



**WP/19/65a**

# **IMF Working Paper**

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Online Appendix to The External Balance Assessment  
Methodology: 2018 Update

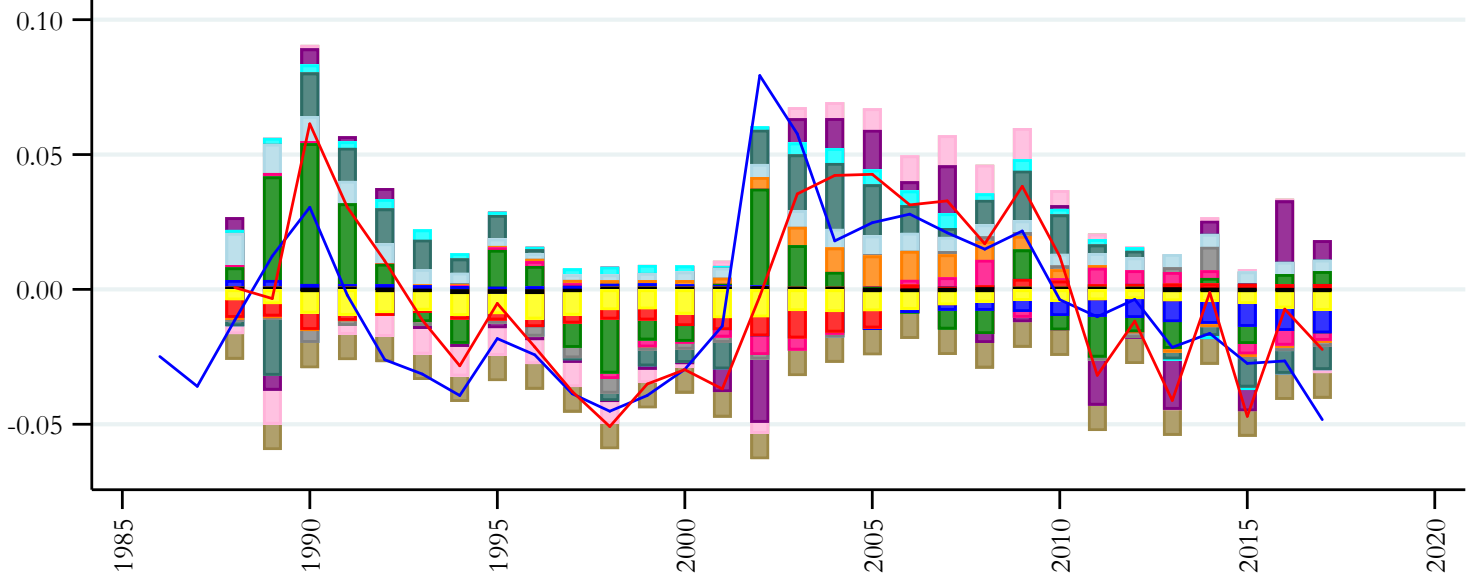
I N T E R N A T I O N A L M O N E T A R Y F U N D

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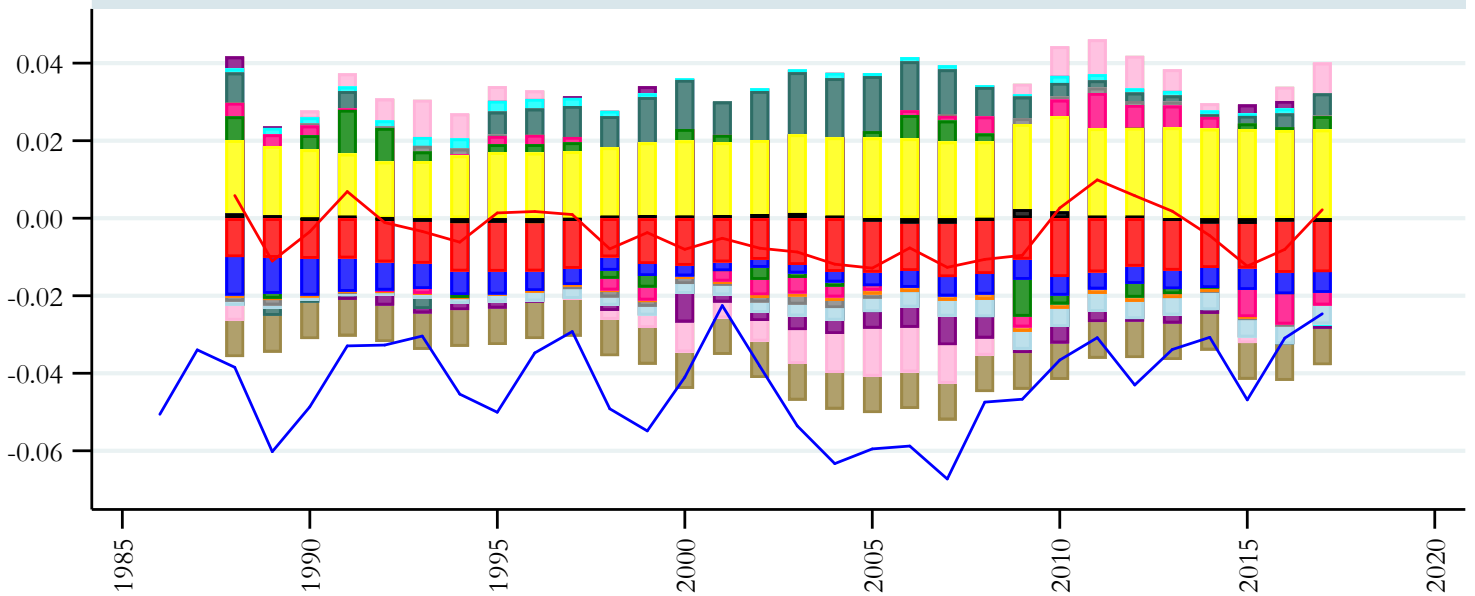
**I. EBA CA Model: Actual Values, Fitted Values, and Historical  
Decomposition**

# CA: Contributions to EBA Fitted Values

## Argentina



## Australia

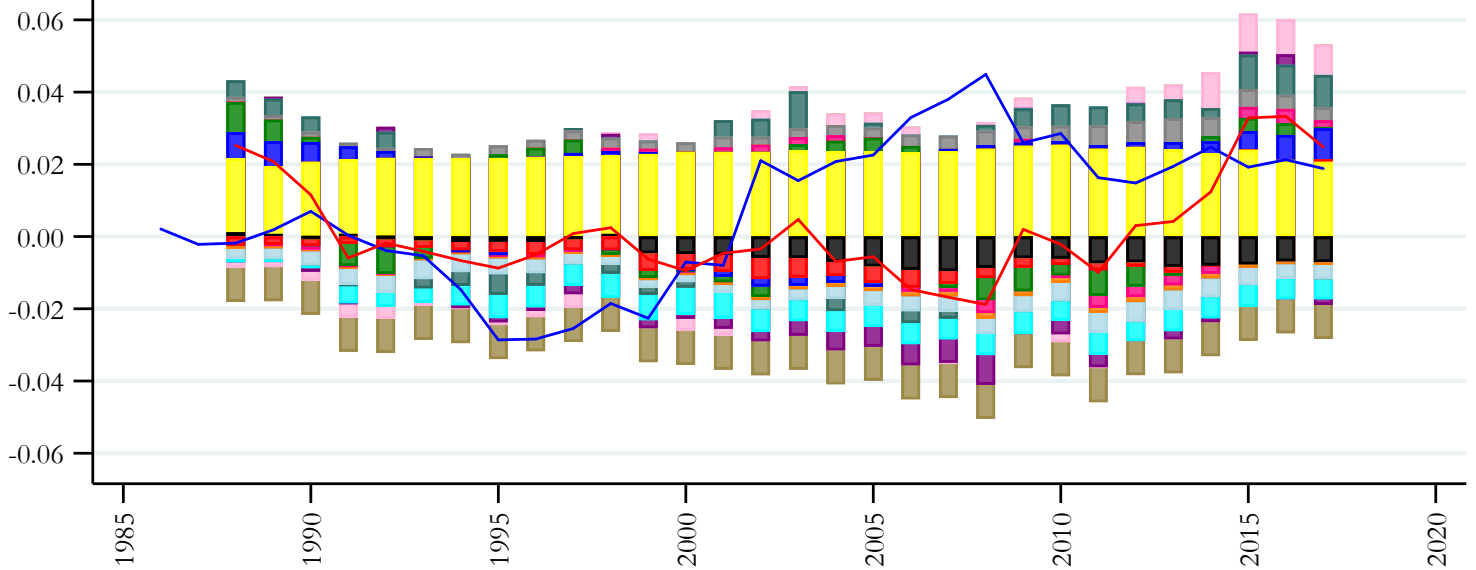


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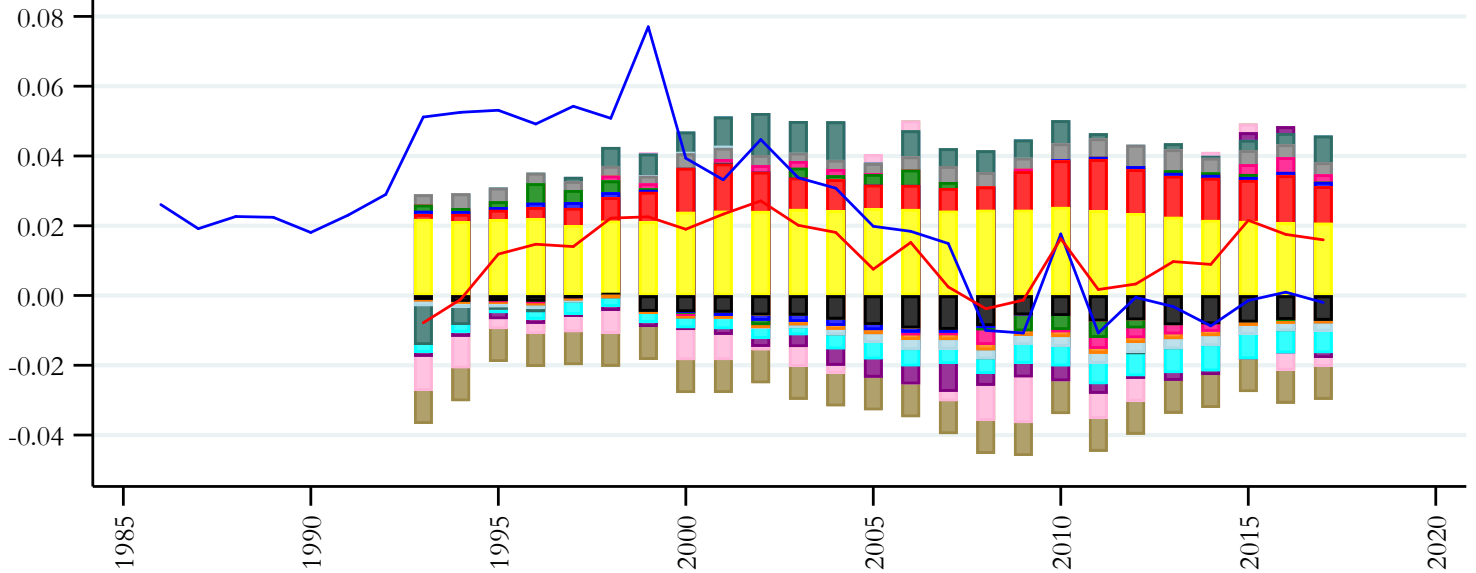
- Constant term
- Kcon\*(Reserves chg.)/GDP
- Cyclically adj. Fiscal Balance
- Forecasted Growth
- ToTgap\*Openness
- Demographic terms
- Lagged GDP pw terms
- Current Account to GDP ratio
- Detrended Credit
- Public Health Spending
- ICRG-12 Institution
- Oil+Gas Balance
- Output Gap
- NFA terms
- VIX + Share of Reserves terms
- fitted\_ca

