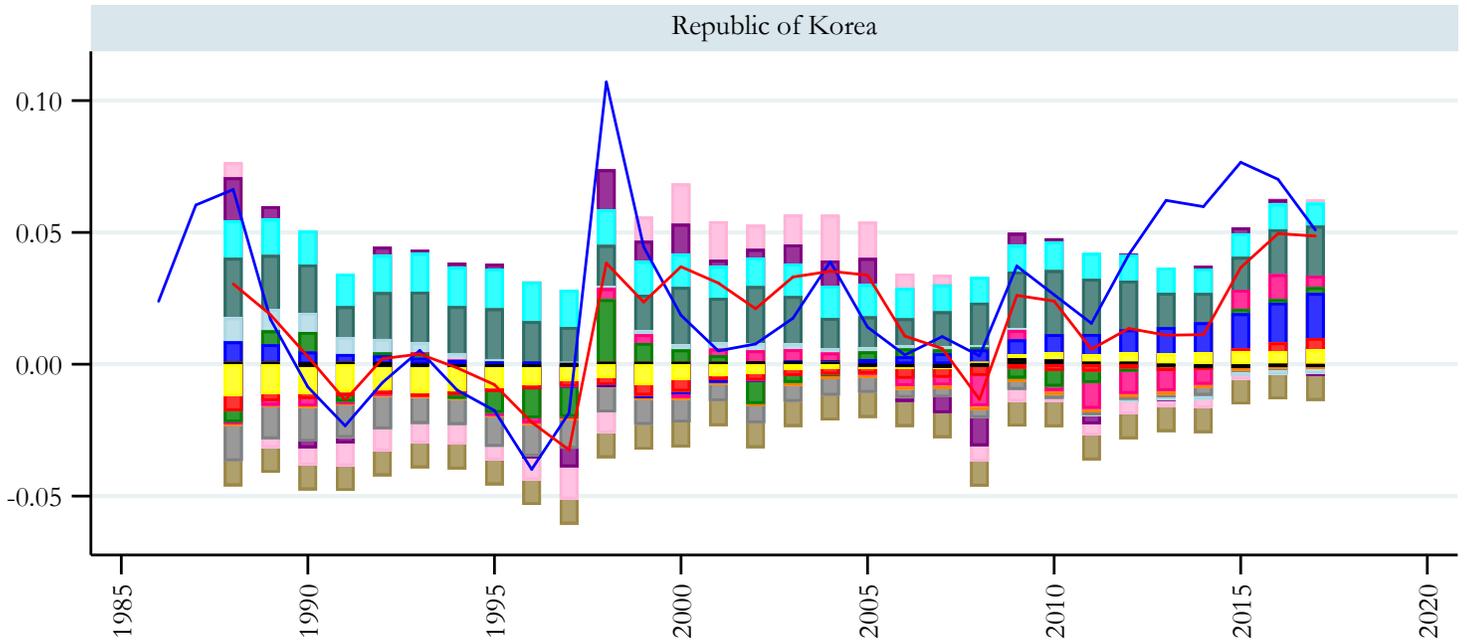
Portugal



year

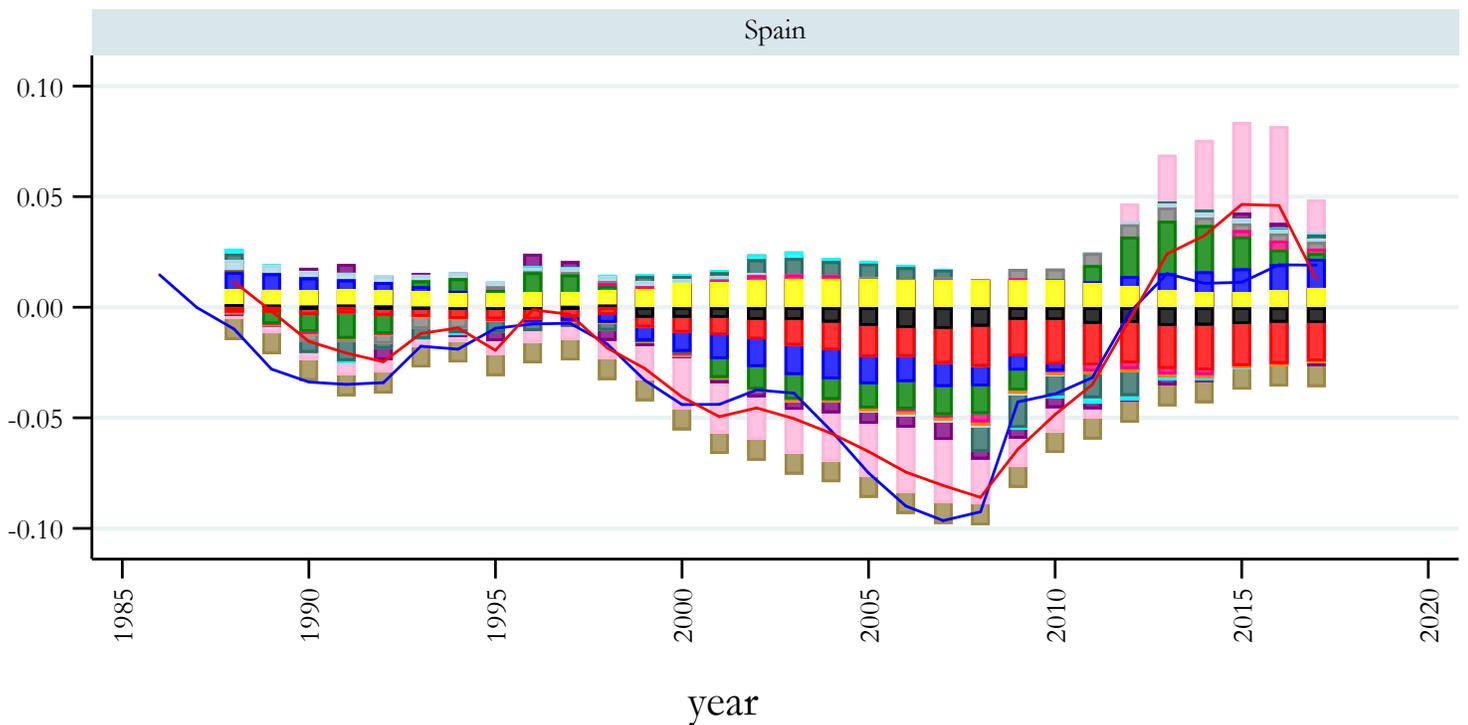
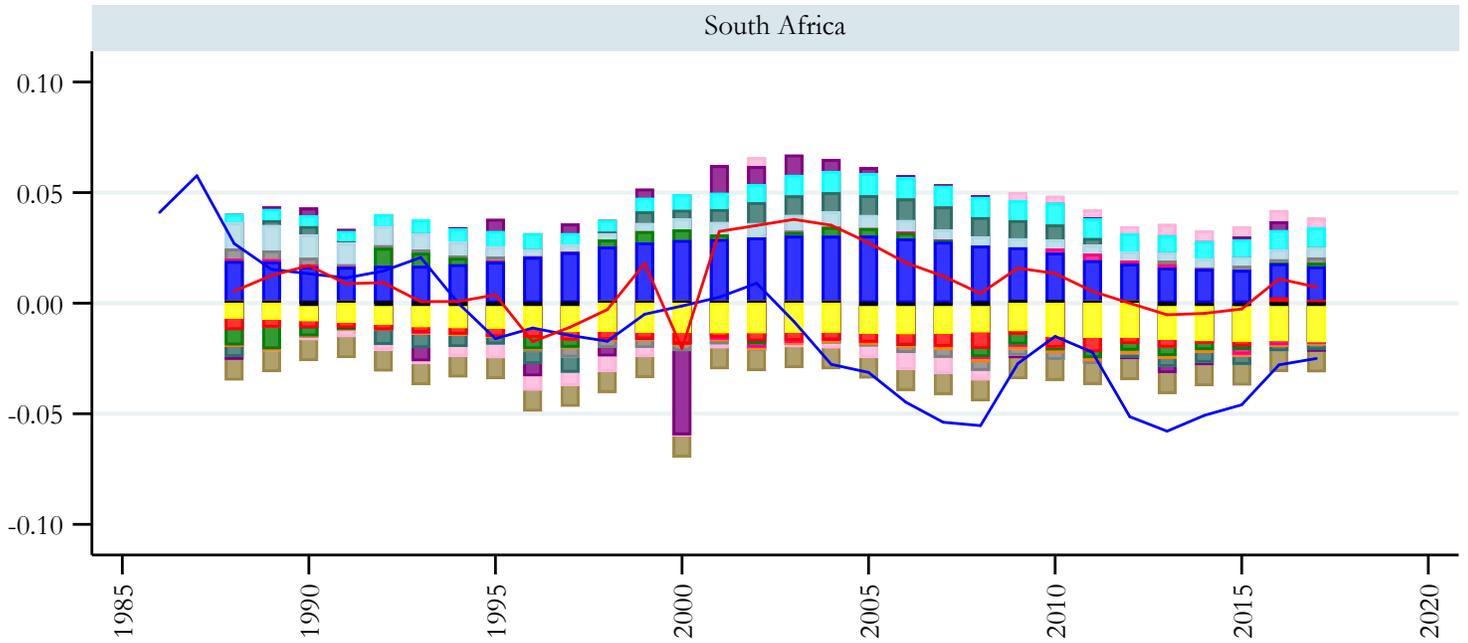
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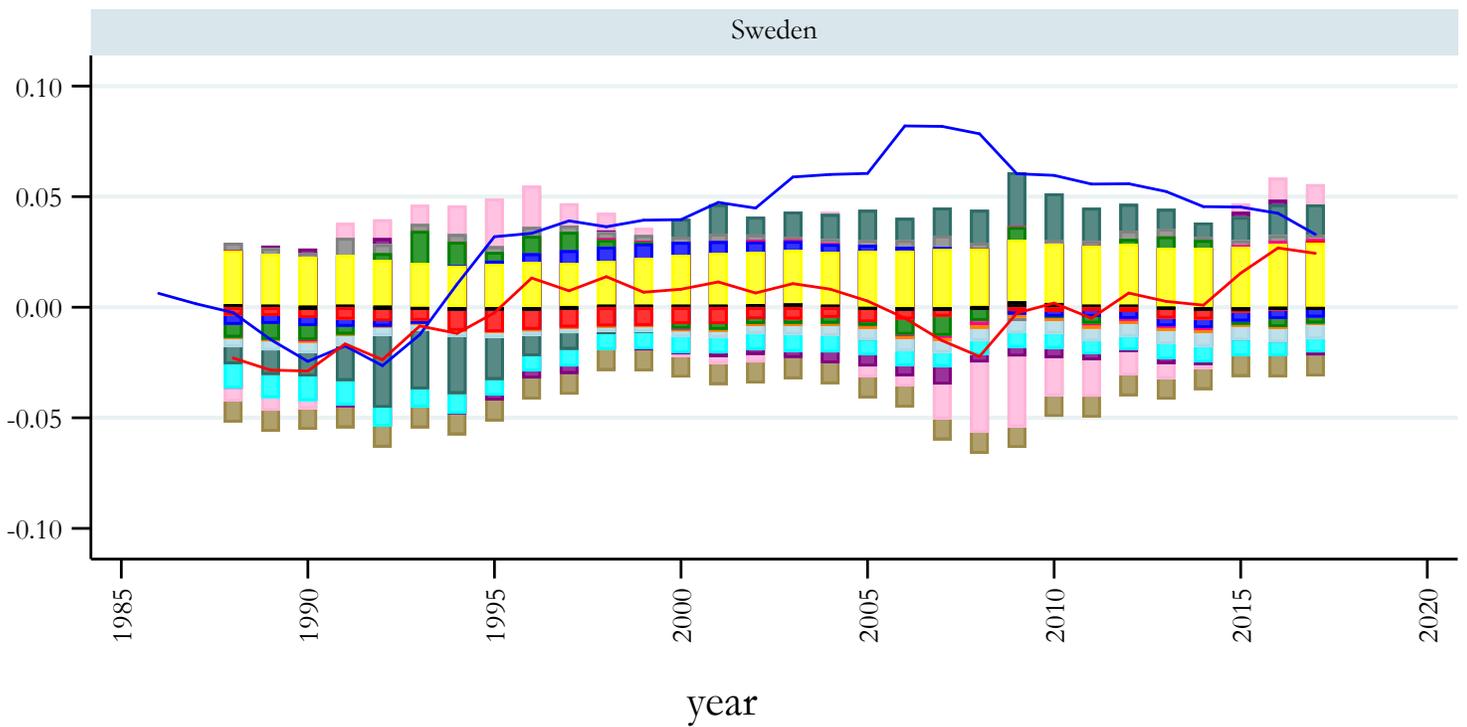
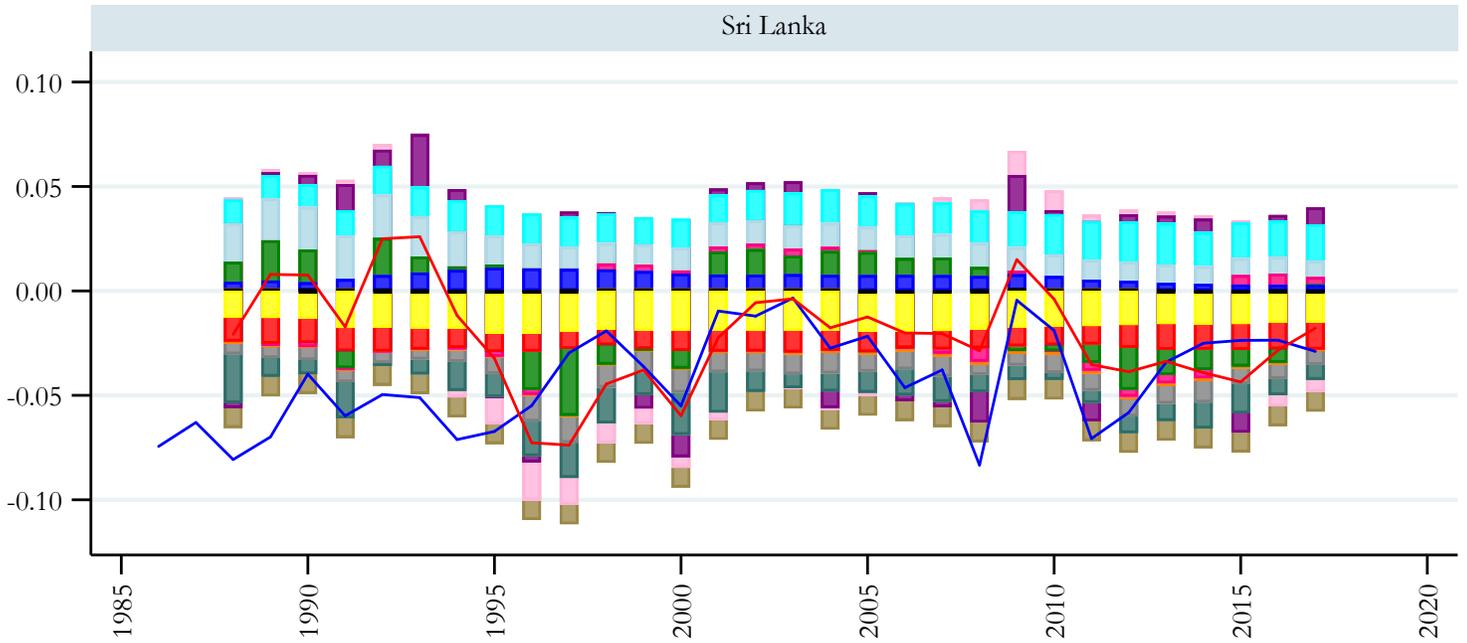
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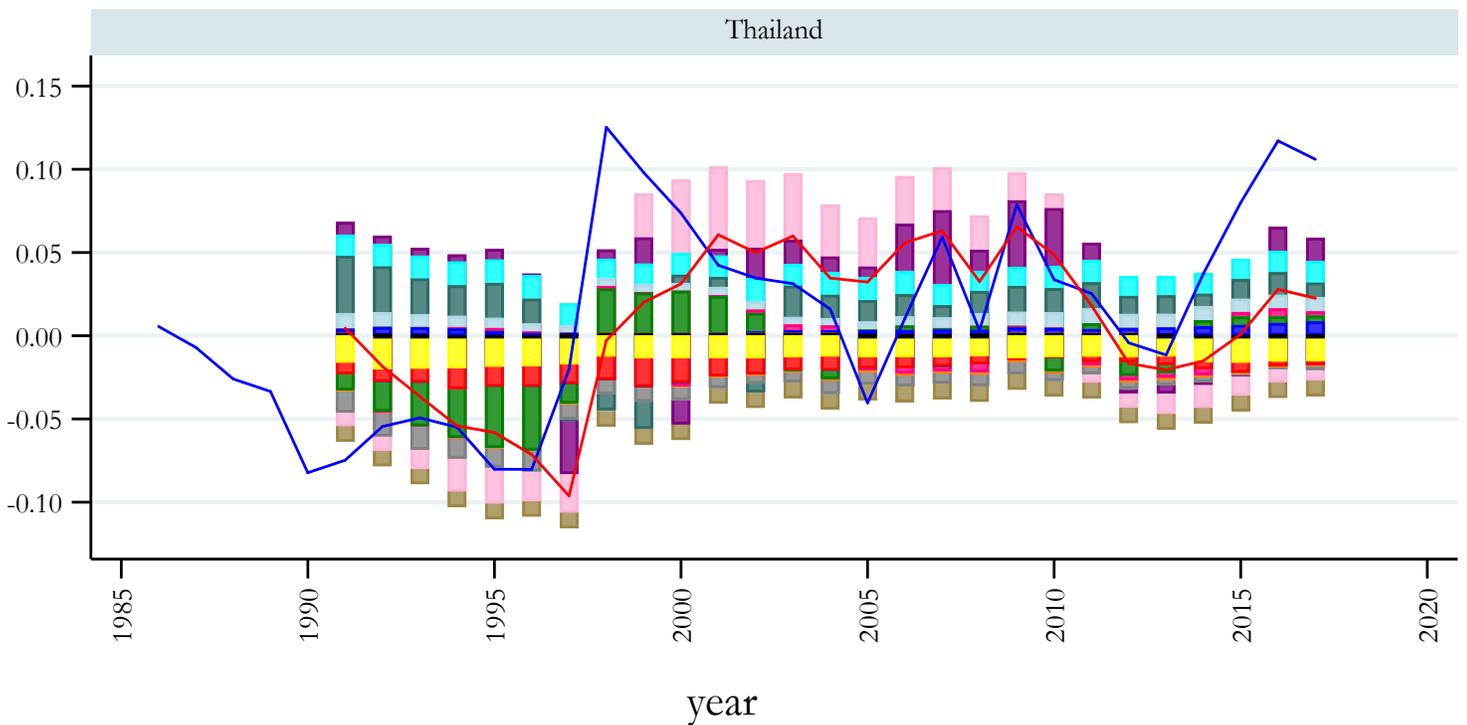
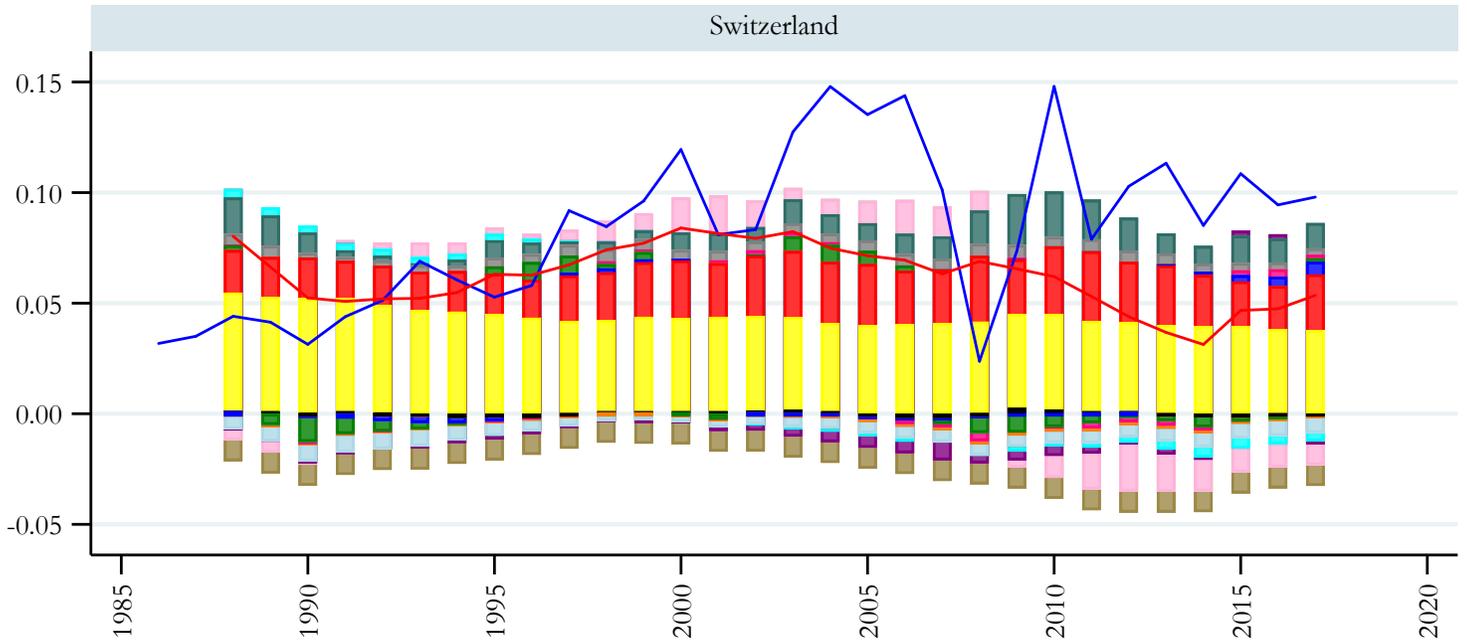
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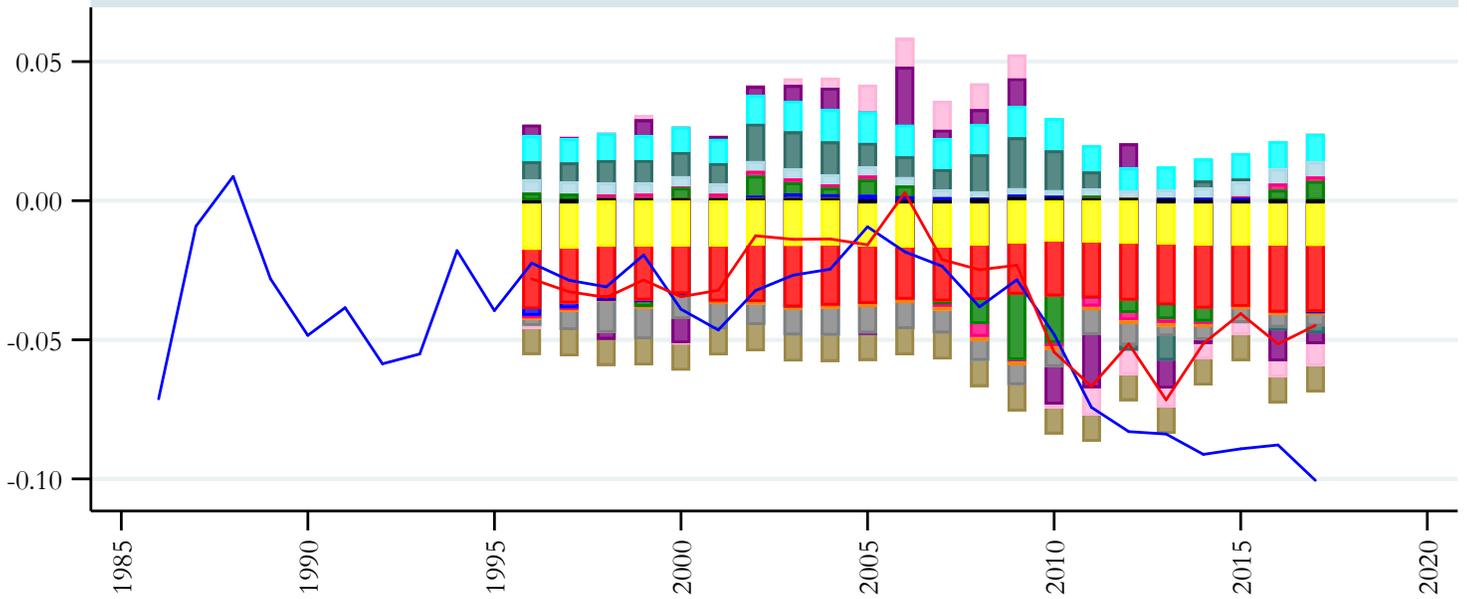


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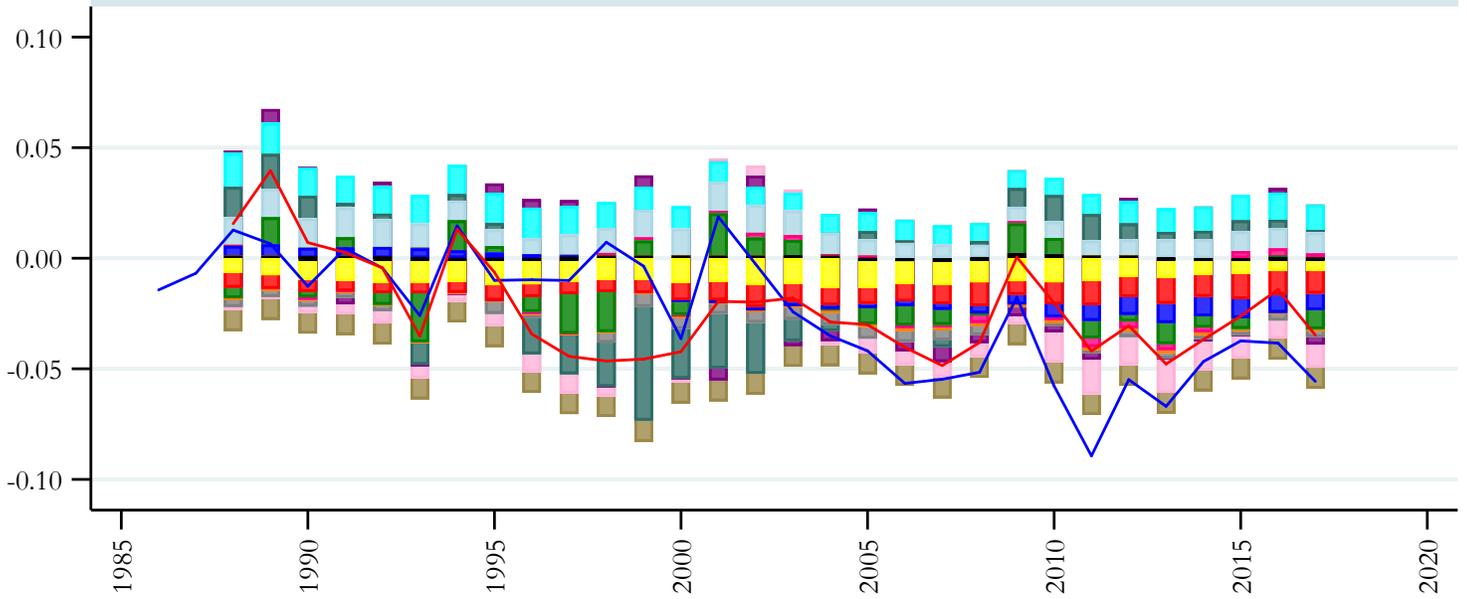
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CA: Contributions to EBA Fitted Values

Tunisia



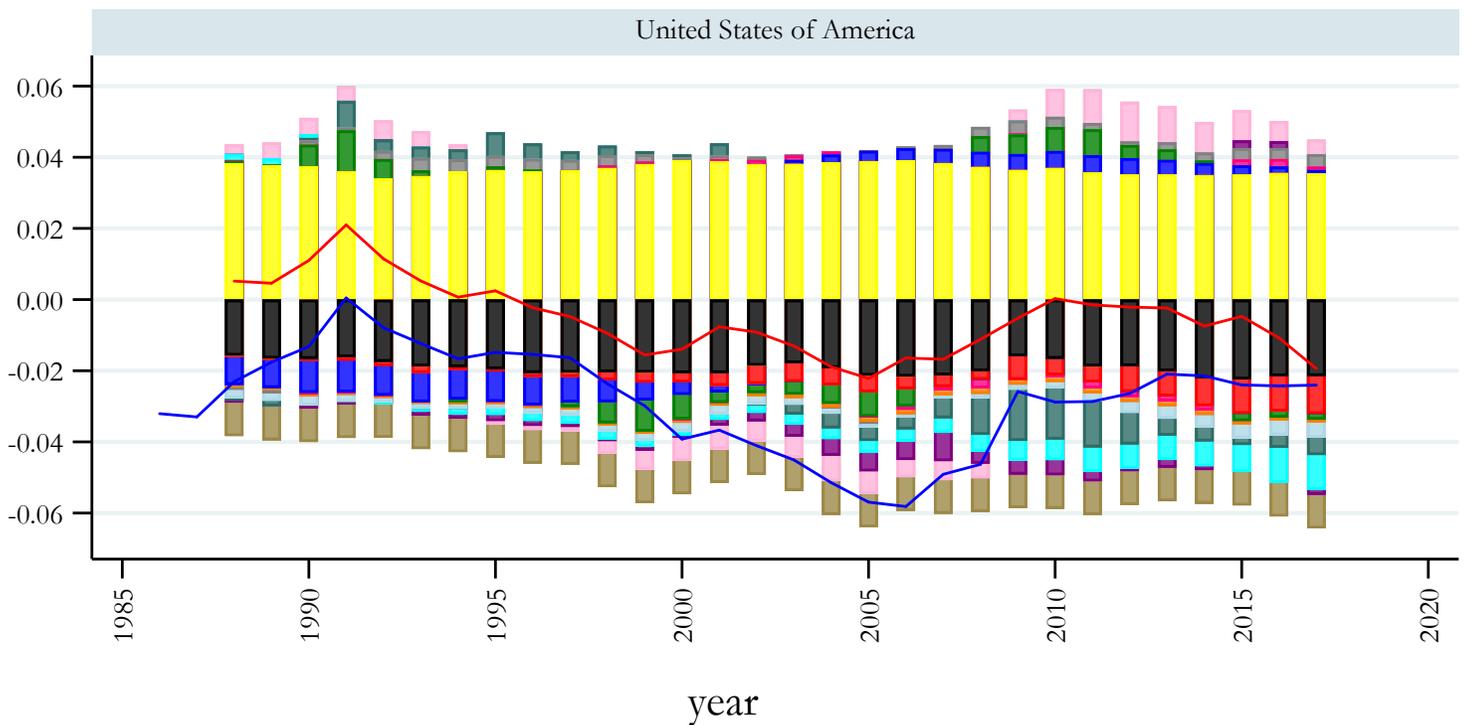
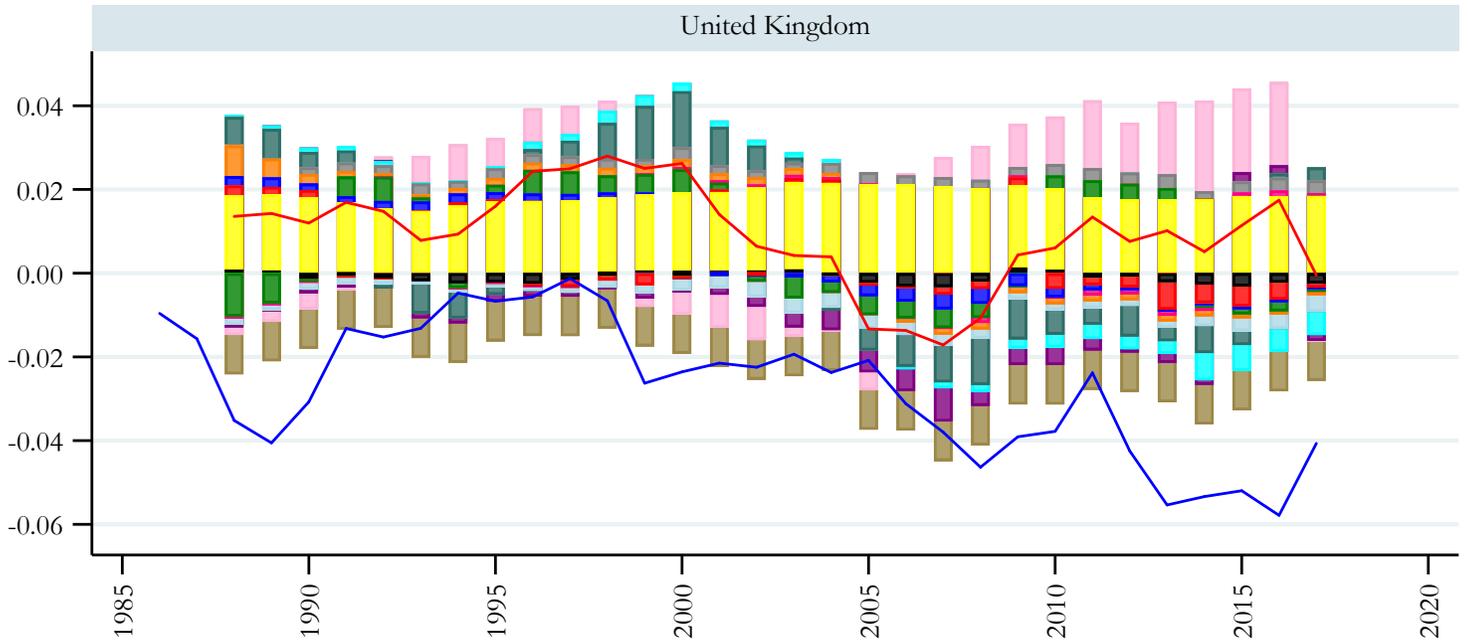
Turkey



year

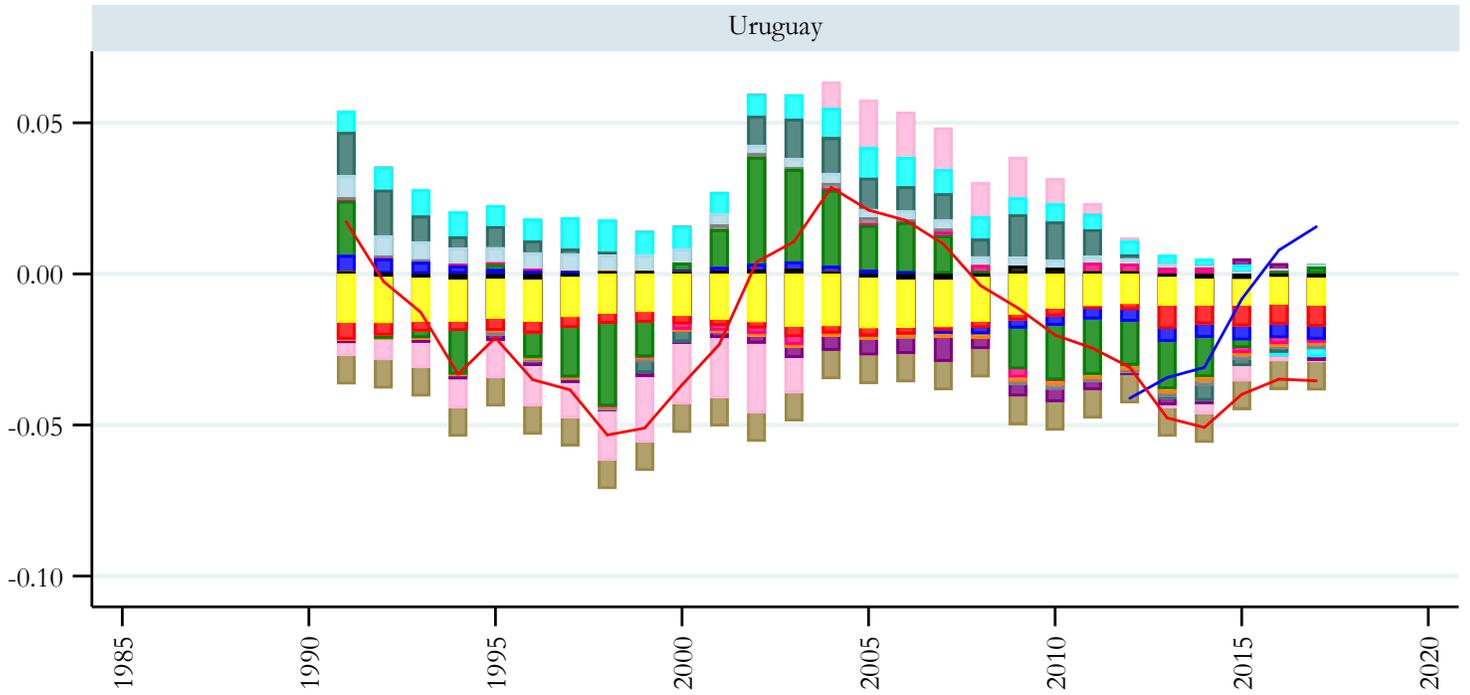
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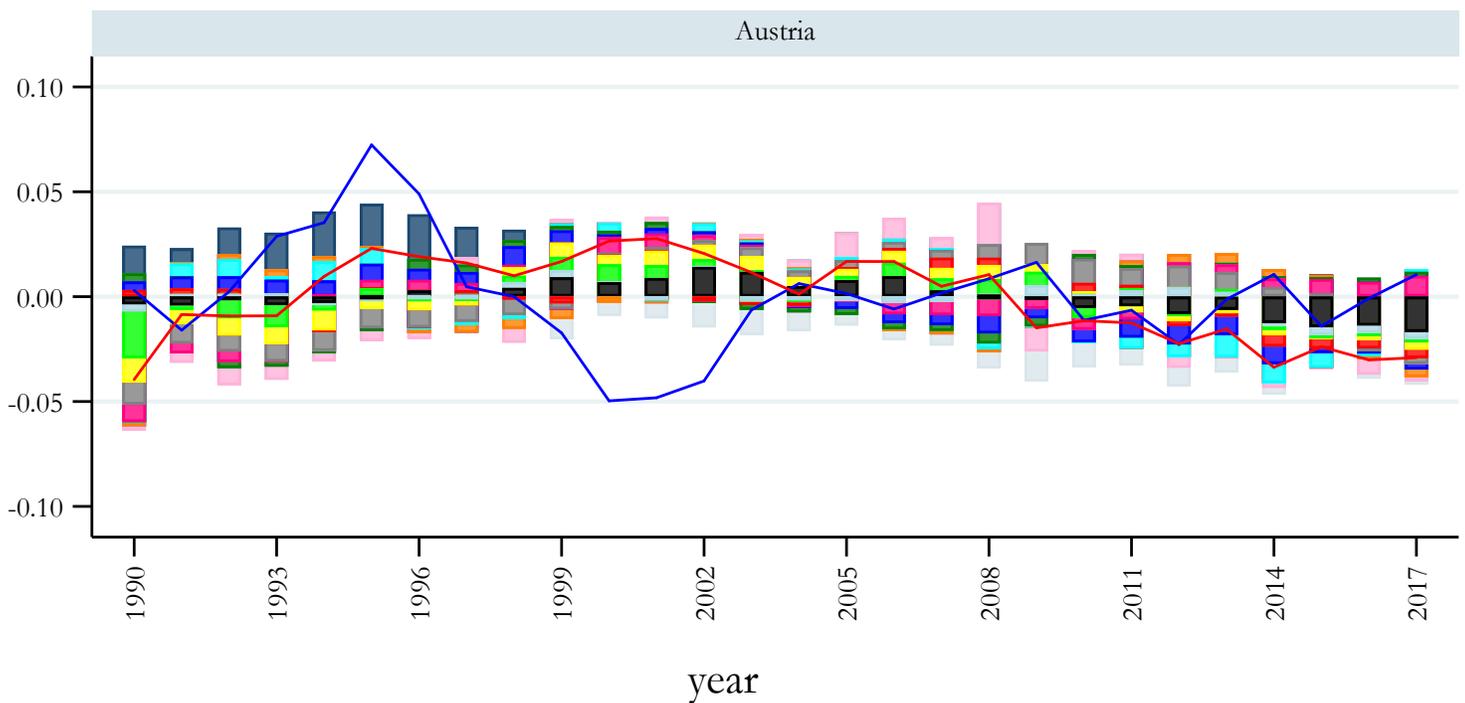
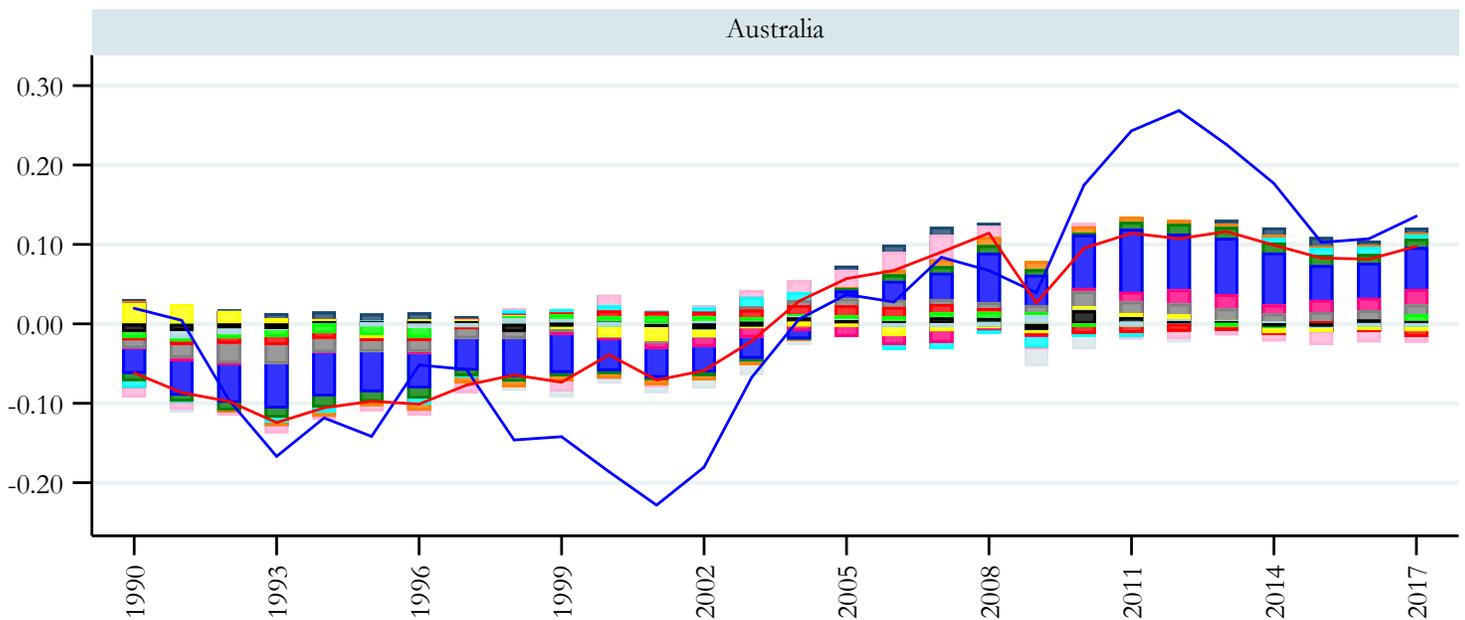