# CA: Contributions to EBA Fitted Values

## Austria



## Belgium

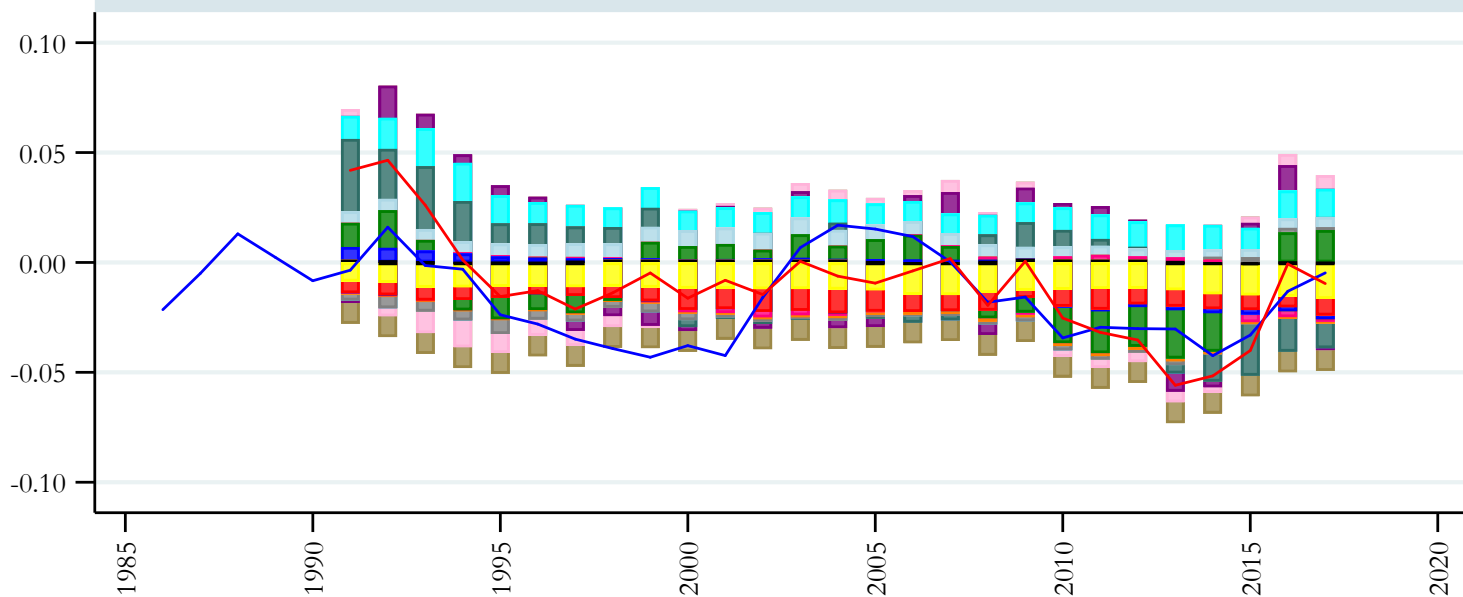


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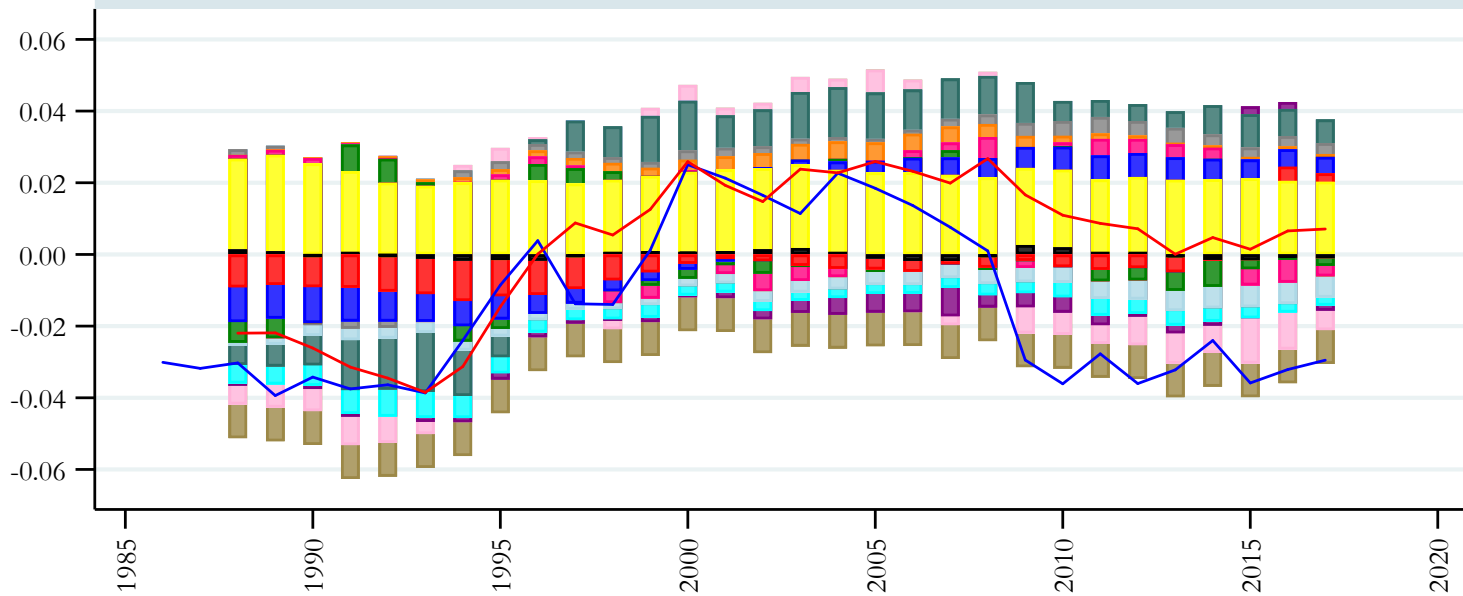
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|--------------------------------|-------------------------------|
| Constant term                  | Detrended Credit              |
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| Demographic terms              | NFA terms                     |
| Lagged GDP pw terms            | VIX + Share of Reserves terms |
| Current Account to GDP ratio   | fitted_ca                     |

# CA: Contributions to EBA Fitted Values

Brazil



Canada

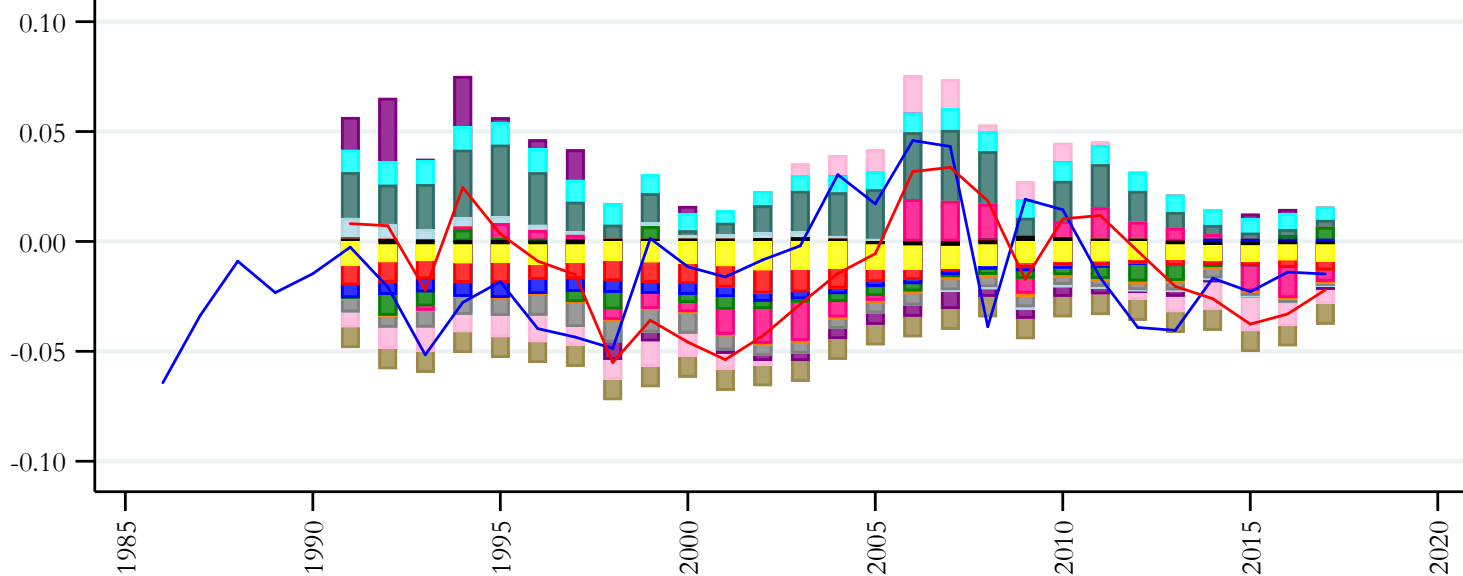


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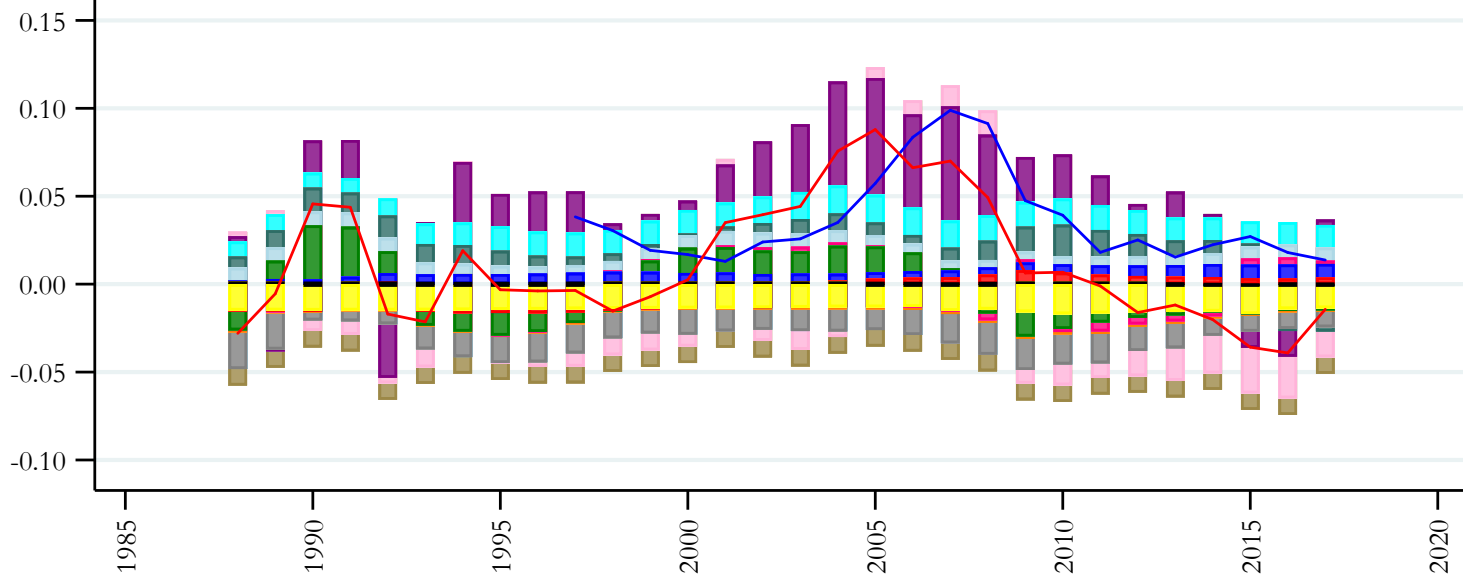
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| Current Account to GDP ratio   | fitted_ca                     |

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Chile



China

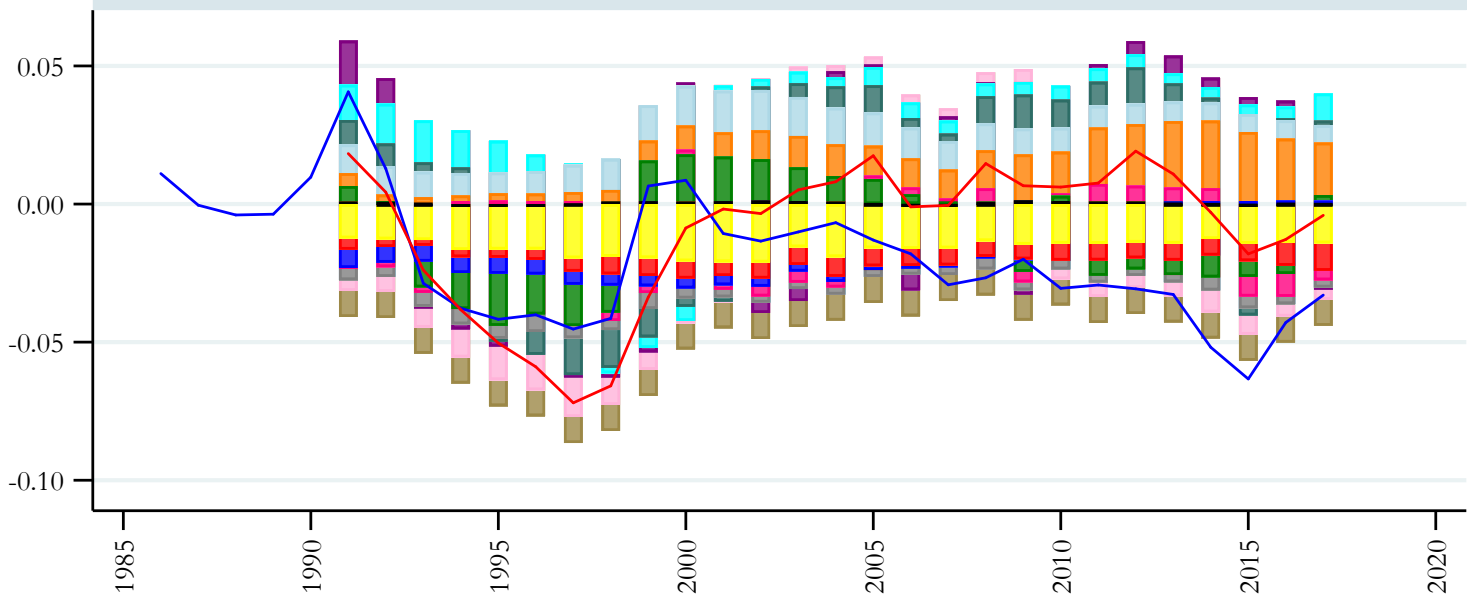


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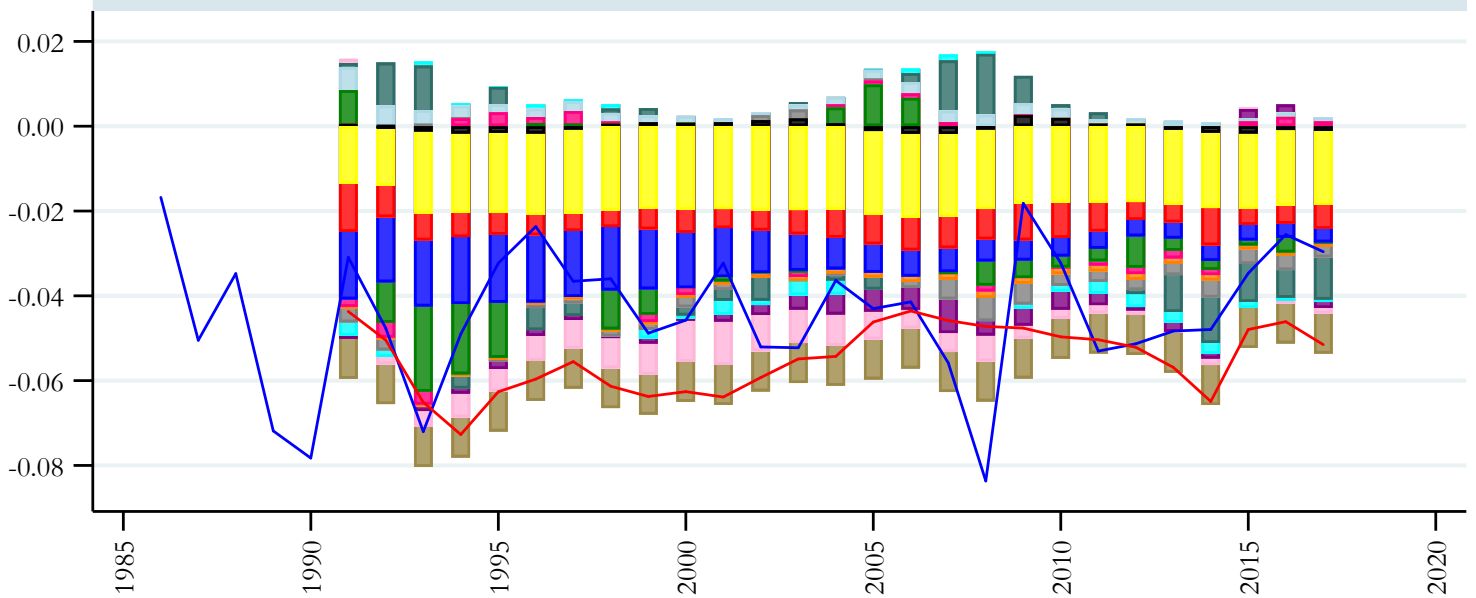
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Colombia



Costa Rica



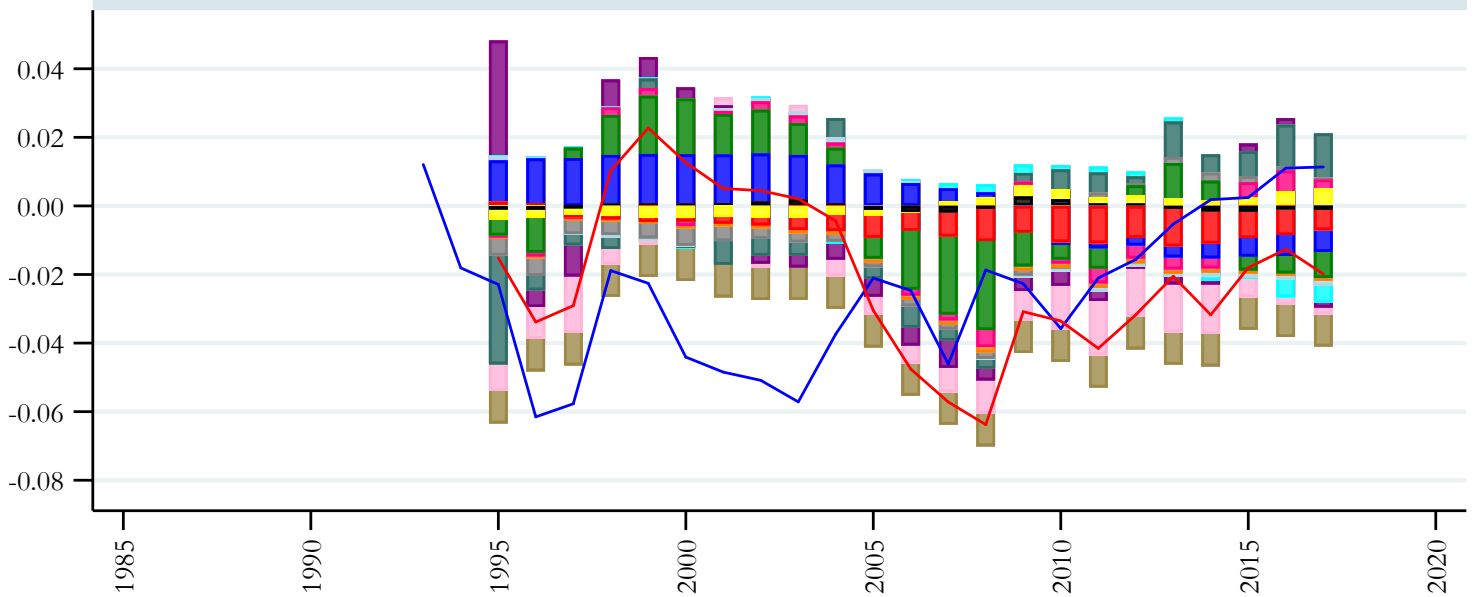
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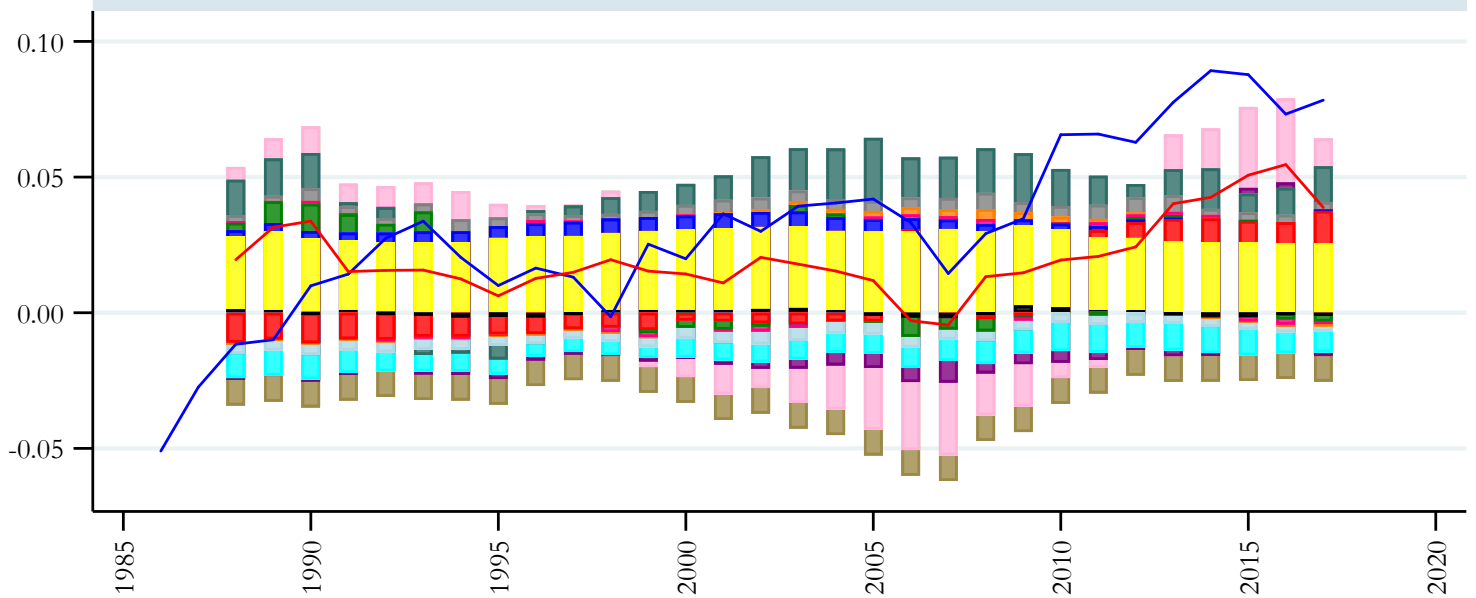


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## Czechia



## Denmark

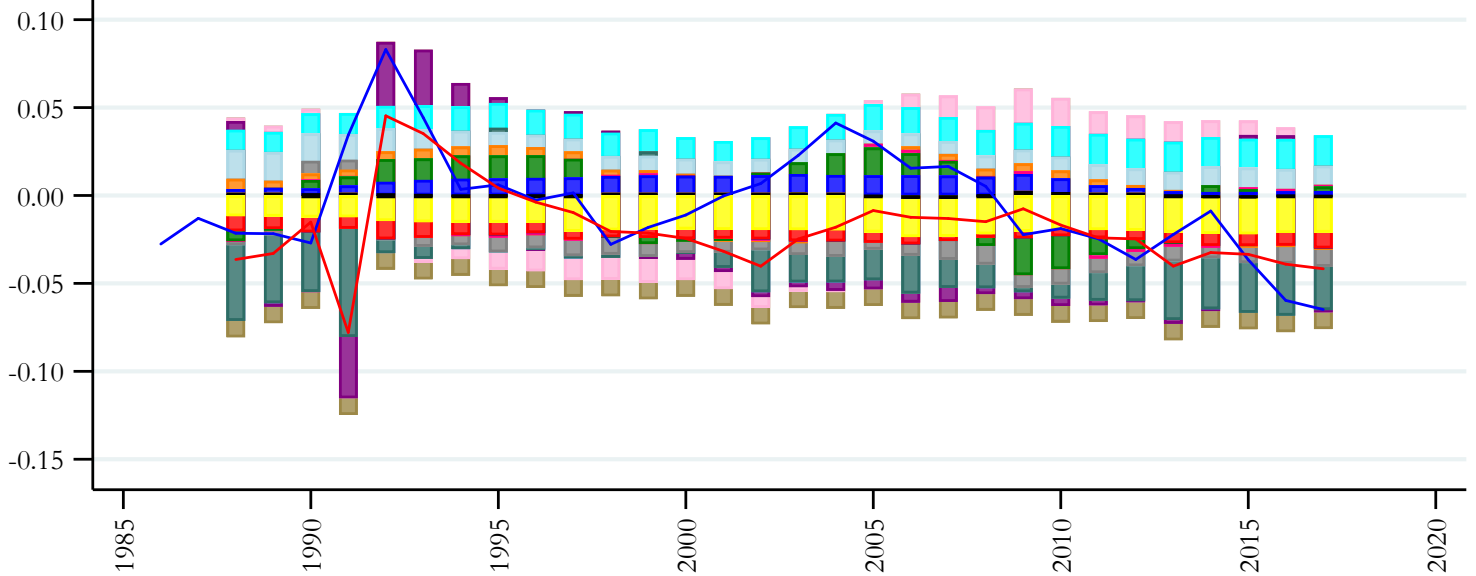


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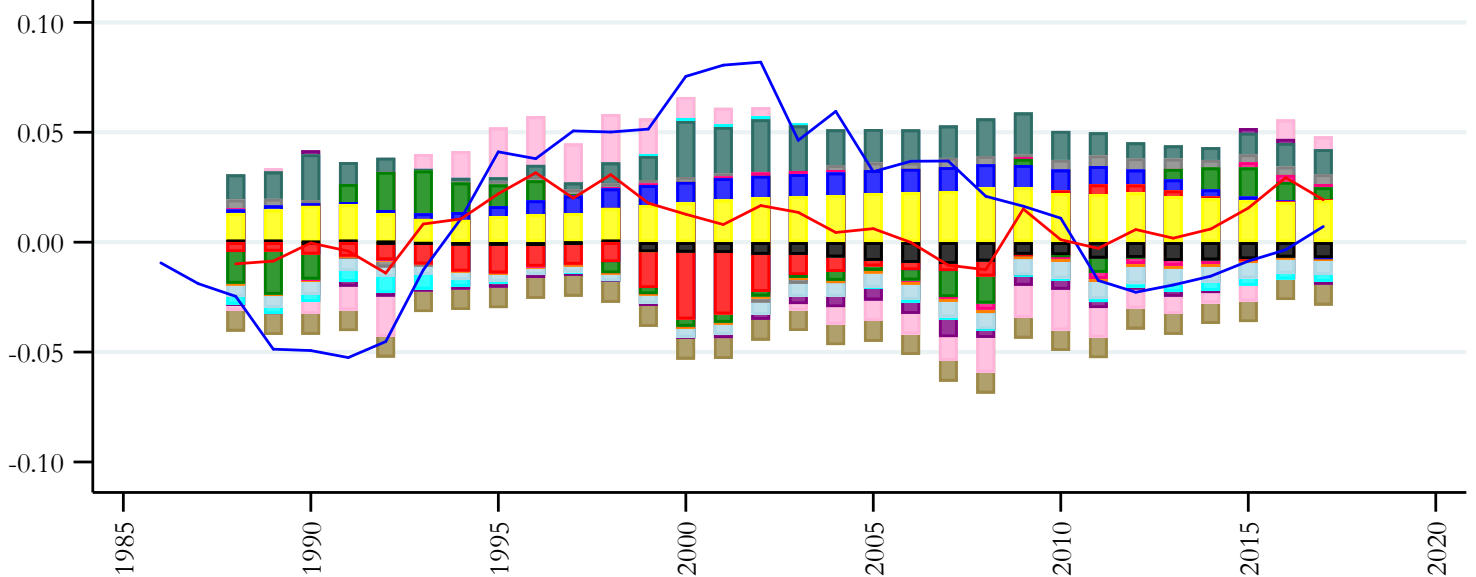
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Egypt