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II. REER Index Model: Actual Values, Fitted Values, and Historical Decomposition

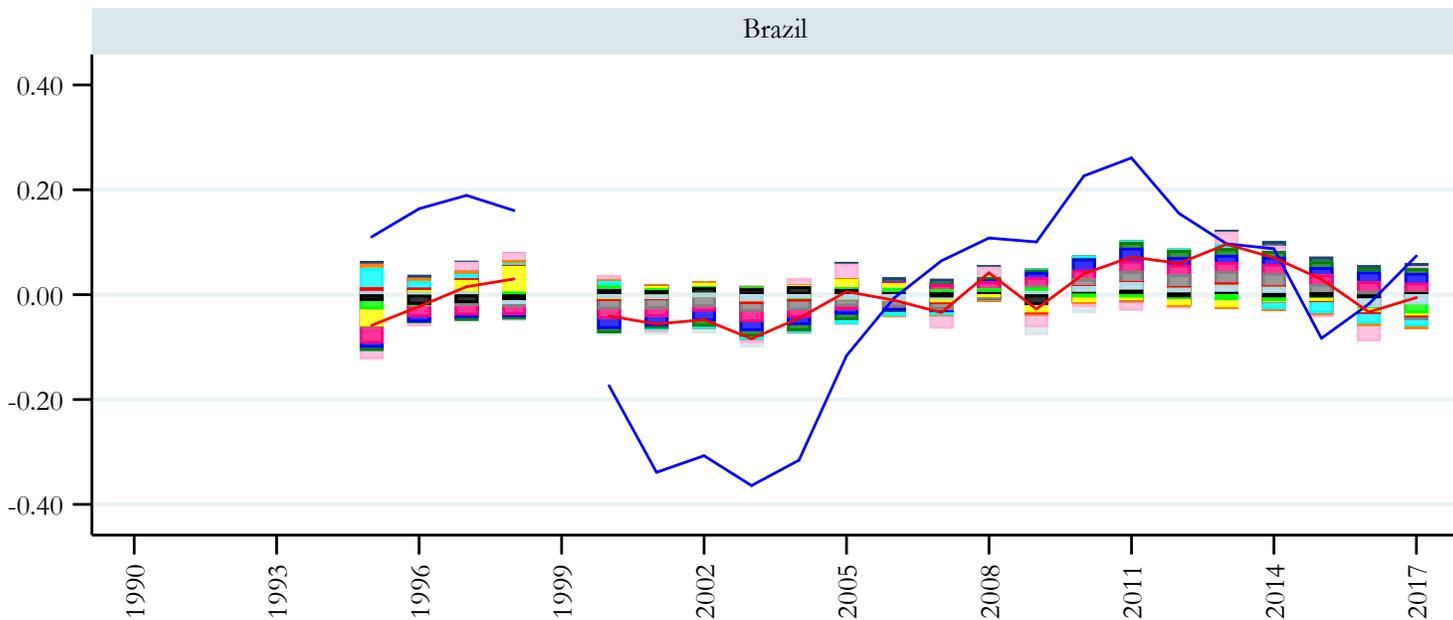
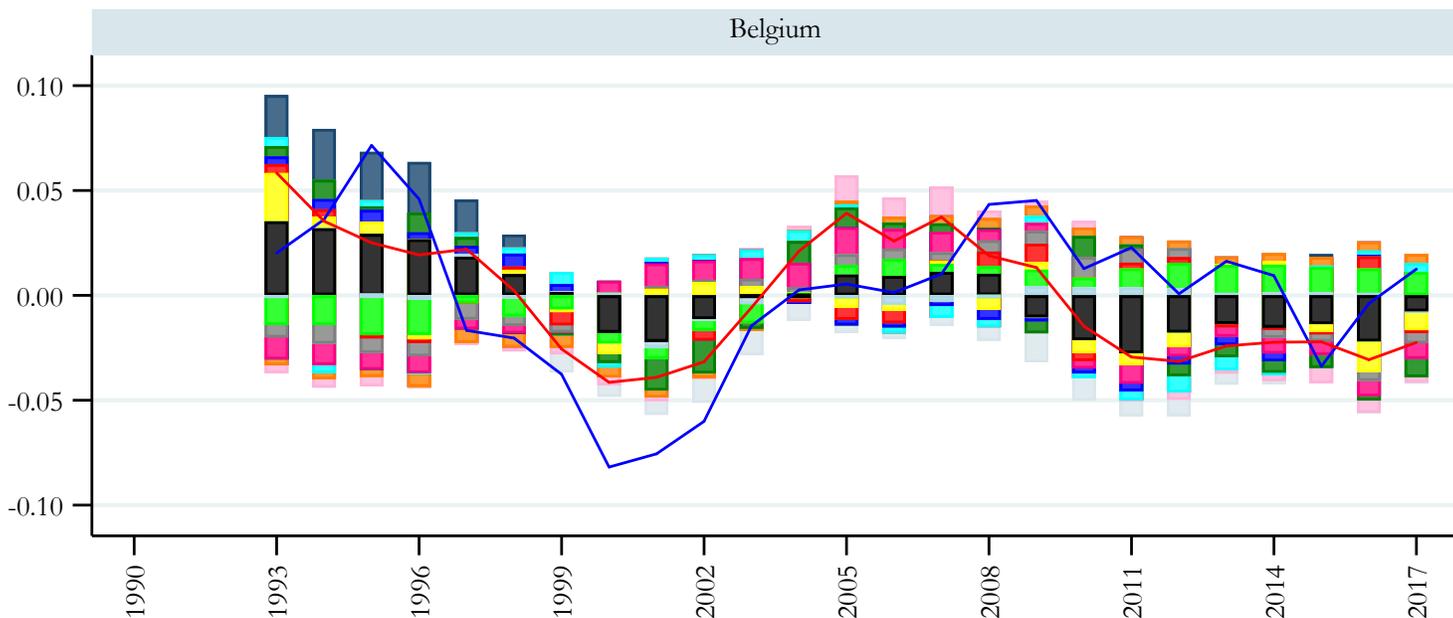
Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



year

- | | |
|---|---|
| ■ VIX + Share of Reserves terms | ■ Change in reserves to GDP*capital control (rel to TRD PRT) |
| ■ Share of administered prices | ■ Population Growth (rel to TRD PRT) |
| ■ Expected GDP growth of medium-term (rel to TRD PRT) | ■ Lag of Trade Openness (avg. of exports and imports to GDP) (rel to TRD PRT) |
| ■ Log commodity Terms Of Trade | ■ Lag of Home bias (rel to TRD PRT) |
| ■ Lag of Demeaned PPPGDP/Top3(PPP) | ■ Private credit/GDP gap (Detrended) (rel to TRD PRT) |
| ■ Real interest rate differential interacted with K openness (rel to TRD PRT) | ■ Lag of Public Health Expenditure (rel to TRD PRT) |
| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| — Actual b | — Fitted b |

Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)

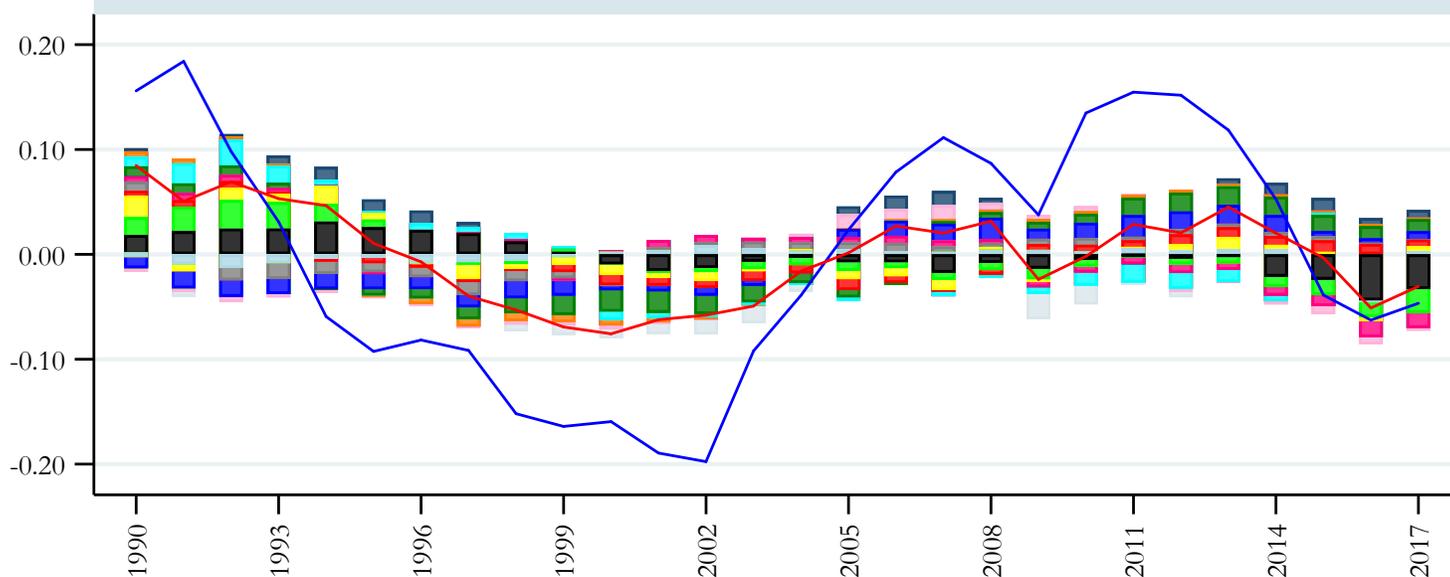


year

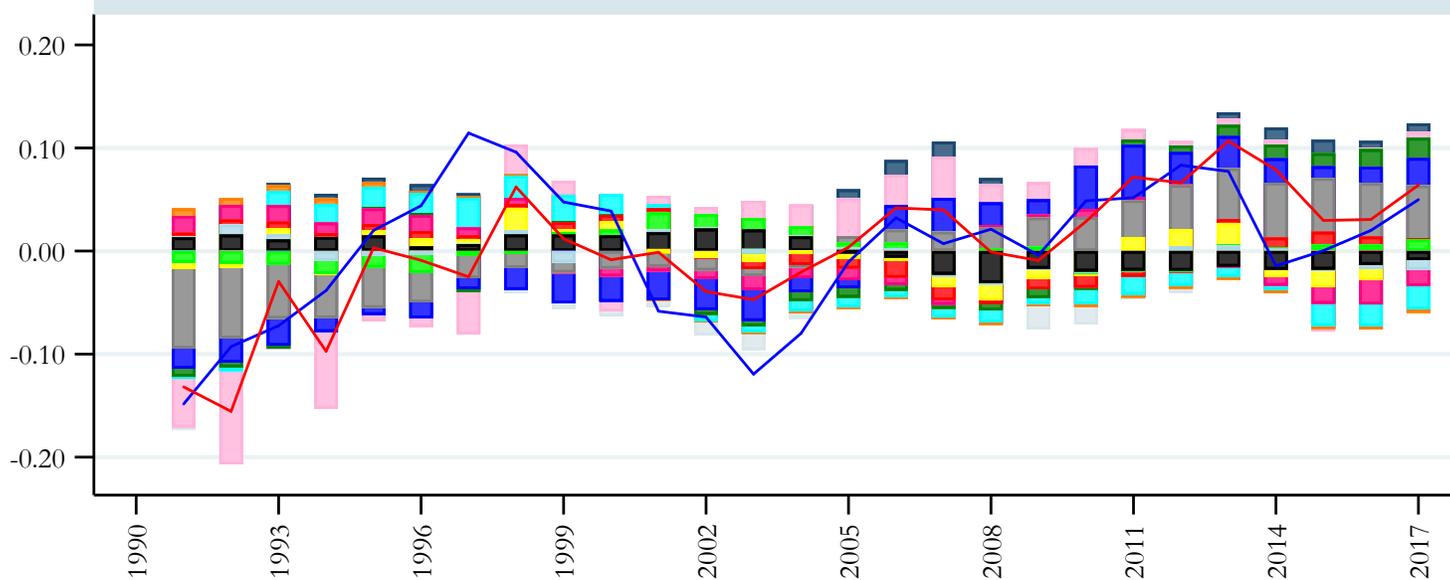
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| ■ VIX + Share of Reserves terms | ■ Change in reserves to GDP*capital control (rel to TRD PRT) |
| ■ Share of administered prices | ■ Population Growth (rel to TRD PRT) |
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| ■ Lag of Demeaned PPPGDP/Top3(PPP) | ■ Private credit/GDP gap (Detrended) (rel to TRD PRT) |
| ■ Real interest rate differential interacted with K openness (rel to TRD PRT) | ■ Lag of Public Health Expenditure (rel to TRD PRT) |
| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| ■ Actual b | ■ Fitted b |

Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)

Canada



Chile

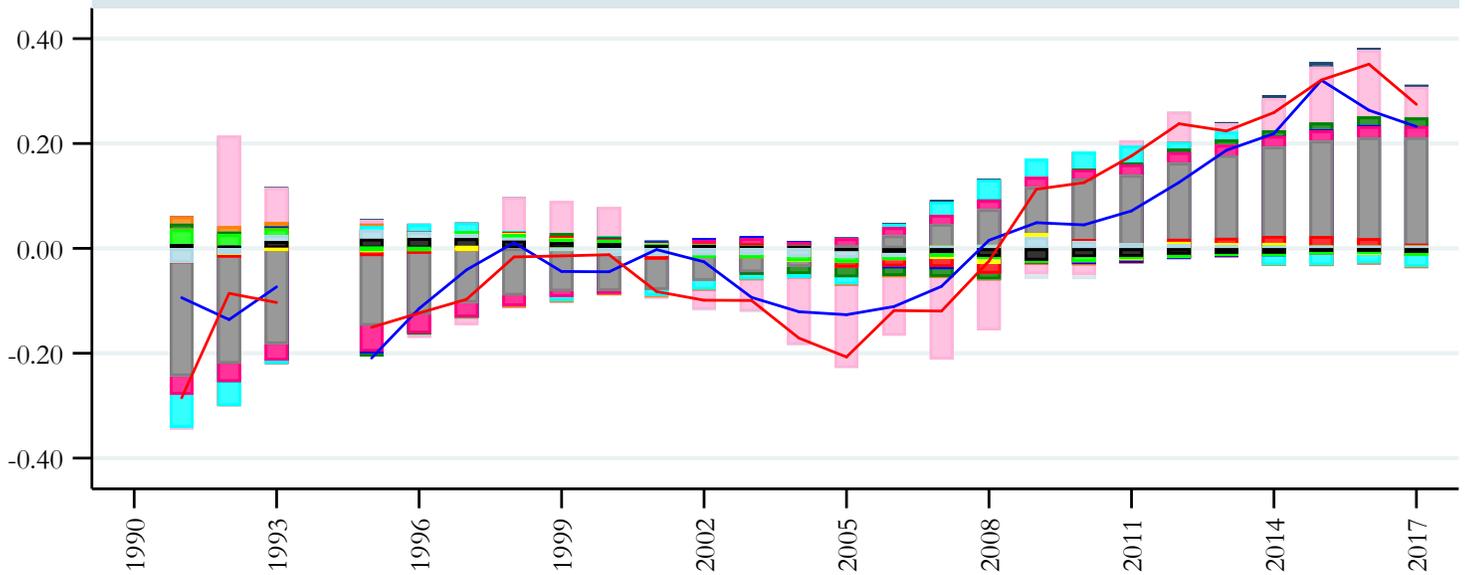


year

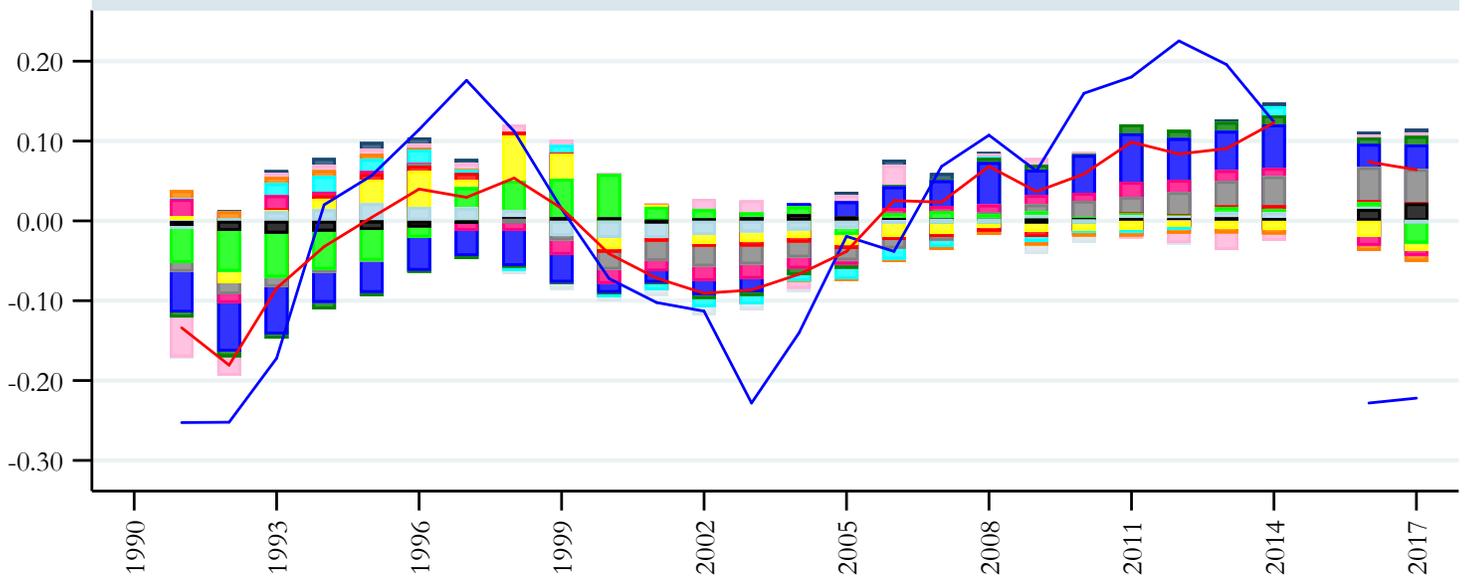
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|---|---|
| ■ VIX + Share of Reserves terms | ■ Change in reserves to GDP*capital control (rel to TRD PRT) |
| ■ Share of administered prices | ■ Population Growth (rel to TRD PRT) |
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| ■ Log commodity Terms Of Trade | ■ Lag of Home bias (rel to TRD PRT) |
| ■ Lag of Demeaned PPPGDP/Top3(PPP) | ■ Private credit/GDP gap (Detrended) (rel to TRD PRT) |
| ■ Real interest rate differential interacted with K openness (rel to TRD PRT) | ■ Lag of Public Health Expenditure (rel to TRD PRT) |
| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| ■ Actual b | ■ Fitted b |

Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)

China



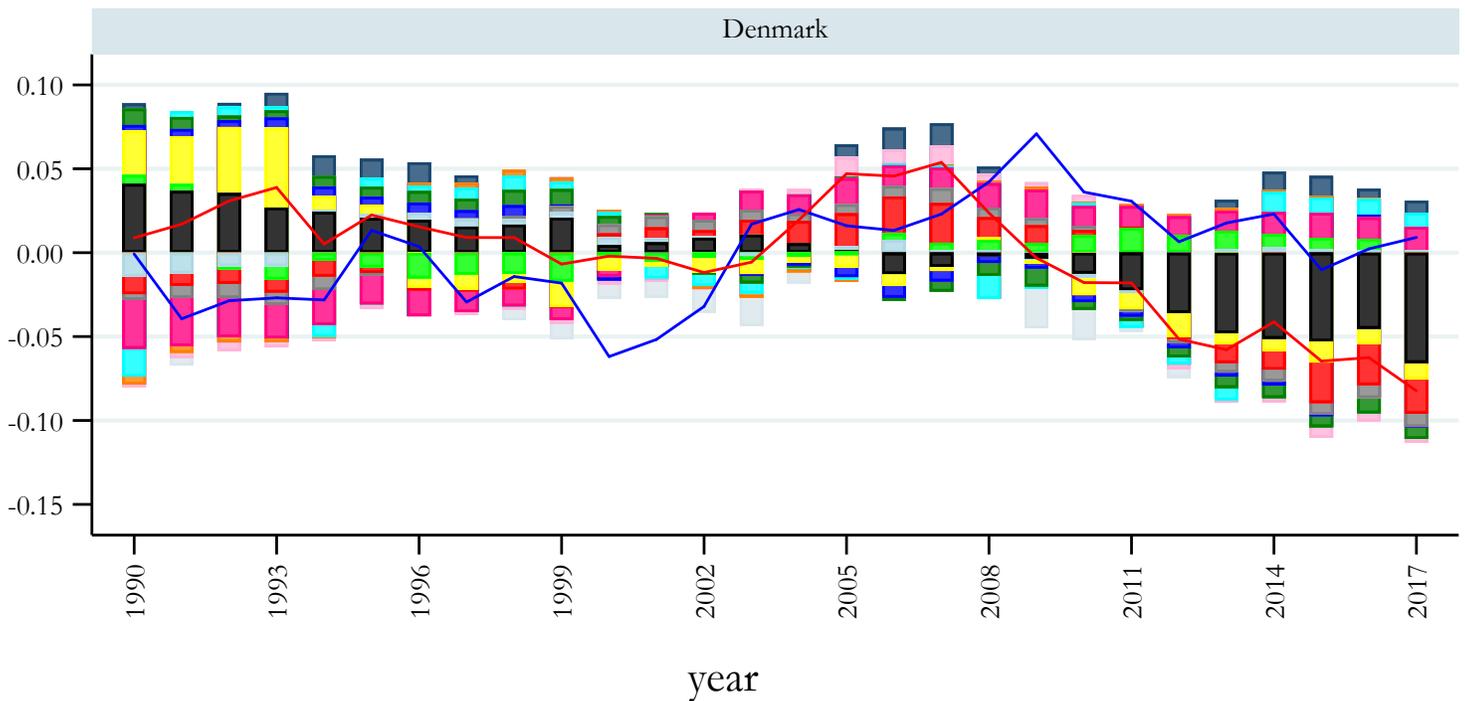
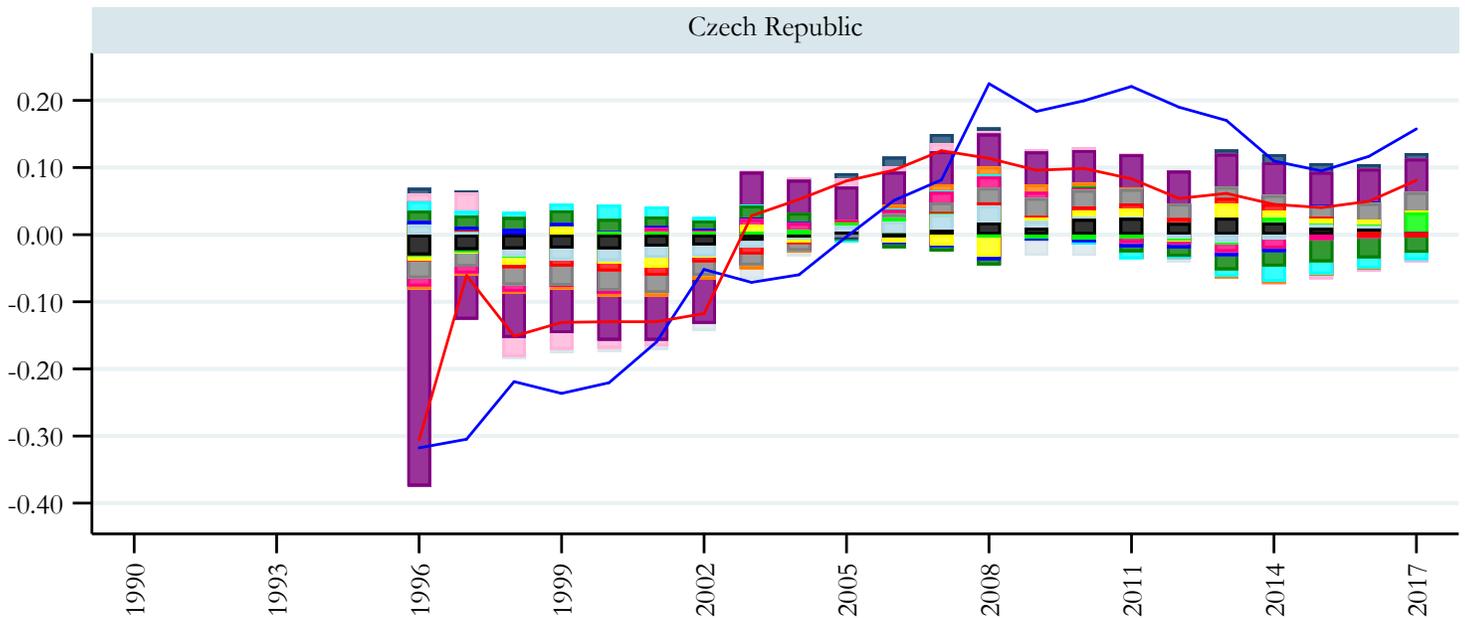
Colombia



year

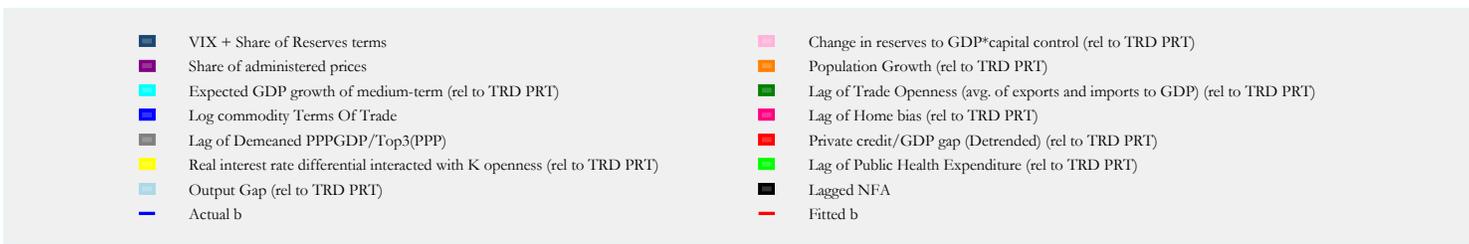
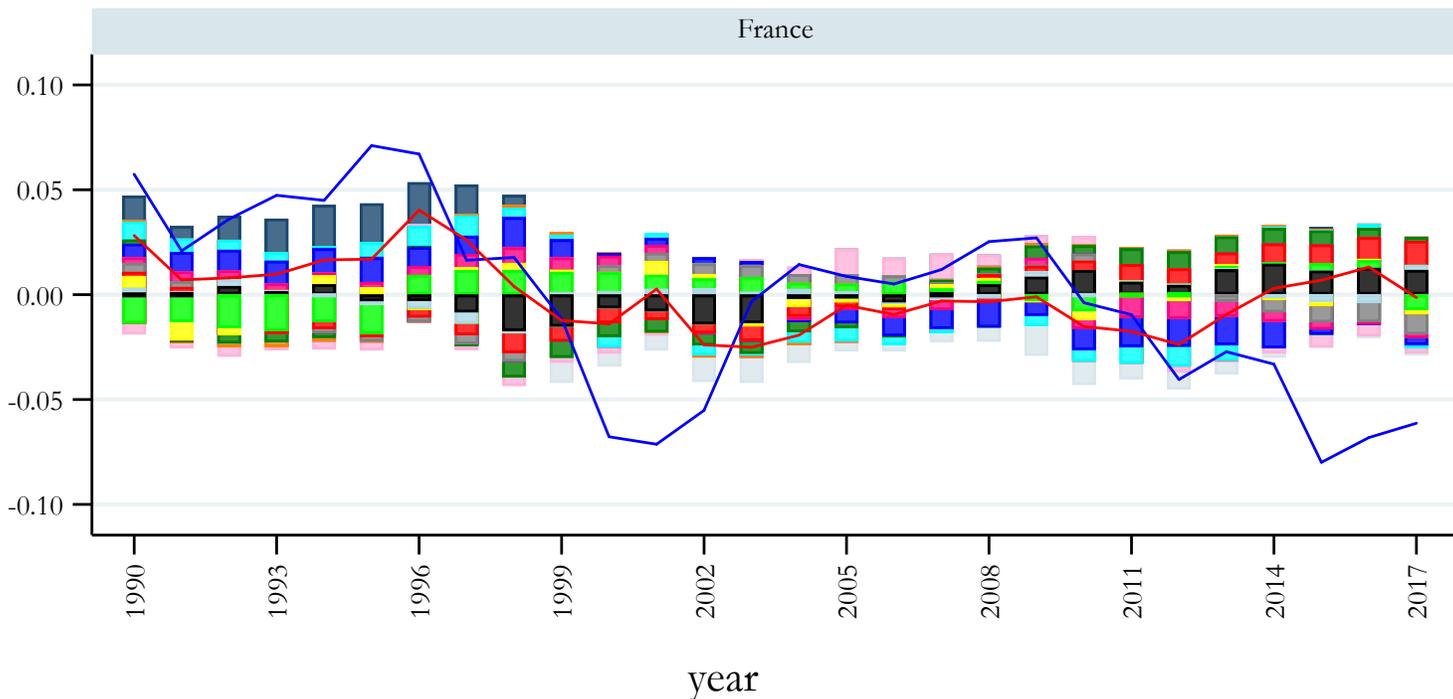
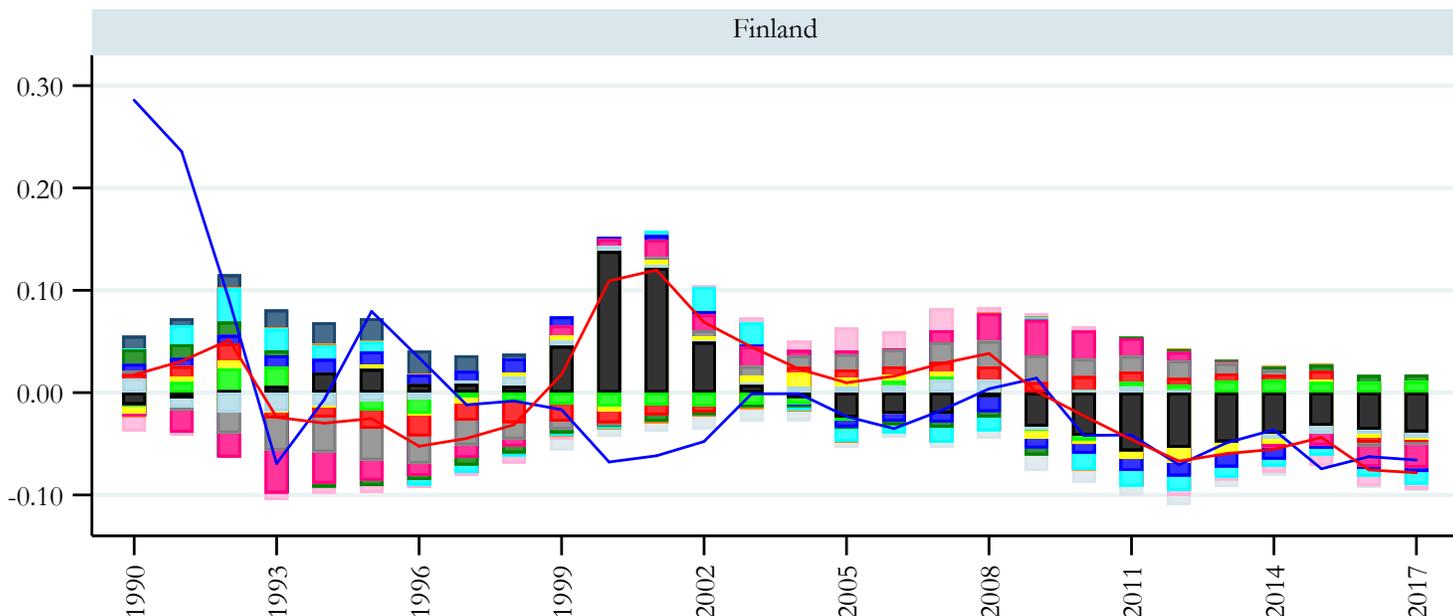
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| <ul style="list-style-type: none"> ■ VIX + Share of Reserves terms ■ Share of administered prices ■ Expected GDP growth of medium-term (rel to TRD PRT) ■ Log commodity Terms Of Trade ■ Lag of Demeaned PPPGDP/Top3(PPP) ■ Real interest rate differential interacted with K openness (rel to TRD PRT) ■ Output Gap (rel to TRD PRT) — Actual b | <ul style="list-style-type: none"> ■ Change in reserves to GDP*capital control (rel to TRD PRT) ■ Population Growth (rel to TRD PRT) ■ Lag of Trade Openness (avg. of exports and imports to GDP) (rel to TRD PRT) ■ Lag of Home bias (rel to TRD PRT) ■ Private credit/GDP gap (Detrended) (rel to TRD PRT) ■ Lag of Public Health Expenditure (rel to TRD PRT) ■ Lagged NFA — Fitted b |
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Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)

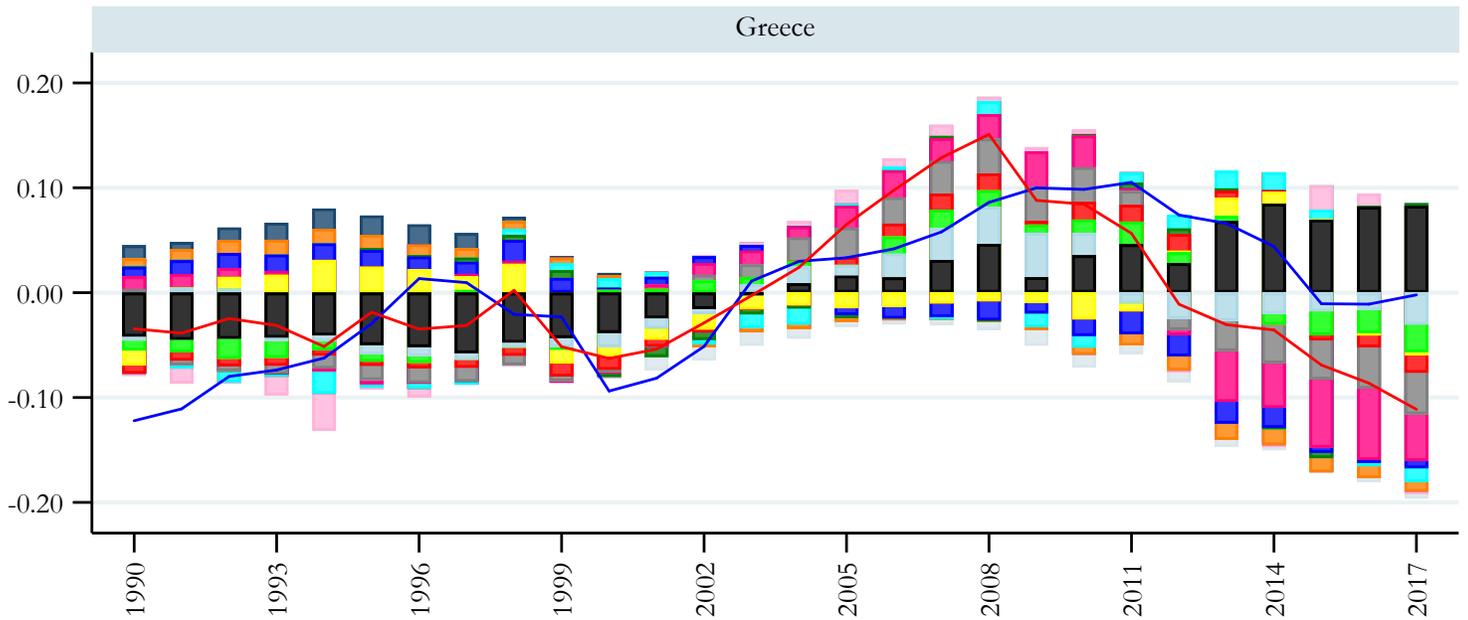
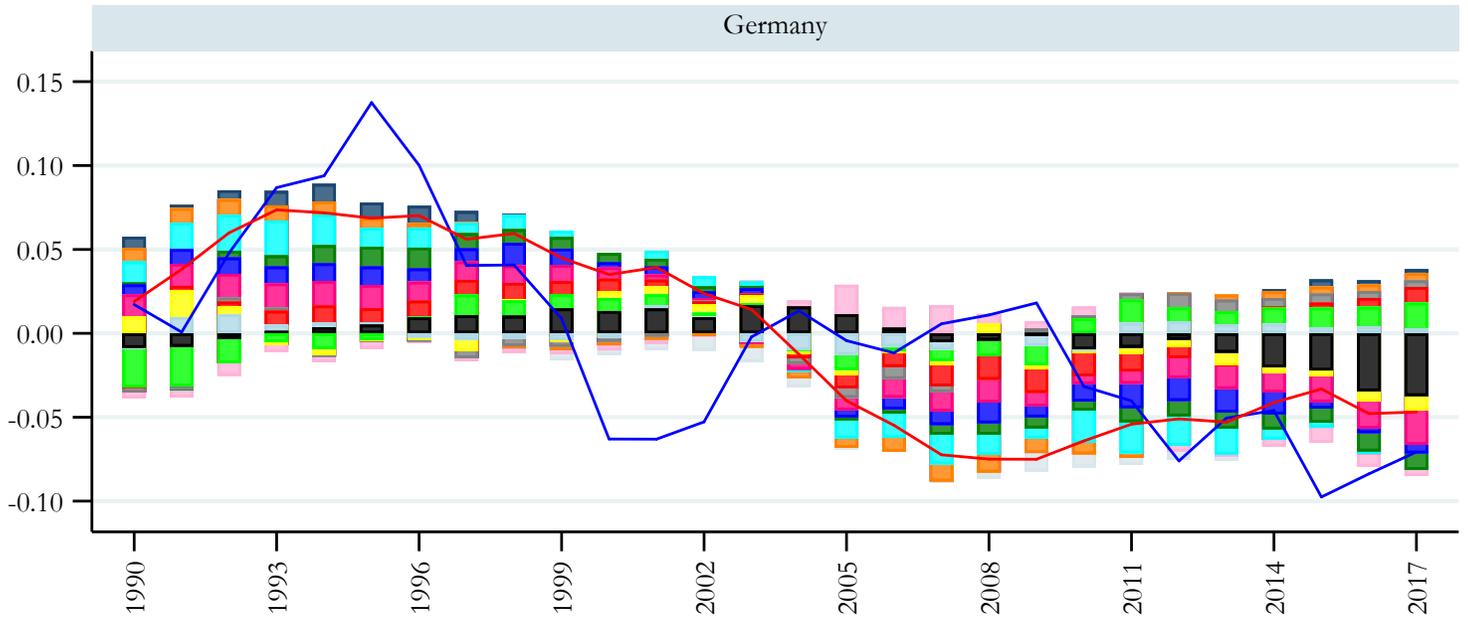