Finland

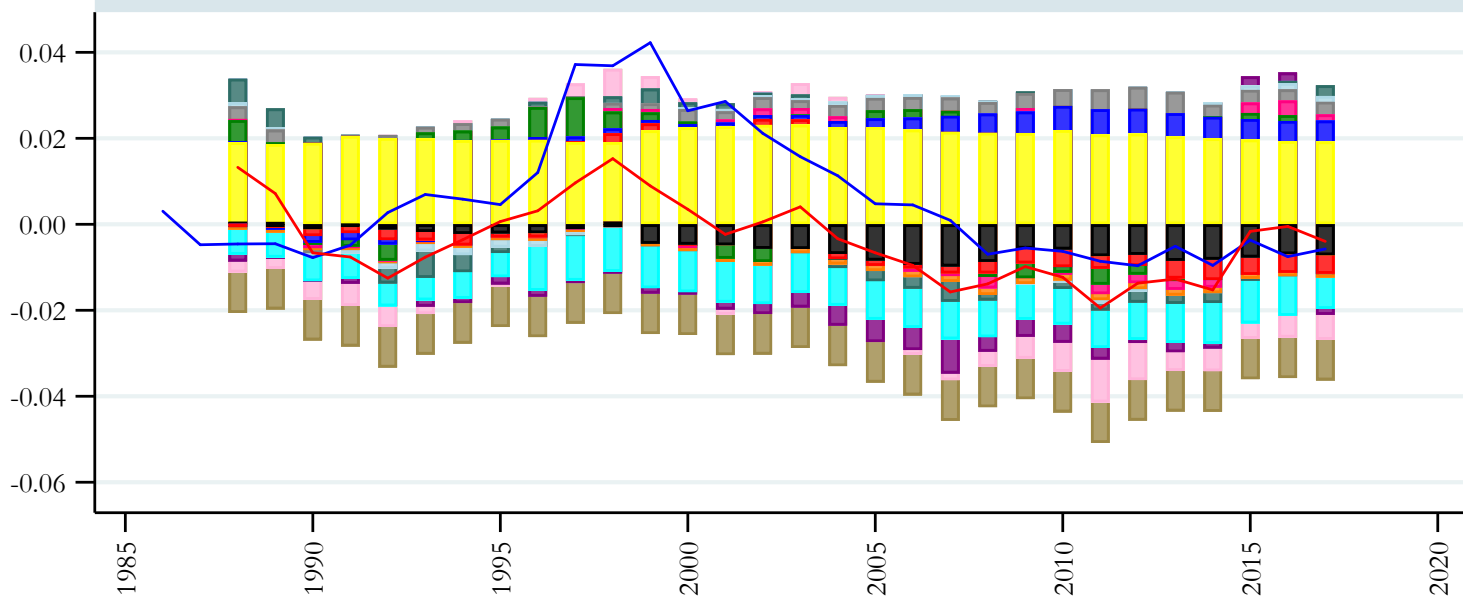


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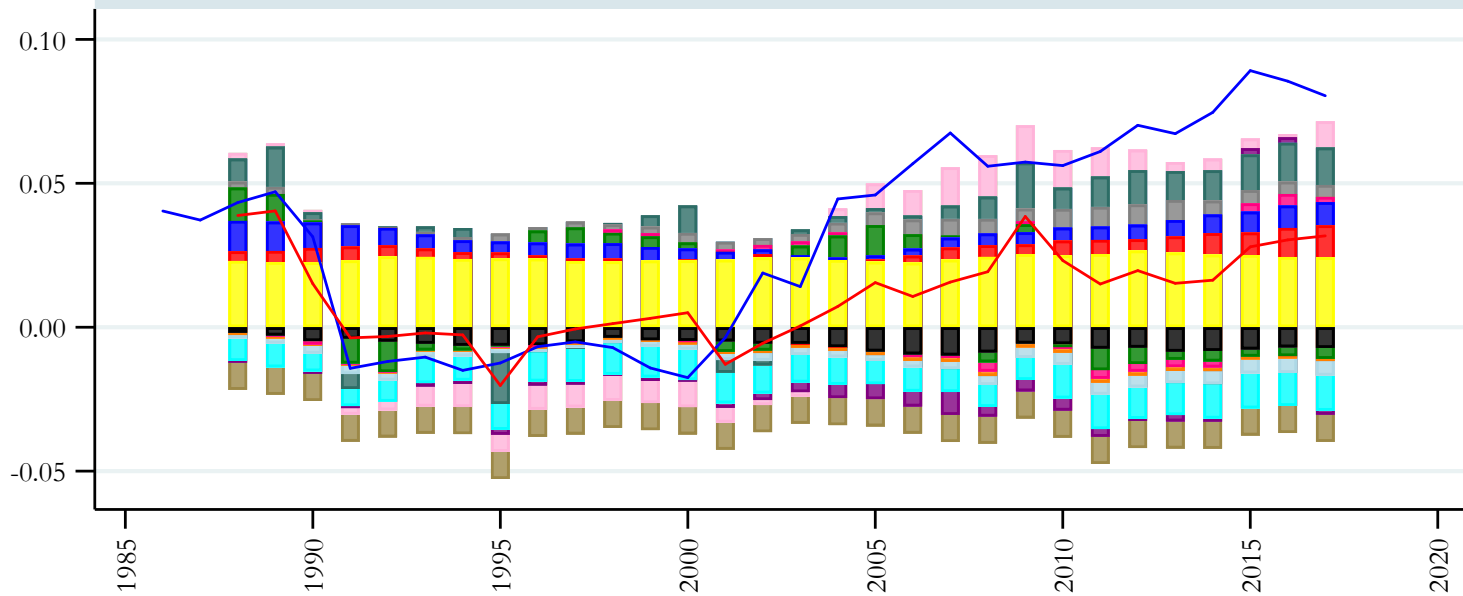
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# CA: Contributions to EBA Fitted Values

## France



## Germany

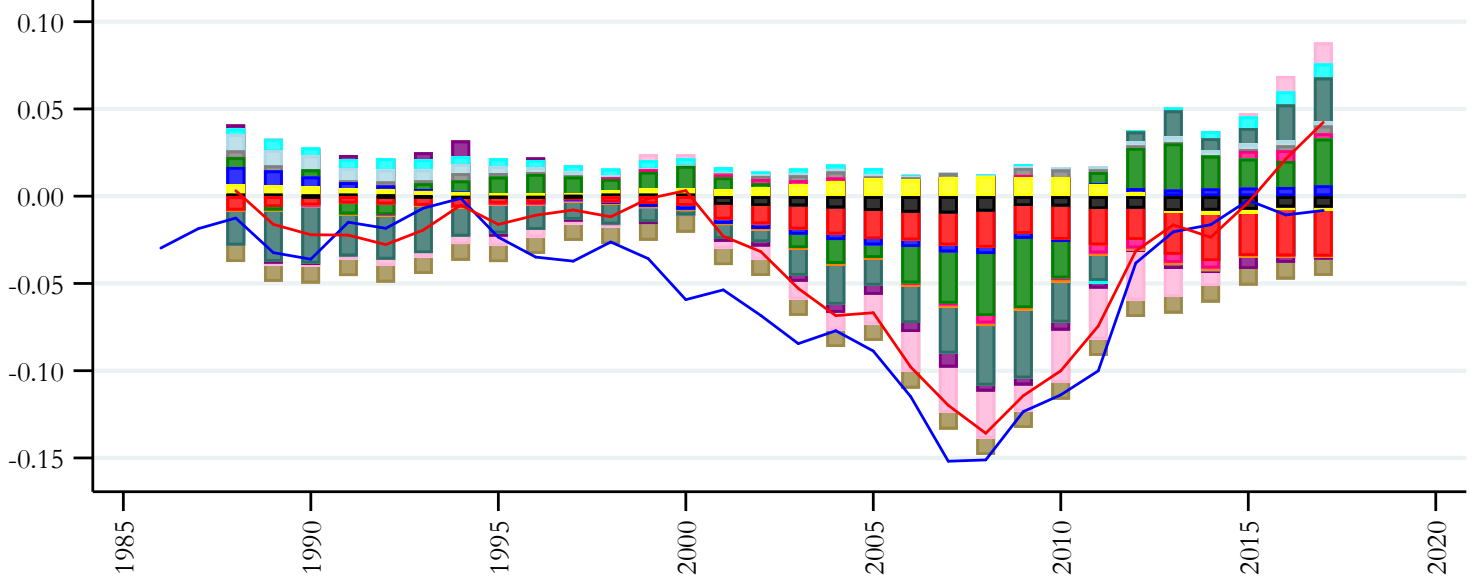


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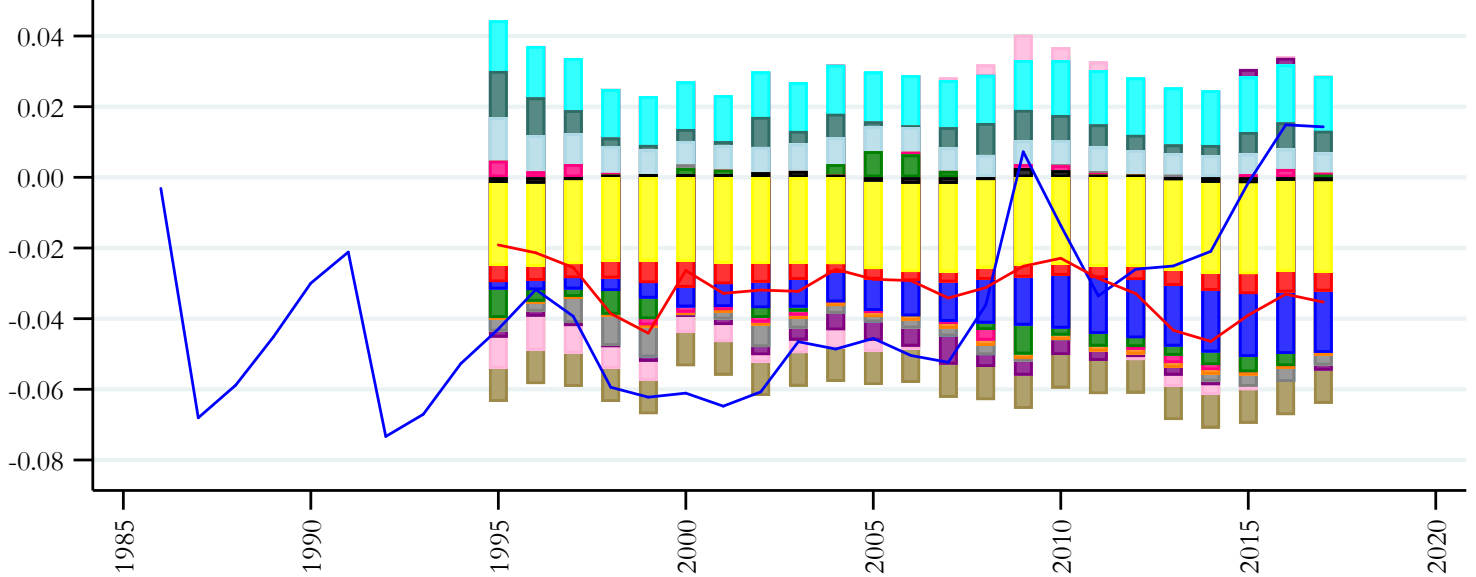
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## Greece



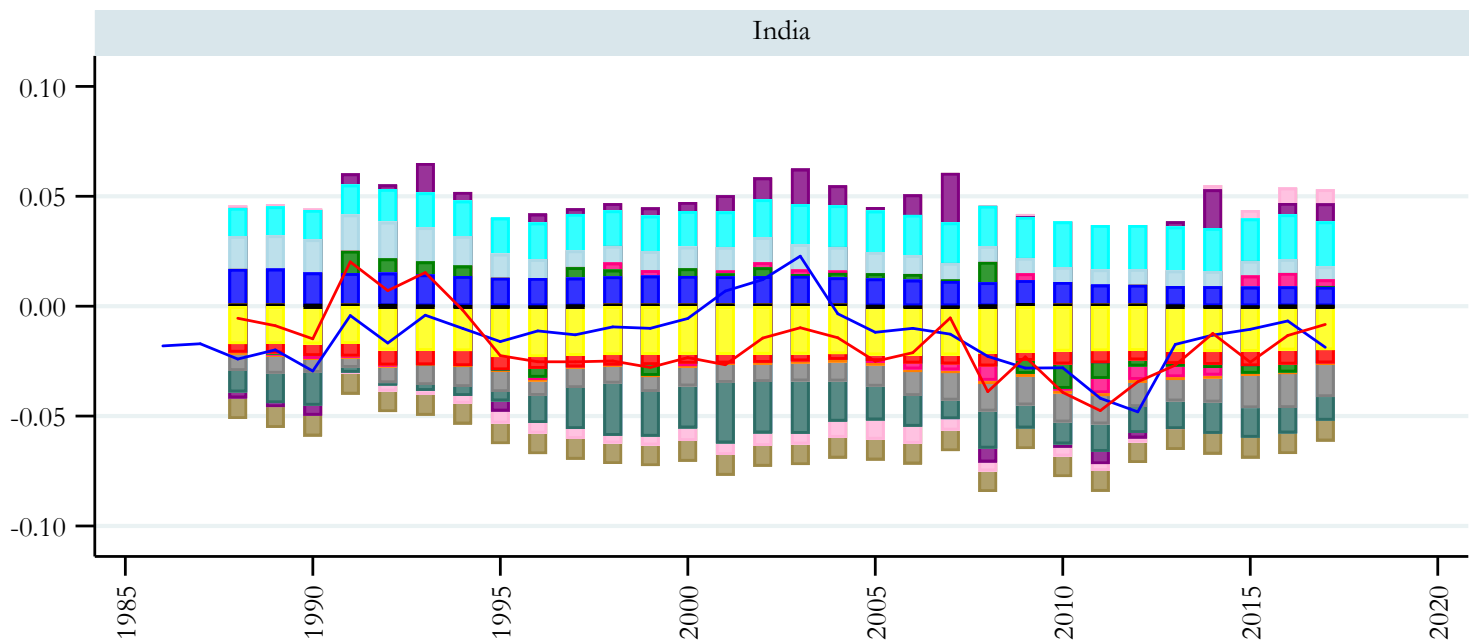
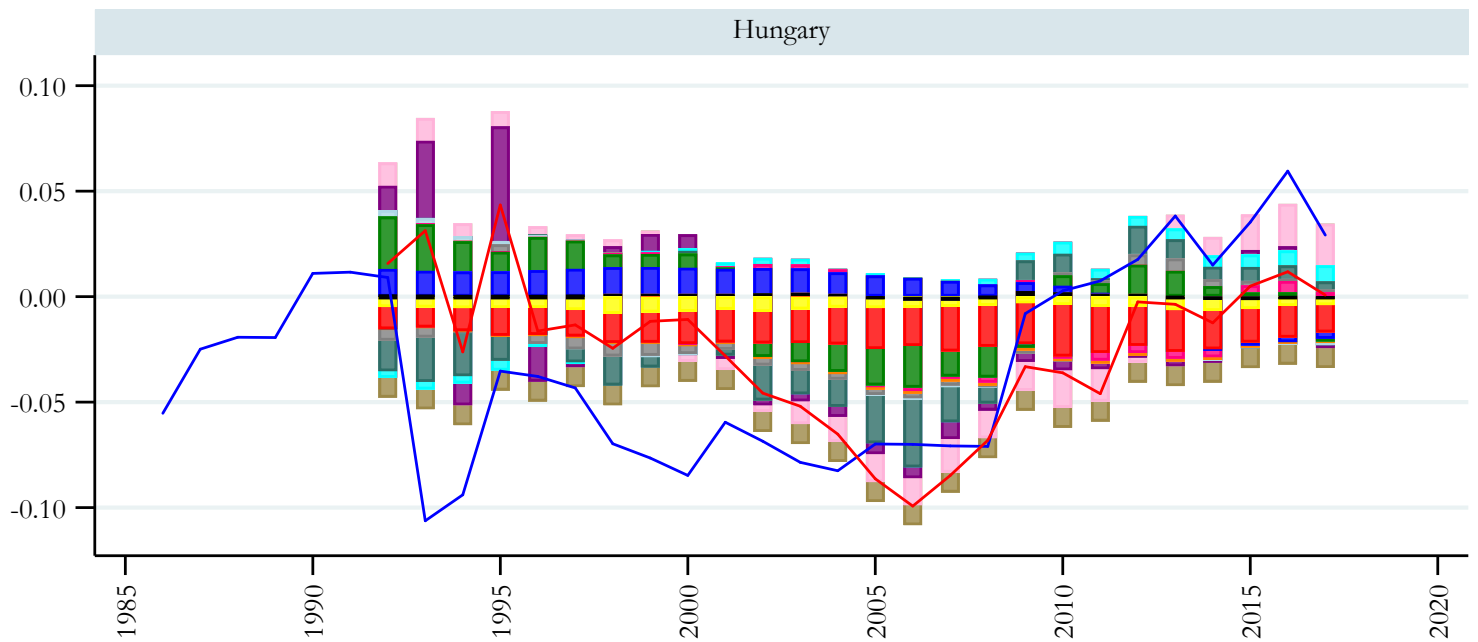
## Guatemala



year

- |                                |                               |
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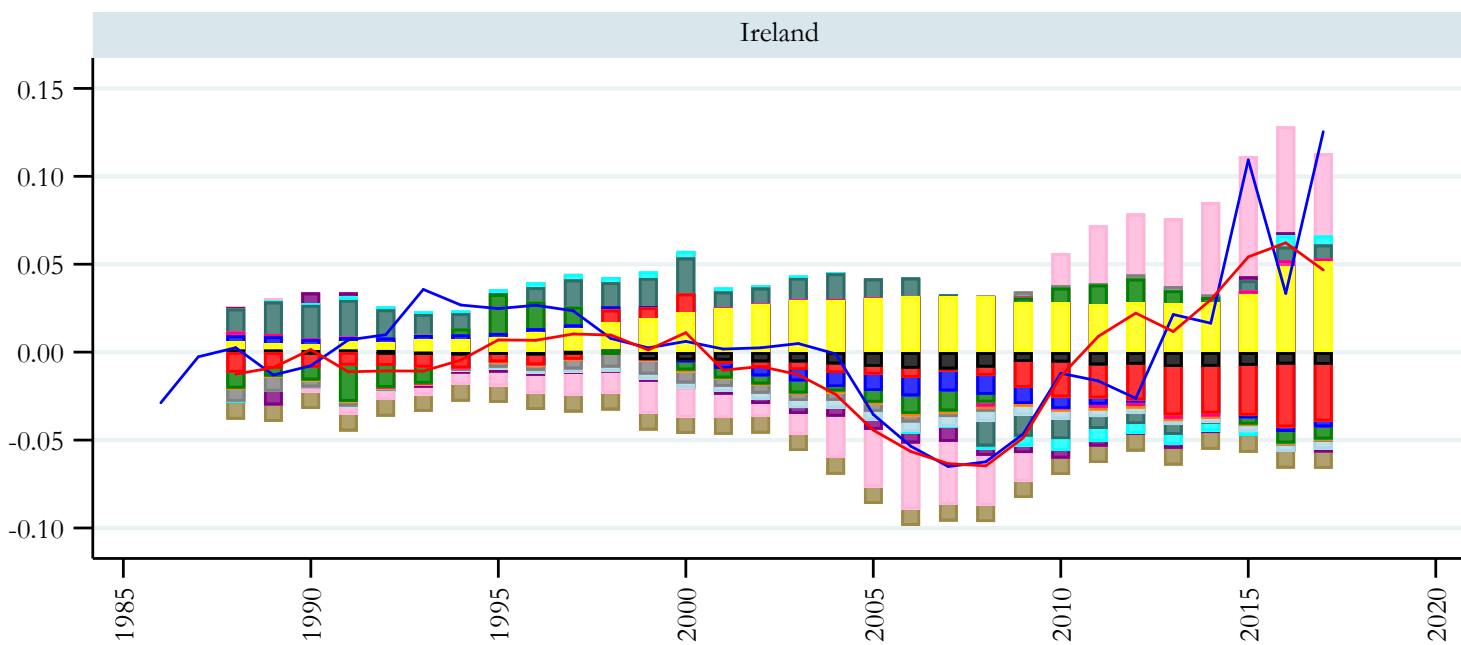
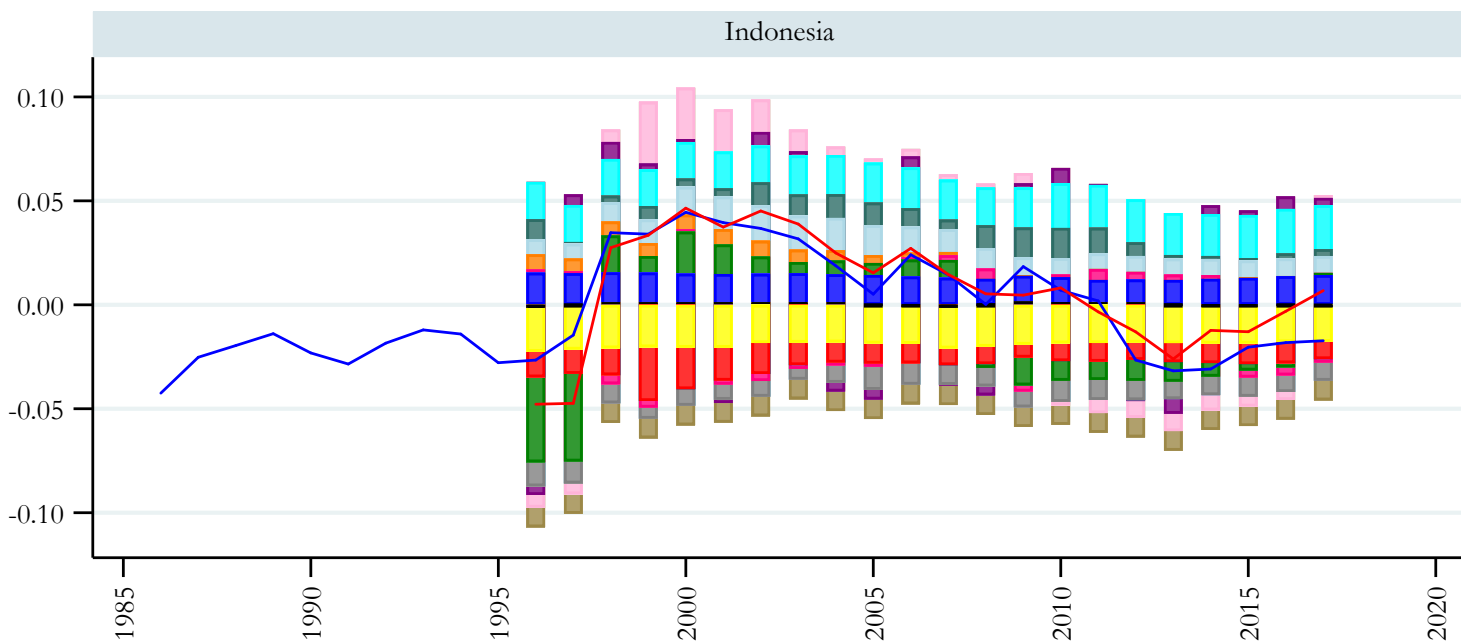
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year

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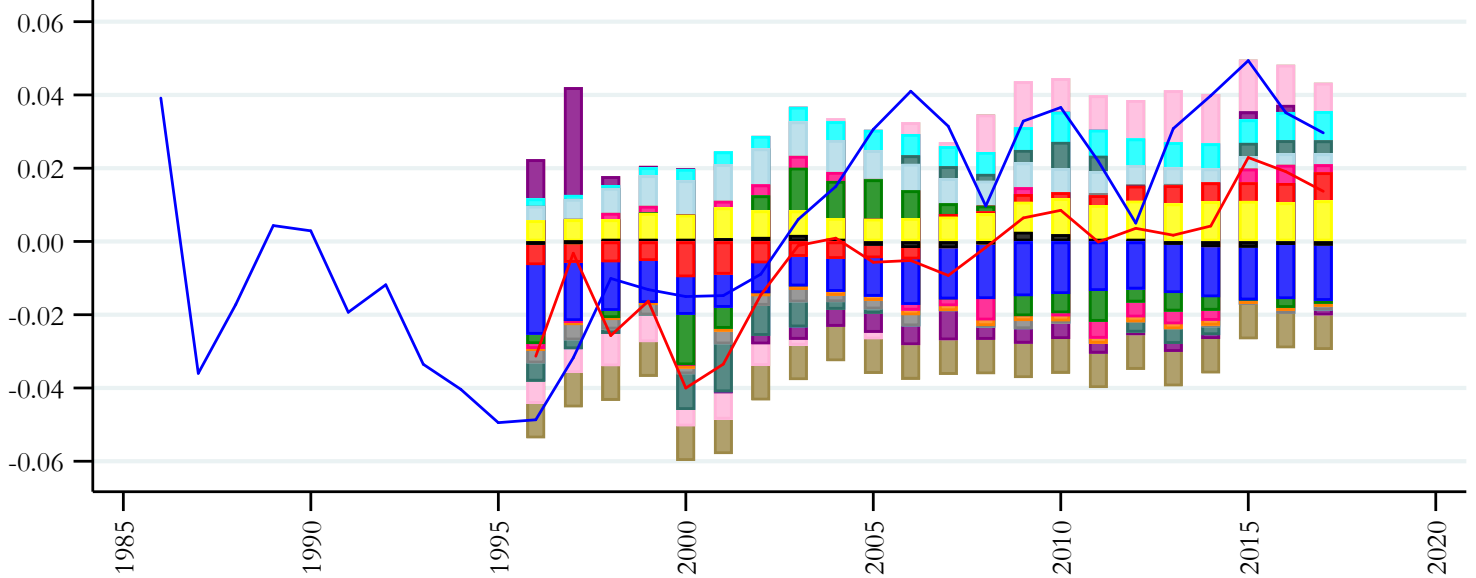