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| ■ VIX + Share of Reserves terms | ■ Change in reserves to GDP*capital control (rel to TRD PRT) |
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| ■ Real interest rate differential interacted with K openness (rel to TRD PRT) | ■ Lag of Public Health Expenditure (rel to TRD PRT) |
| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| — Actual b | — Fitted b |

Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



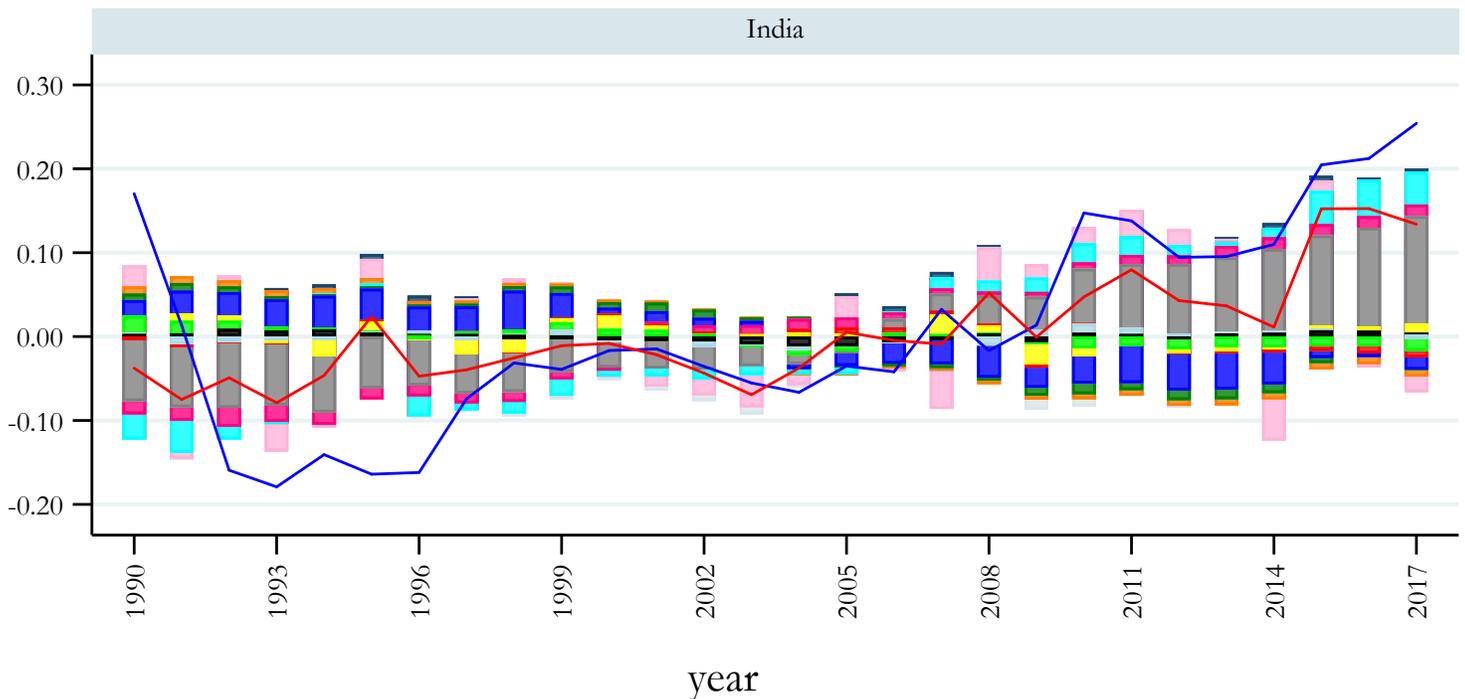
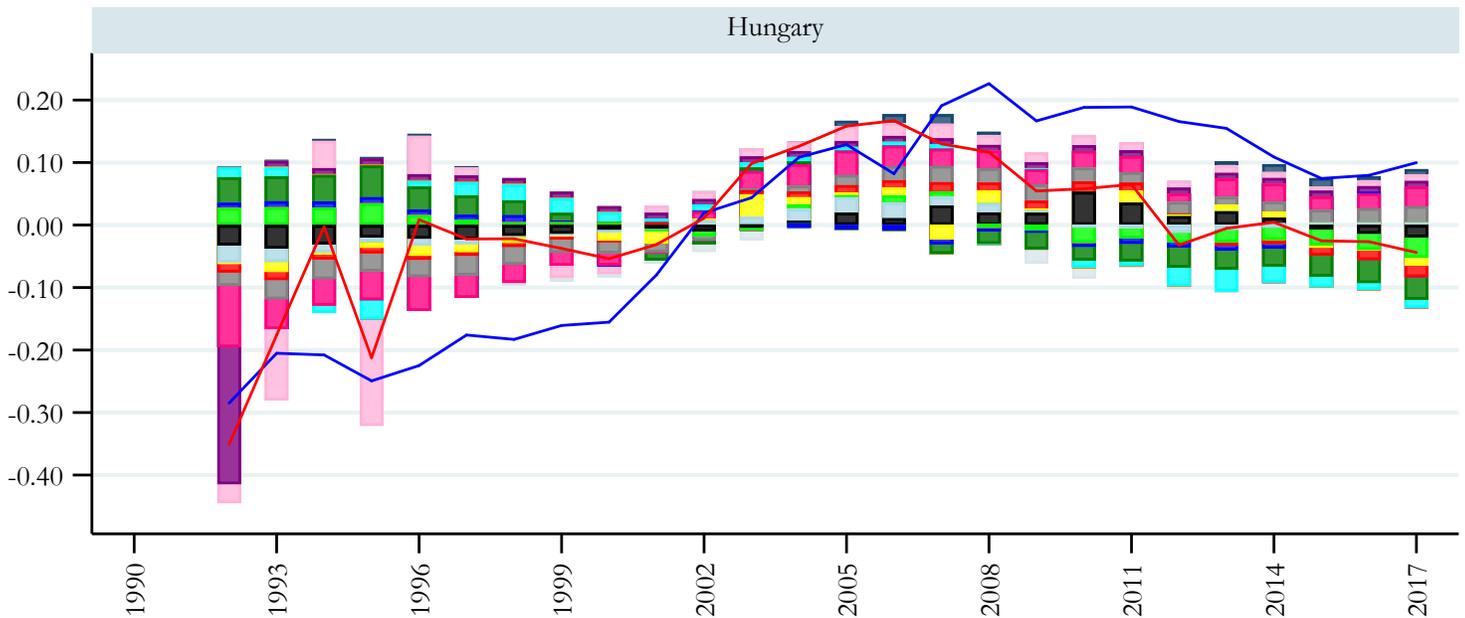
Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



year

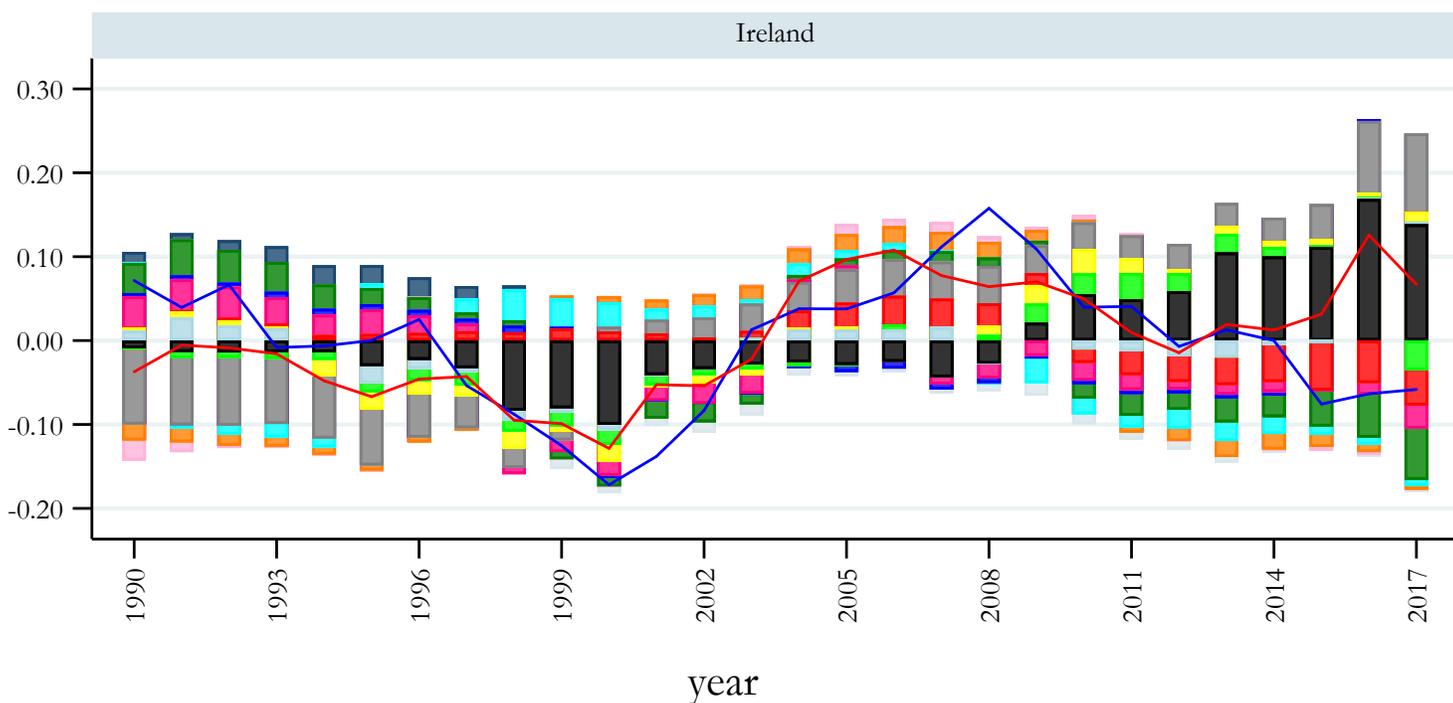
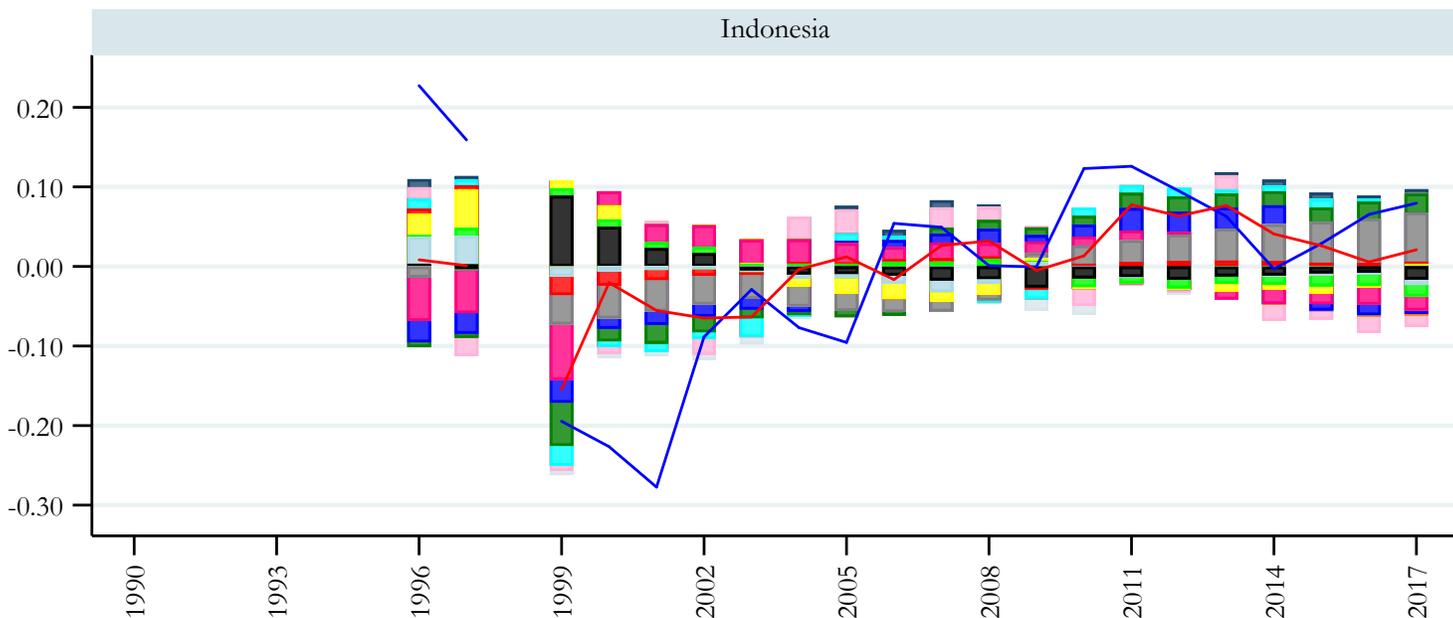
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| <ul style="list-style-type: none"> ■ VIX + Share of Reserves terms ■ Share of administered prices ■ Expected GDP growth of medium-term (rel to TRD PRT) ■ Log commodity Terms Of Trade ■ Lag of Demeaned PPPGDP/Top3(PPP) ■ Real interest rate differential interacted with K openness (rel to TRD PRT) ■ Output Gap (rel to TRD PRT) — Actual b | <ul style="list-style-type: none"> ■ Change in reserves to GDP*capital control (rel to TRD PRT) ■ Population Growth (rel to TRD PRT) ■ Lag of Trade Openness (avg. of exports and imports to GDP) (rel to TRD PRT) ■ Lag of Home bias (rel to TRD PRT) ■ Private credit/GDP gap (Detrended) (rel to TRD PRT) ■ Lag of Public Health Expenditure (rel to TRD PRT) ■ Lagged NFA — Fitted b |
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Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



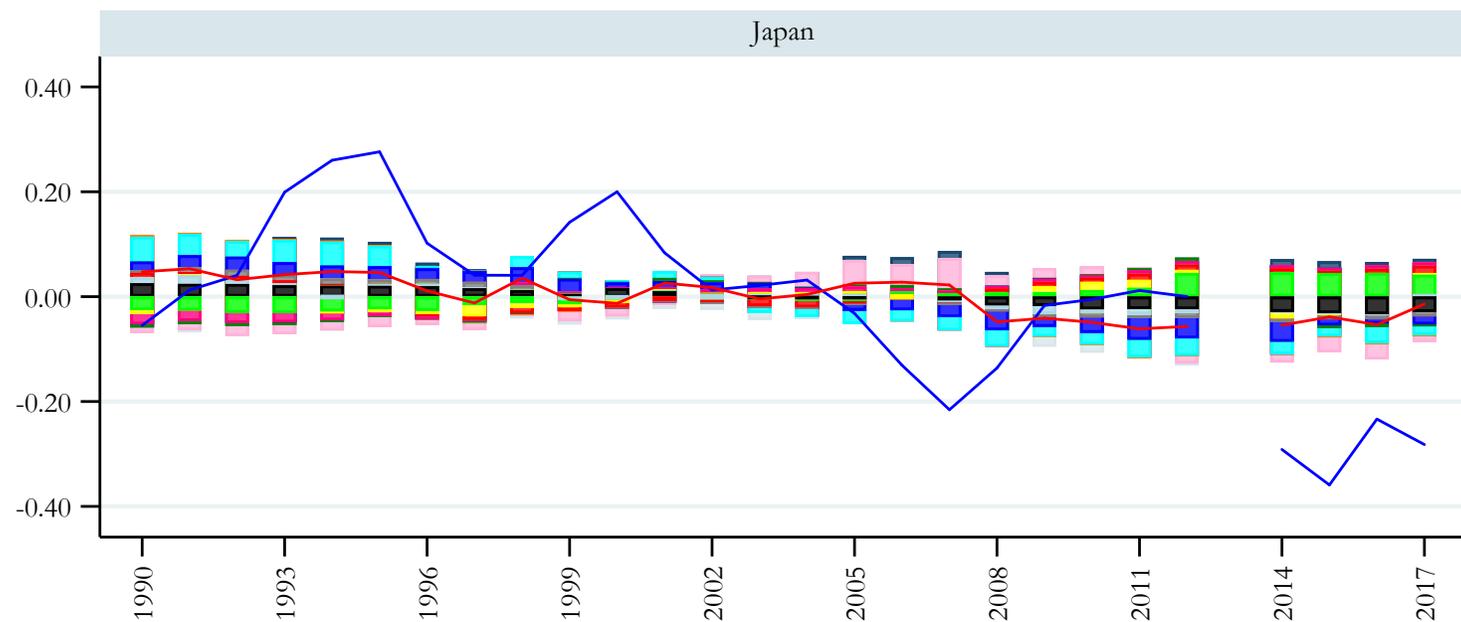
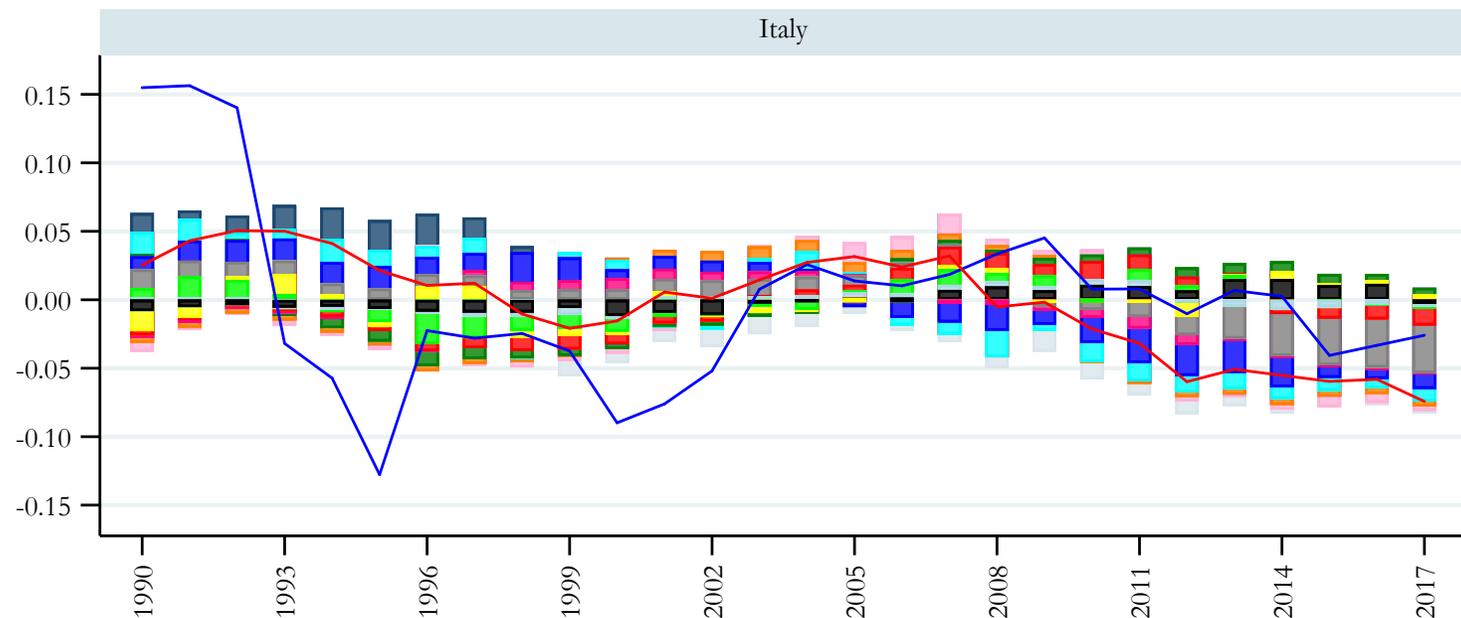
- VIX + Share of Reserves terms
- Share of administered prices
- Expected GDP growth of medium-term (rel to TRD PRT)
- Log commodity Terms Of Trade
- Lag of Demeaned PPPGDP/Top3(PPP)
- Real interest rate differential interacted with K openness (rel to TRD PRT)
- Output Gap (rel to TRD PRT)
- Actual b
- Change in reserves to GDP*capital control (rel to TRD PRT)
- Population Growth (rel to TRD PRT)
- Lag of Trade Openness (avg. of exports and imports to GDP) (rel to TRD PRT)
- Lag of Home bias (rel to TRD PRT)
- Private credit/GDP gap (Detrended) (rel to TRD PRT)
- Lag of Public Health Expenditure (rel to TRD PRT)
- Lagged NFA
- Fitted b

Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



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|---|---|
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| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| ■ Actual b | ■ Fitted b |

Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)

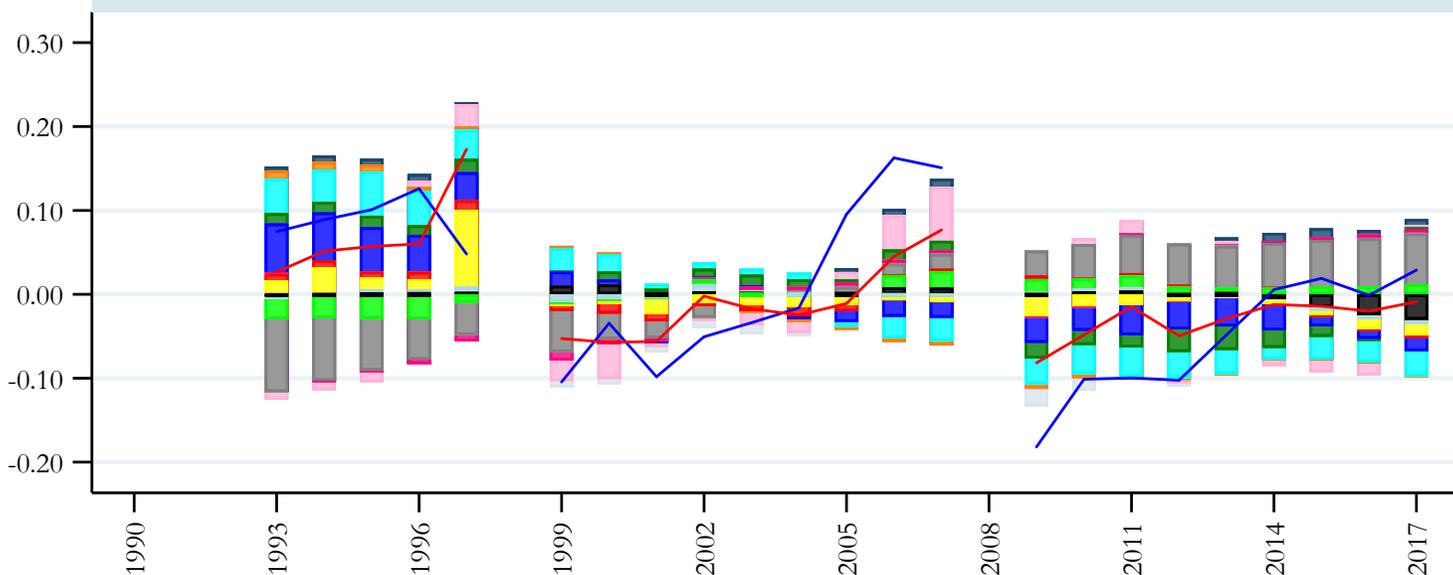


year

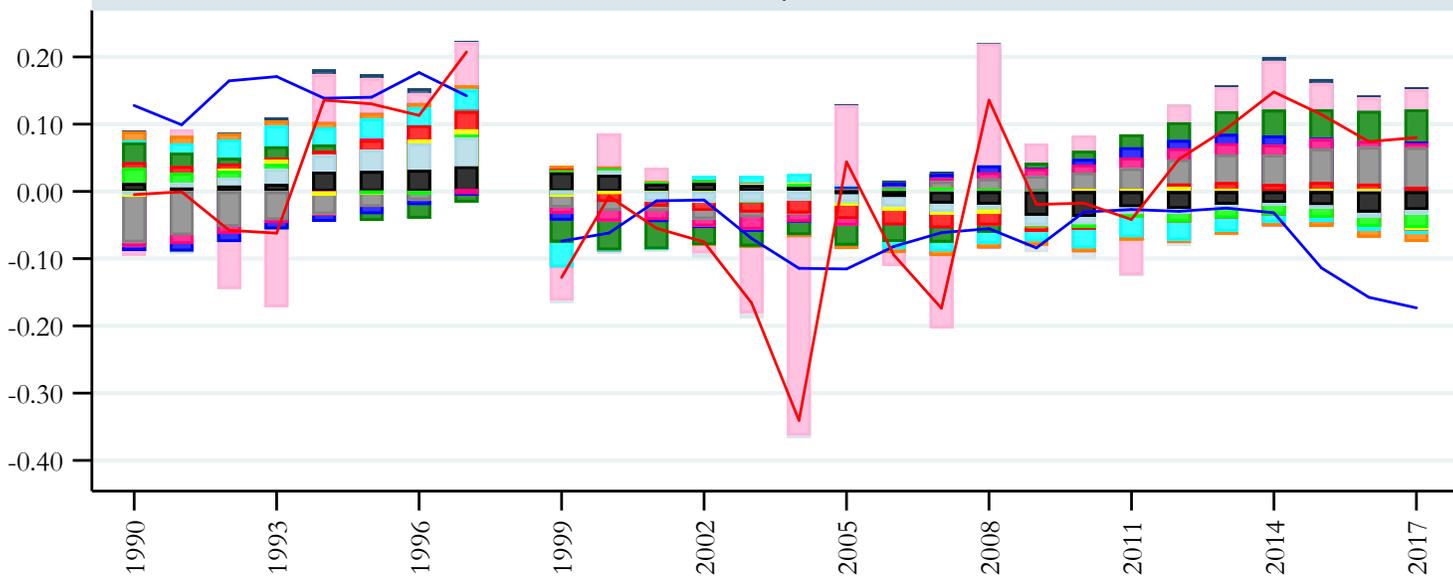
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| ■ VIX + Share of Reserves terms | ■ Change in reserves to GDP*capital control (rel to TRD PRT) |
| ■ Share of administered prices | ■ Population Growth (rel to TRD PRT) |
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| ■ Real interest rate differential interacted with K openness (rel to TRD PRT) | ■ Lag of Public Health Expenditure (rel to TRD PRT) |
| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| — Actual b | — Fitted b |

Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)

Korea



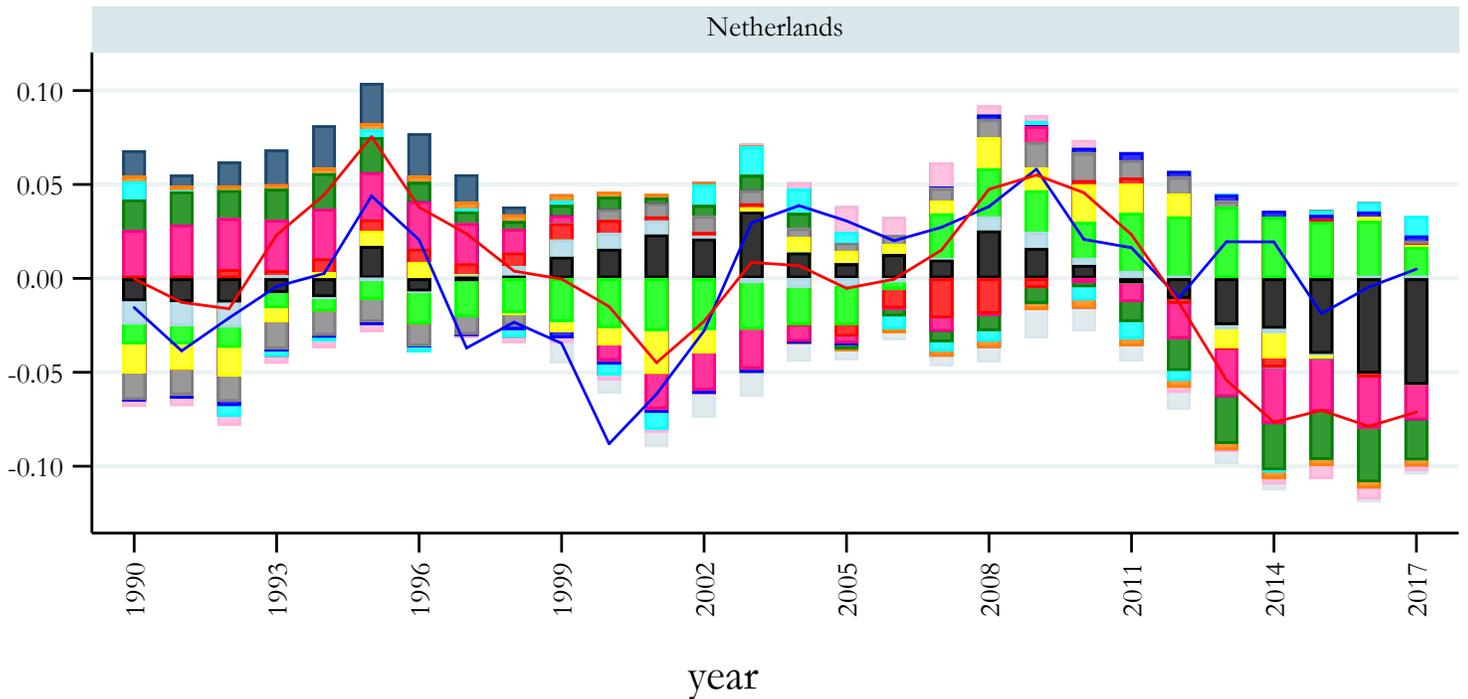
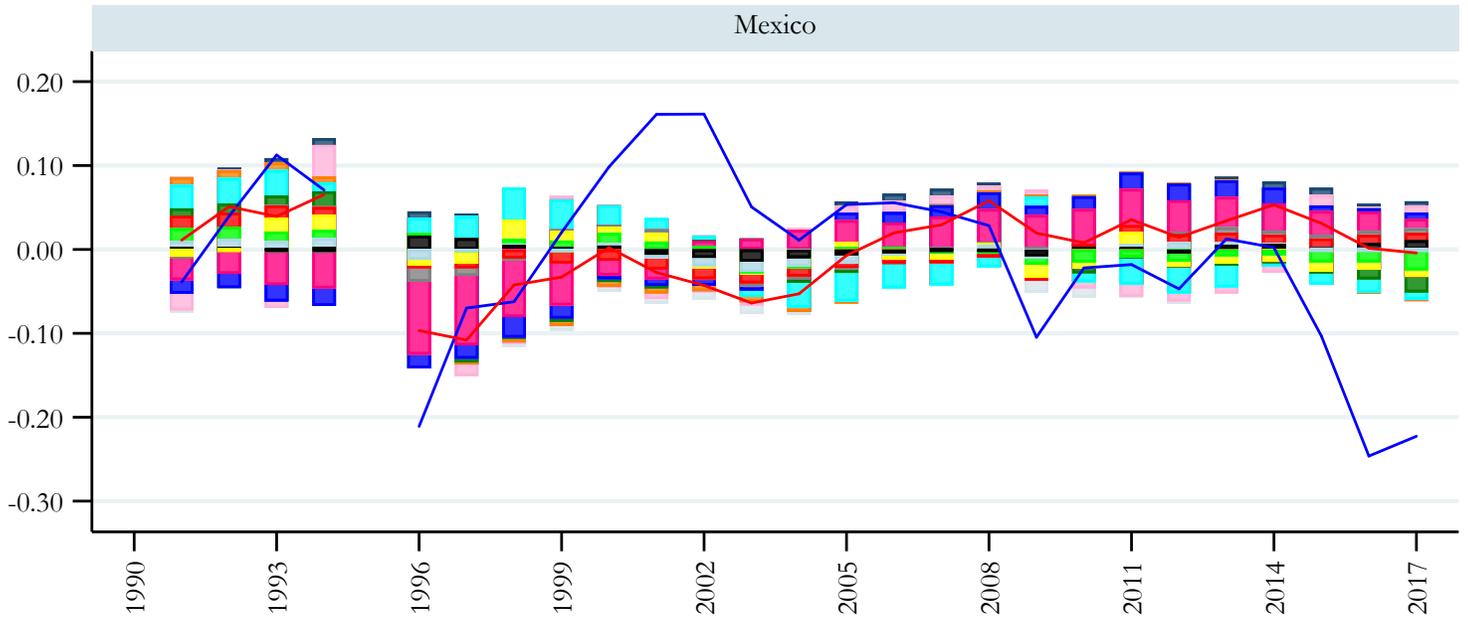
Malaysia



year

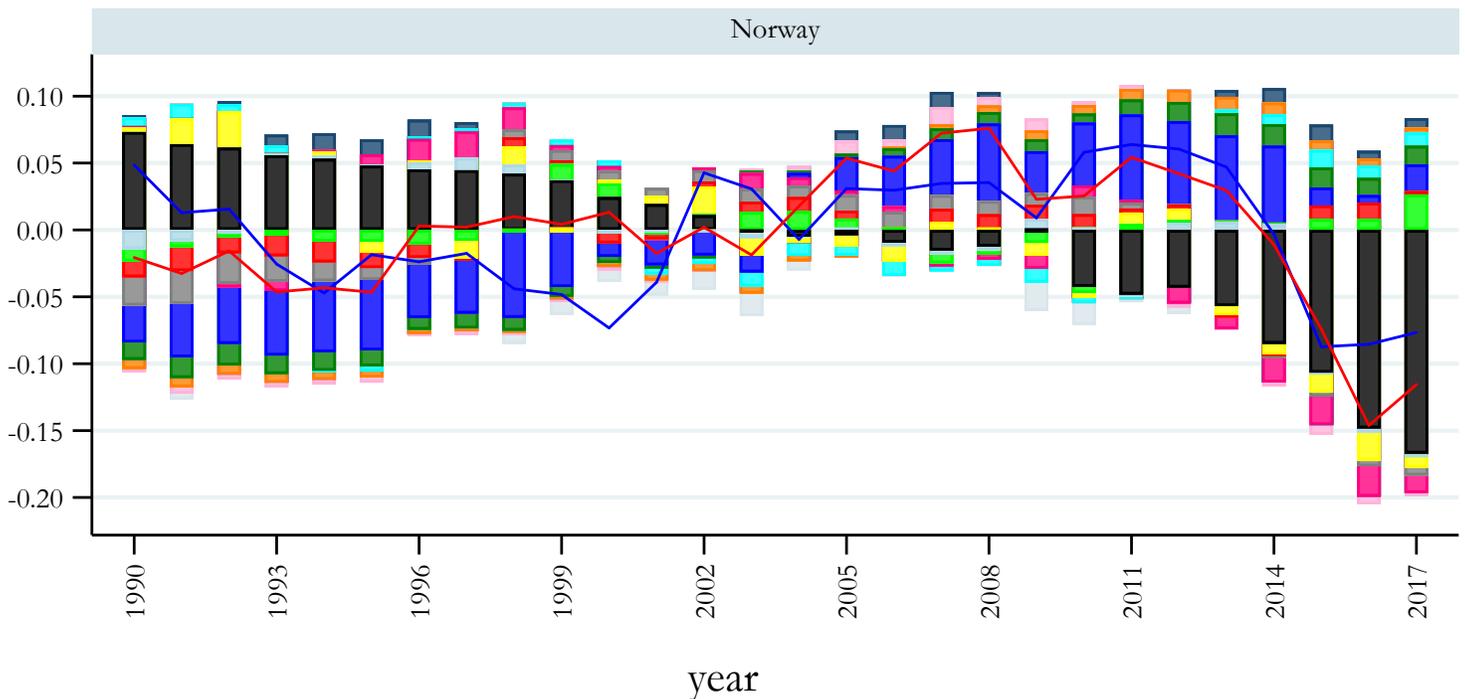
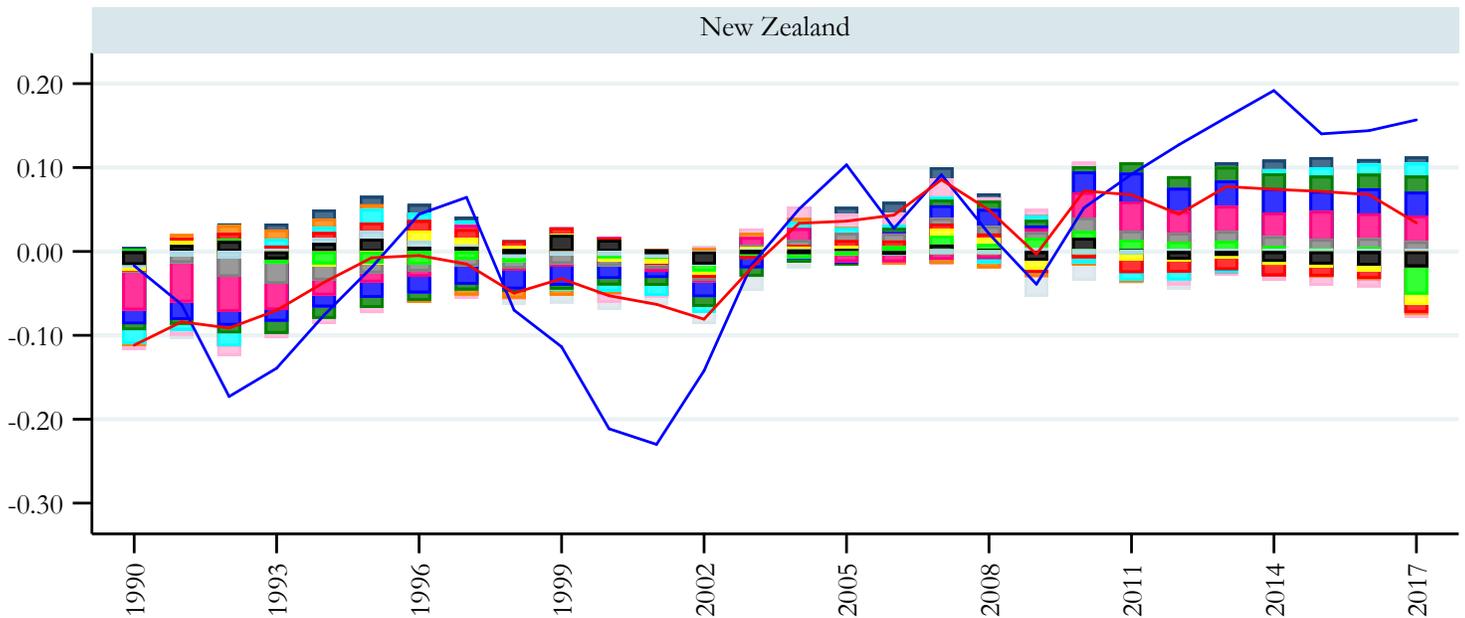
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| <ul style="list-style-type: none"> VIX + Share of Reserves terms Share of administered prices Expected GDP growth of medium-term (rel to TRD PRT) Log commodity Terms Of Trade Lag of Demeaned PPPGDP/Top3(PPP) Real interest rate differential interacted with K openness (rel to TRD PRT) Output Gap (rel to TRD PRT) Actual b | <ul style="list-style-type: none"> Change in reserves to GDP*capital control (rel to TRD PRT) Population Growth (rel to TRD PRT) Lag of Trade Openness (avg. of exports and imports to GDP) (rel to TRD PRT) Lag of Home bias (rel to TRD PRT) Private credit/GDP gap (Detrended) (rel to TRD PRT) Lag of Public Health Expenditure (rel to TRD PRT) Lagged NFA Fitted b |
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Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