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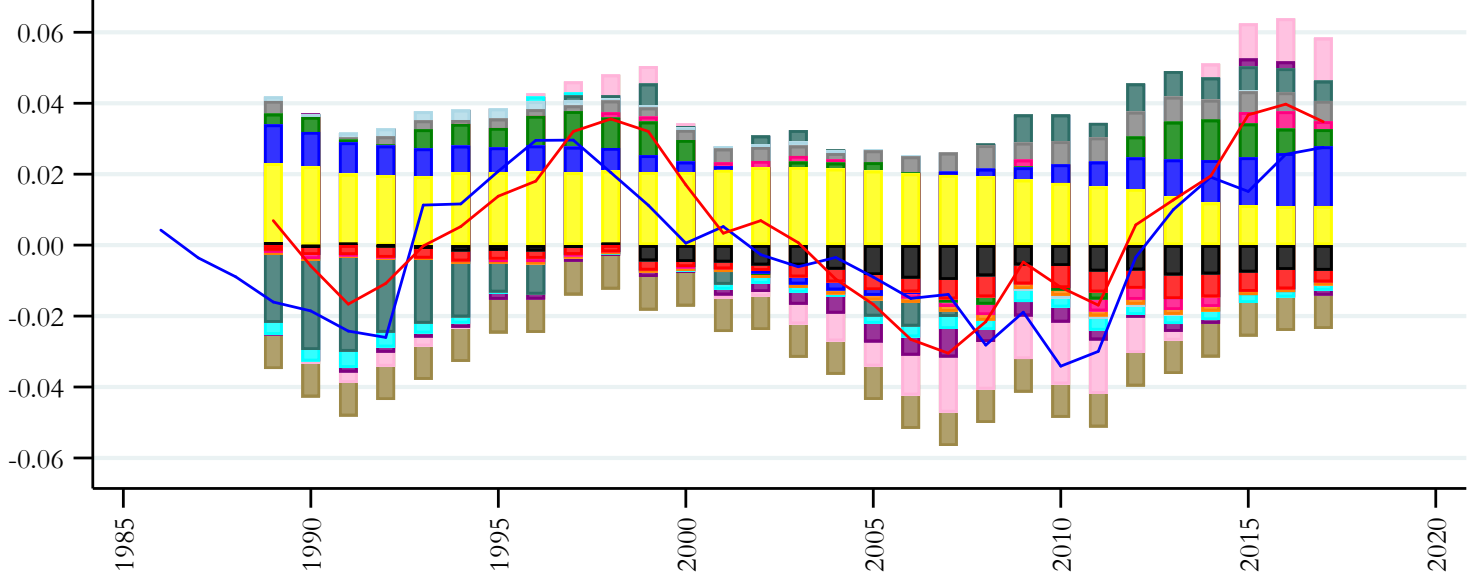
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Israel



Italy

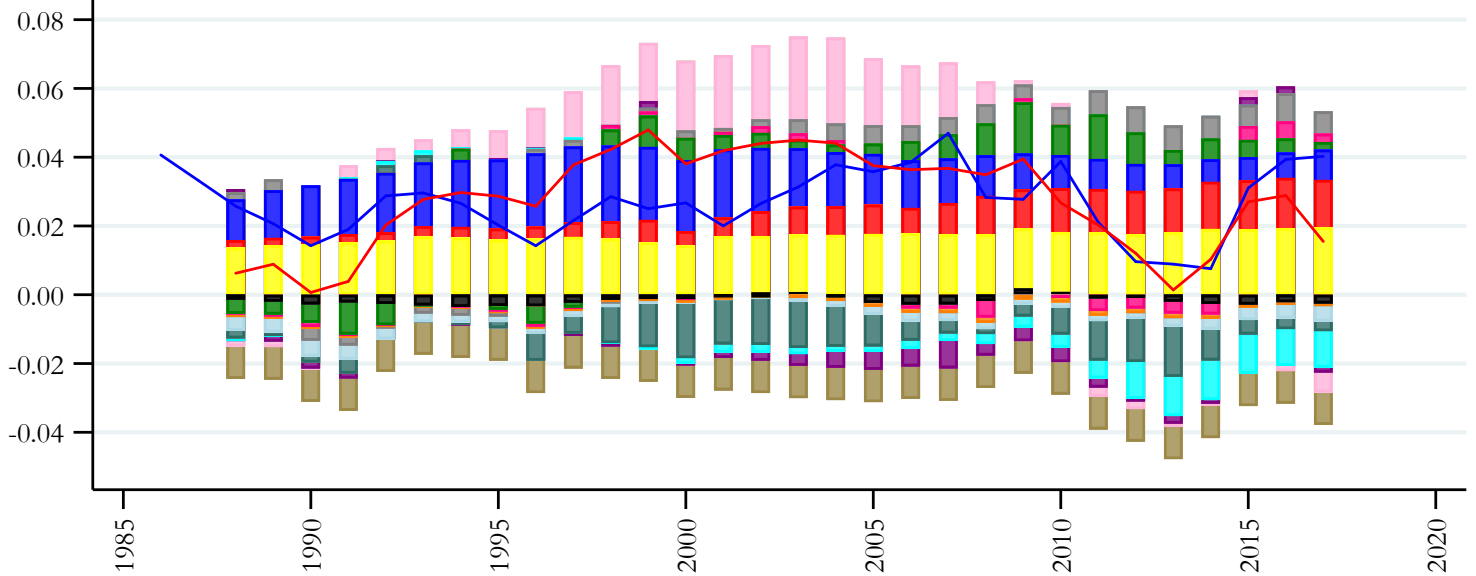


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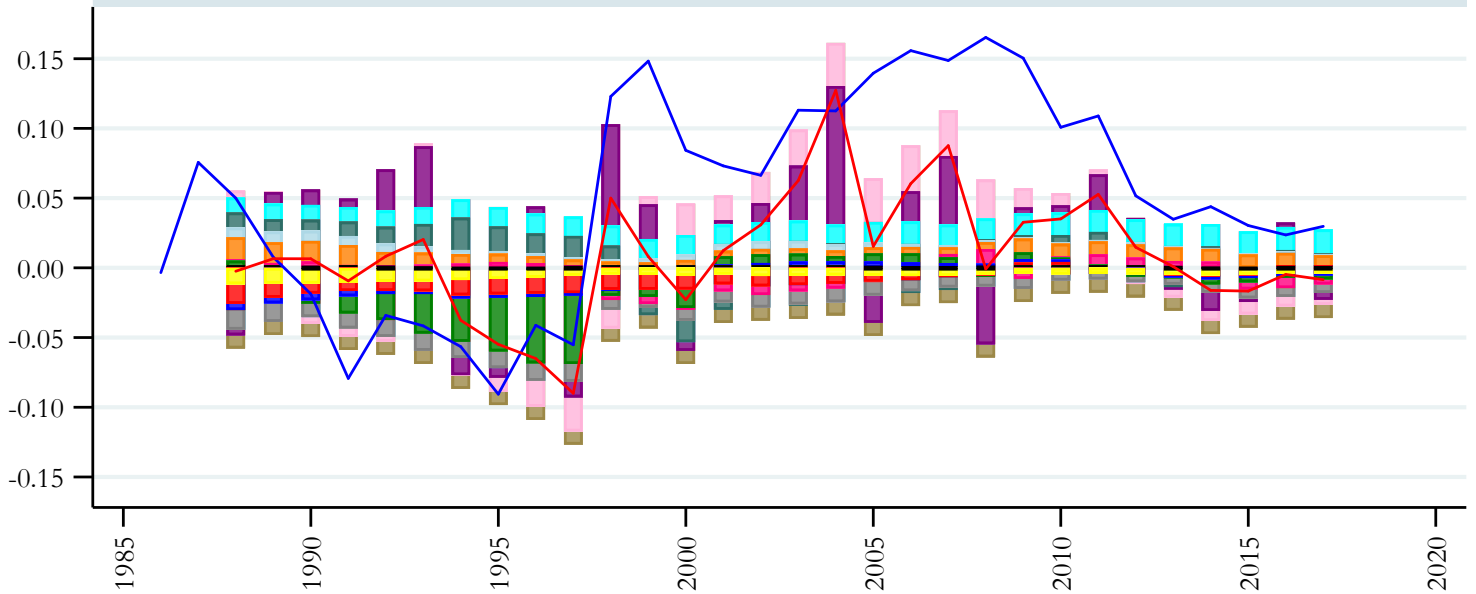
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# CA: Contributions to EBA Fitted Values

## Japan



## Malaysia



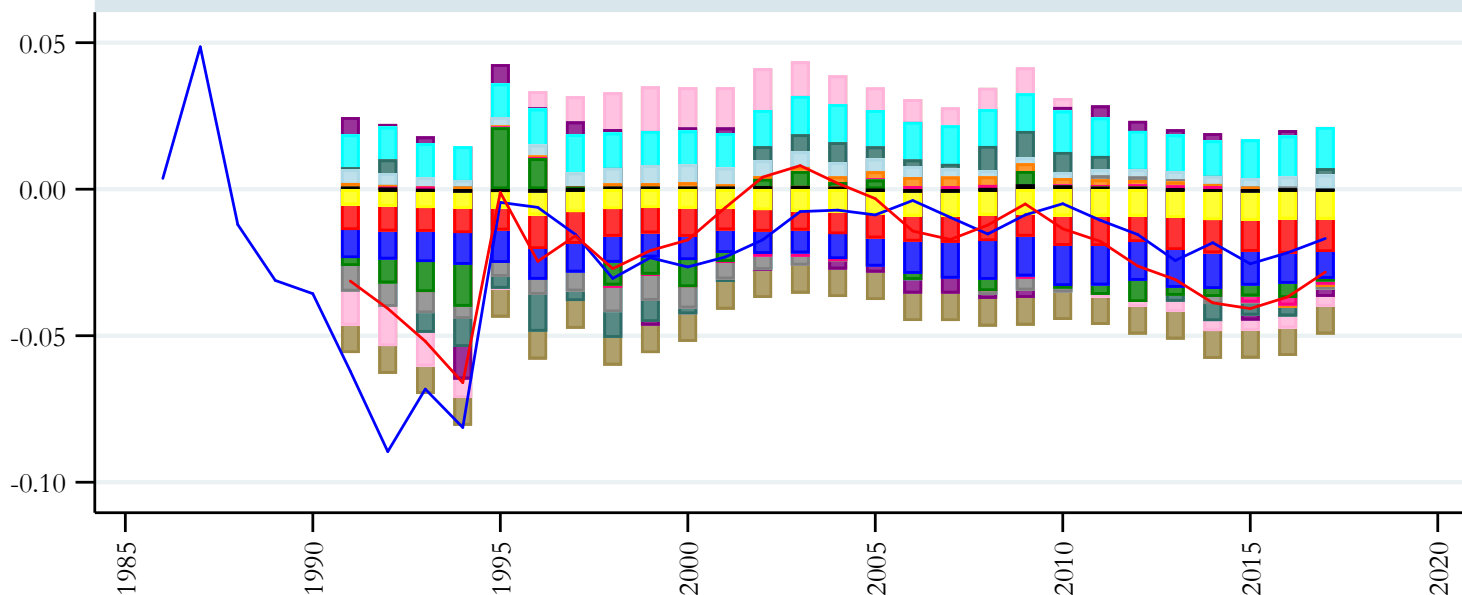
year

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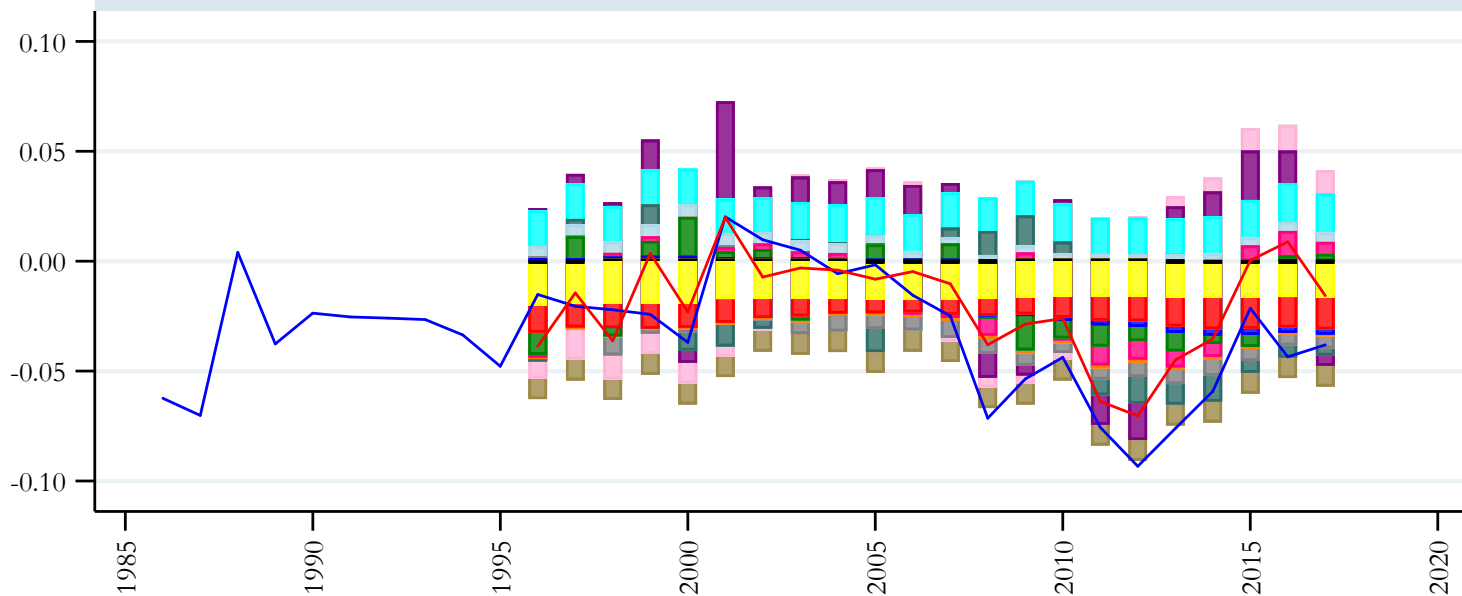


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## Mexico



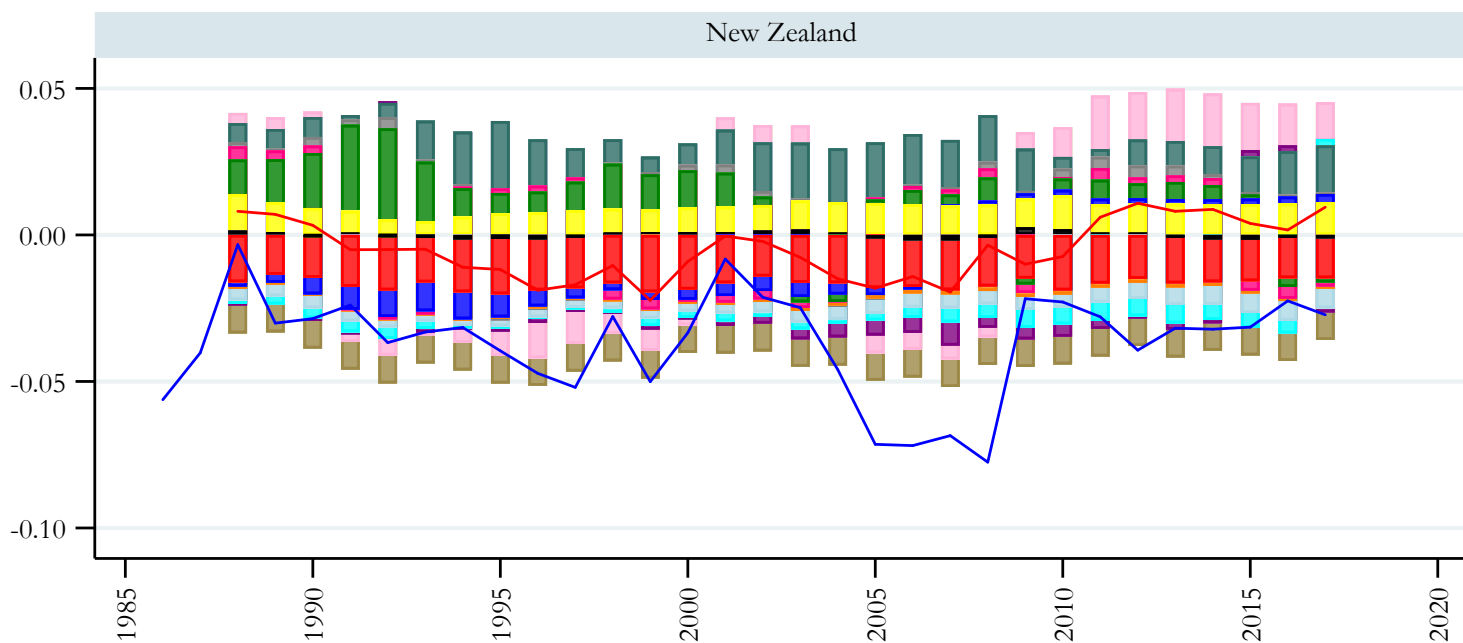
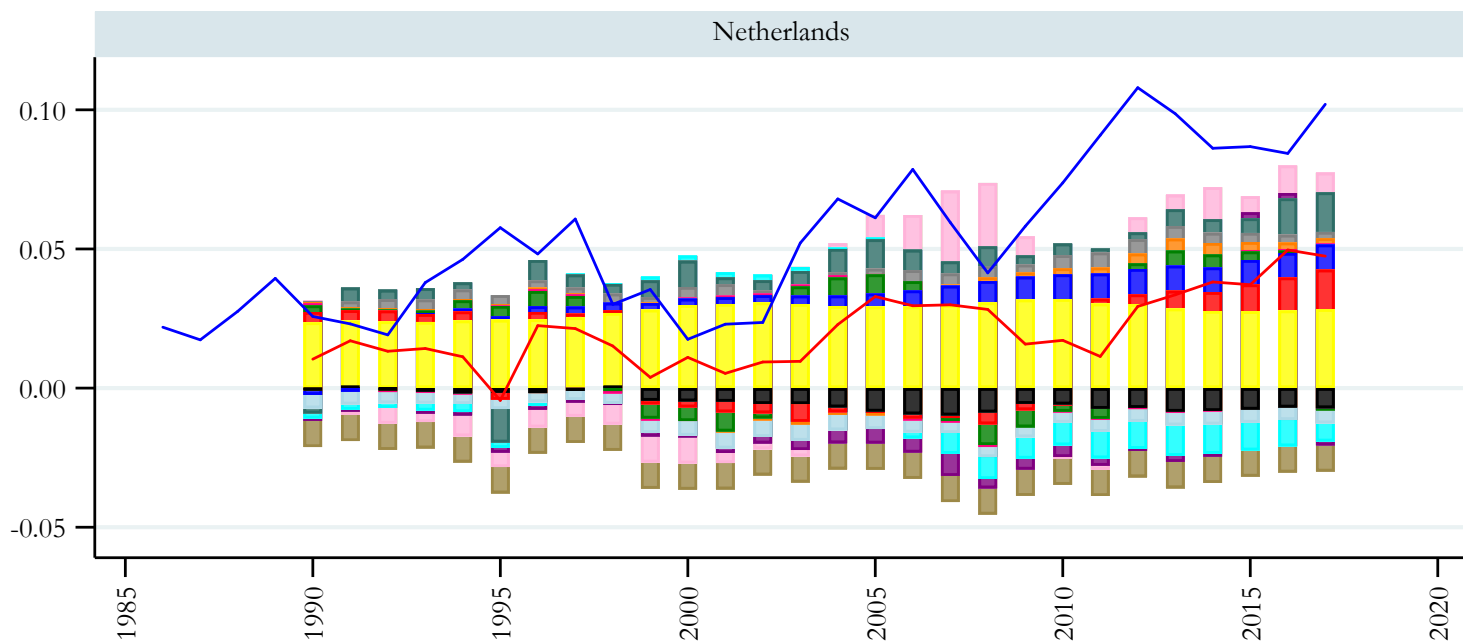
## Morocco



year

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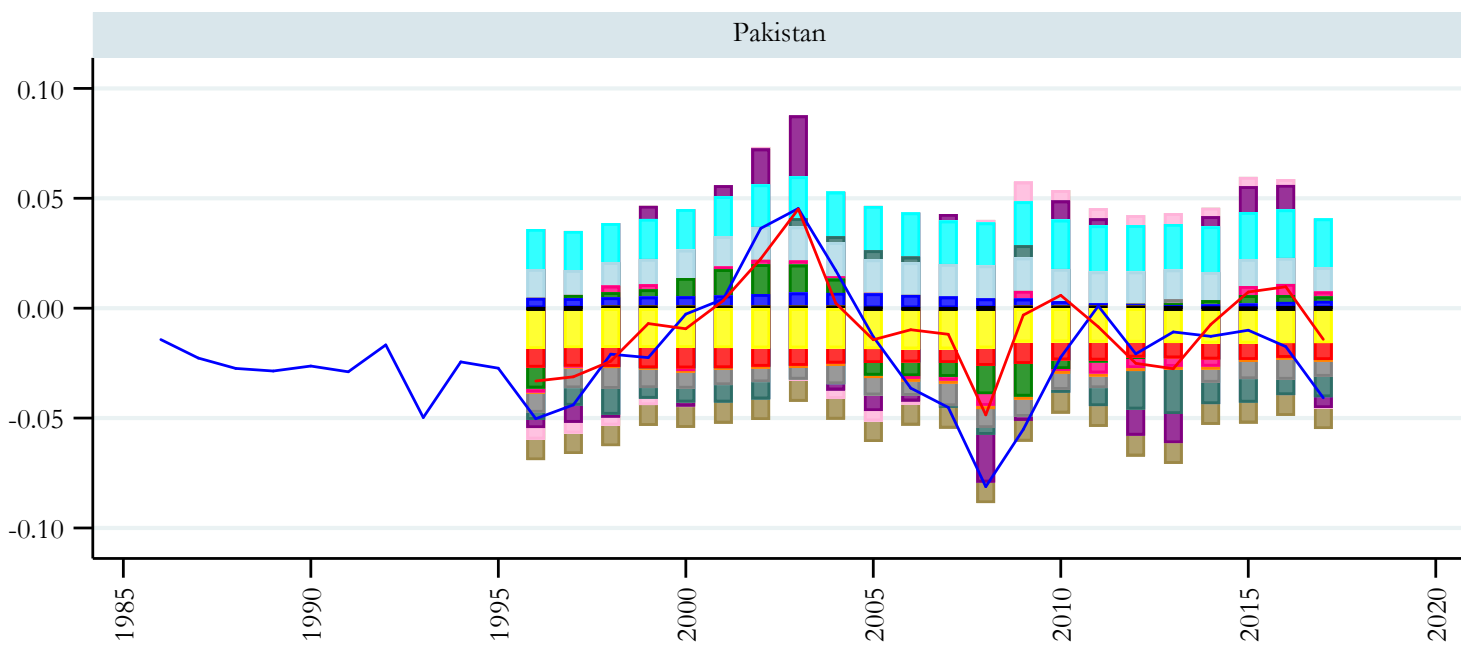
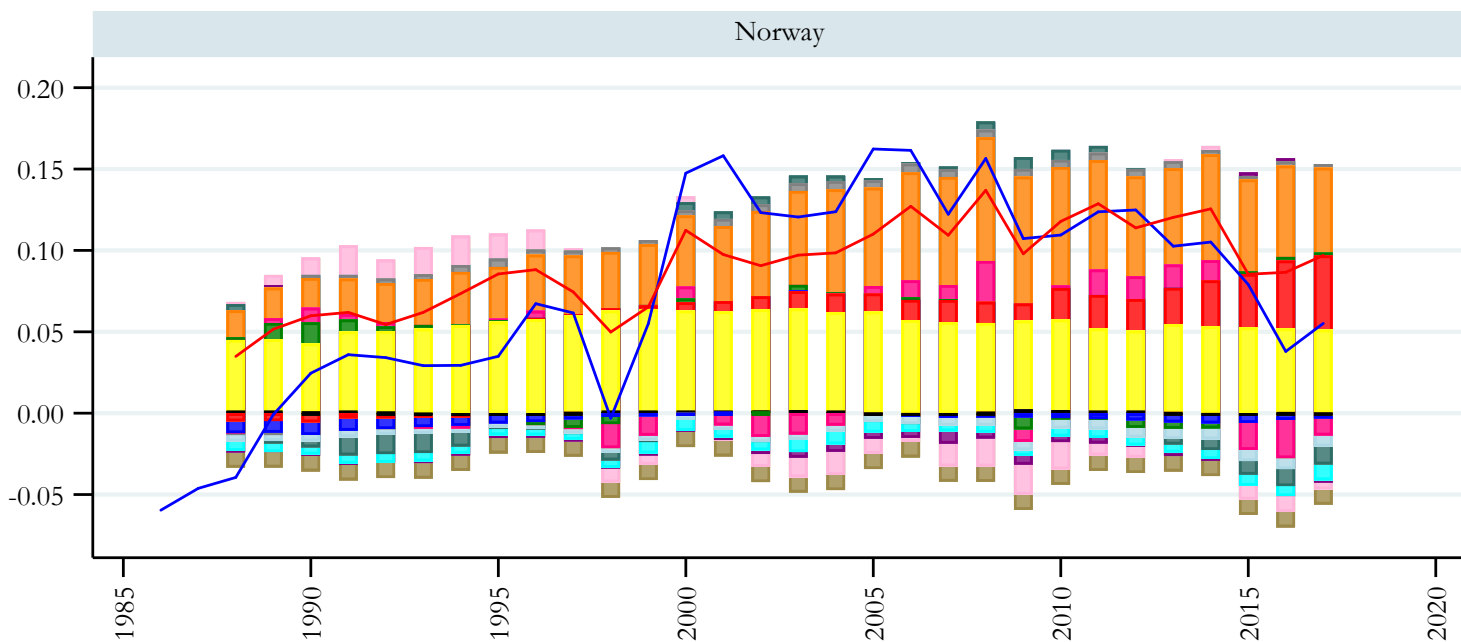
# CA: Contributions to EBA Fitted Values



year

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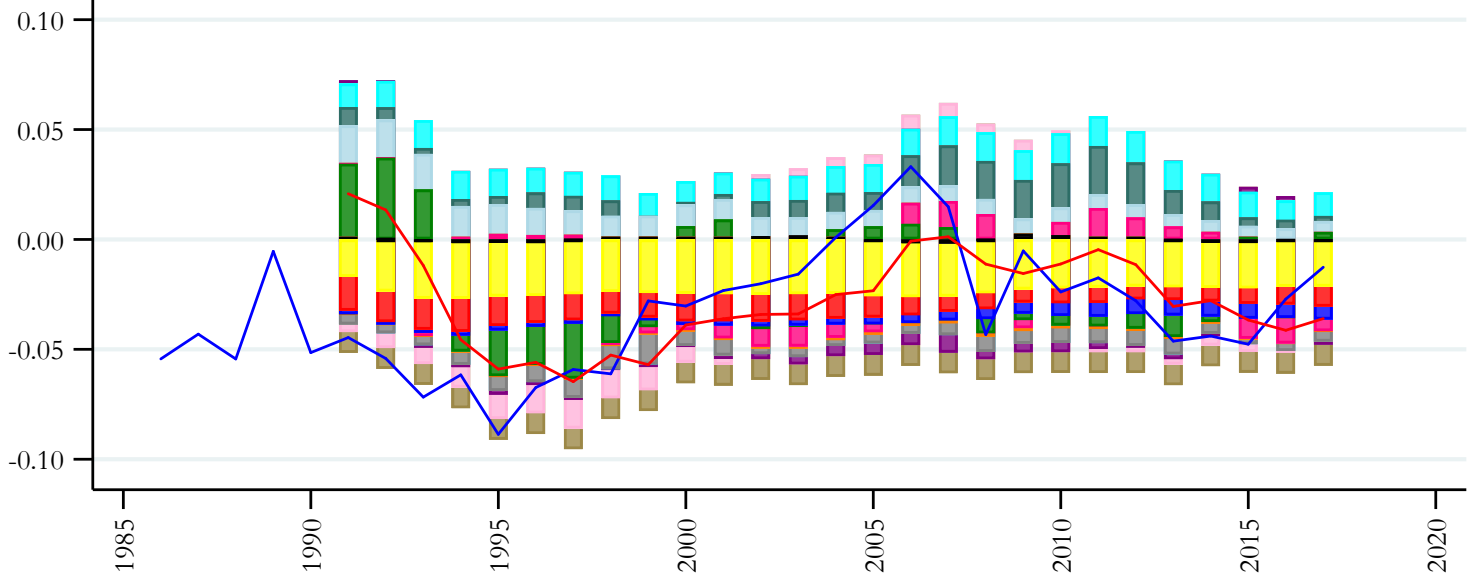