- VIX + Share of Reserves terms
- Share of administered prices
- Expected GDP growth of medium-term (rel to TRD PRT)
- Log commodity Terms Of Trade
- Lag of Demeaned PPPGDP/Top3(PPP)
- Real interest rate differential interacted with K openness (rel to TRD PRT)
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- Private credit/GDP gap (Detrended) (rel to TRD PRT)
- Lag of Public Health Expenditure (rel to TRD PRT)
- Lagged NFA
- Fitted b

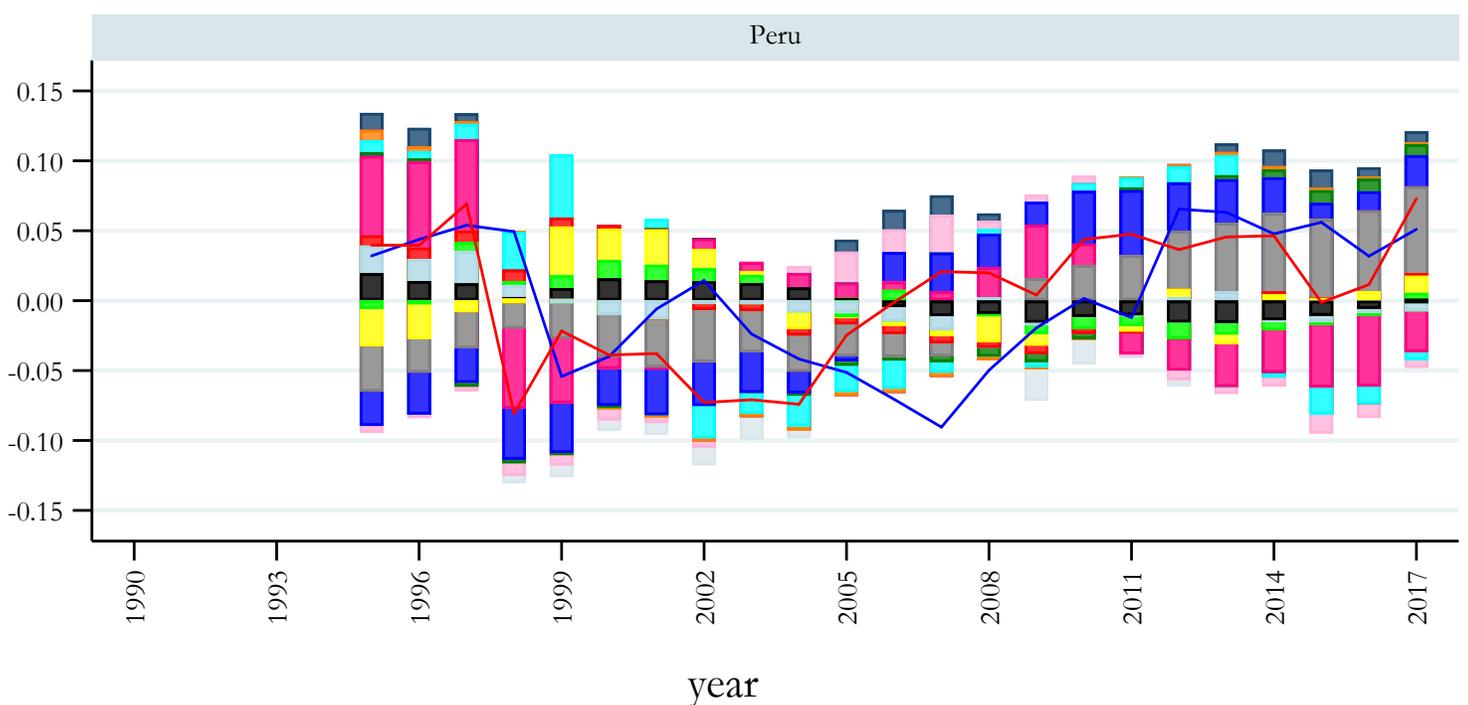
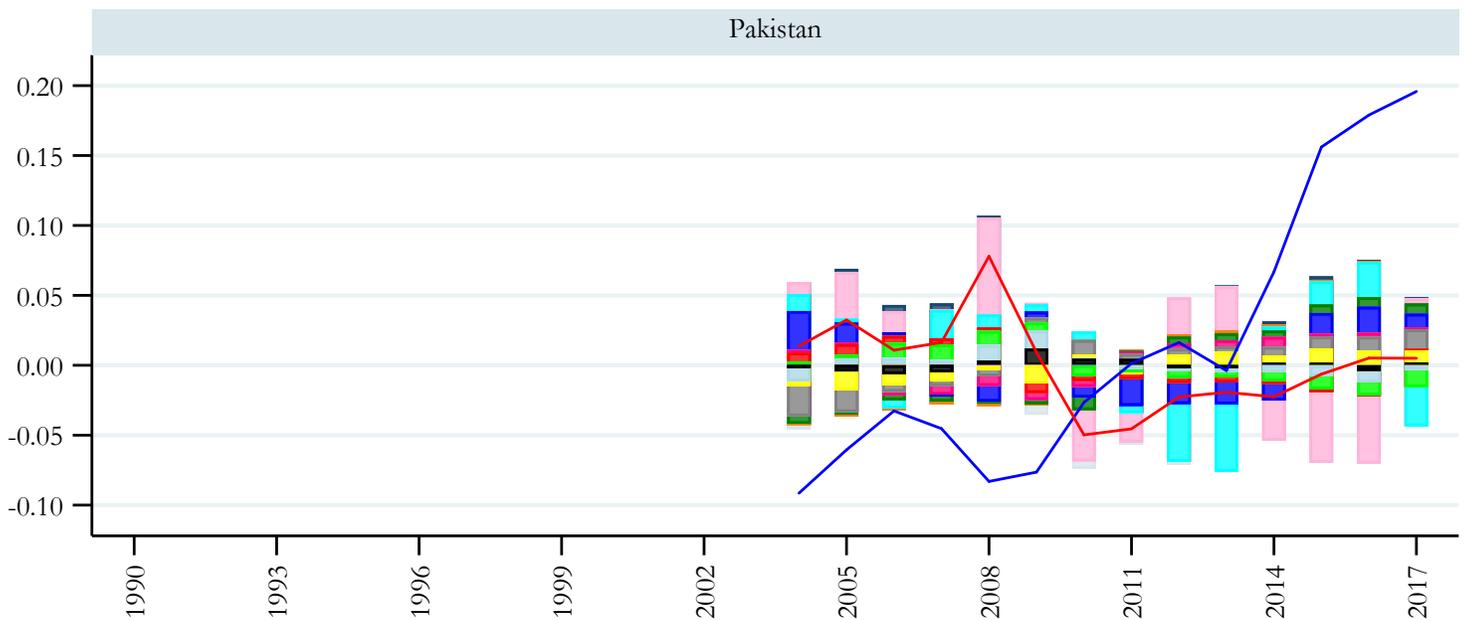
Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



year

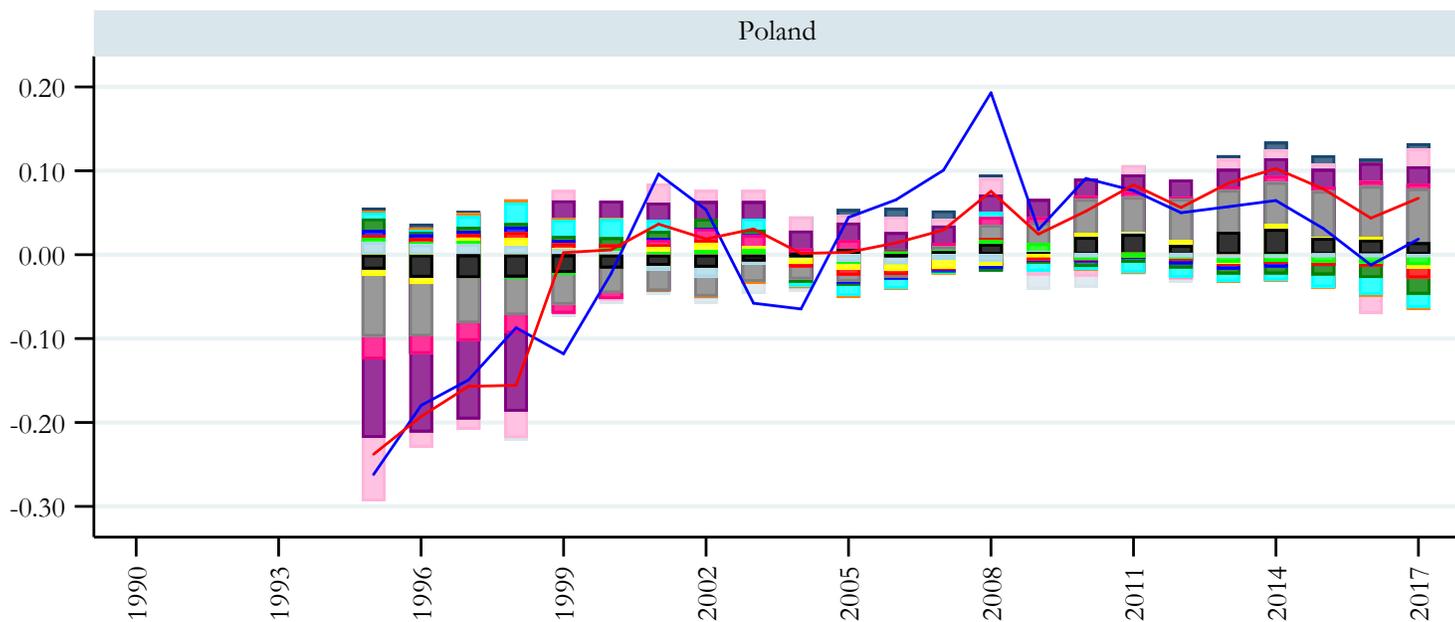
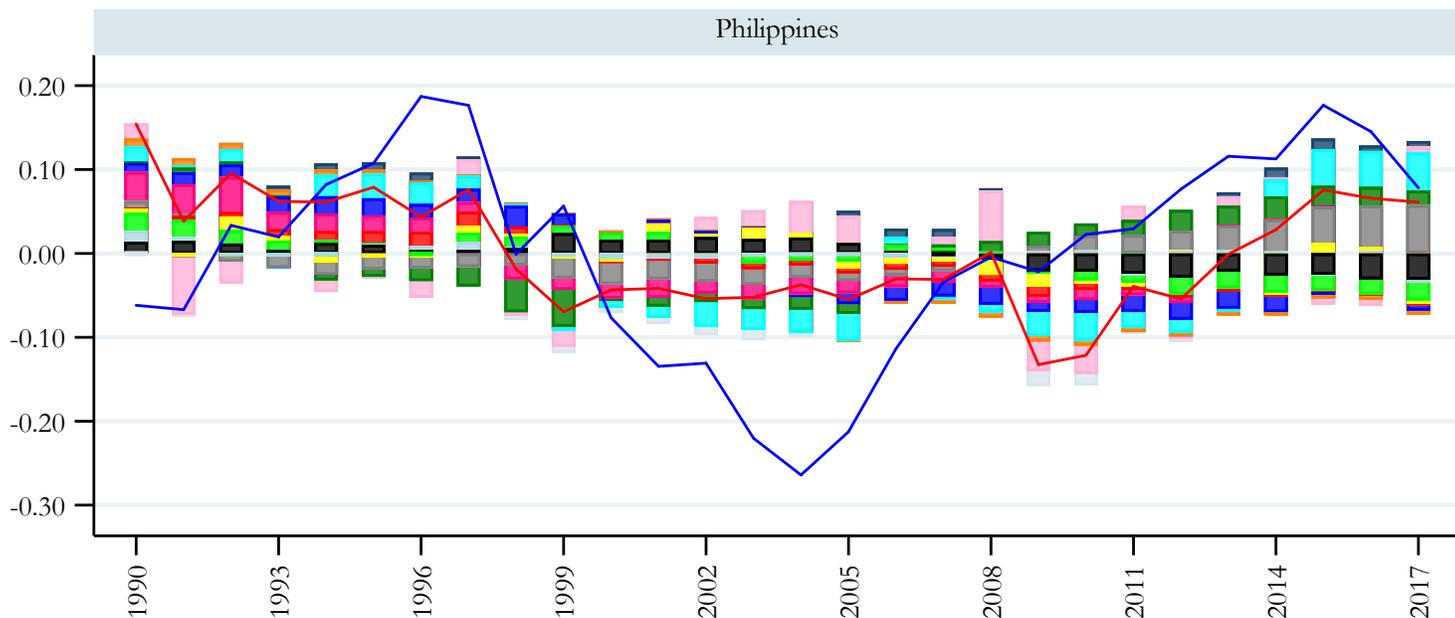
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| ■ VIX + Share of Reserves terms | ■ Change in reserves to GDP*capital control (rel to TRD PRT) |
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| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| ■ Actual b | ■ Fitted b |

Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



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|---|---|
| ■ VIX + Share of Reserves terms | ■ Change in reserves to GDP*capital control (rel to TRD PRT) |
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| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| ■ Actual b | ■ Fitted b |

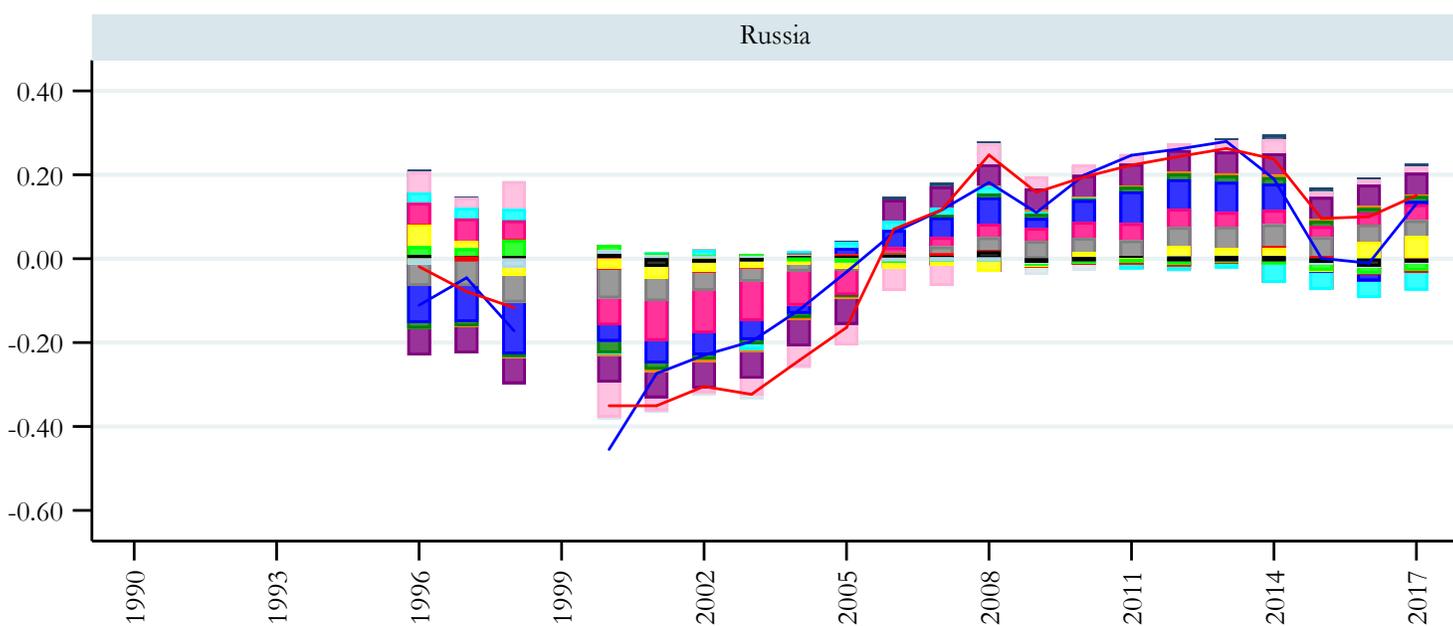
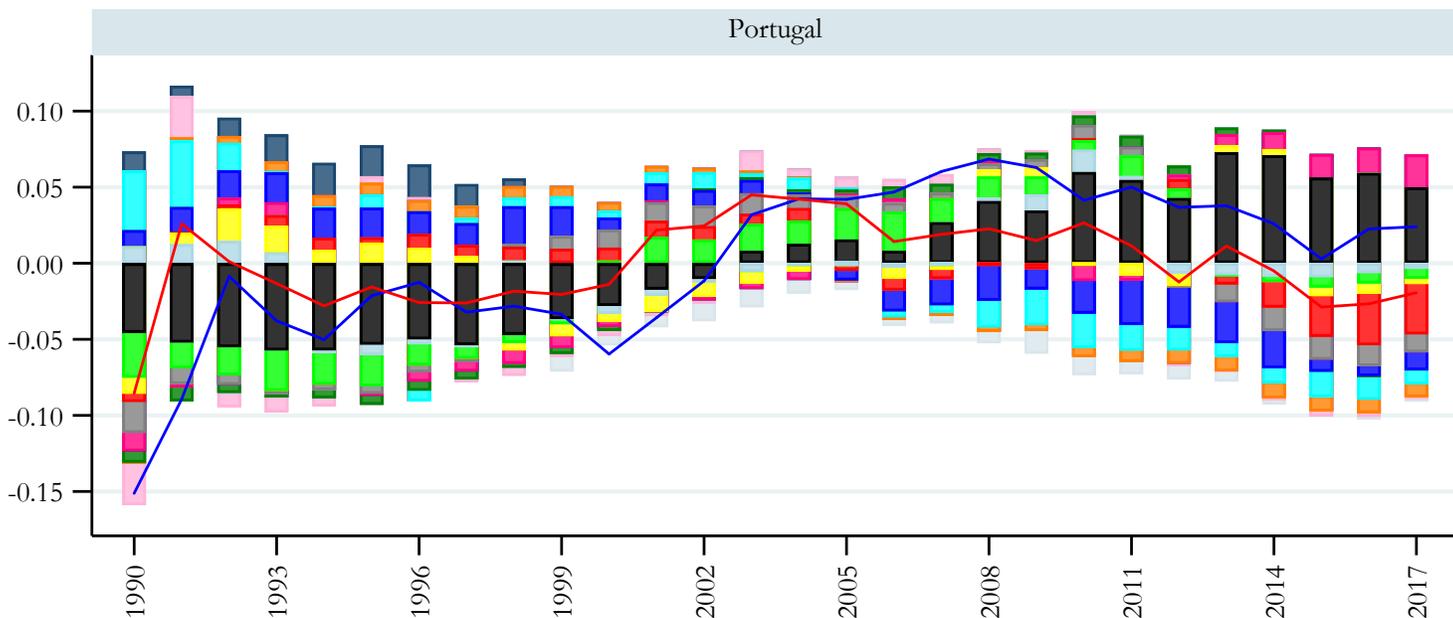
Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



year

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| ■ VIX + Share of Reserves terms | ■ Change in reserves to GDP*capital control (rel to TRD PRT) |
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| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| — Actual b | — Fitted b |

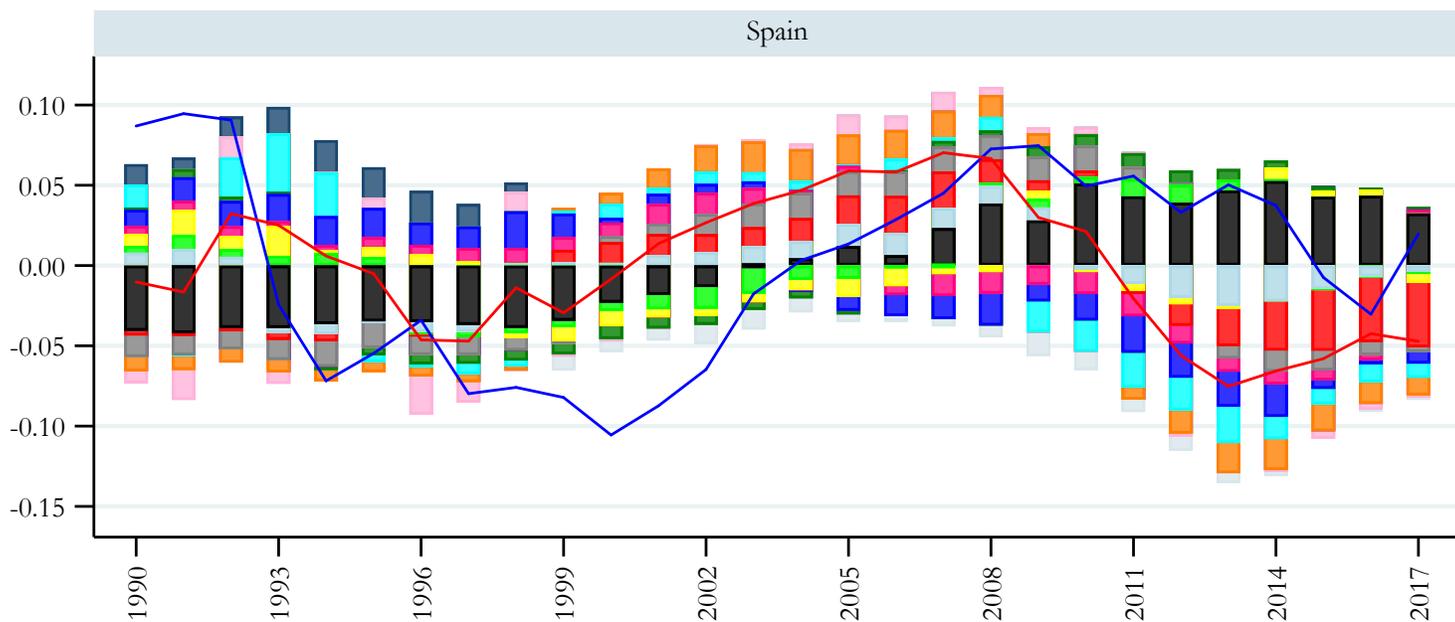
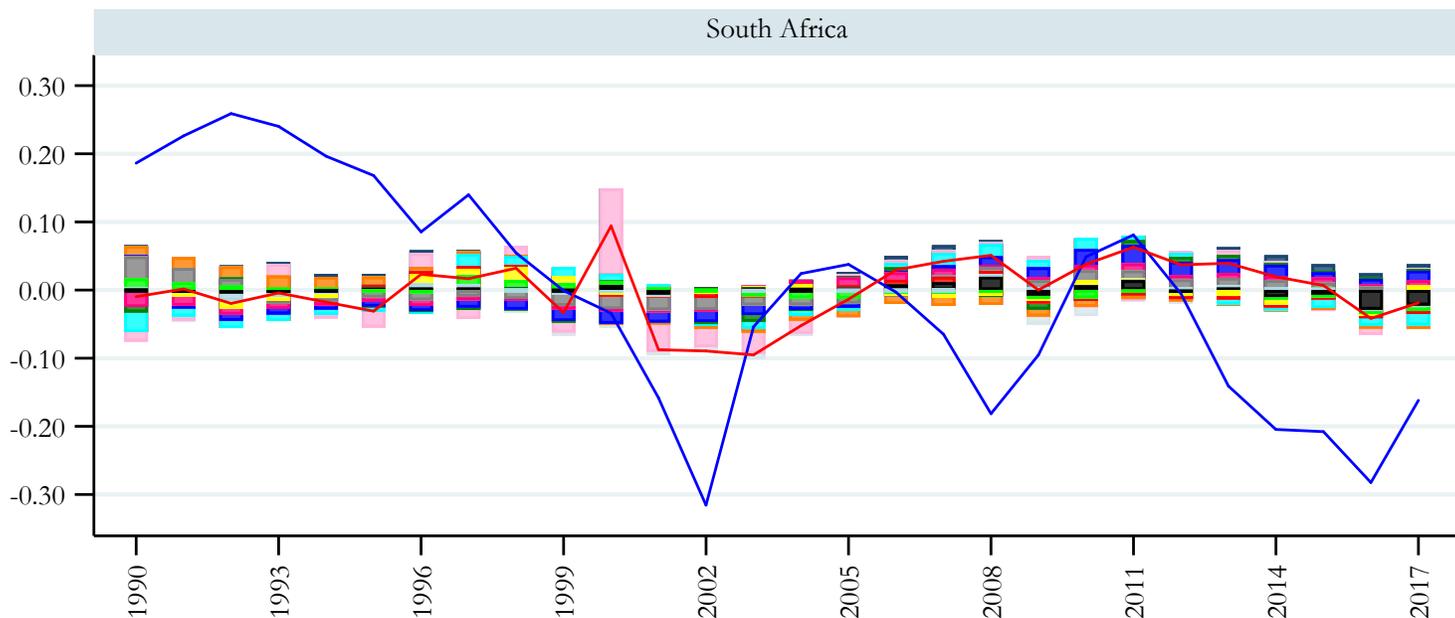
Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



year

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| <ul style="list-style-type: none"> ■ VIX + Share of Reserves terms ■ Share of administered prices ■ Expected GDP growth of medium-term (rel to TRD PRT) ■ Log commodity Terms Of Trade ■ Lag of Demeaned PPPGDP/Top3(PPP) ■ Real interest rate differential interacted with K openness (rel to TRD PRT) ■ Output Gap (rel to TRD PRT) — Actual b | <ul style="list-style-type: none"> ■ Change in reserves to GDP*capital control (rel to TRD PRT) ■ Population Growth (rel to TRD PRT) ■ Lag of Trade Openness (avg. of exports and imports to GDP) (rel to TRD PRT) ■ Lag of Home bias (rel to TRD PRT) ■ Private credit/GDP gap (Detrended) (rel to TRD PRT) ■ Lag of Public Health Expenditure (rel to TRD PRT) ■ Lagged NFA — Fitted b |
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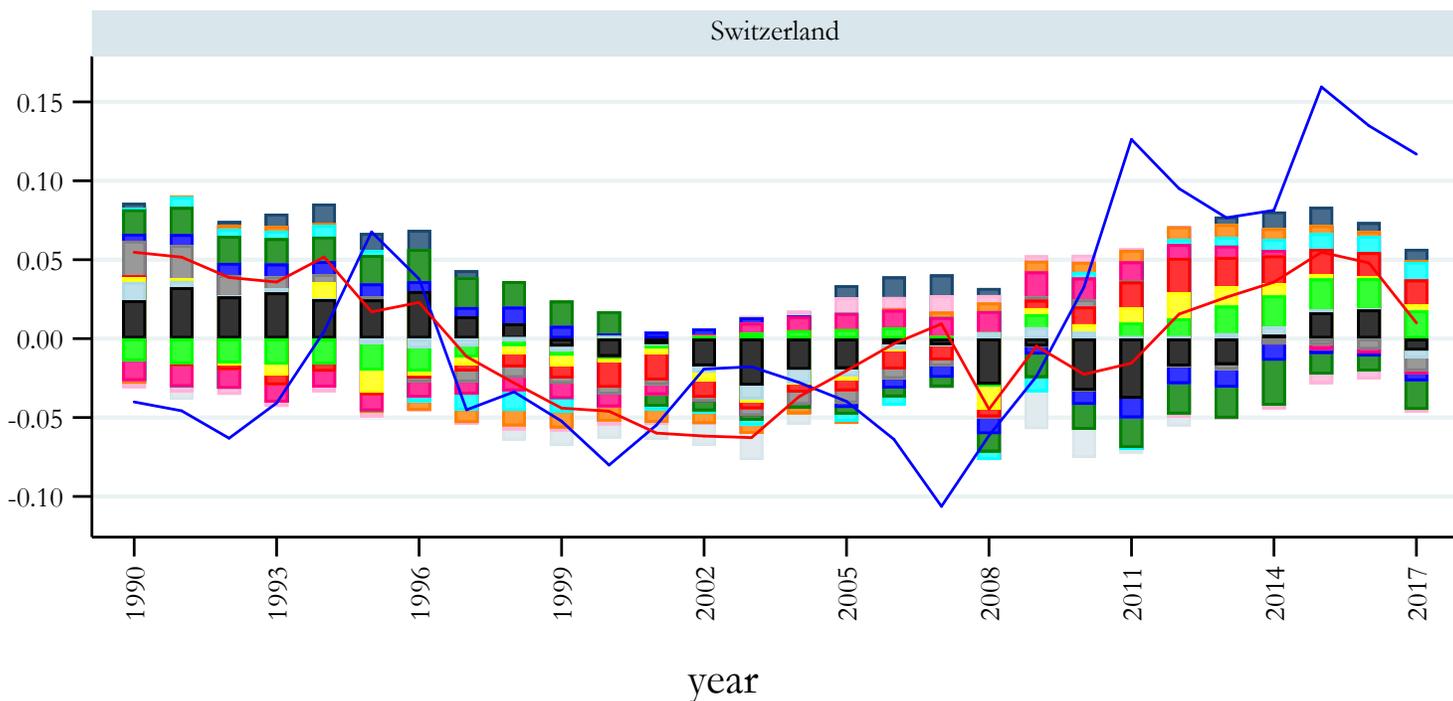
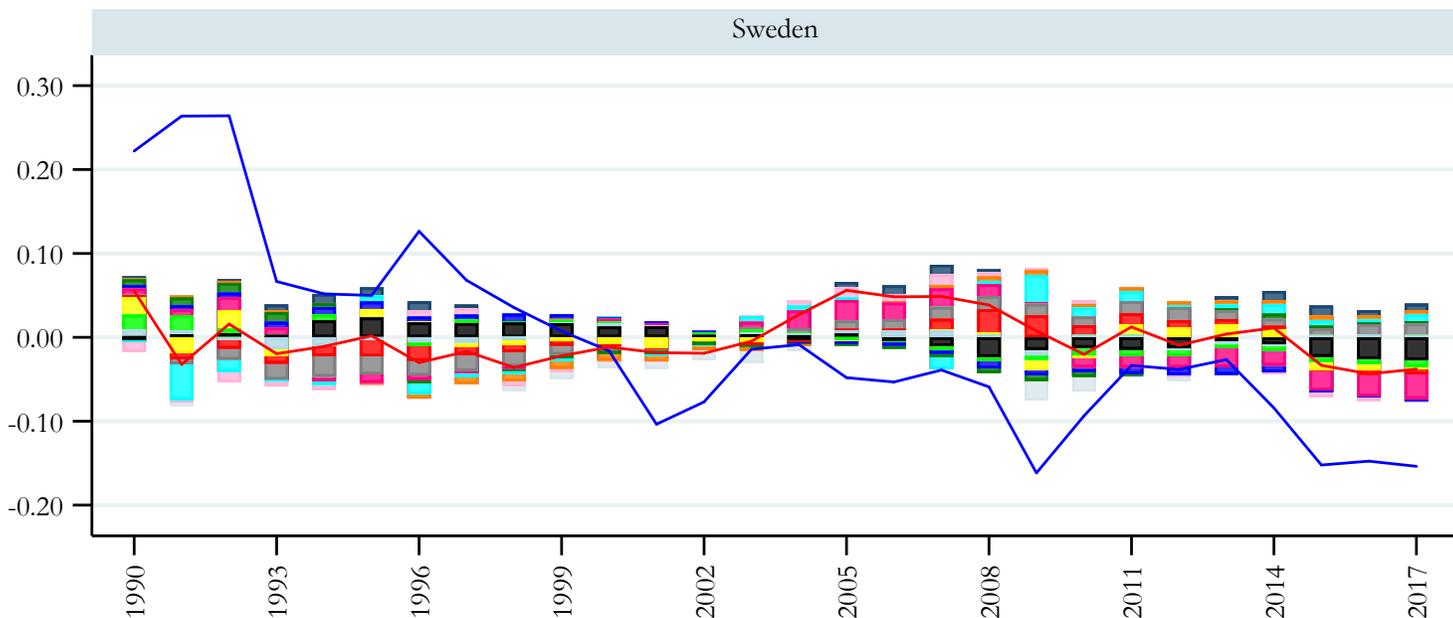
Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



year

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|---|---|
| ■ VIX + Share of Reserves terms | ■ Change in reserves to GDP*capital control (rel to TRD PRT) |
| ■ Share of administered prices | ■ Population Growth (rel to TRD PRT) |
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| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| ■ Actual b | ■ Fitted b |

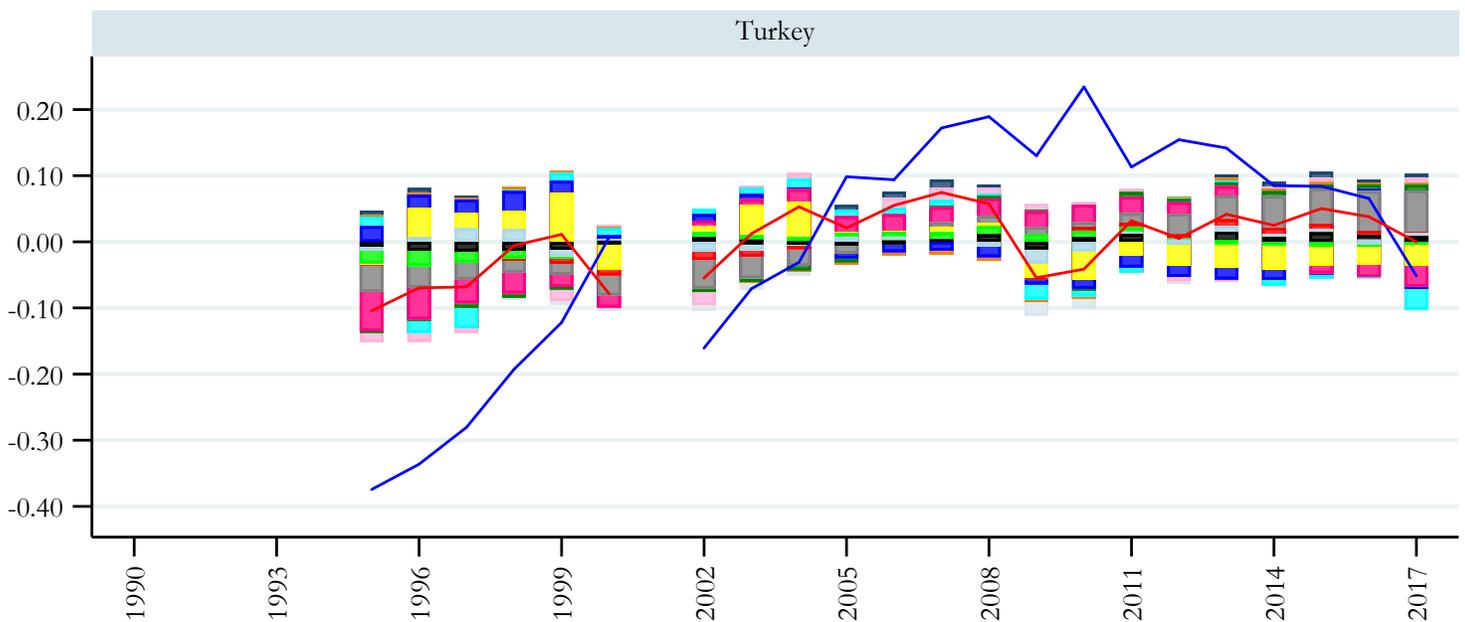
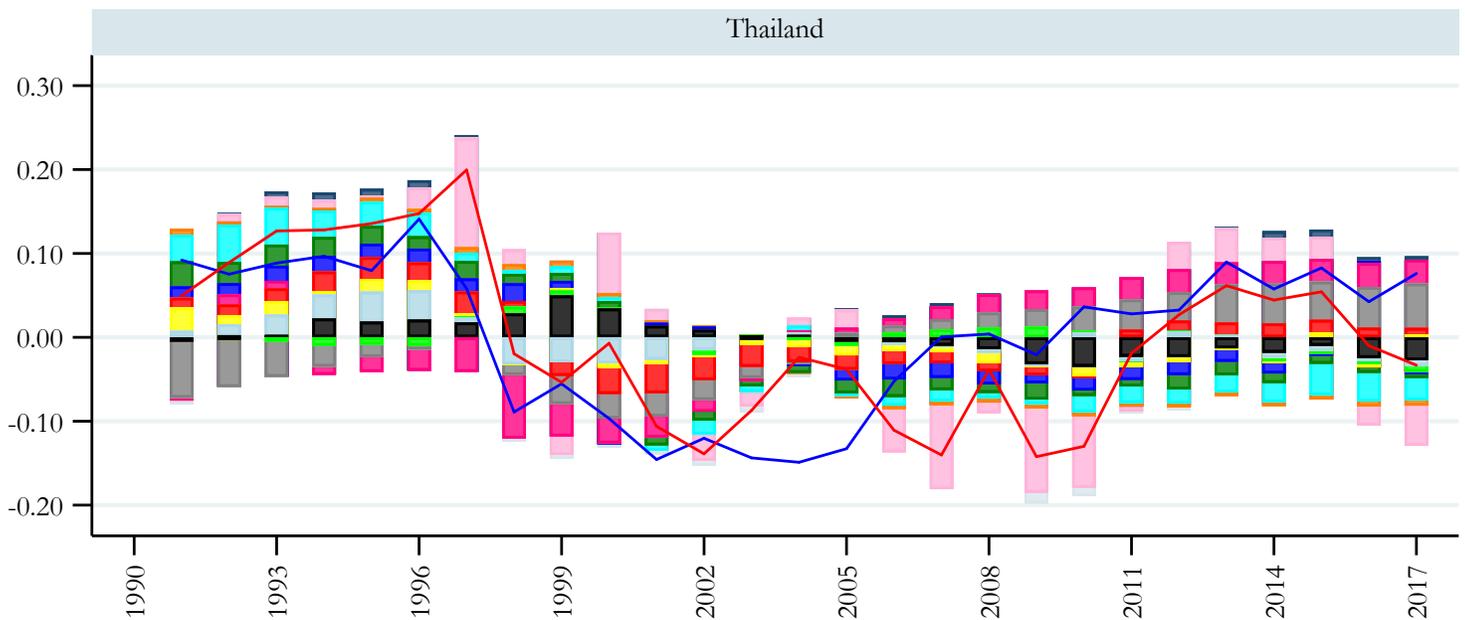
Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



year

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|---|---|
| <ul style="list-style-type: none"> ■ VIX + Share of Reserves terms ■ Share of administered prices ■ Expected GDP growth of medium-term (rel to TRD PRT) ■ Log commodity Terms Of Trade ■ Lag of Demeaned PPPGDP/Top3(PPP) ■ Real interest rate differential interacted with K openness (rel to TRD PRT) ■ Output Gap (rel to TRD PRT) — Actual b | <ul style="list-style-type: none"> ■ Change in reserves to GDP*capital control (rel to TRD PRT) ■ Population Growth (rel to TRD PRT) ■ Lag of Trade Openness (avg. of exports and imports to GDP) (rel to TRD PRT) ■ Lag of Home bias (rel to TRD PRT) ■ Private credit/GDP gap (Detrended) (rel to TRD PRT) ■ Lag of Public Health Expenditure (rel to TRD PRT) ■ Lagged NFA — Fitted b |
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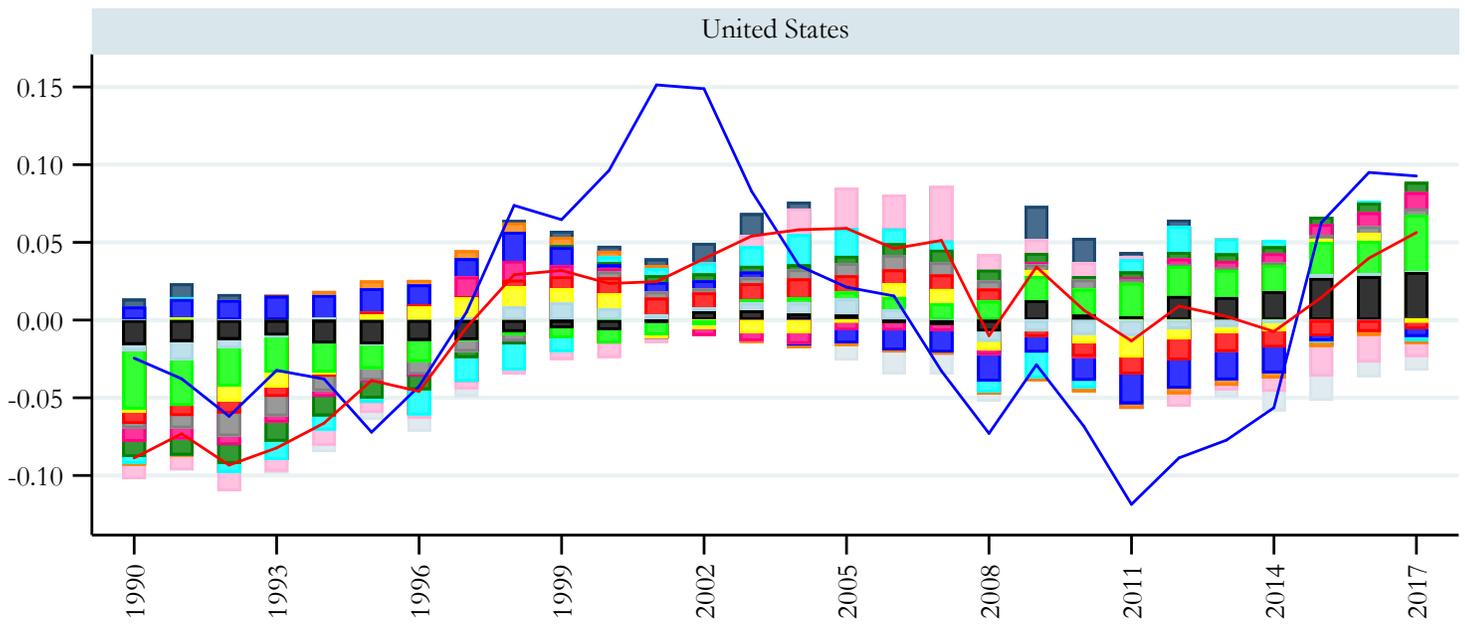
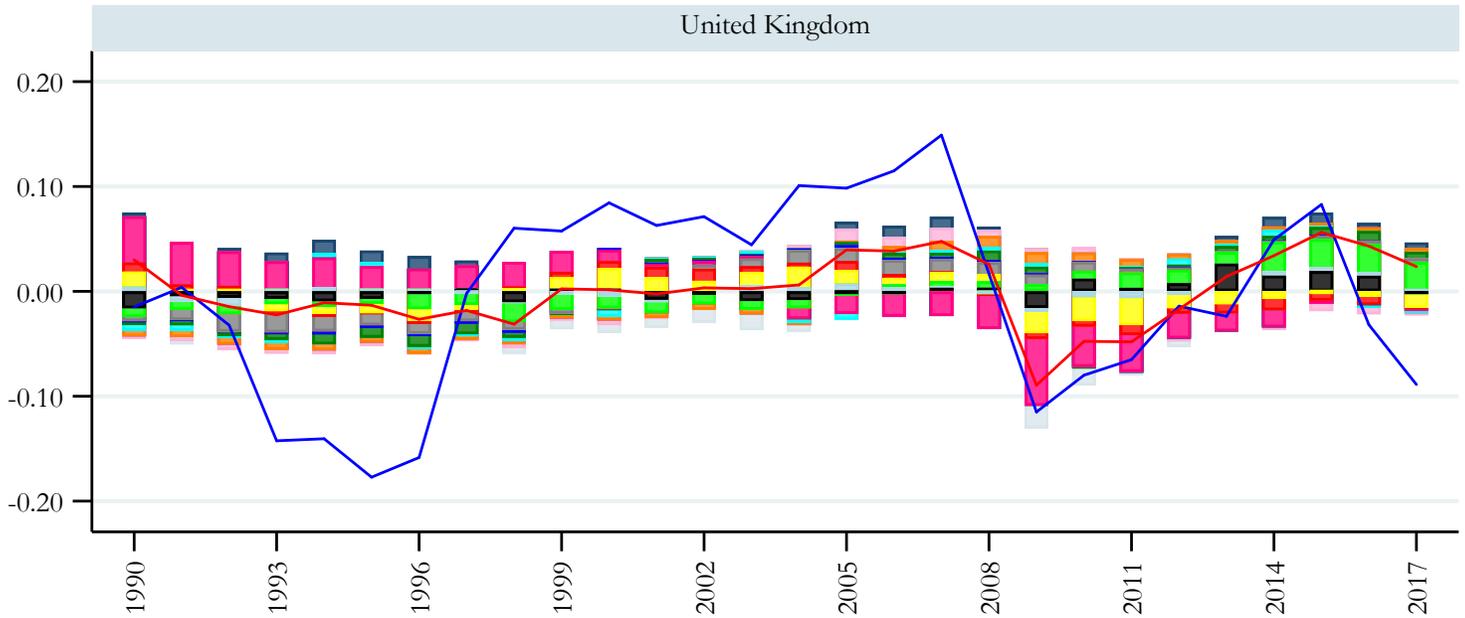
Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



year

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| ■ Real interest rate differential interacted with K openness (rel to TRD PRT) | ■ Lag of Public Health Expenditure (rel to TRD PRT) |
| ■ Output Gap (rel to TRD PRT) | ■ Lagged NFA |
| ■ Actual b | ■ Fitted b |

Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



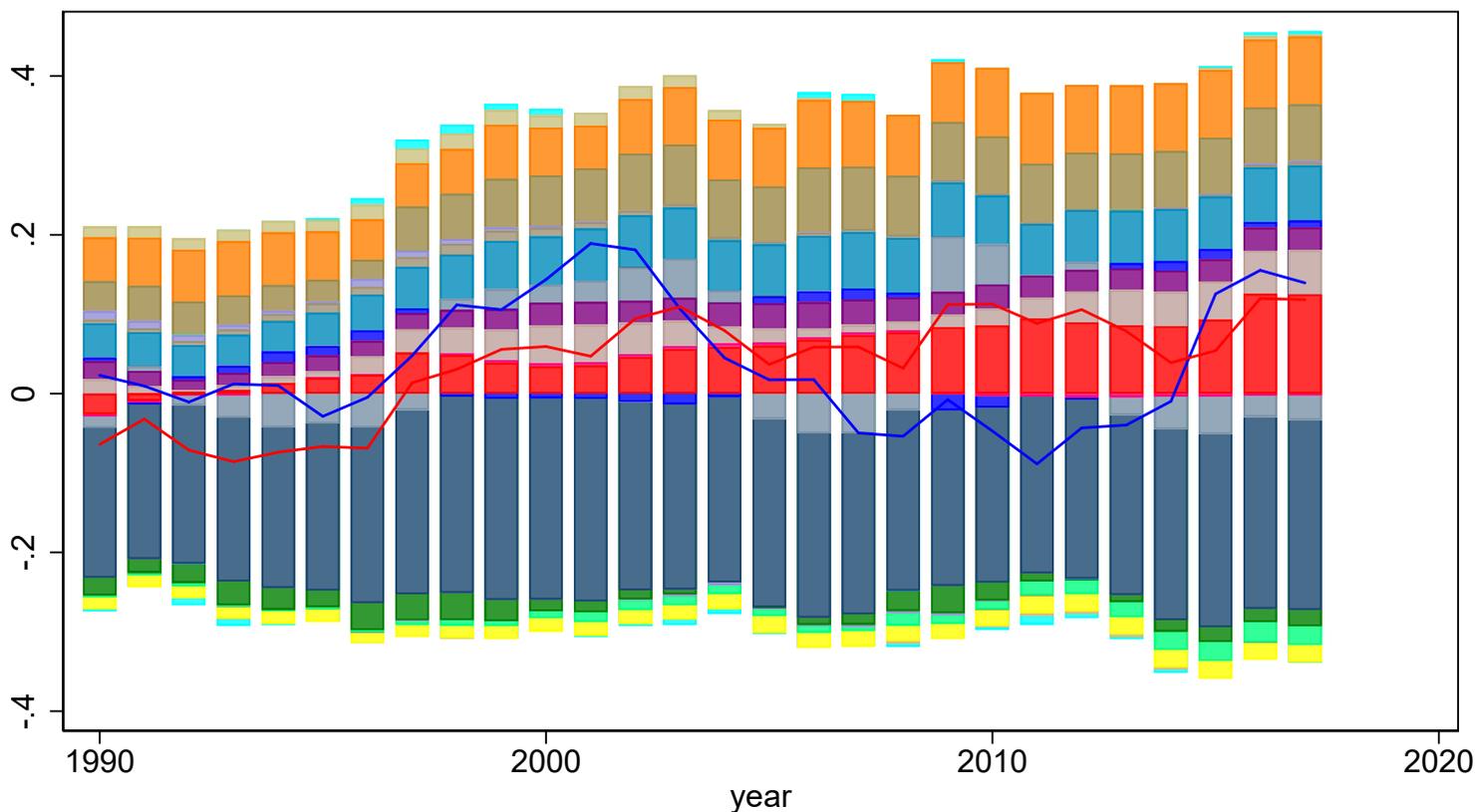
year

- | | |
|--|--|
| <ul style="list-style-type: none"> ■ VIX + Share of Reserves terms ■ Share of administered prices ■ Expected GDP growth of medium-term (rel to TRD PRT) ■ Log commodity Terms Of Trade ■ Lag of Demeaned PPPGDP/Top3(PPP) ■ Real interest rate differential interacted with K openness (rel to TRD PRT) ■ Output Gap (rel to TRD PRT) — Actual b | <ul style="list-style-type: none"> ■ Change in reserves to GDP*capital control (rel to TRD PRT) ■ Population Growth (rel to TRD PRT) ■ Lag of Trade Openness (avg. of exports and imports to GDP) (rel to TRD PRT) ■ Lag of Home bias (rel to TRD PRT) ■ Private credit/GDP gap (Detrended) (rel to TRD PRT) ■ Lag of Public Health Expenditure (rel to TRD PRT) ■ Lagged NFA — Fitted b |
|--|--|

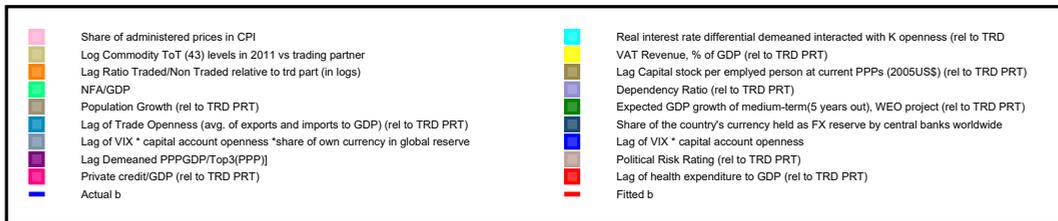
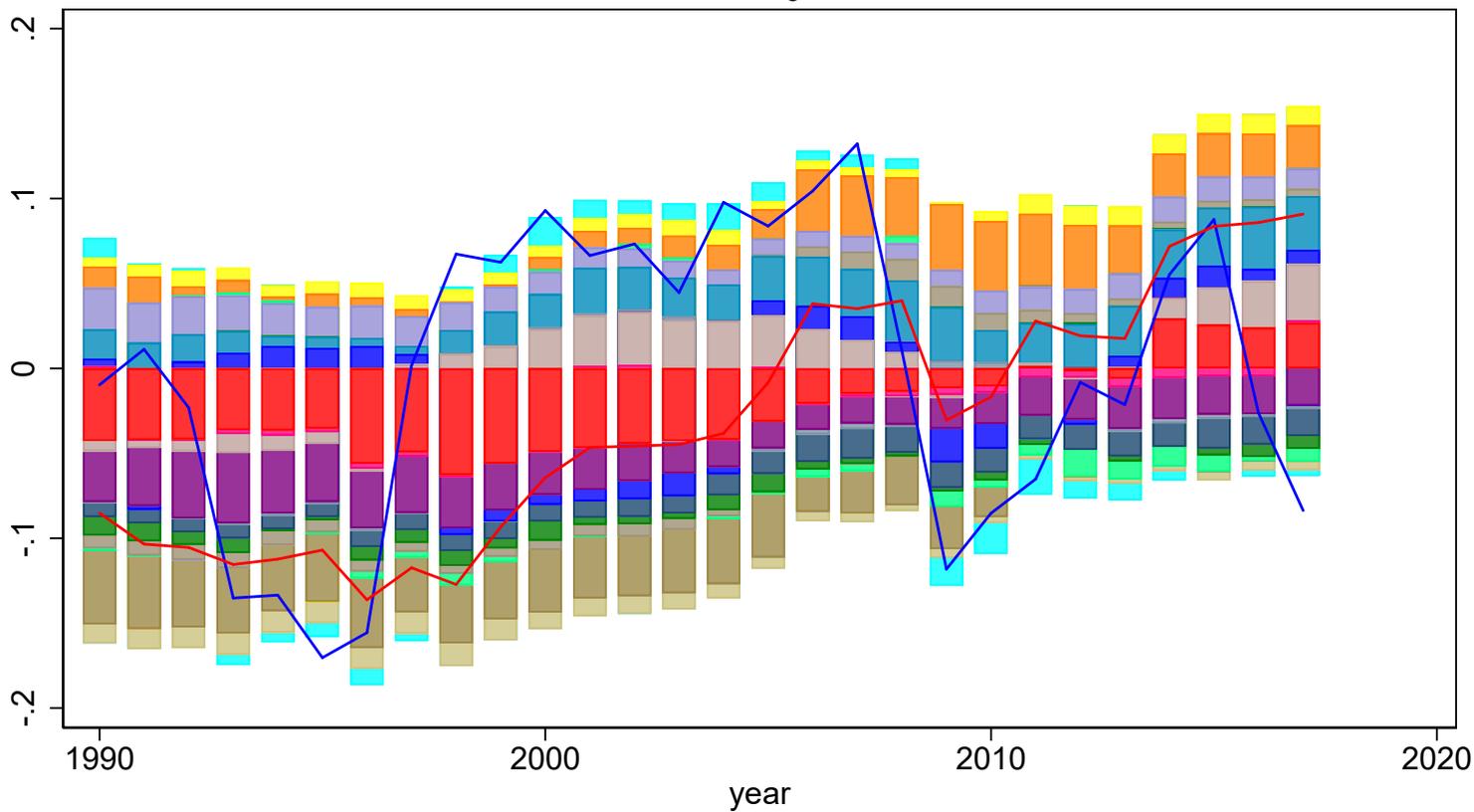
III. REER Level Model: Actual Values, Fitted Values, and Historical Decomposition

EBA - Contributions to the REER (level) Fitted Values

United States

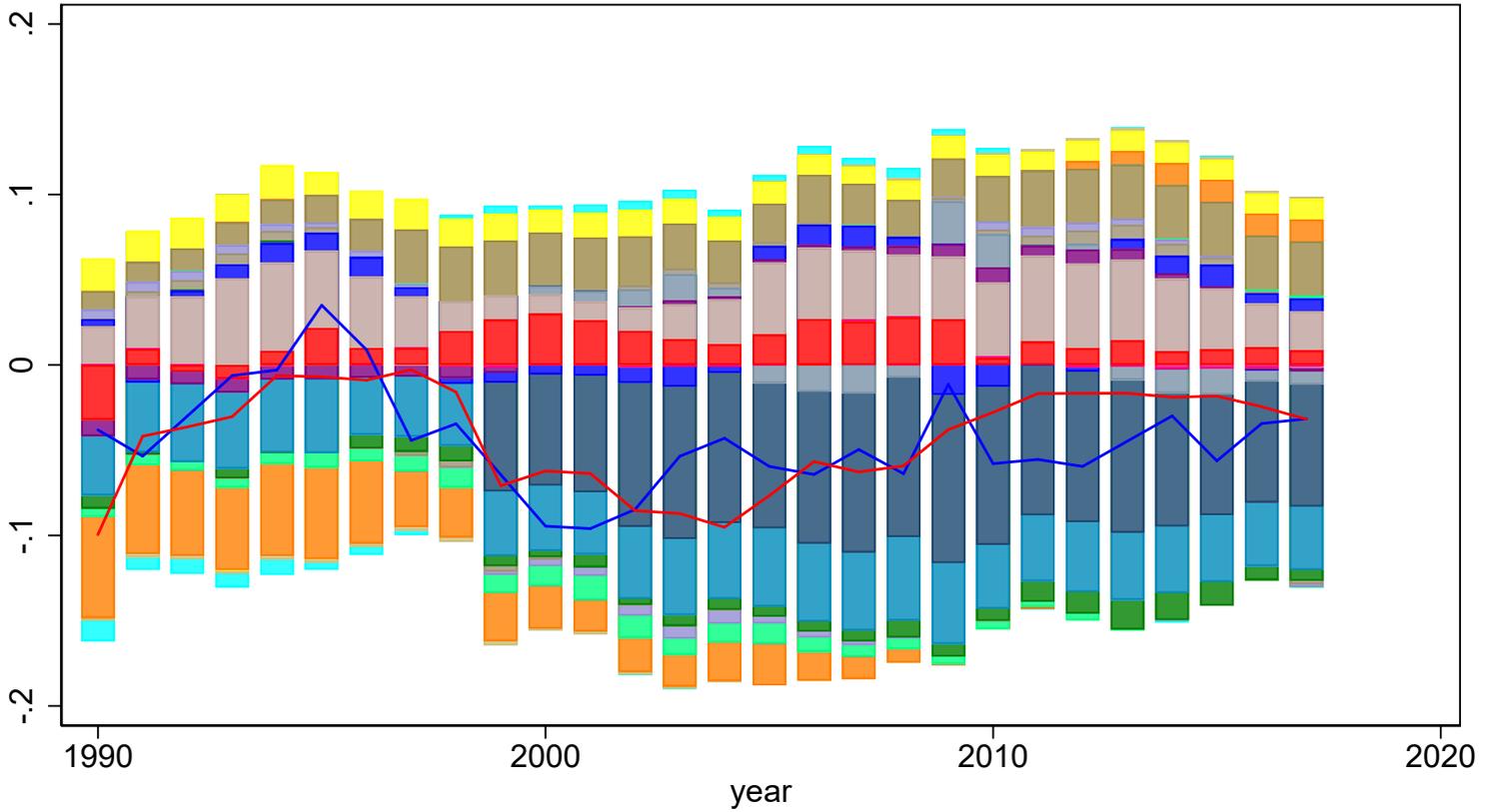


United Kingdom

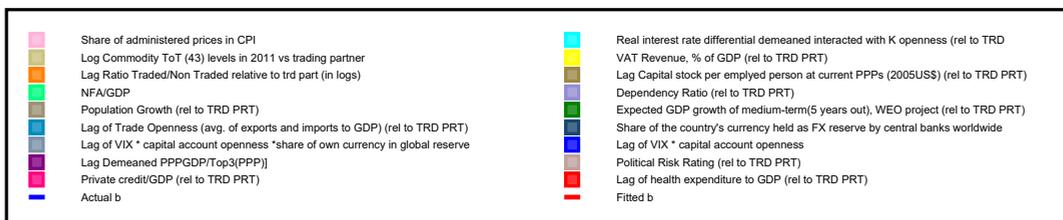
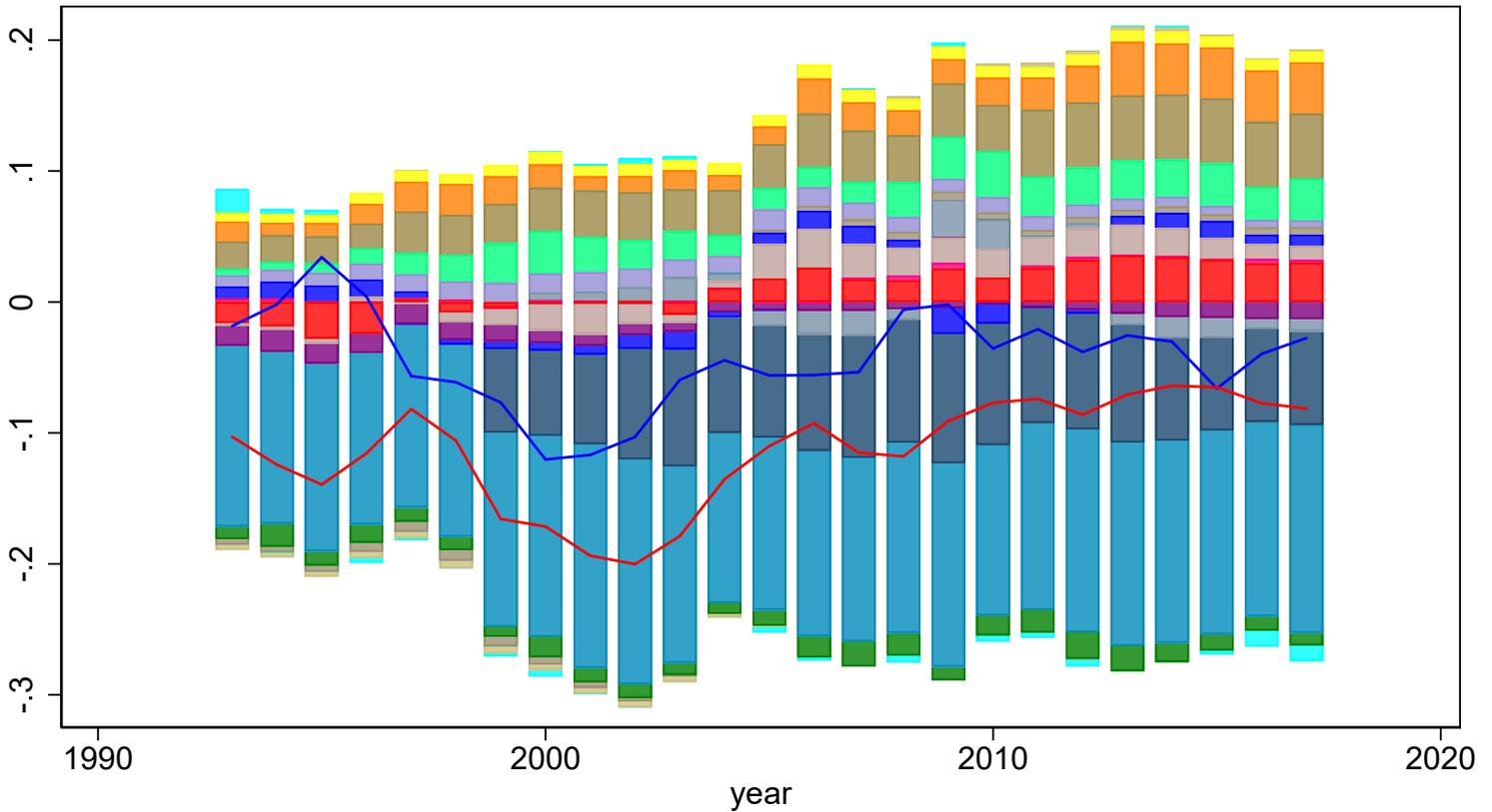


EBA - Contributions to the REER (level) Fitted Values

Austria

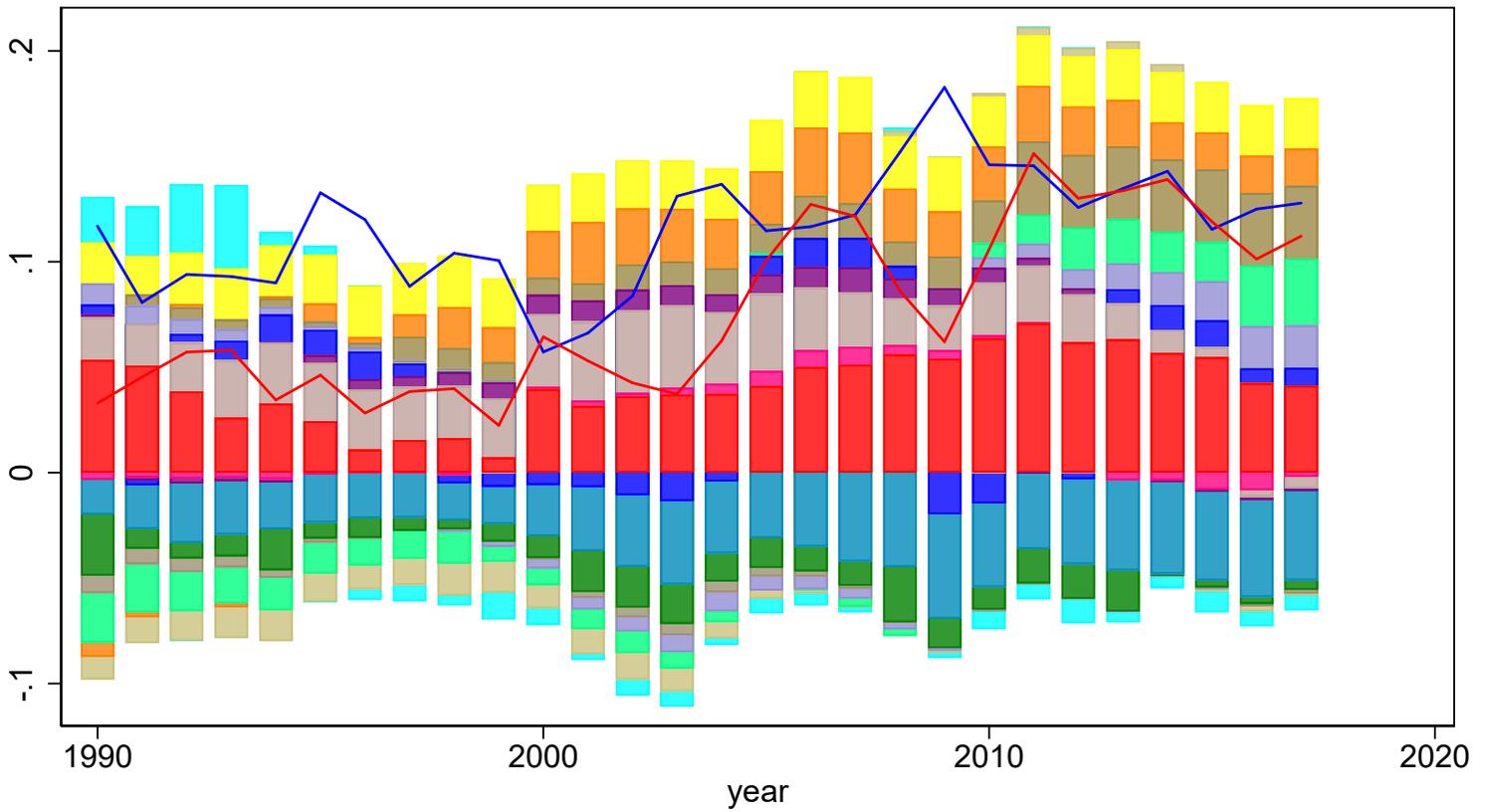


Belgium

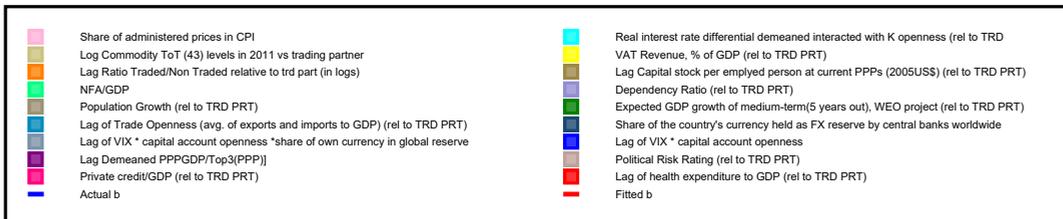
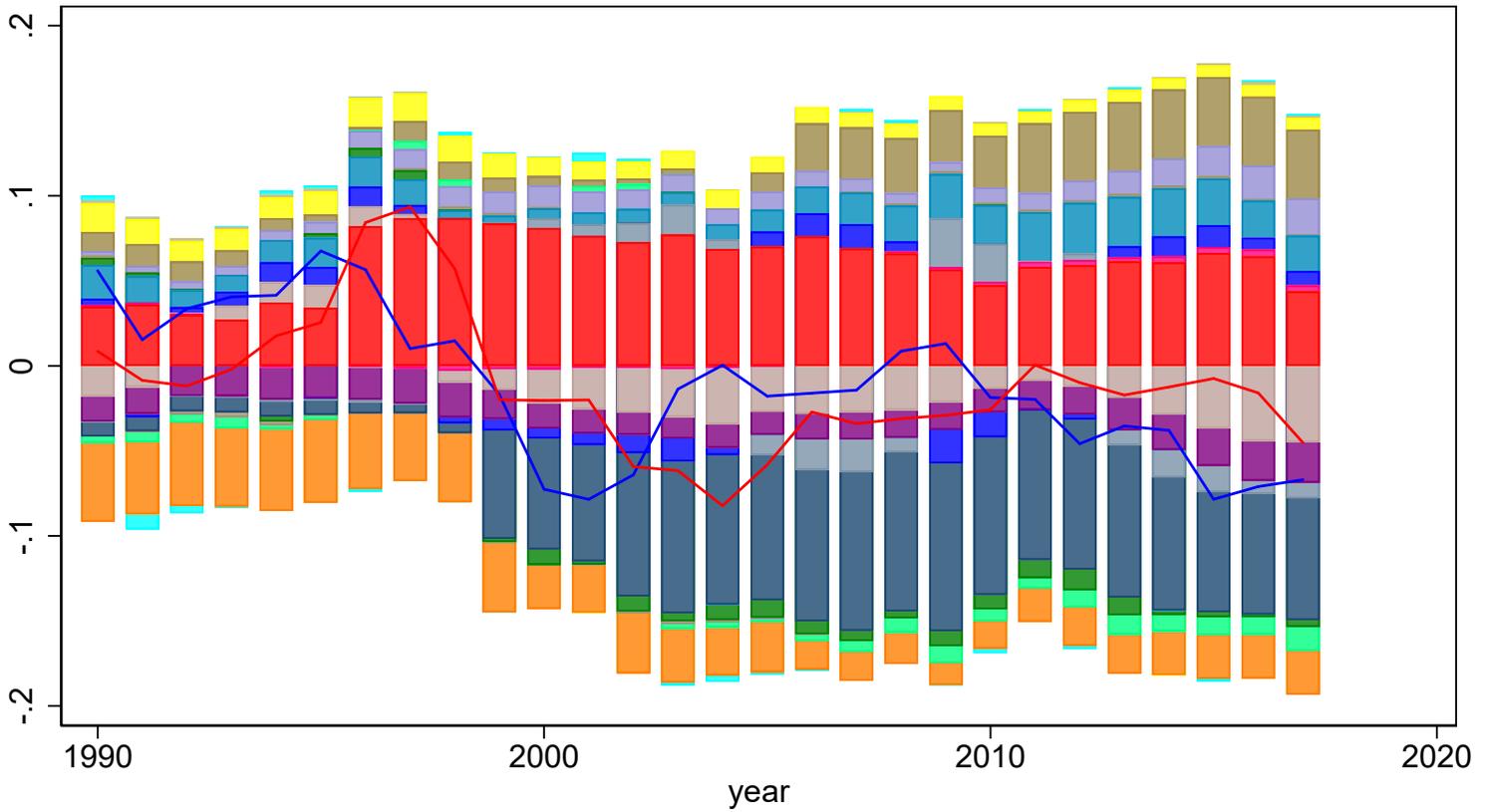


EBA - Contributions to the REER (level) Fitted Values

Denmark

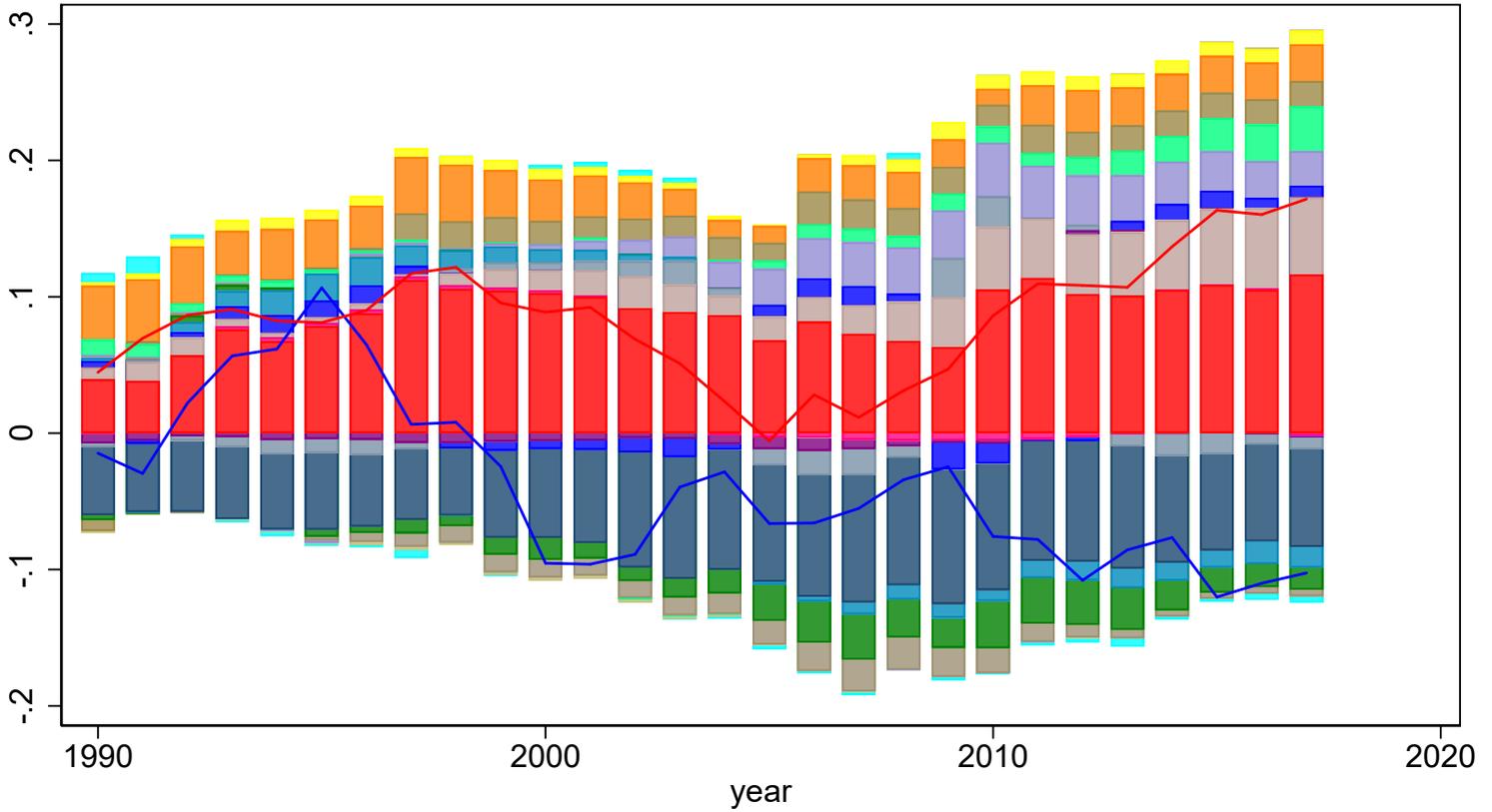


France

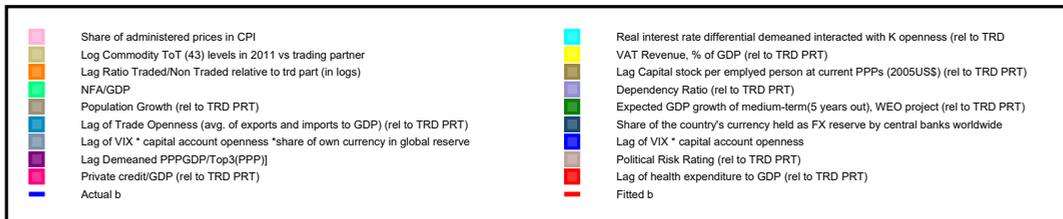
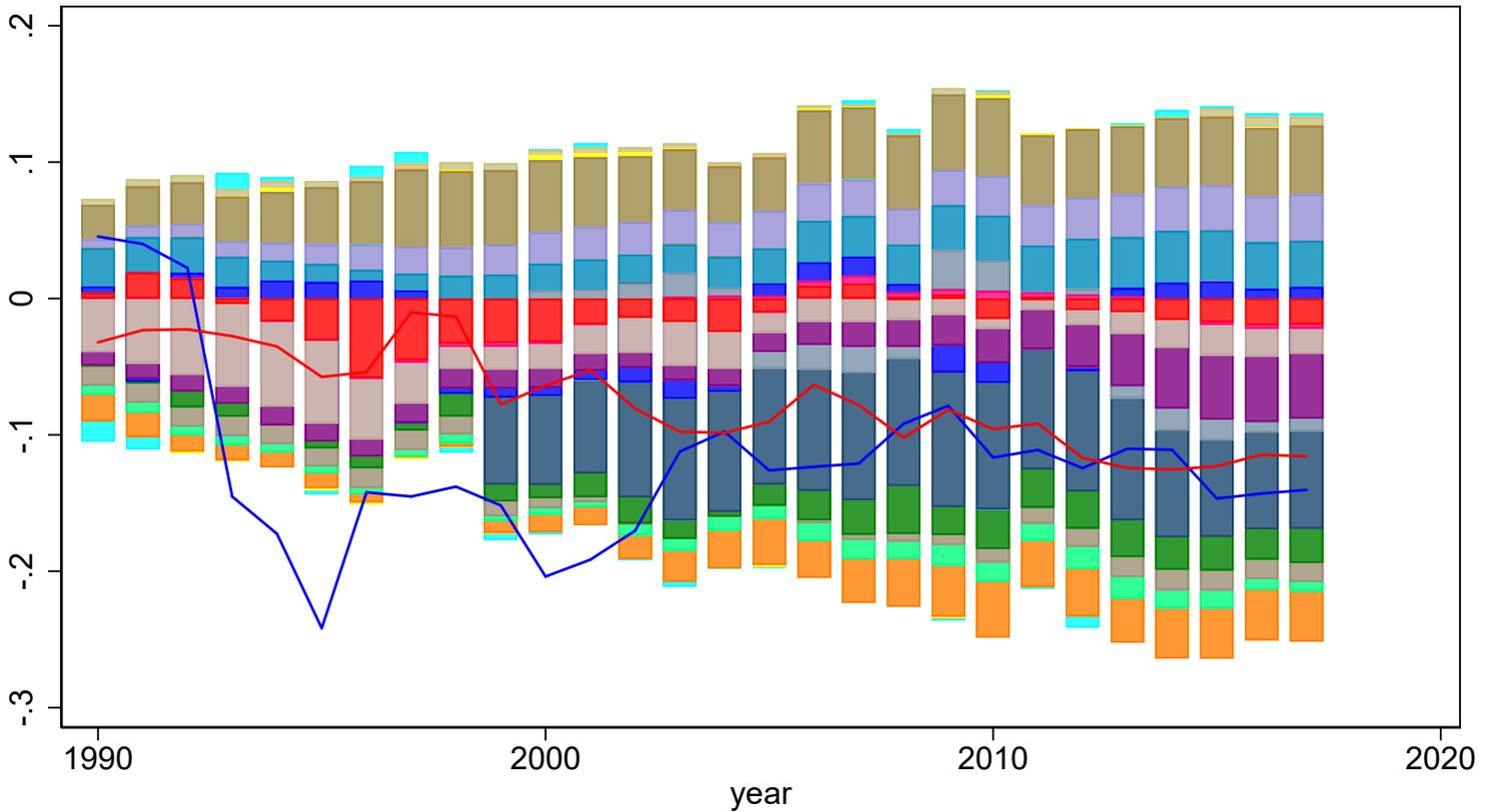


EBA - Contributions to the REER (level) Fitted Values

Germany

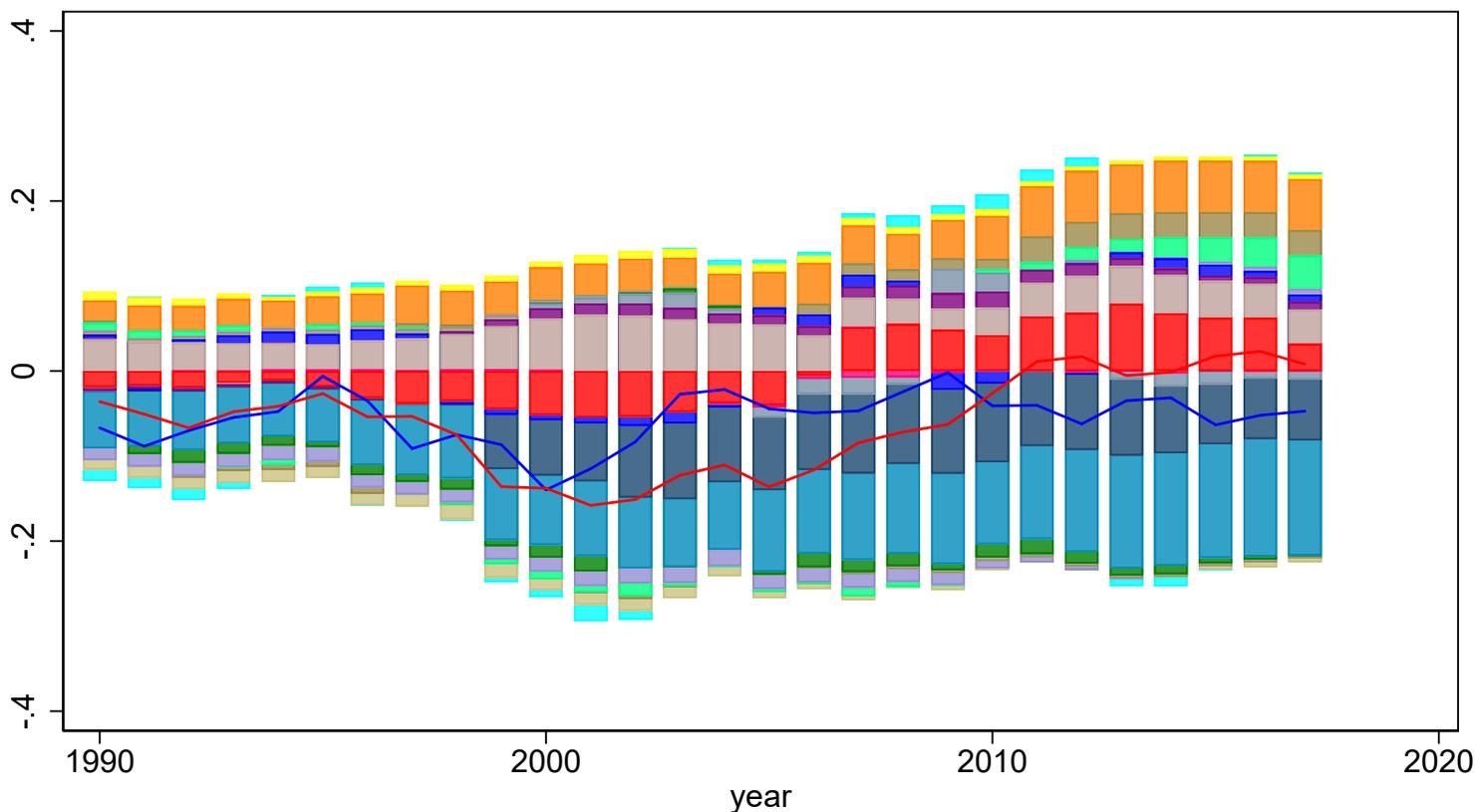


Italy

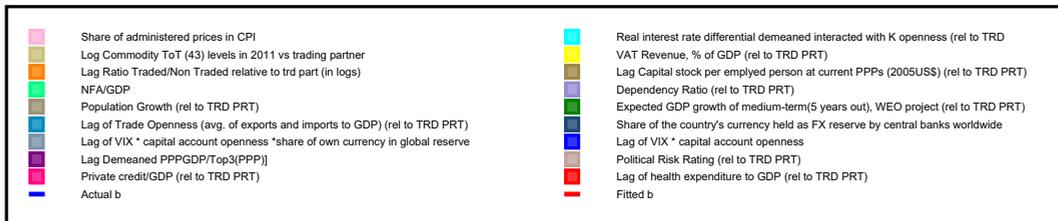
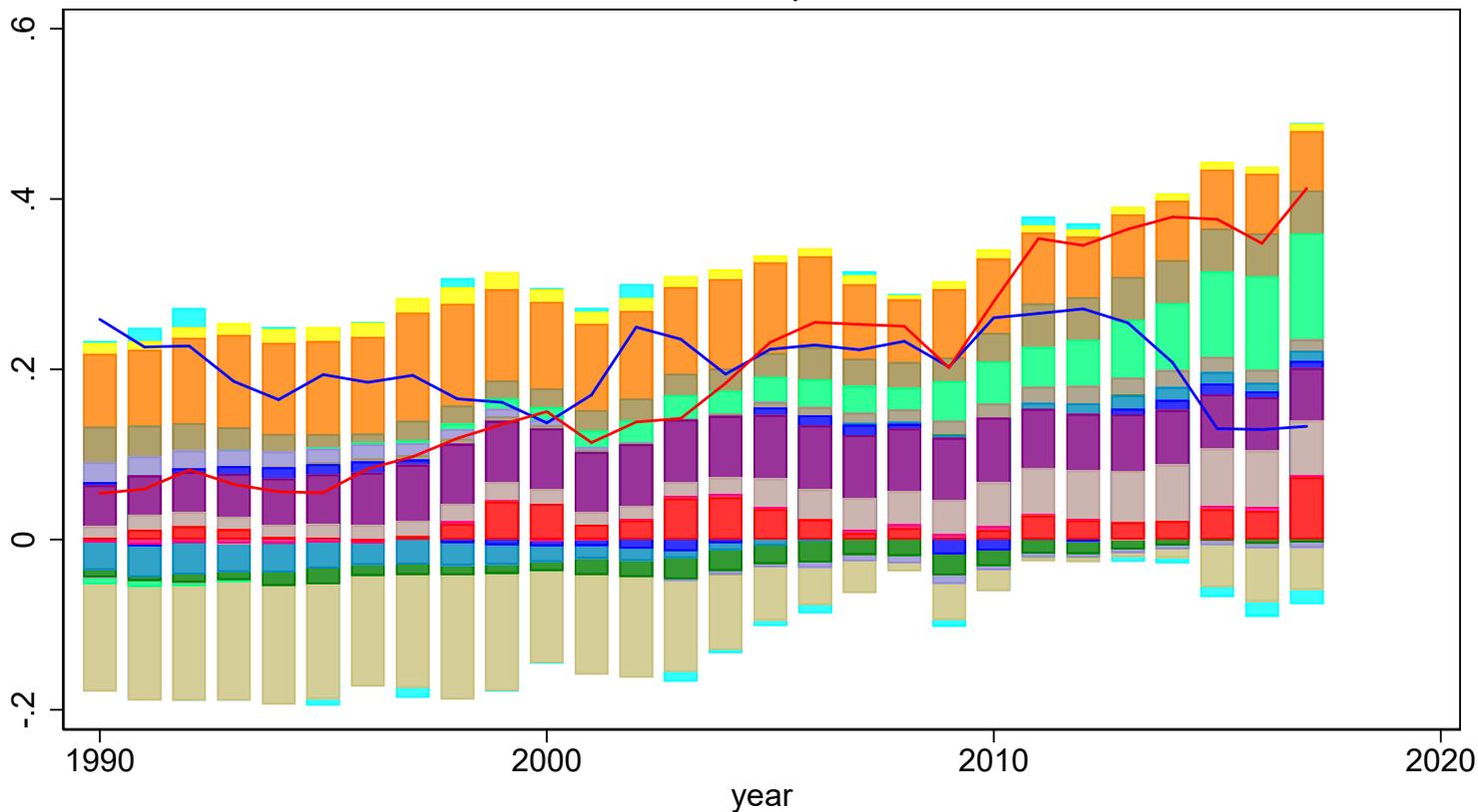


EBA - Contributions to the REER (level) Fitted Values

Netherlands

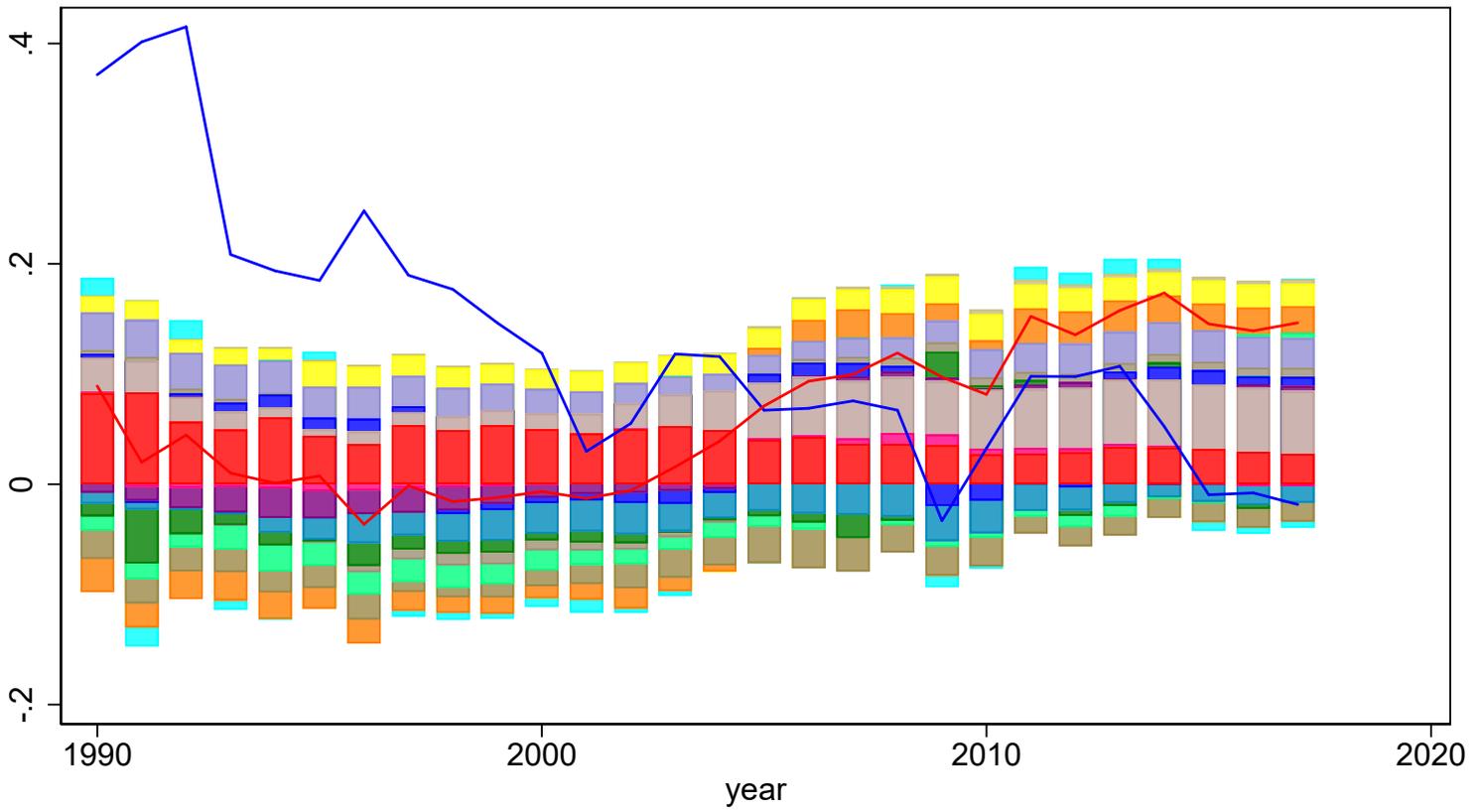


Norway

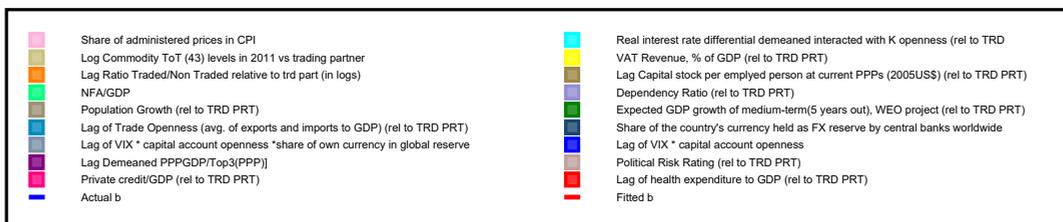
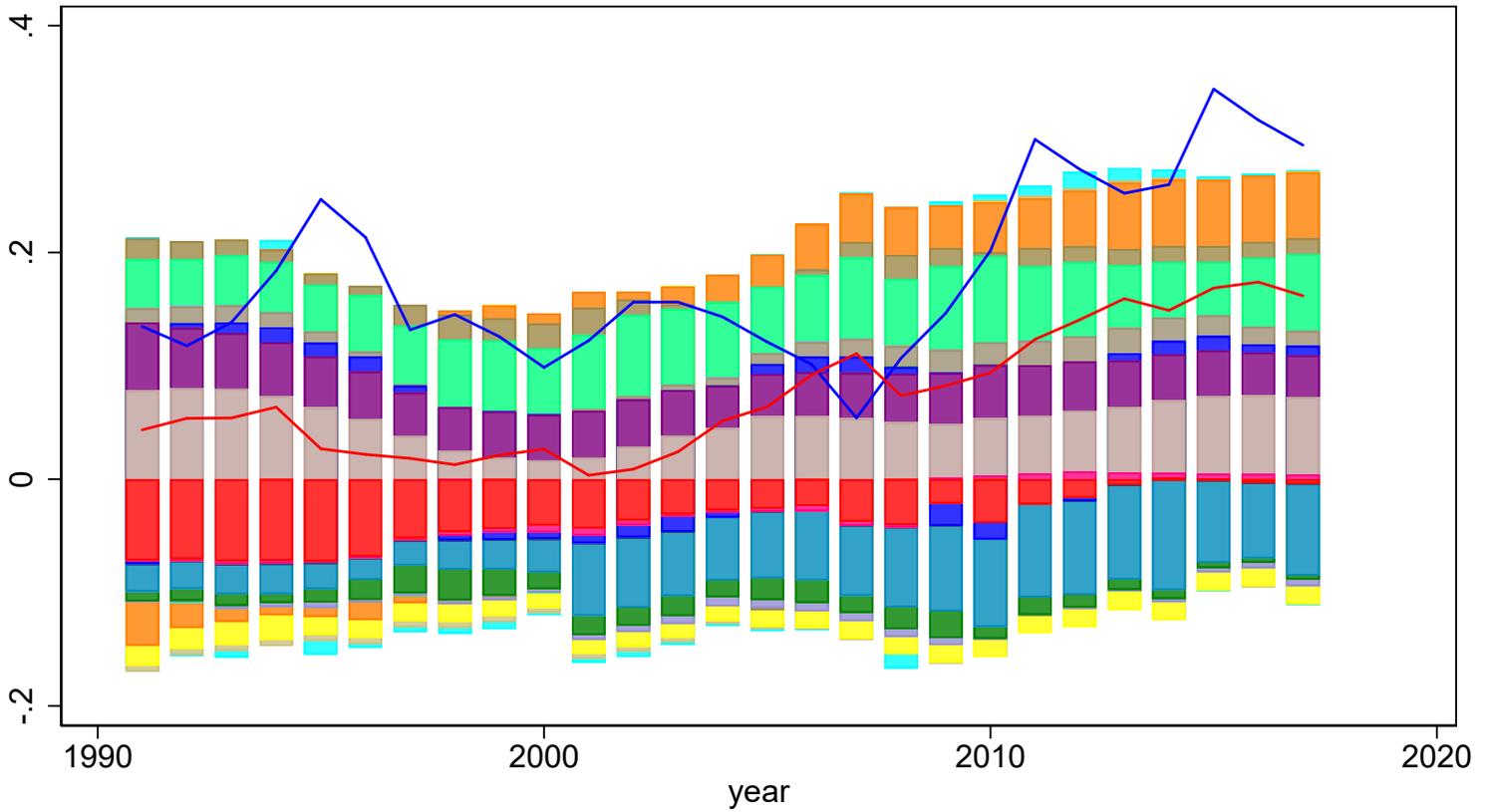


EBA - Contributions to the REER (level) Fitted Values

Sweden

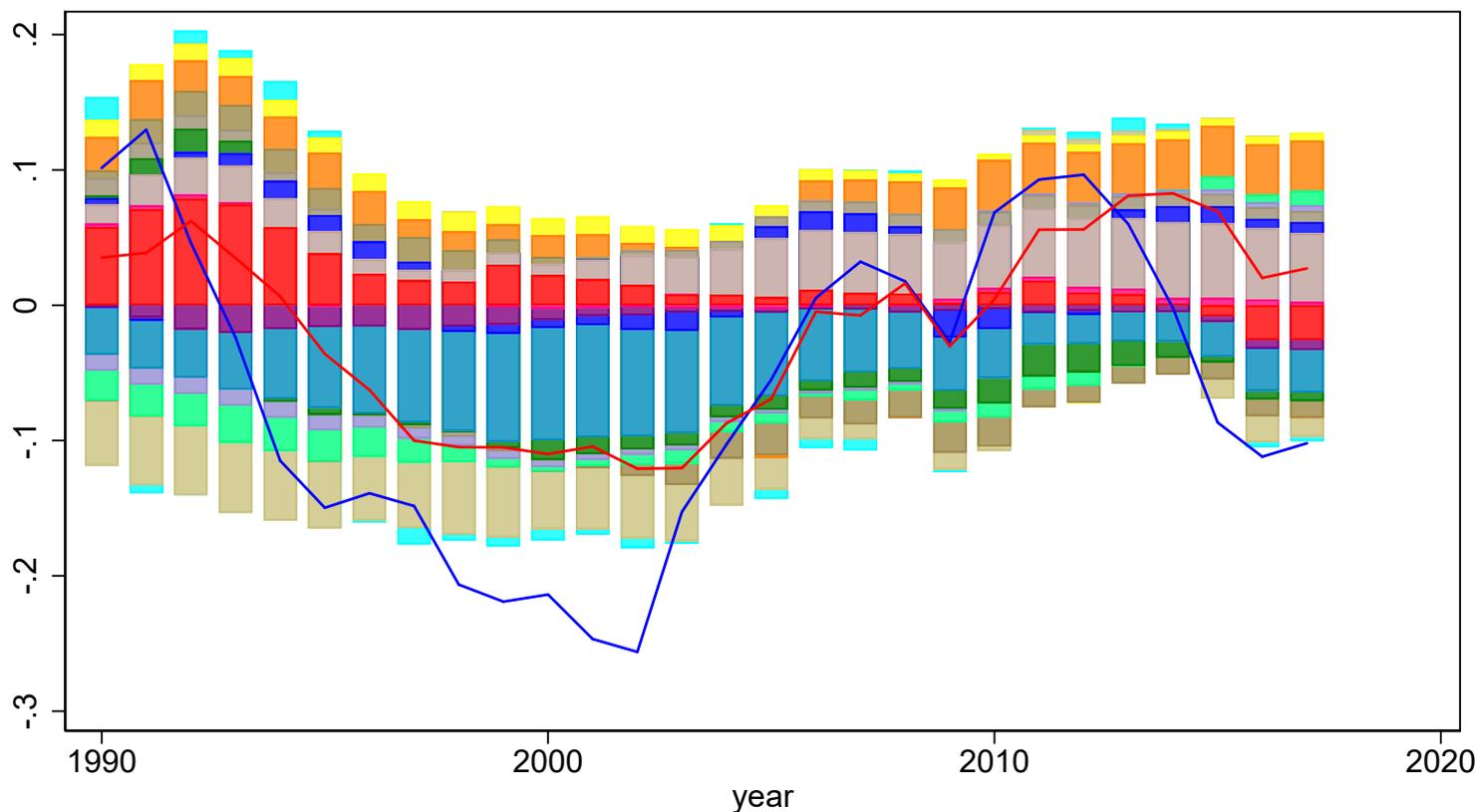


Switzerland

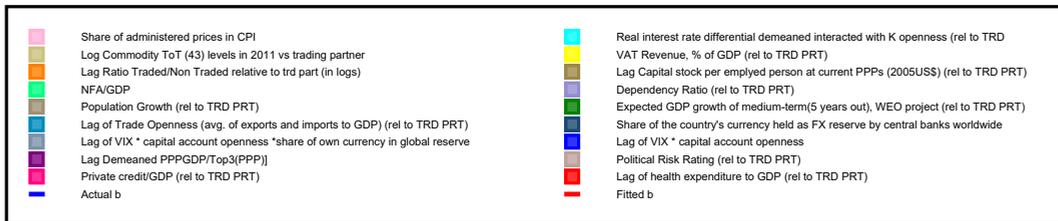
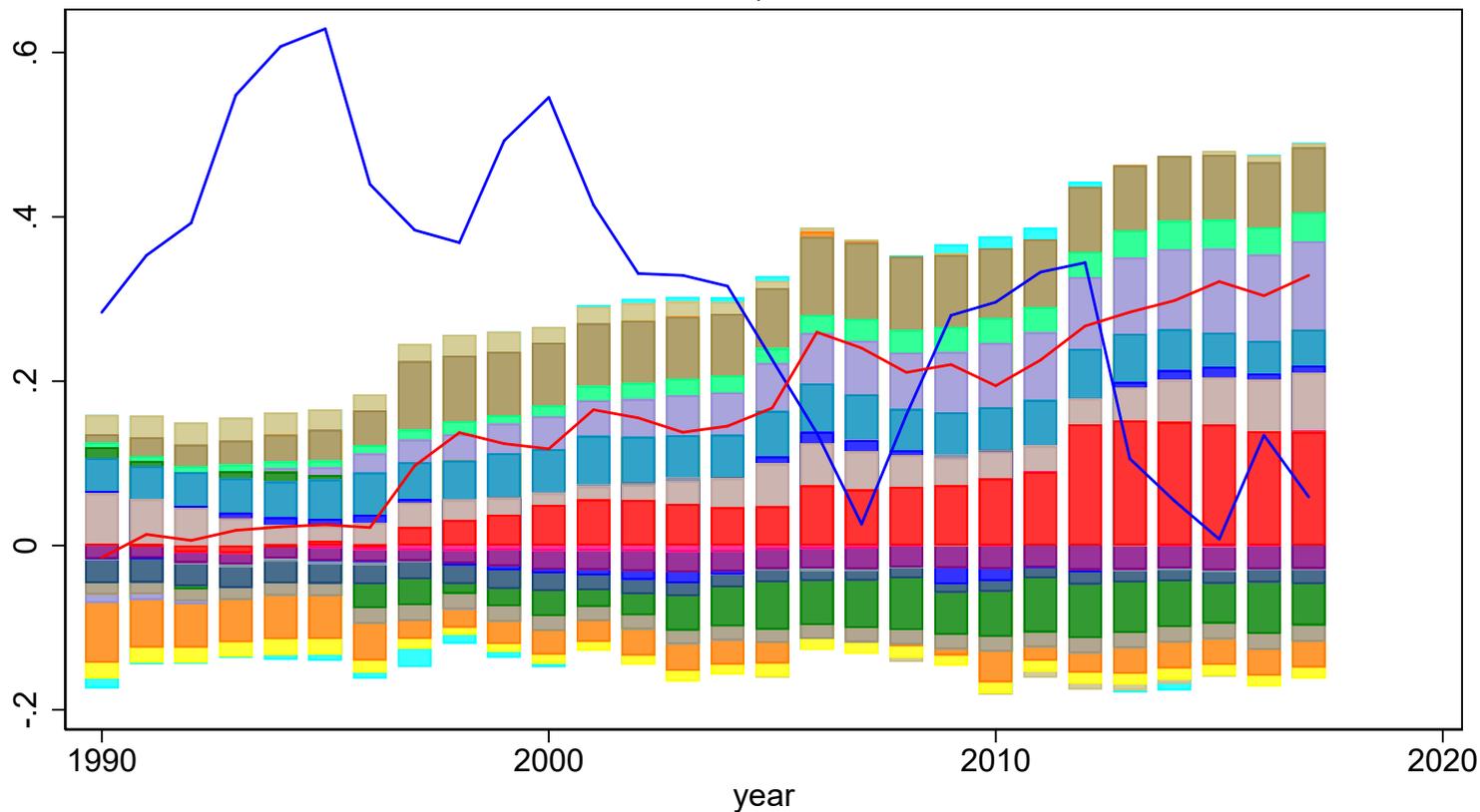


EBA - Contributions to the REER (level) Fitted Values

Canada

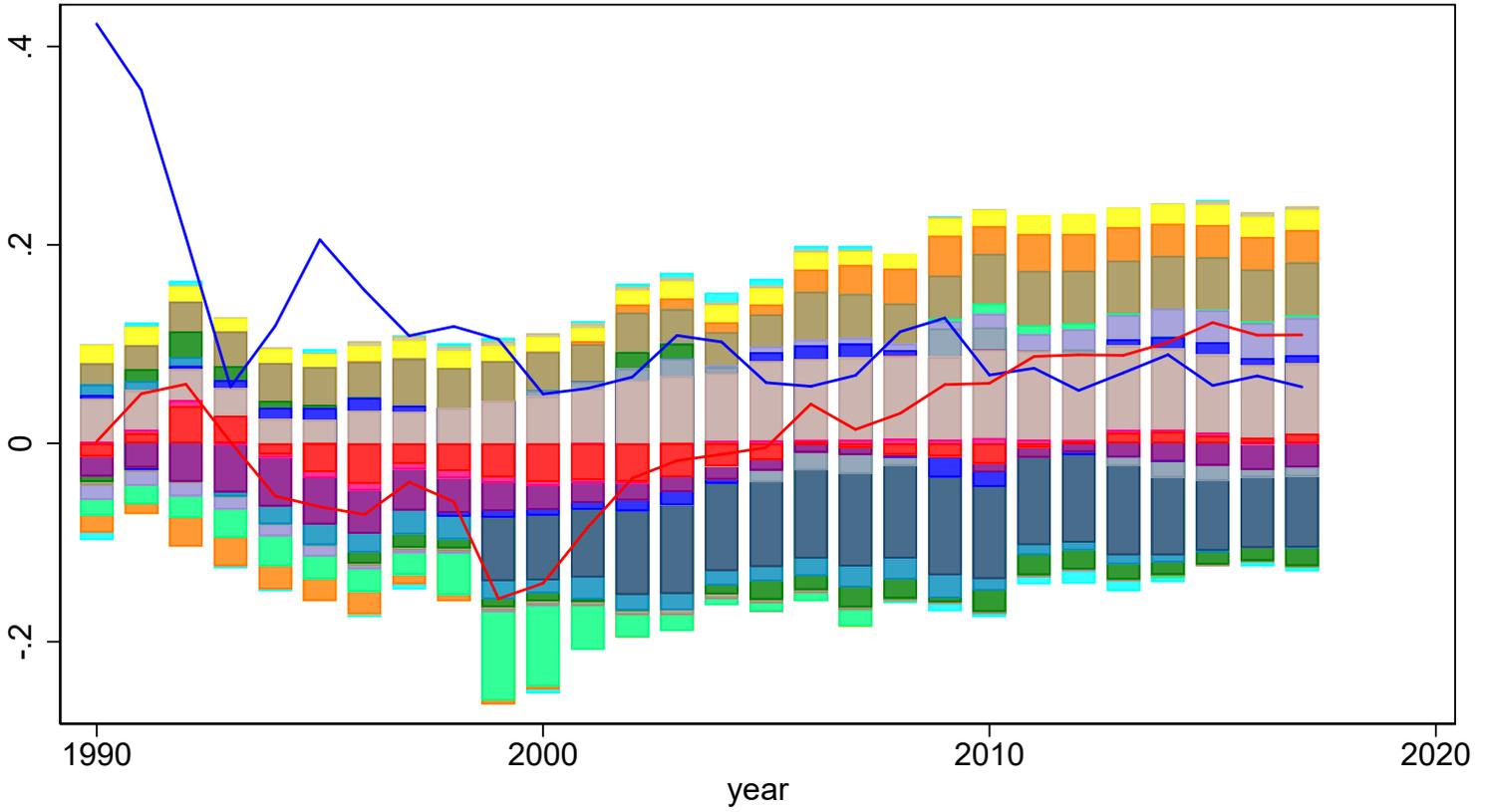


Japan

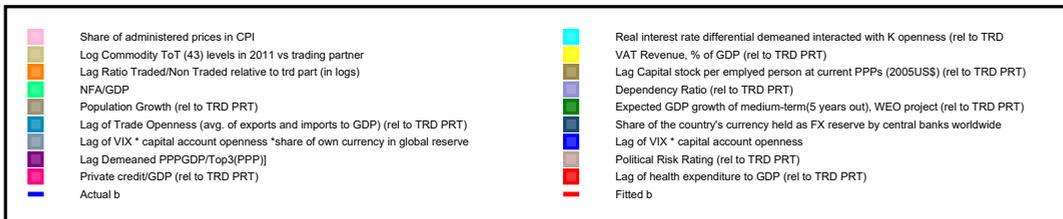
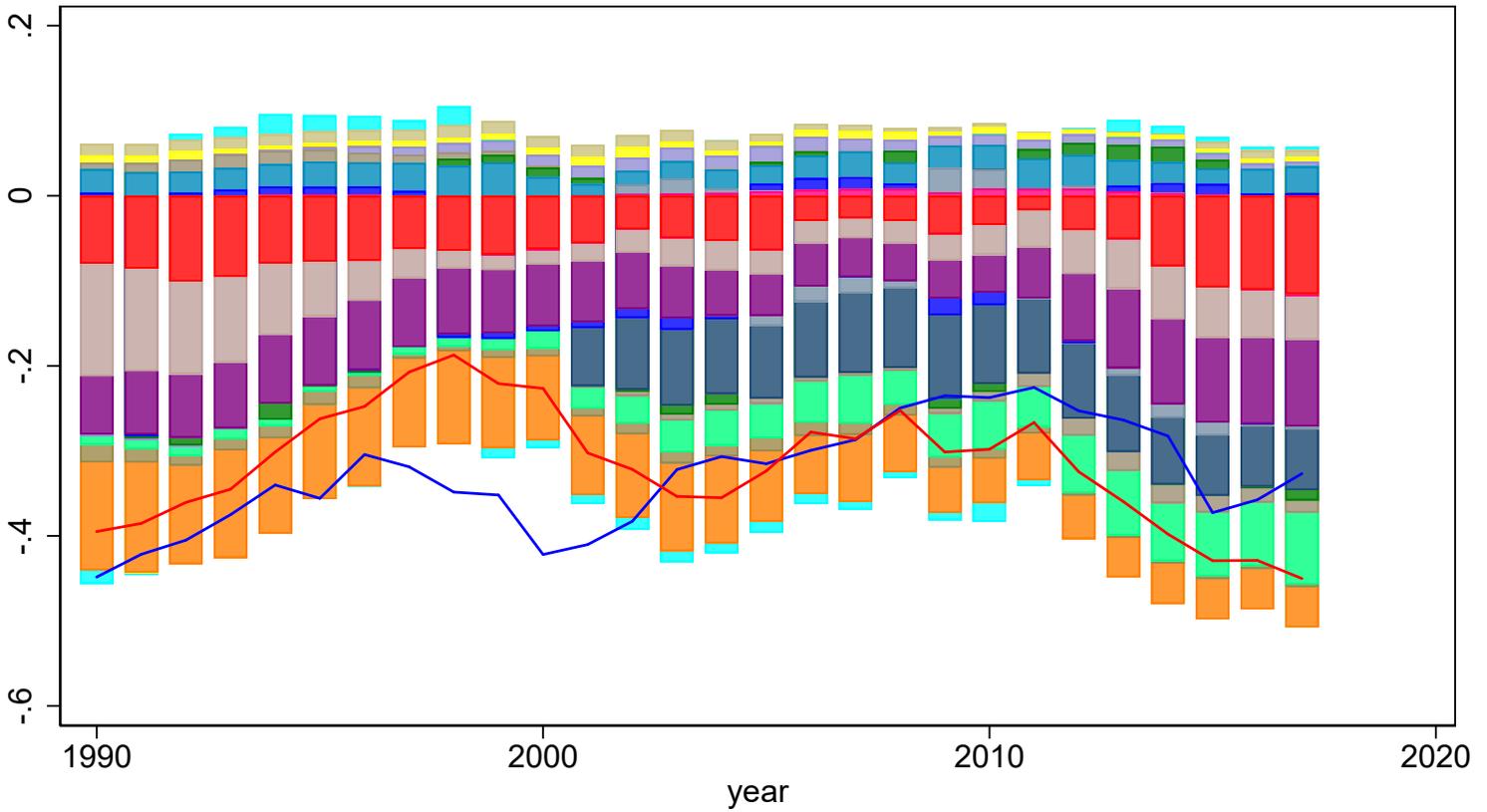


EBA - Contributions to the REER (level) Fitted Values

Finland

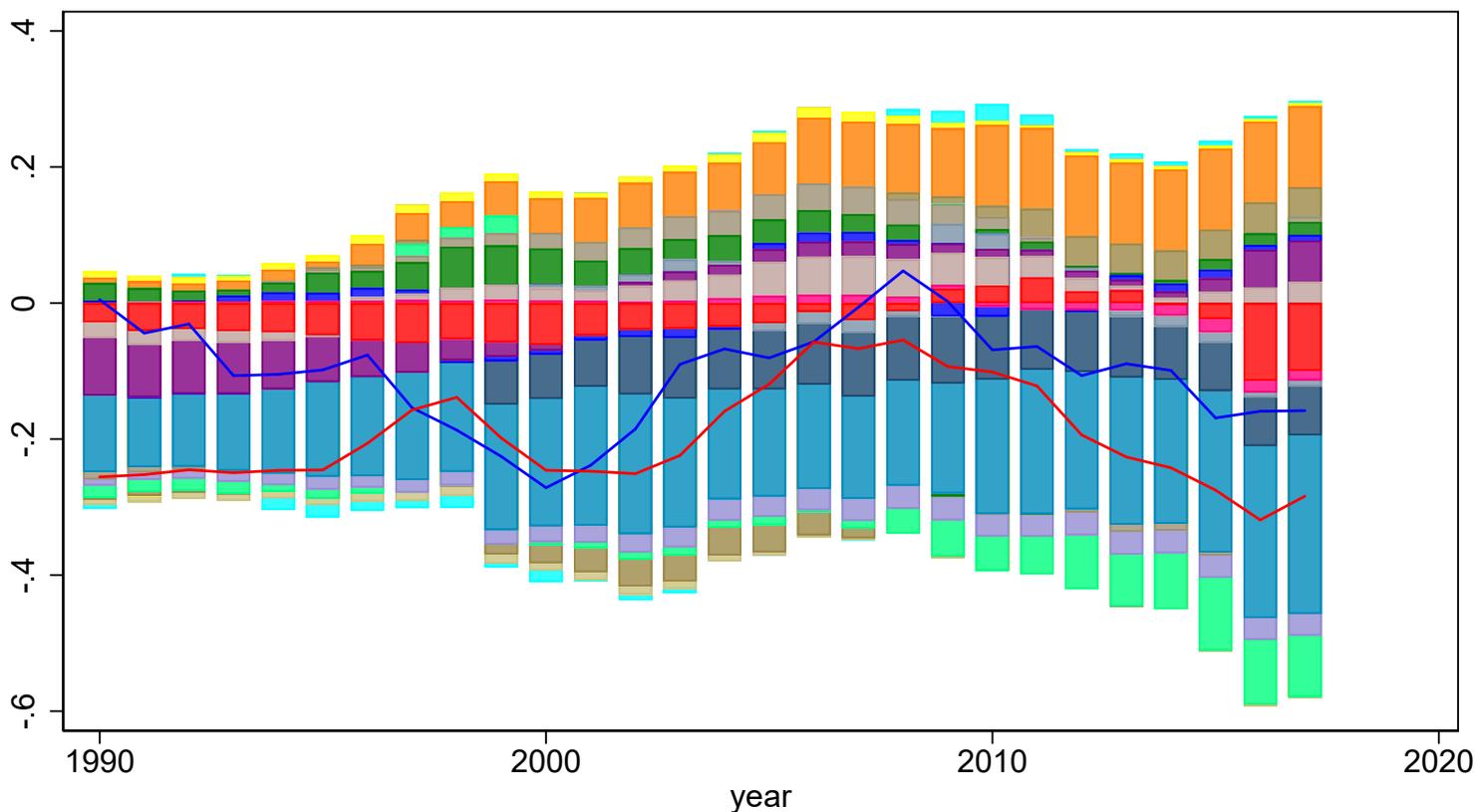


Greece

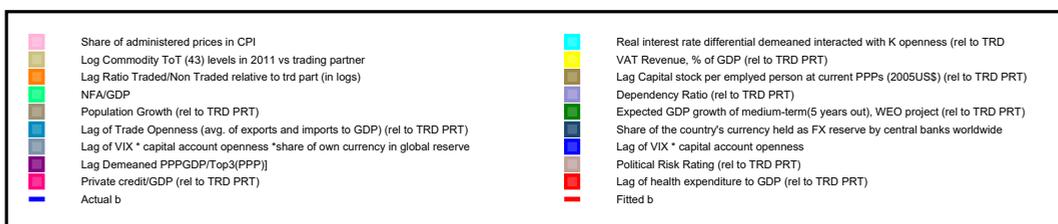
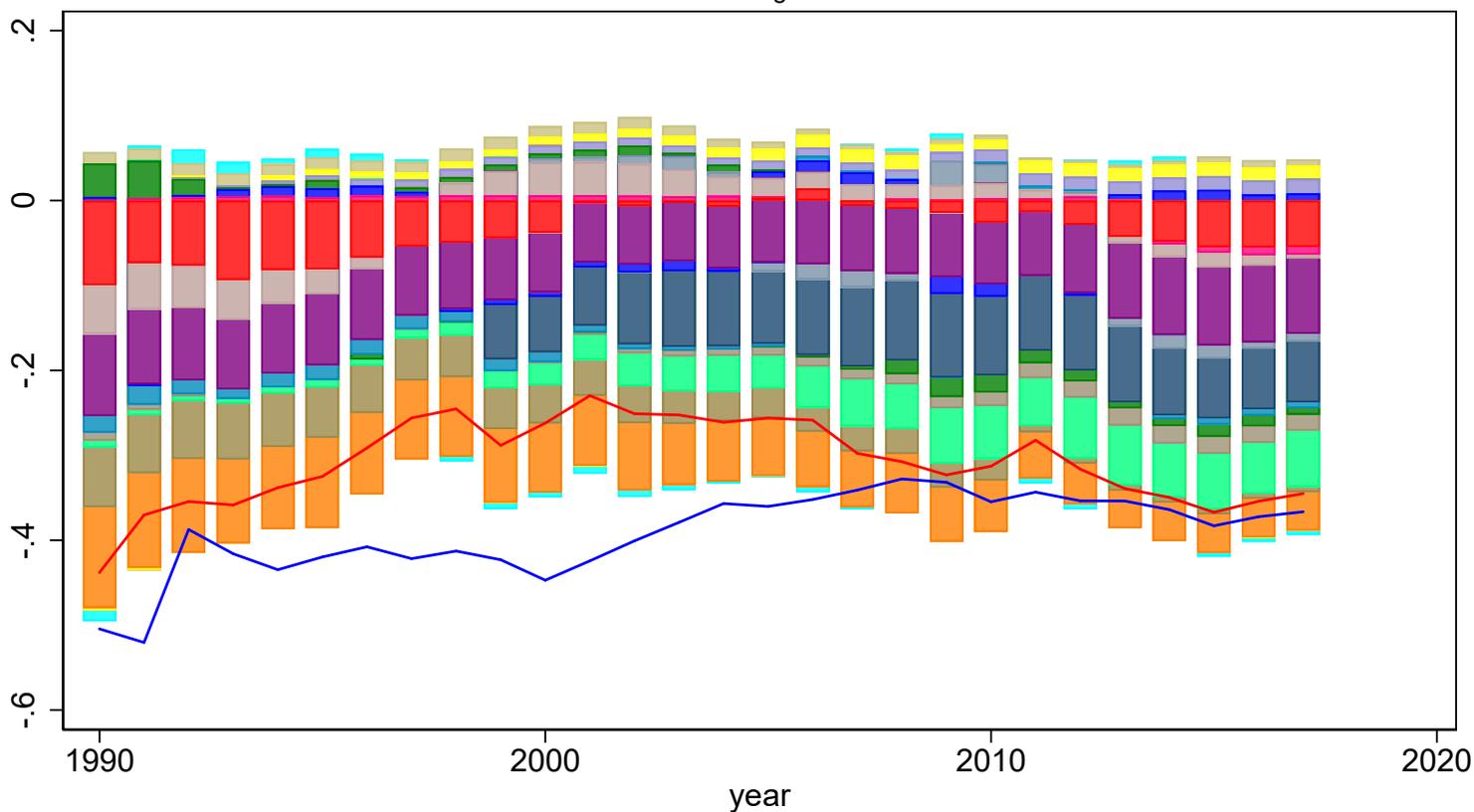


EBA - Contributions to the REER (level) Fitted Values

Ireland

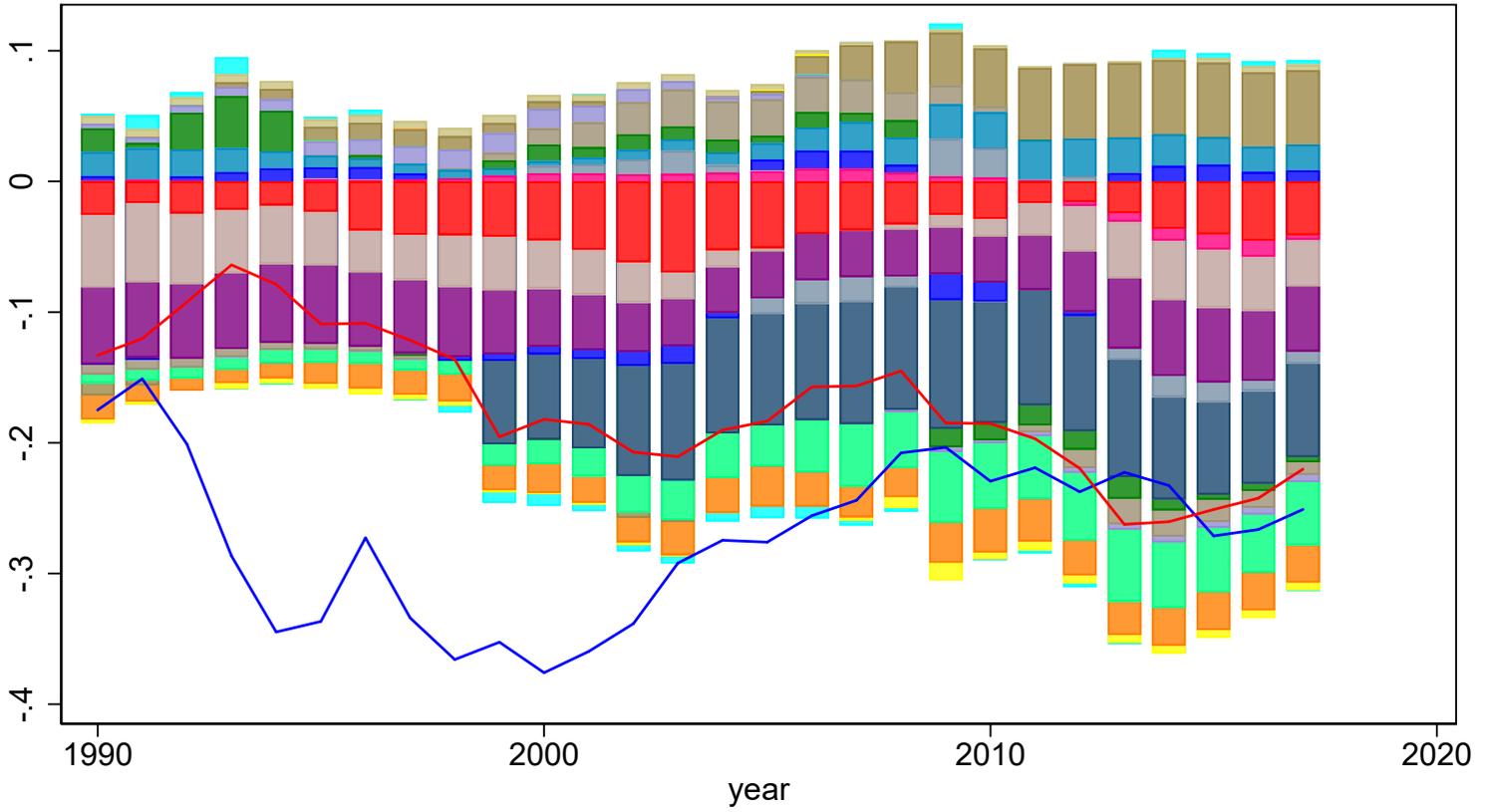


Portugal

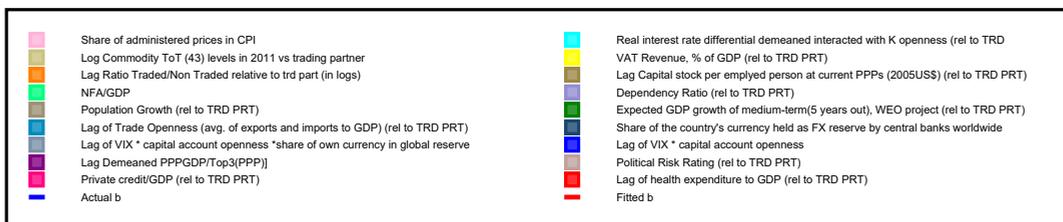
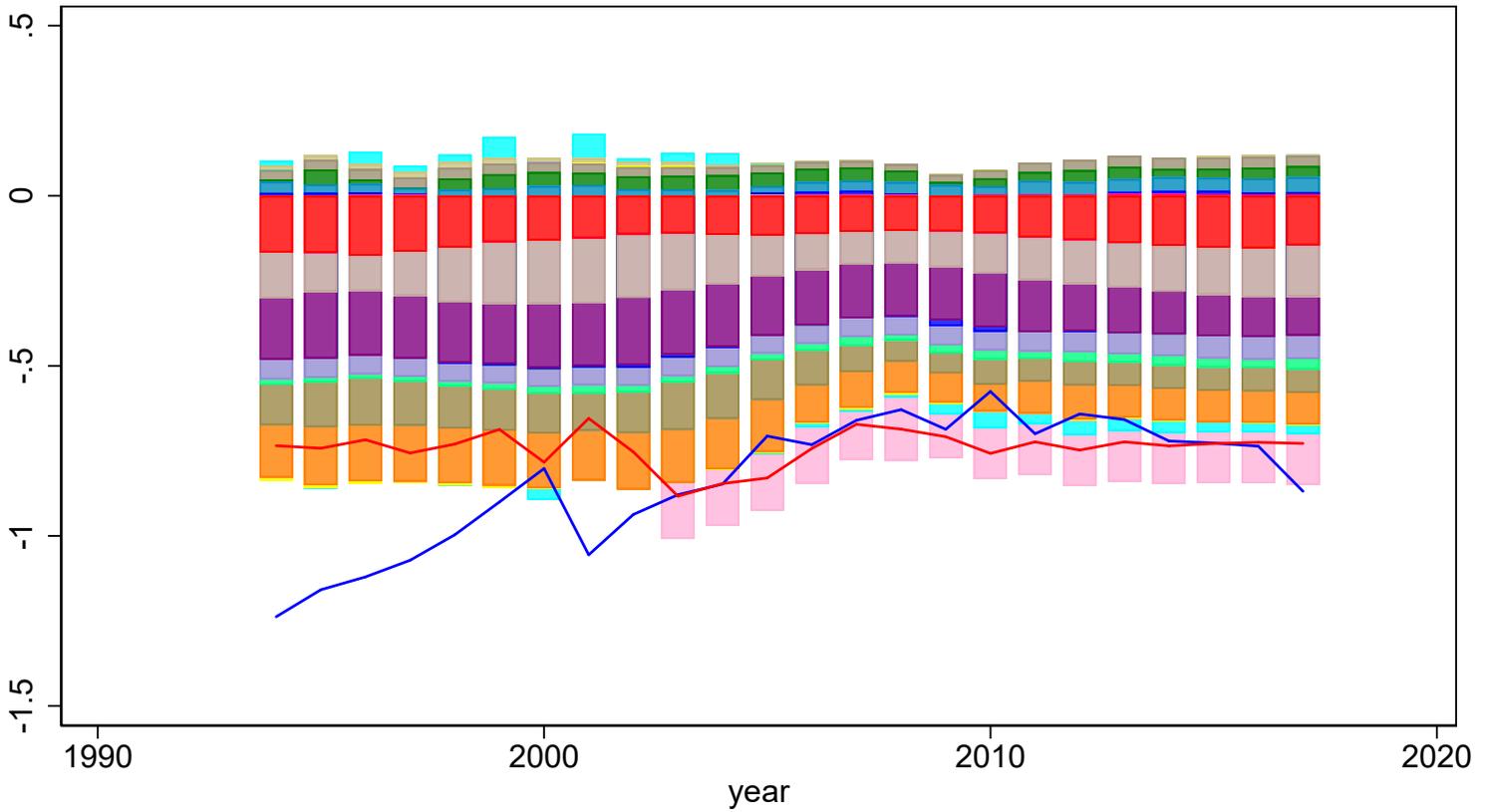


EBA - Contributions to the REER (level) Fitted Values

Spain

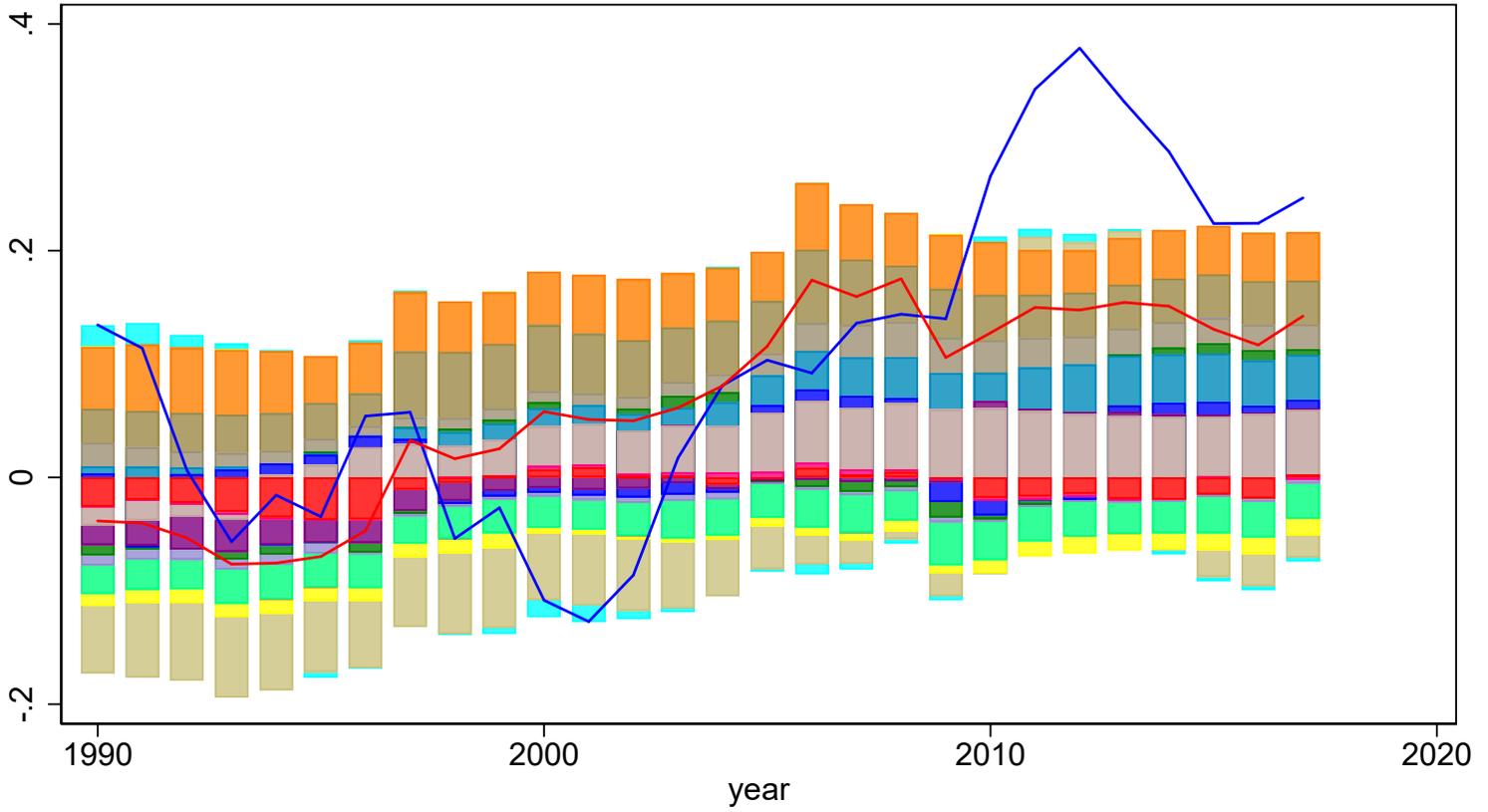


Turkey

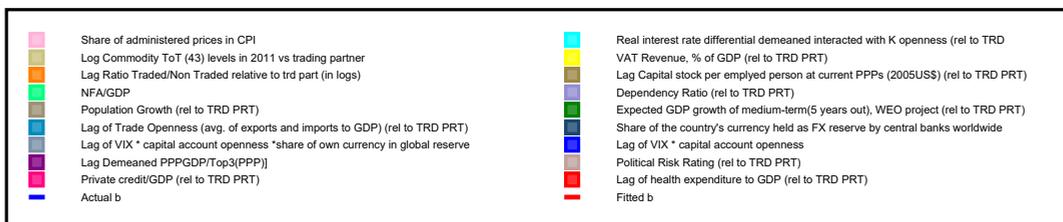
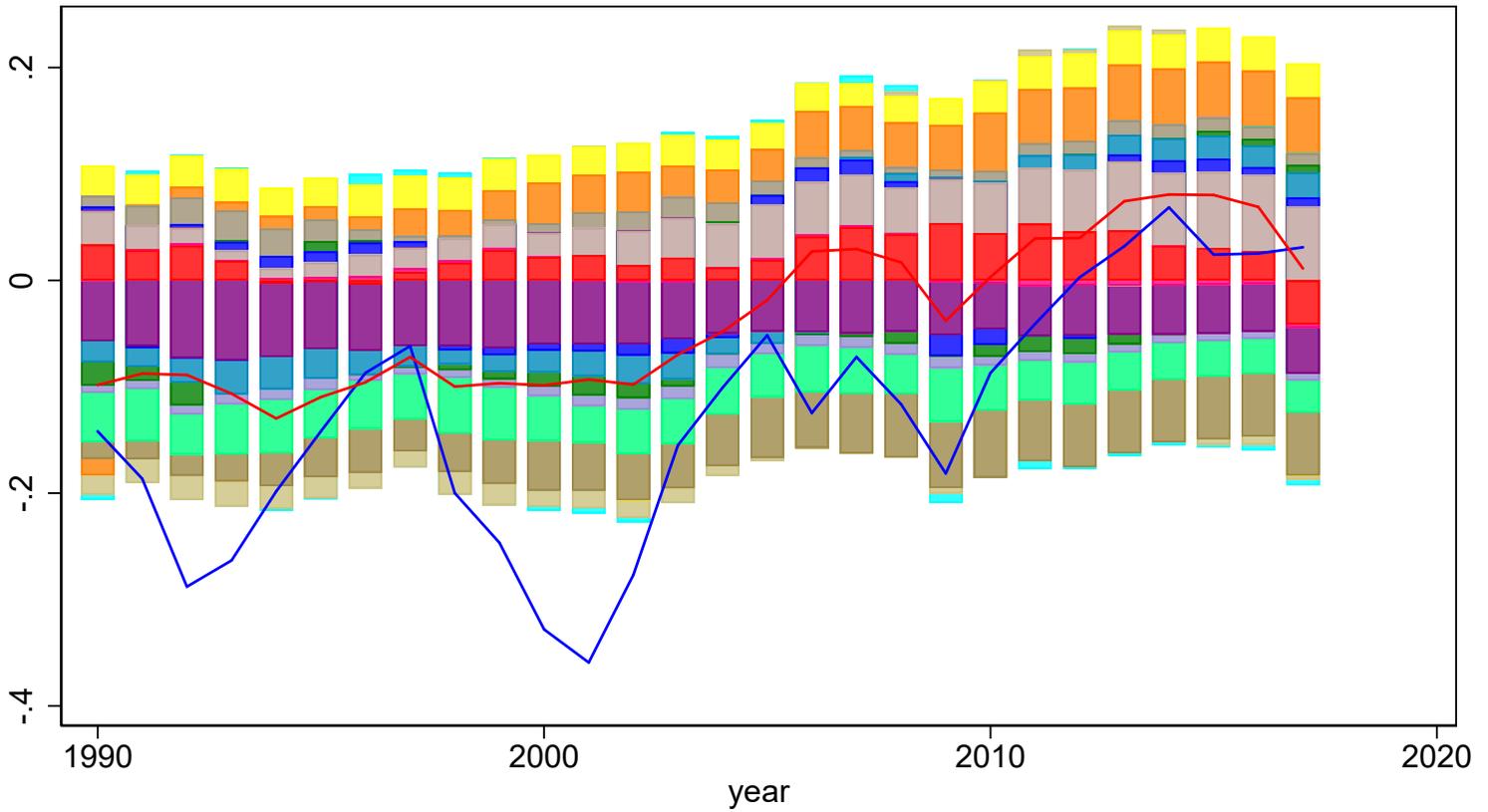


EBA - Contributions to the REER (level) Fitted Values

Australia

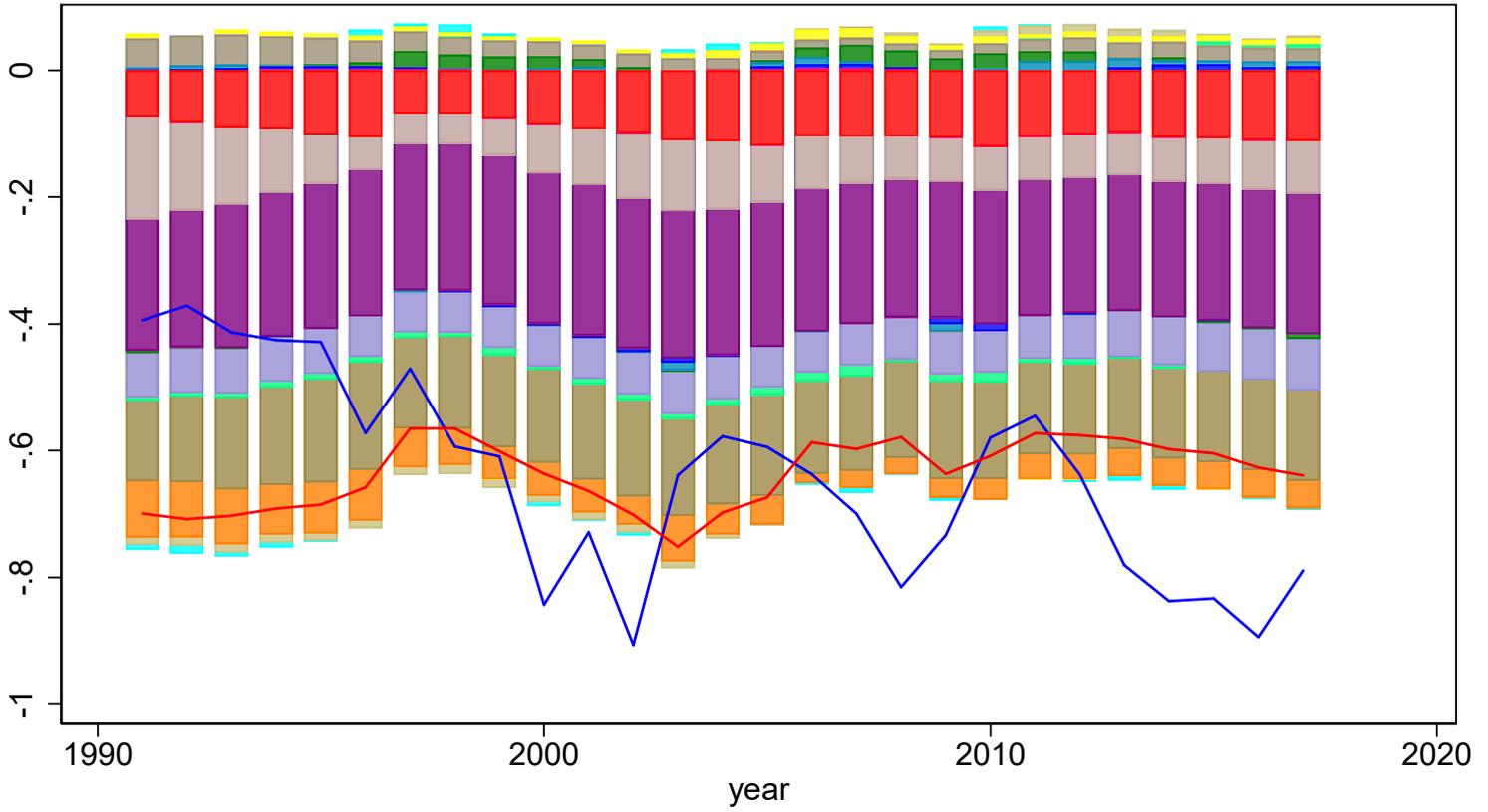


New Zealand

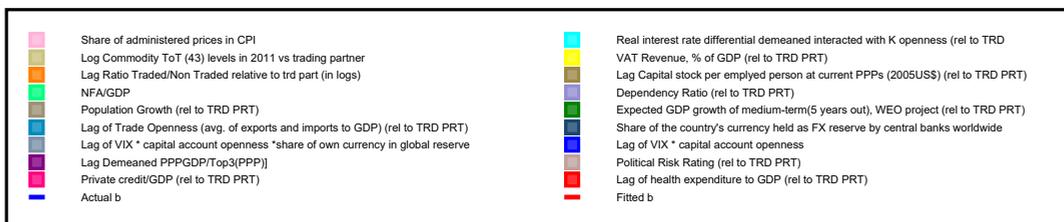
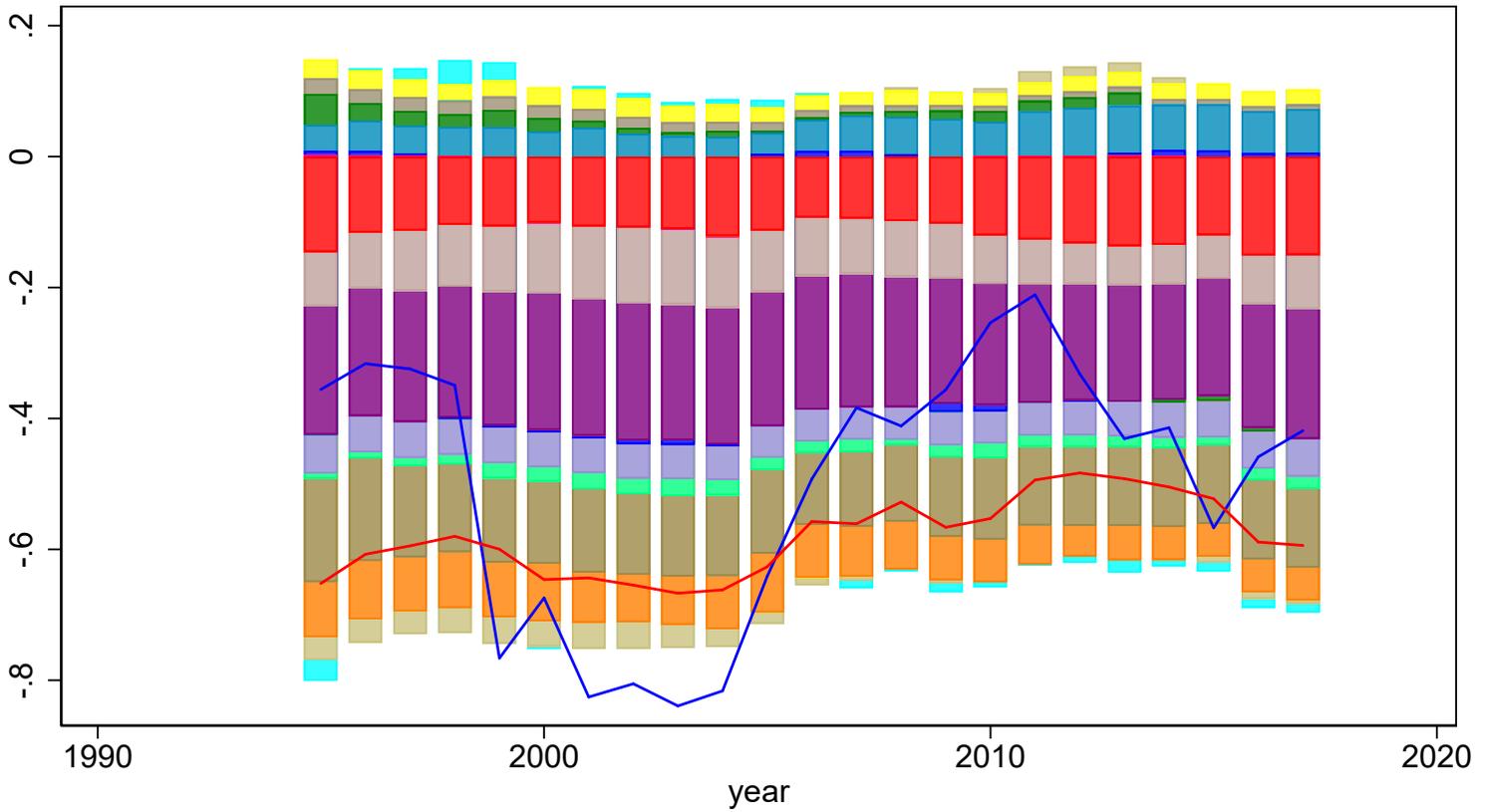


EBA - Contributions to the REER (level) Fitted Values

South Africa

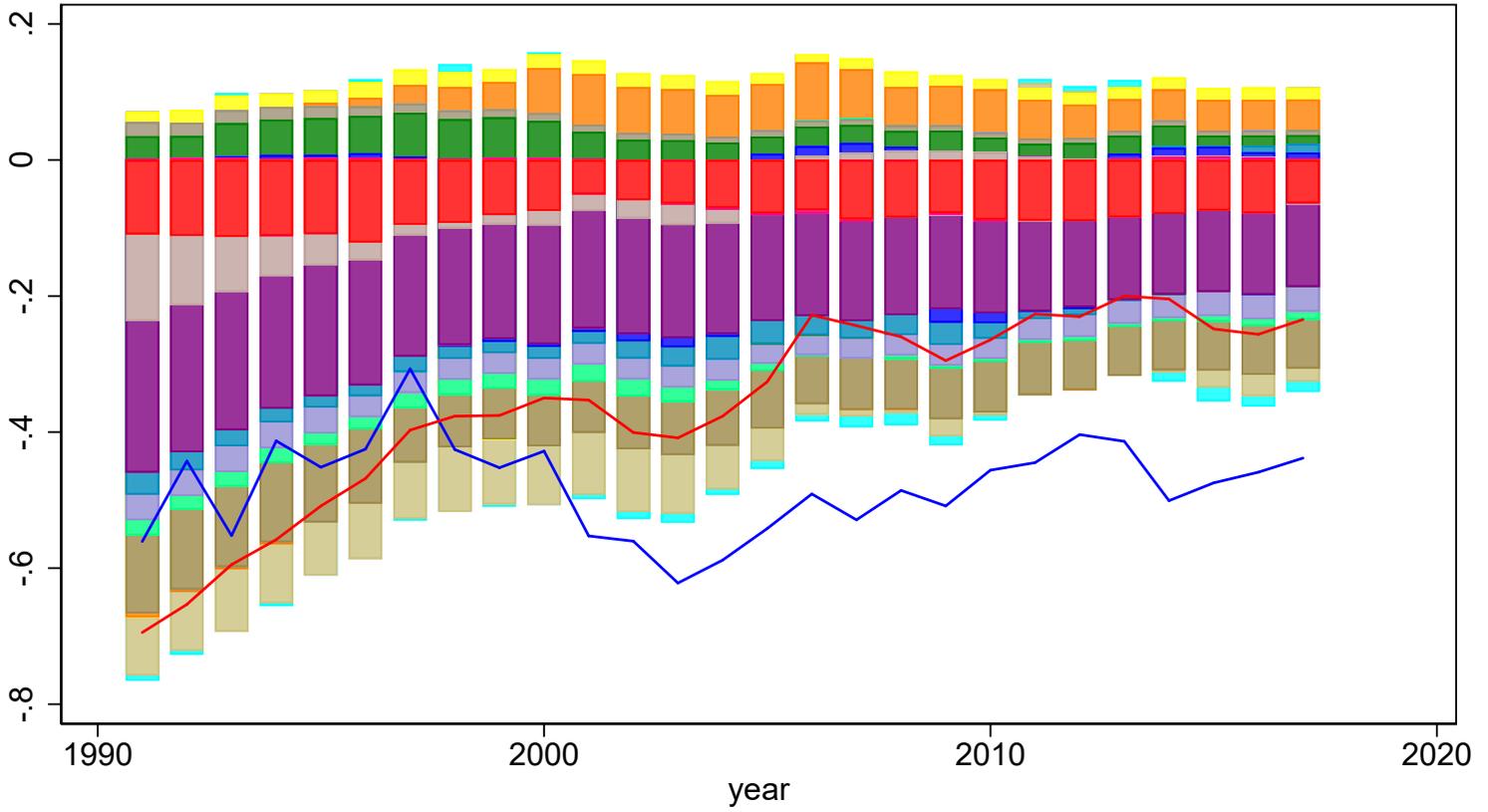


Brazil

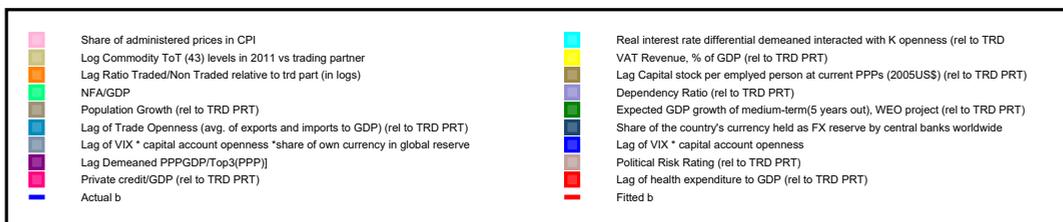
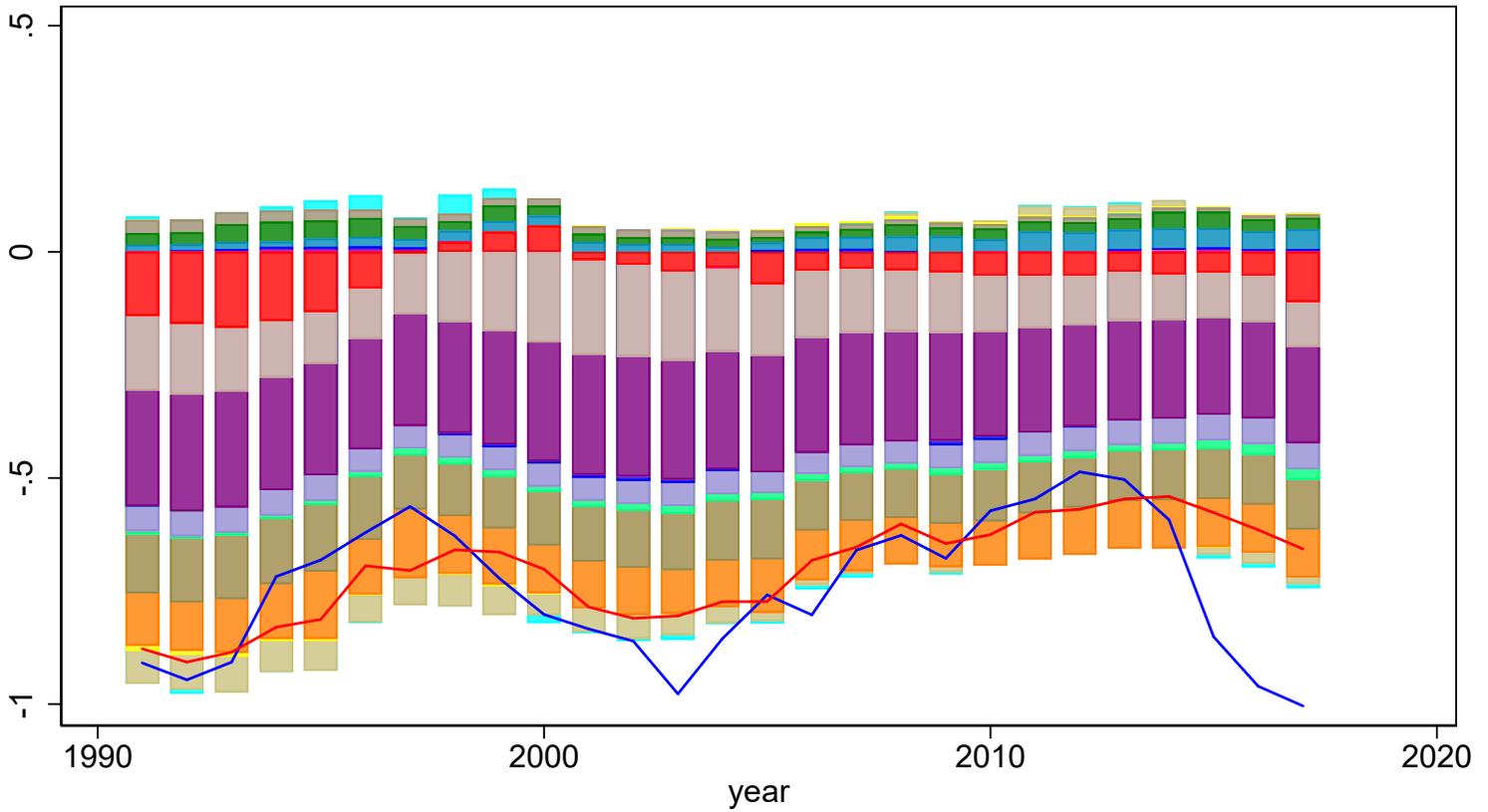


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Chile

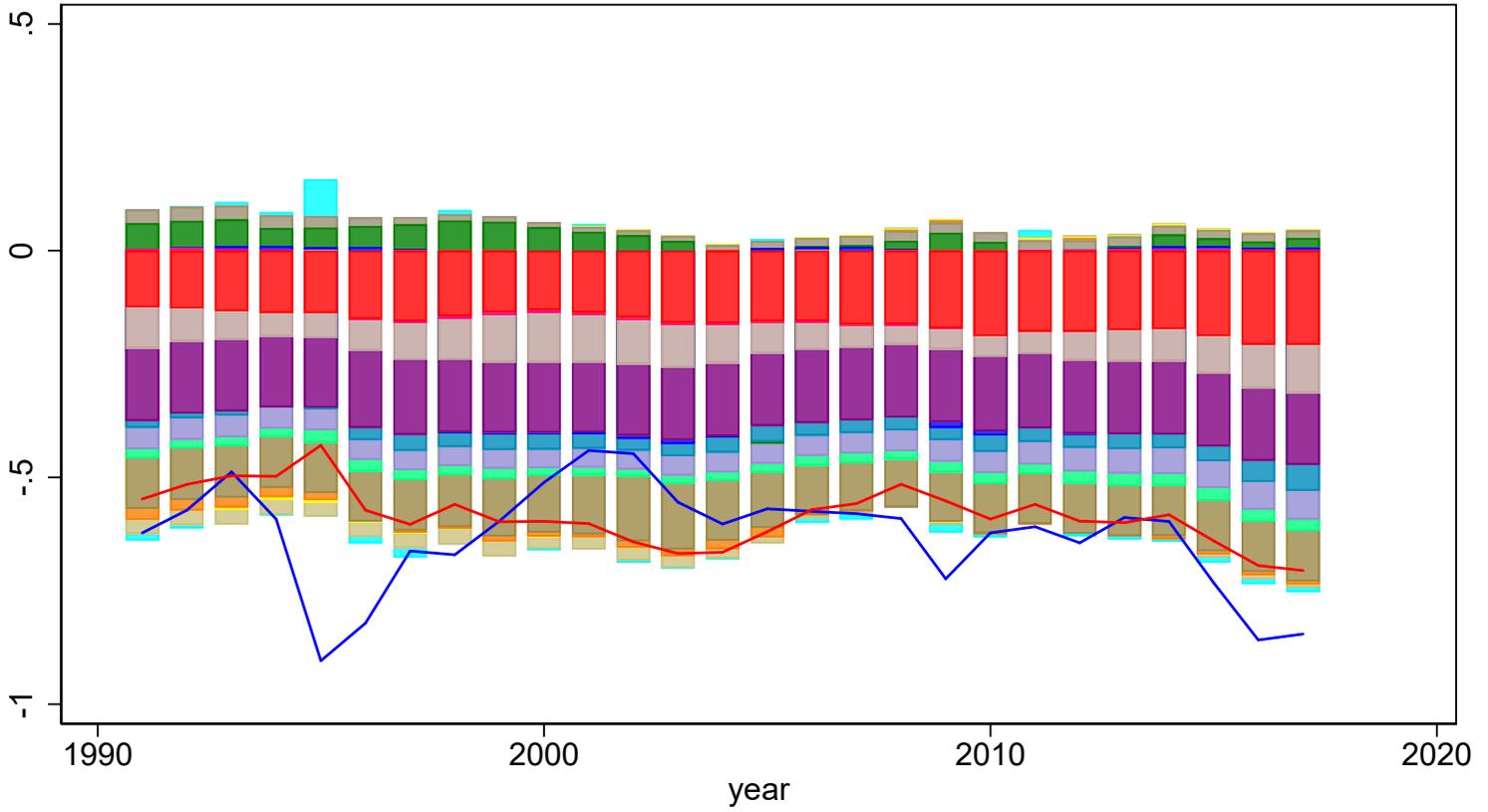


Colombia

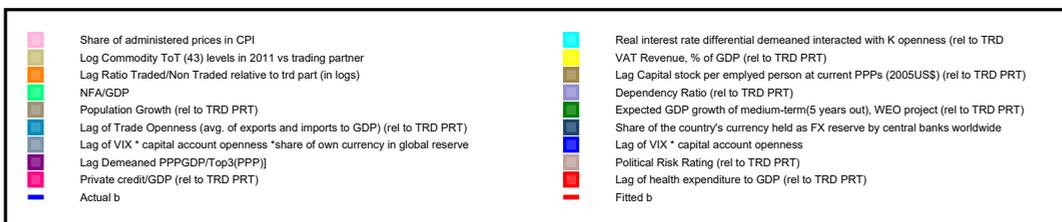
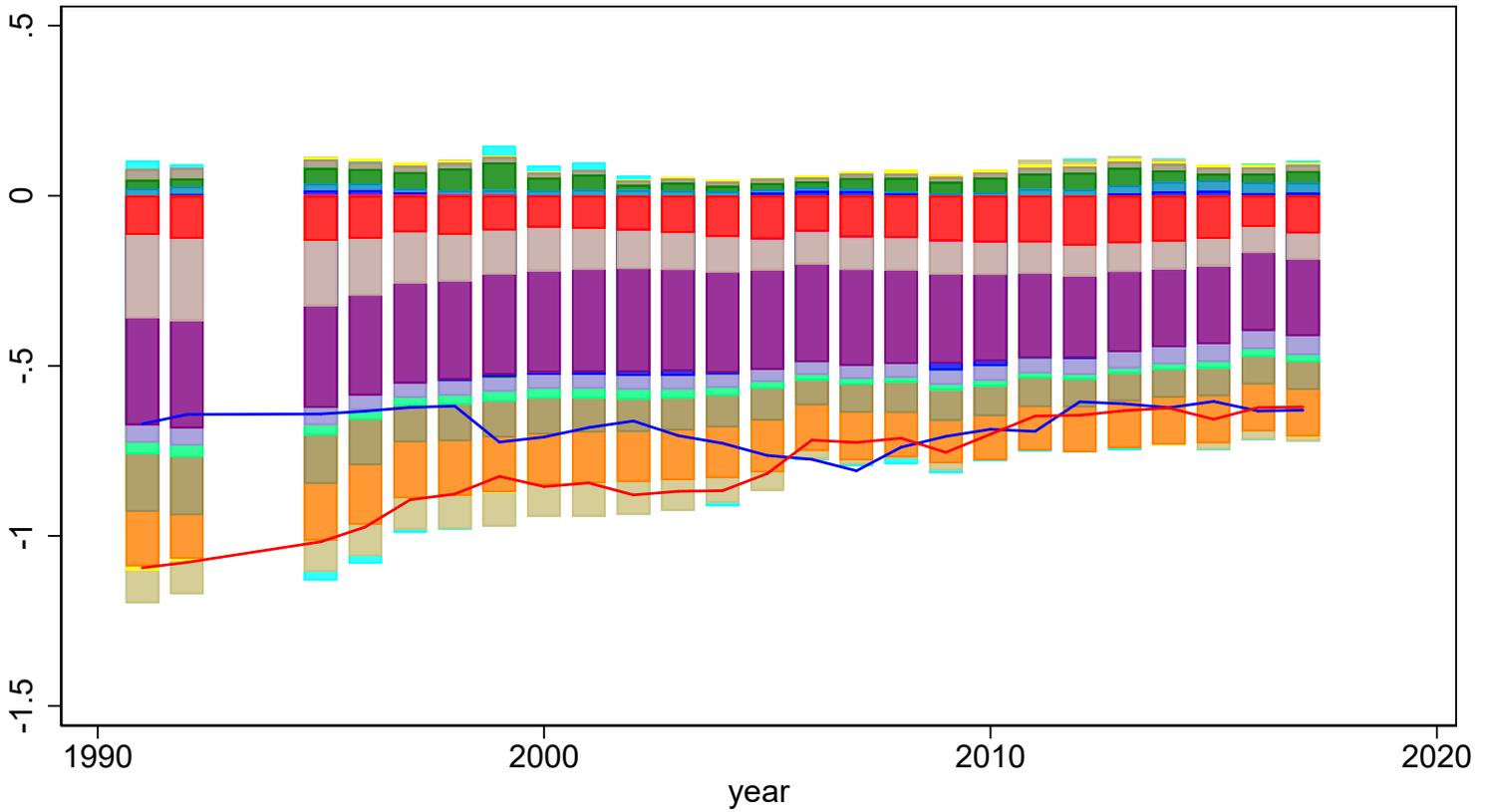


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Mexico

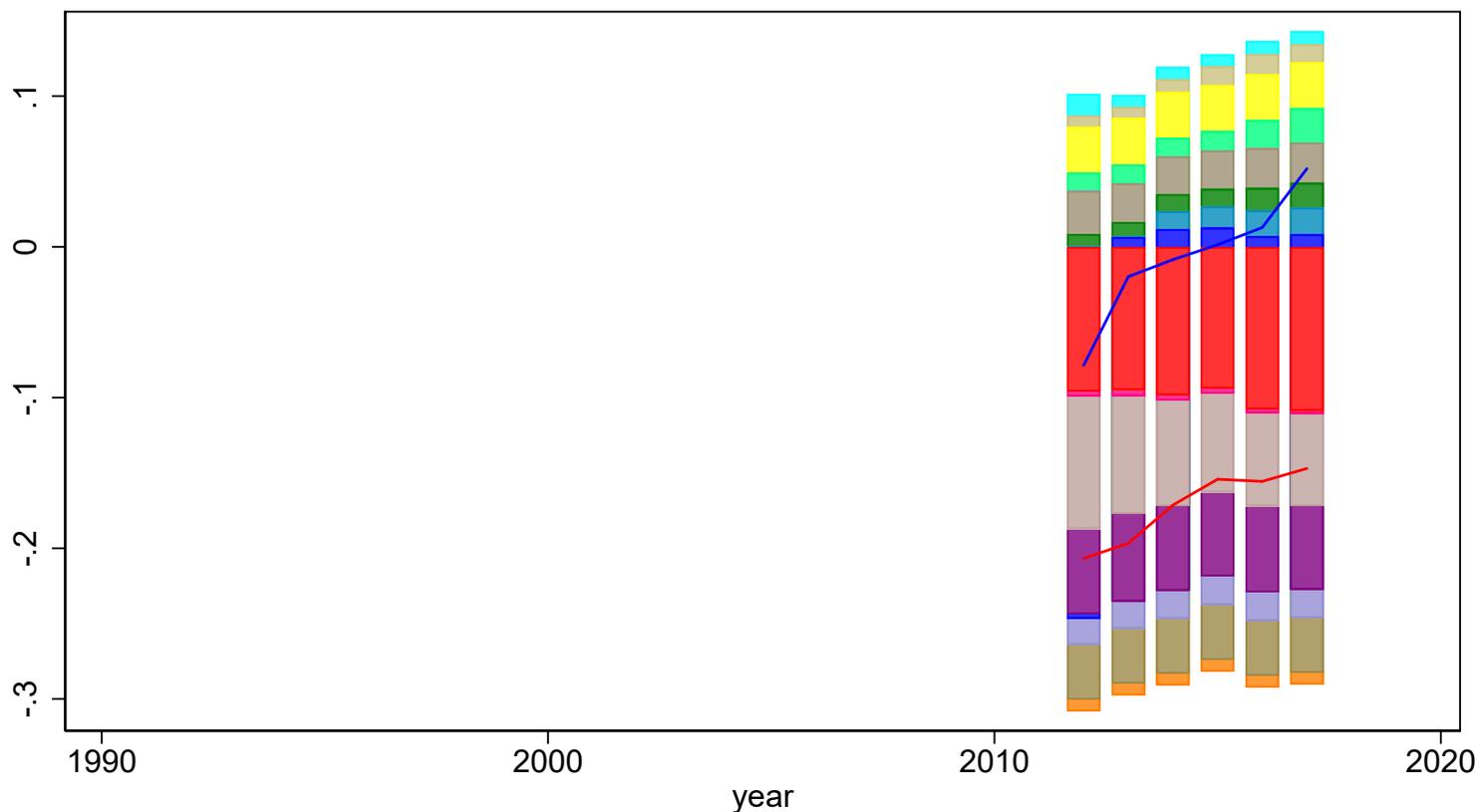


Peru

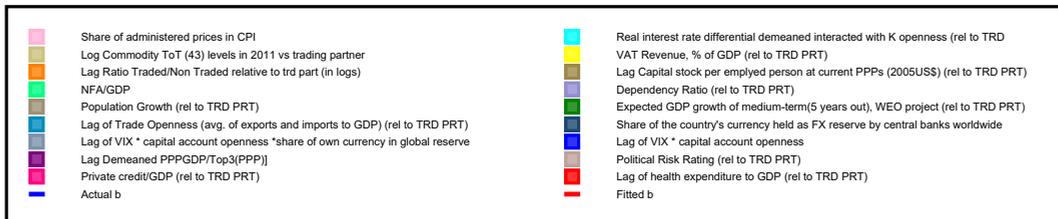
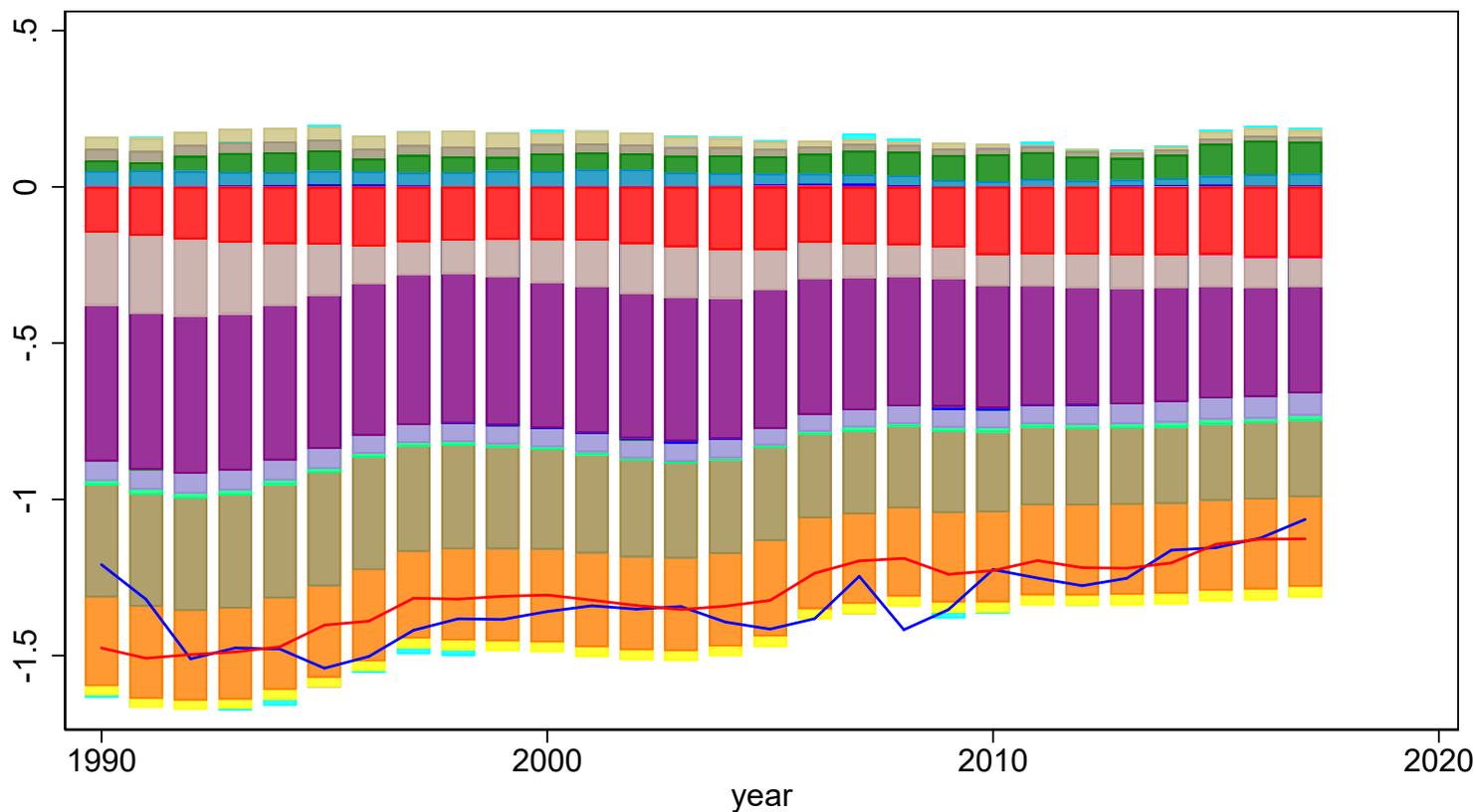


EBA - Contributions to the REER (level) Fitted Values

Israel

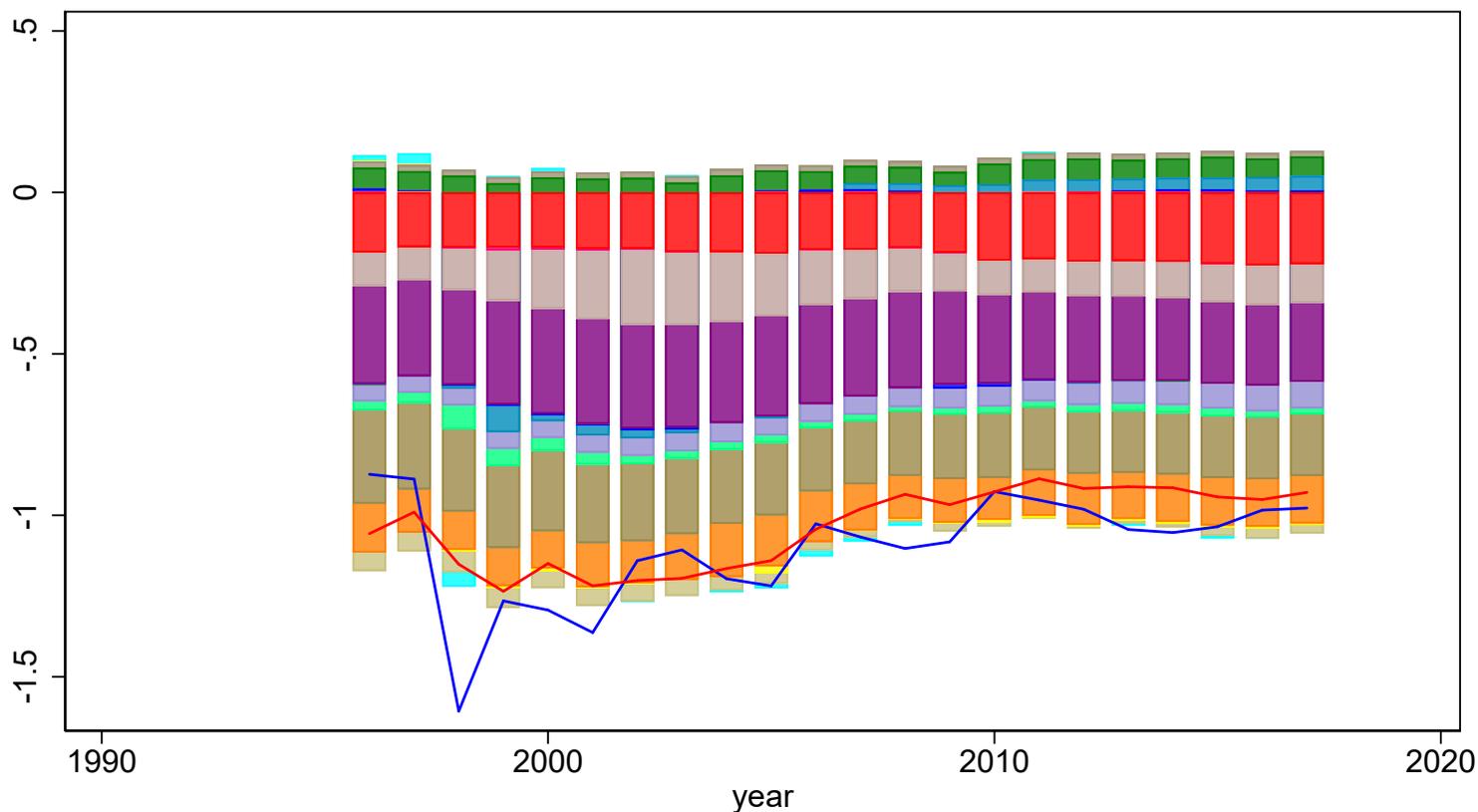


India

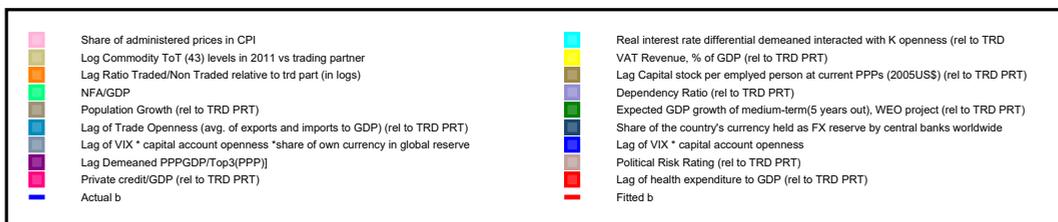
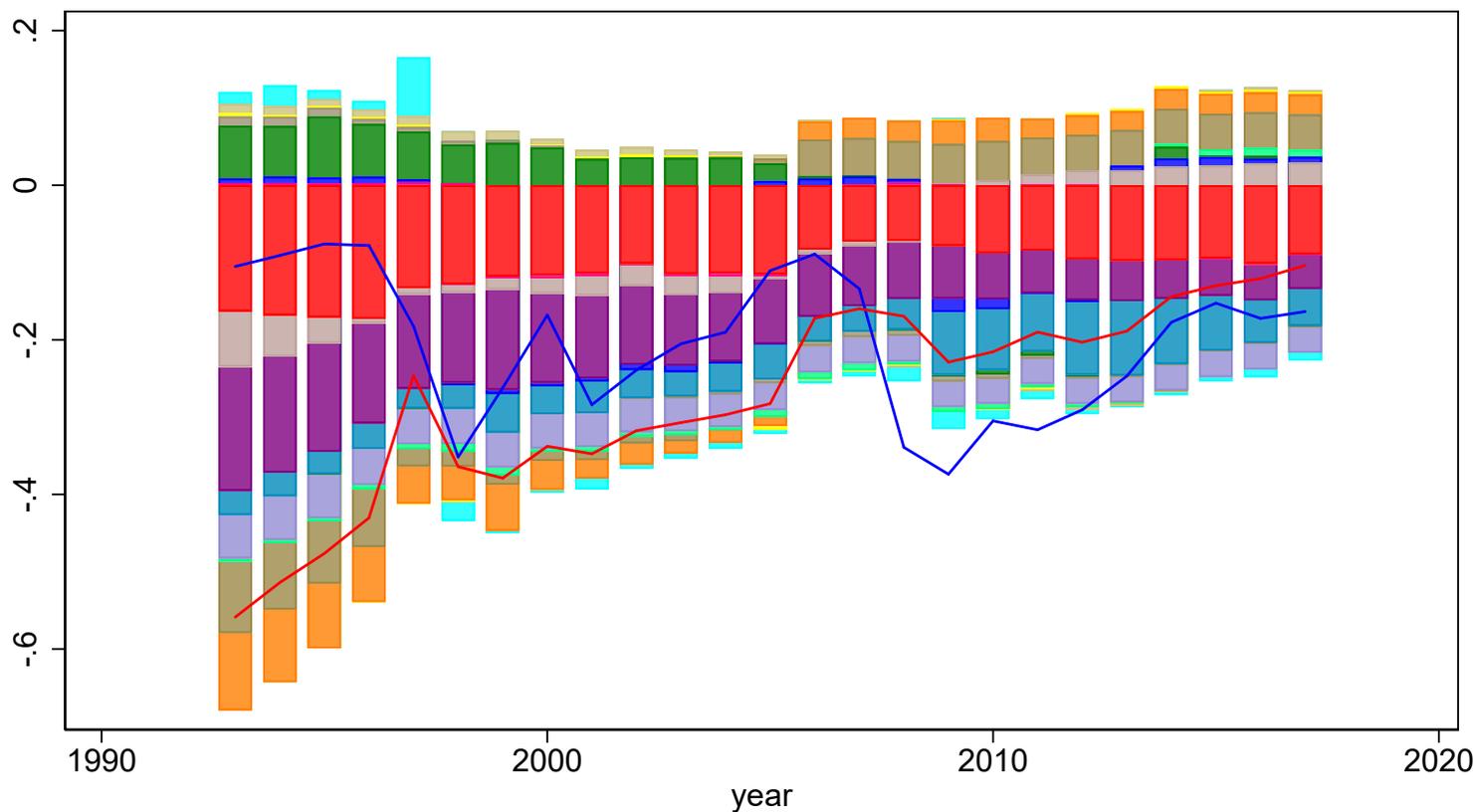


EBA - Contributions to the REER (level) Fitted Values

Indonesia

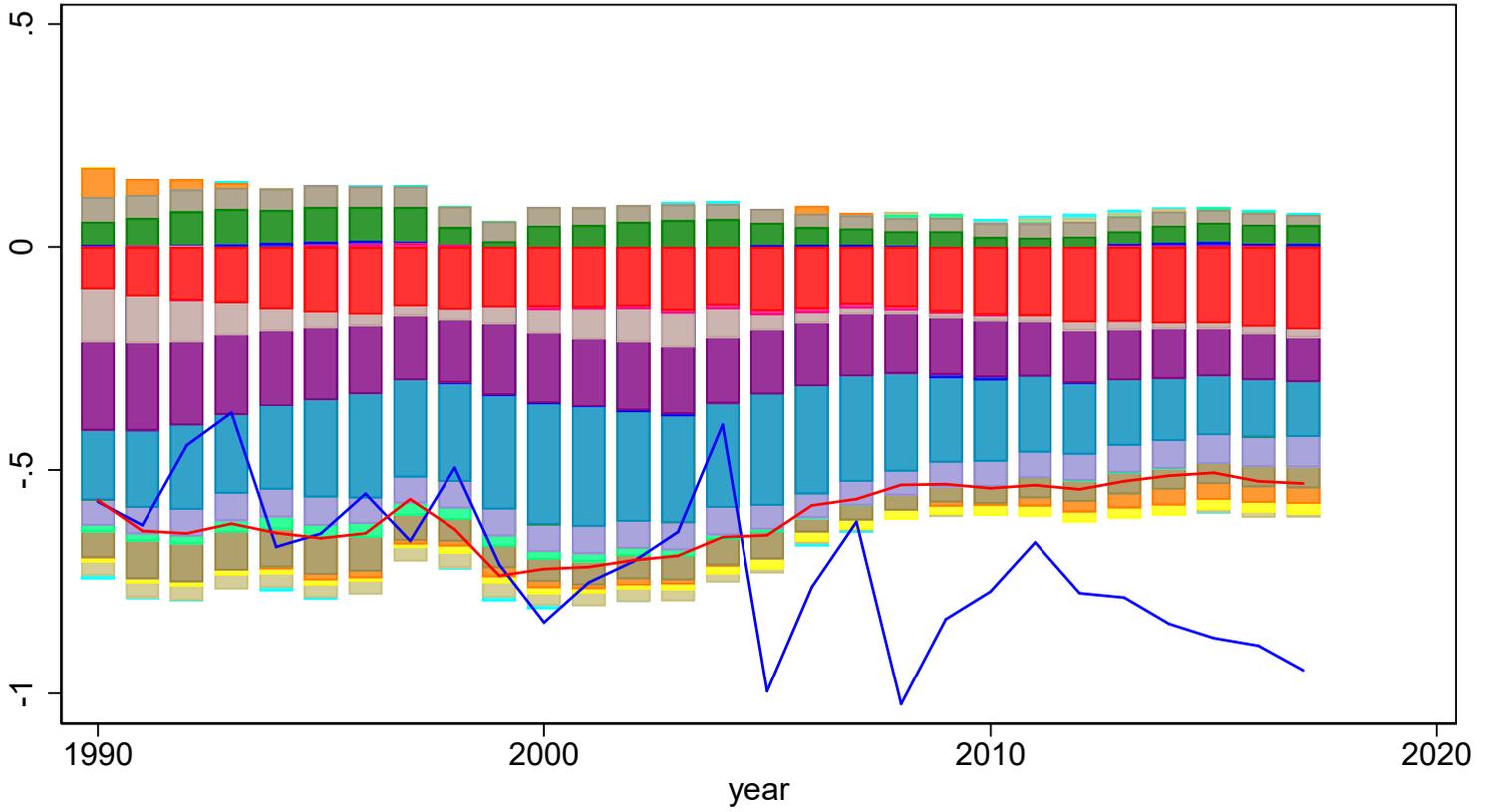


Korea

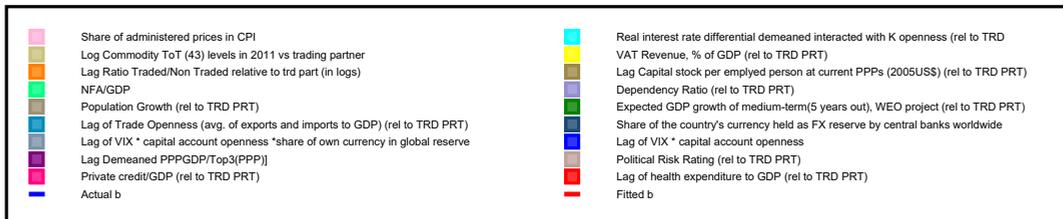
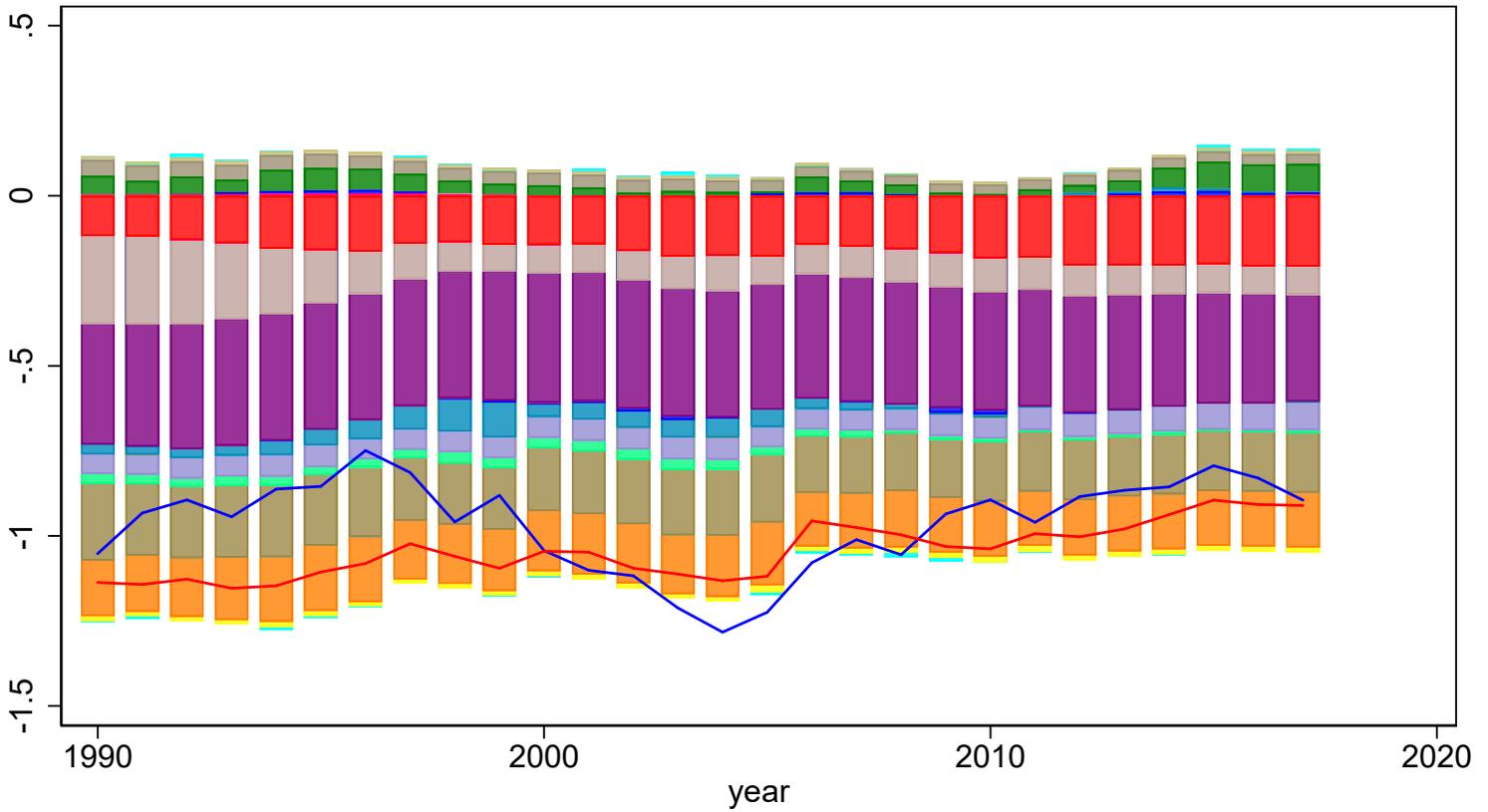


EBA - Contributions to the REER (level) Fitted Values

Malaysia

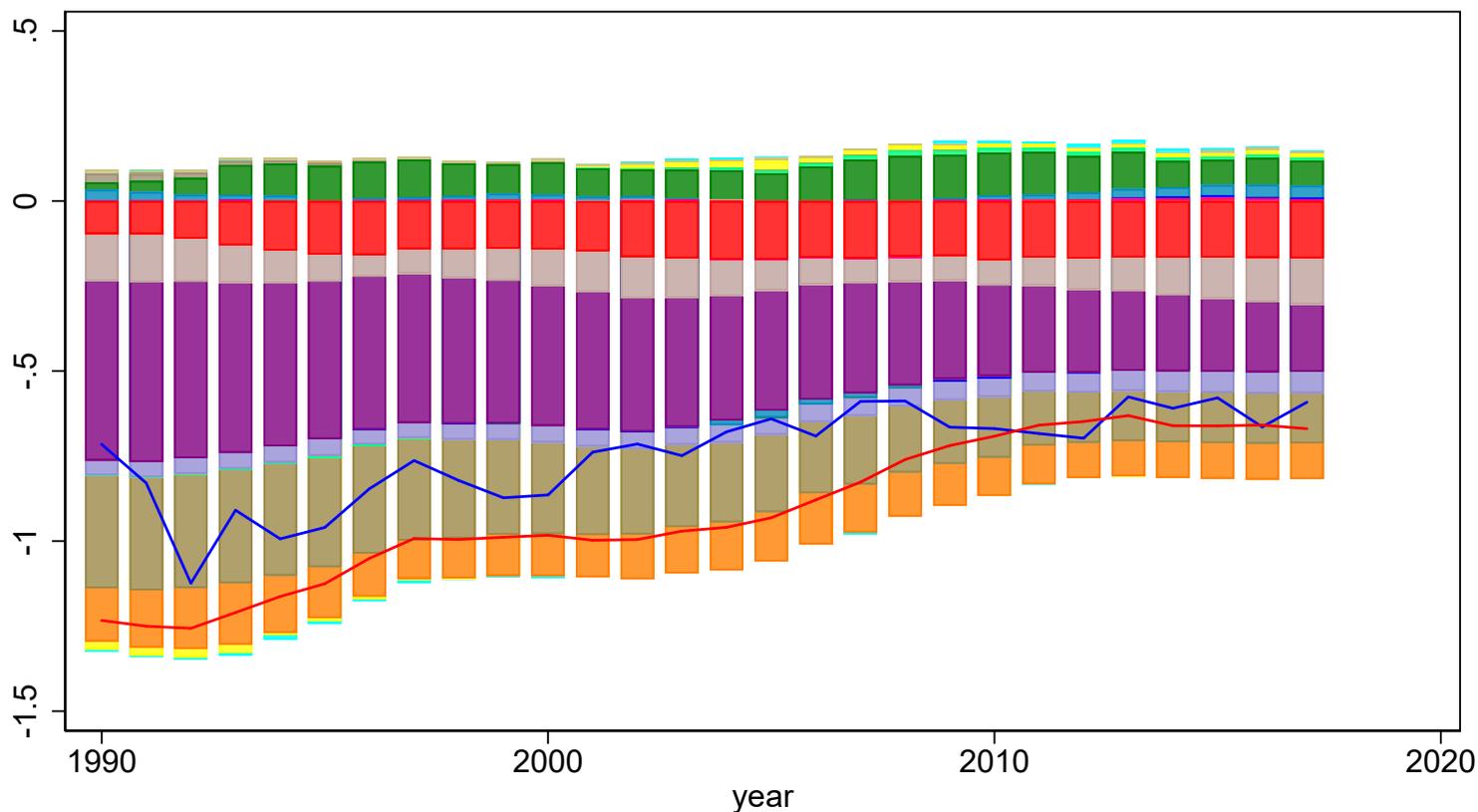


Philippines

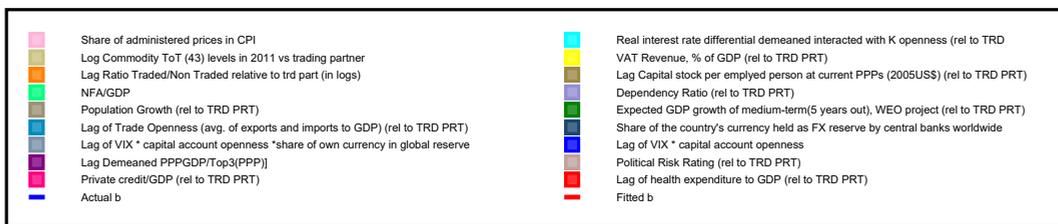
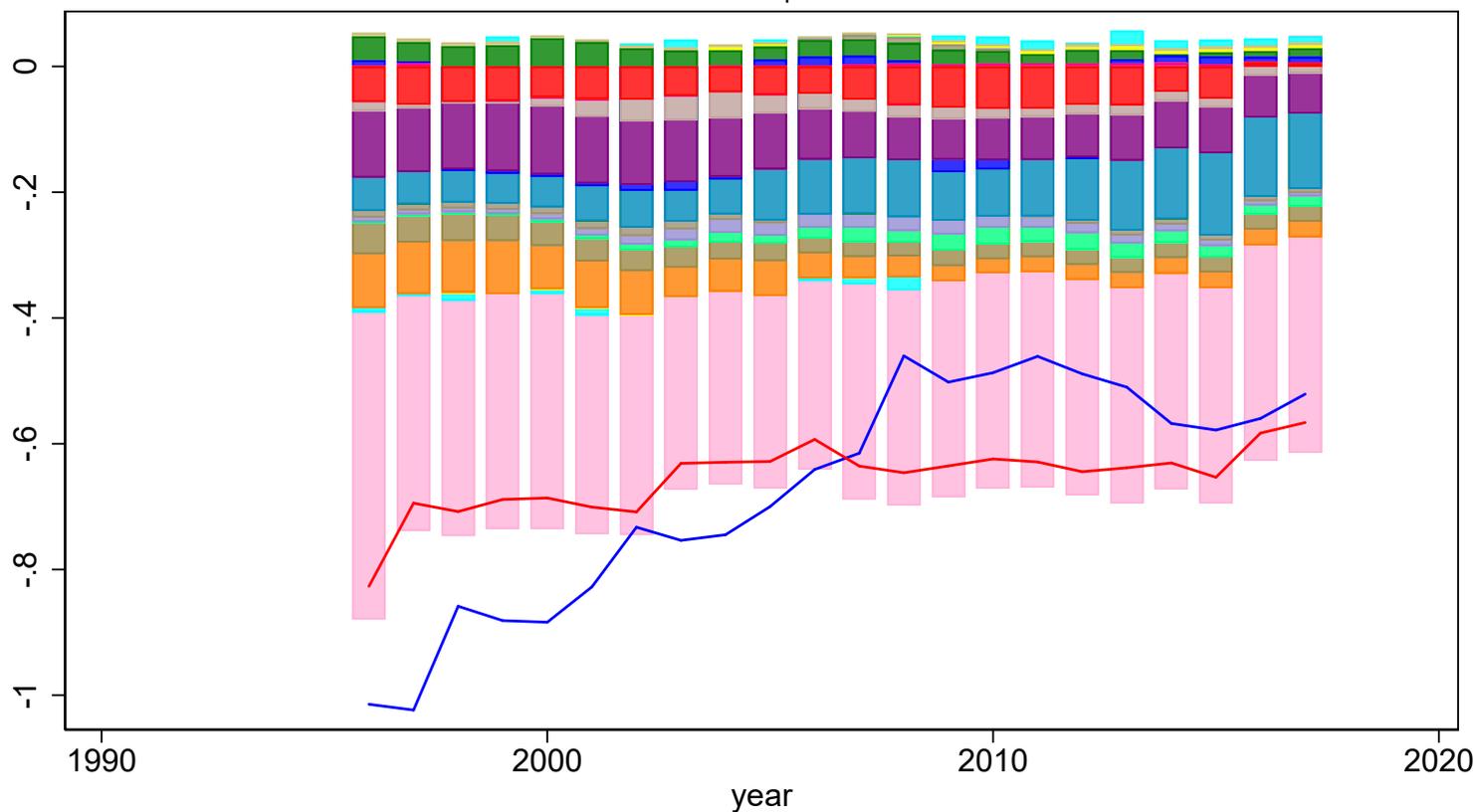


EBA - Contributions to the REER (level) Fitted Values

China

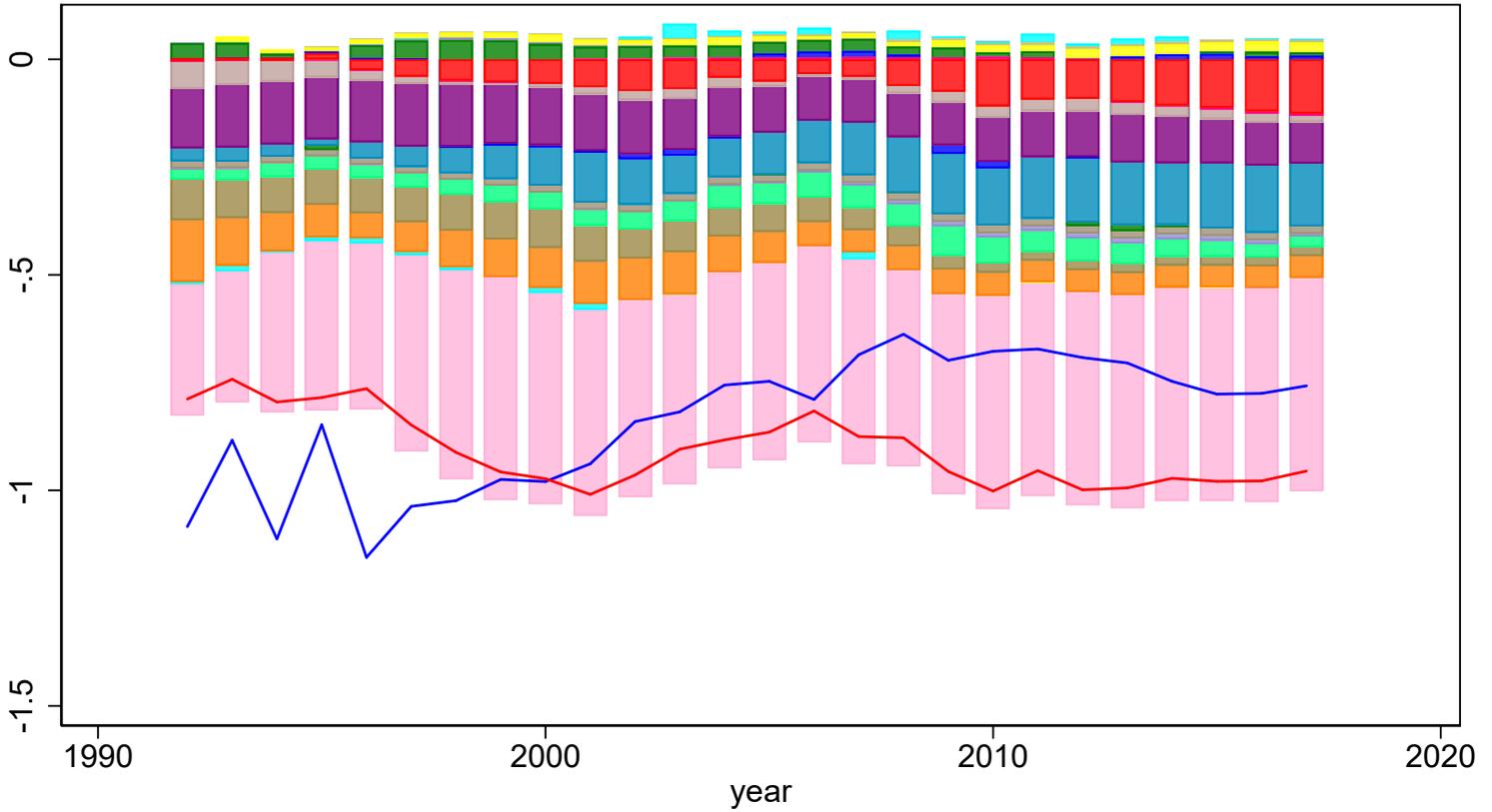


Czech Republic



EBA - Contributions to the REER (level) Fitted Values

Hungary



Poland