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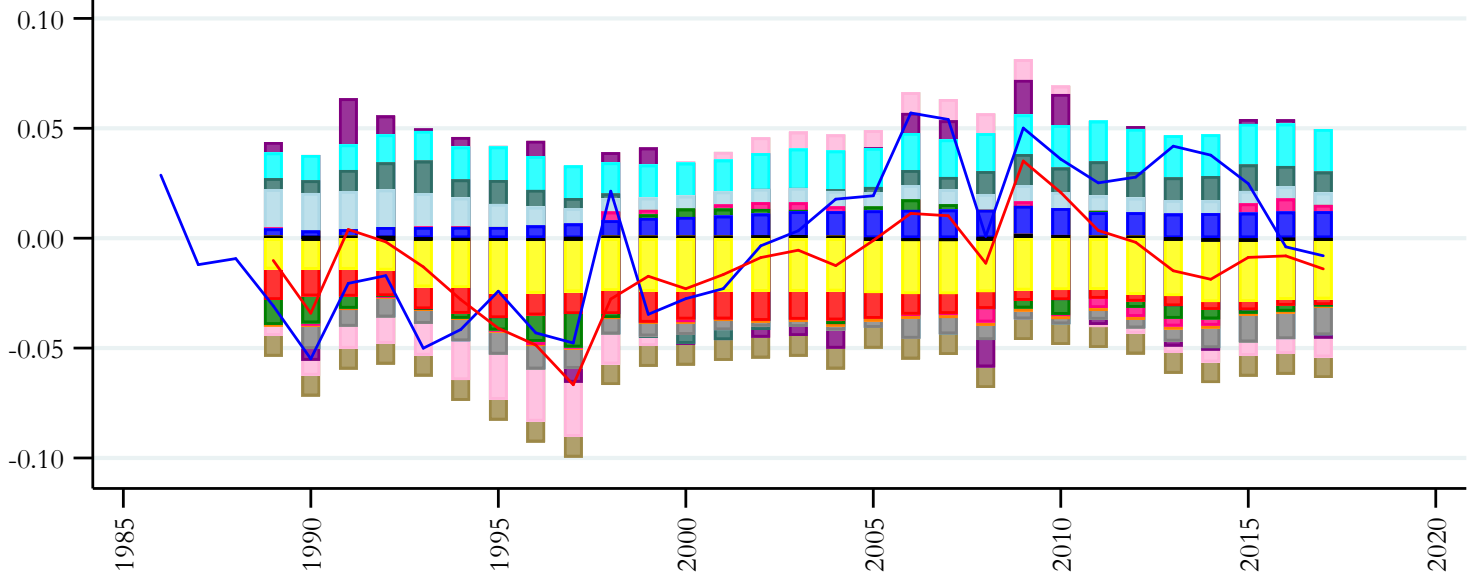
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# CA: Contributions to EBA Fitted Values

Peru



Philippines

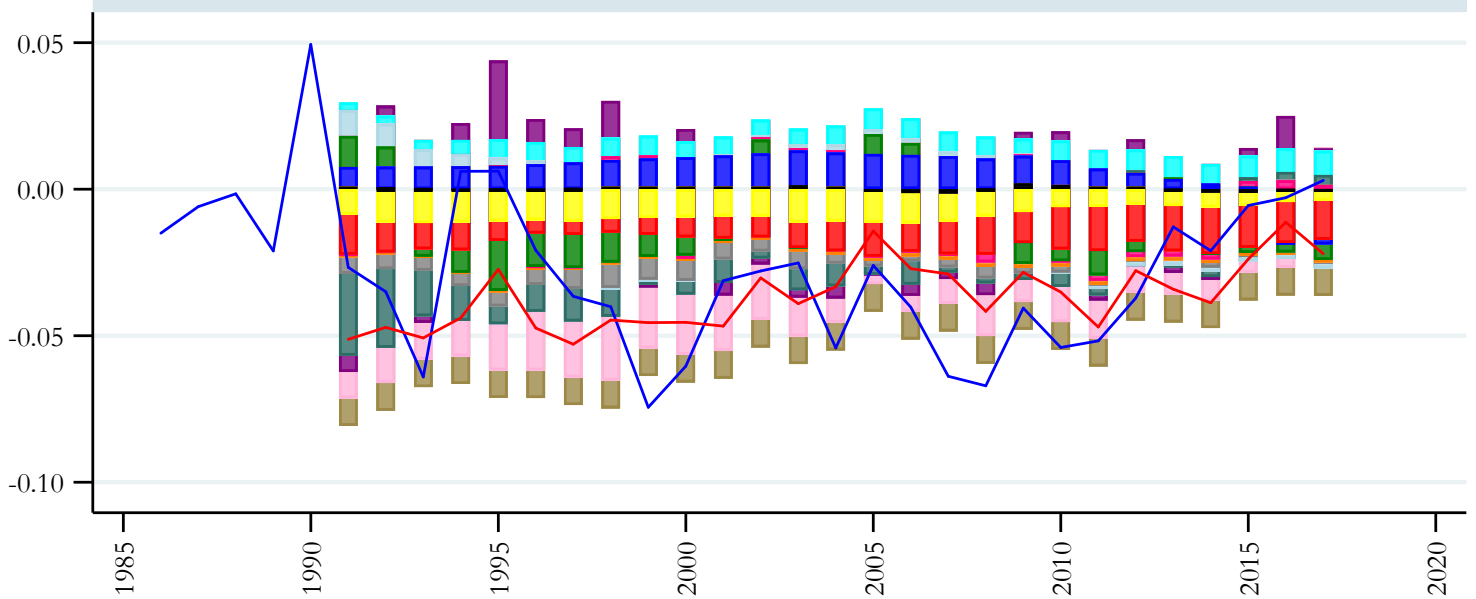


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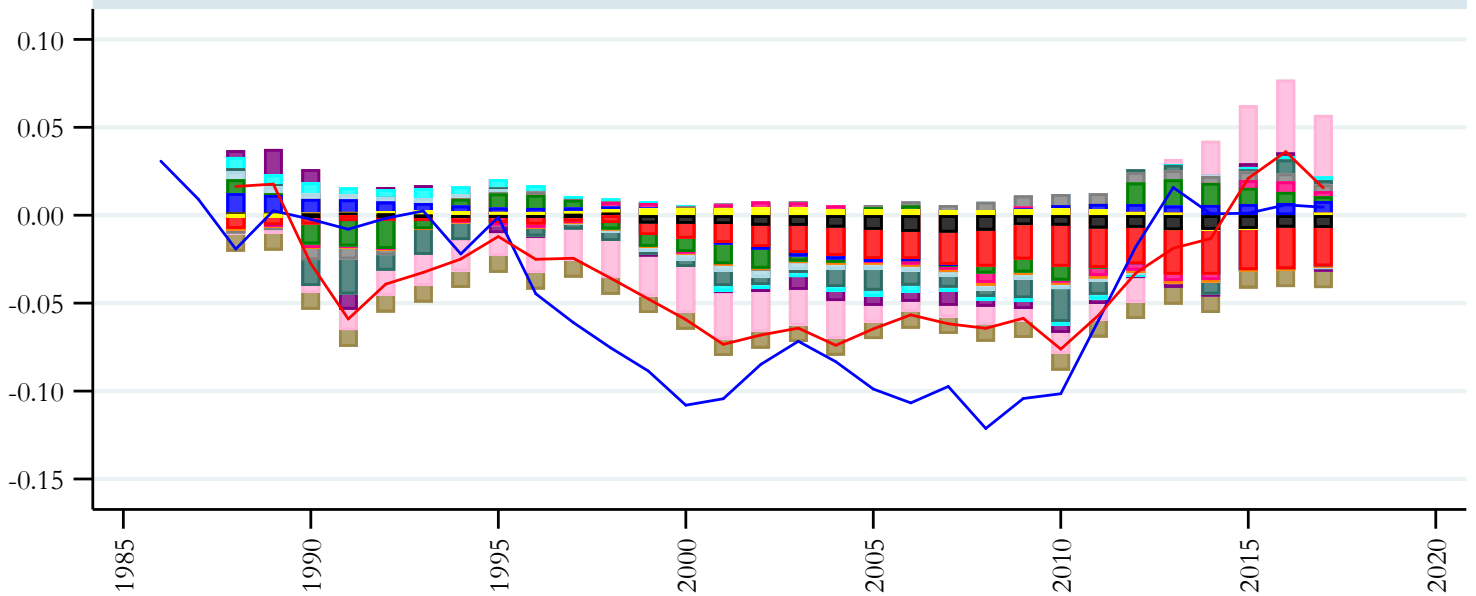
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# CA: Contributions to EBA Fitted Values

## Poland



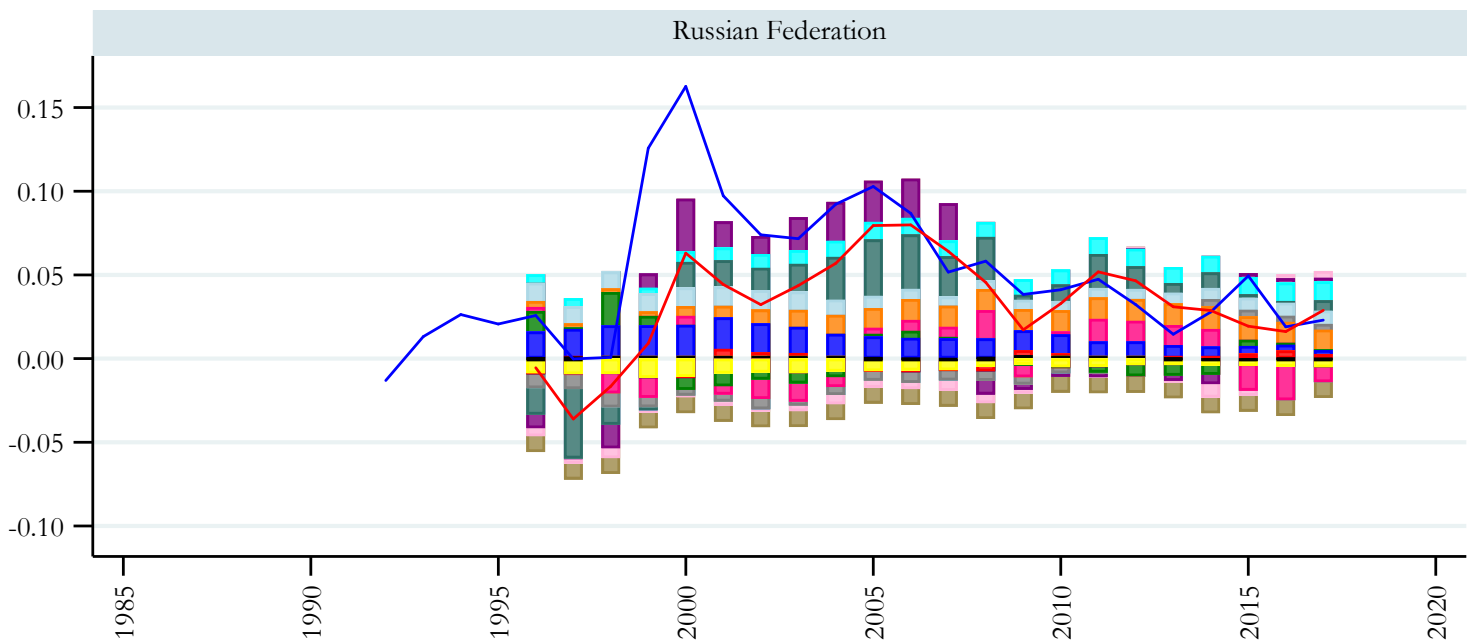
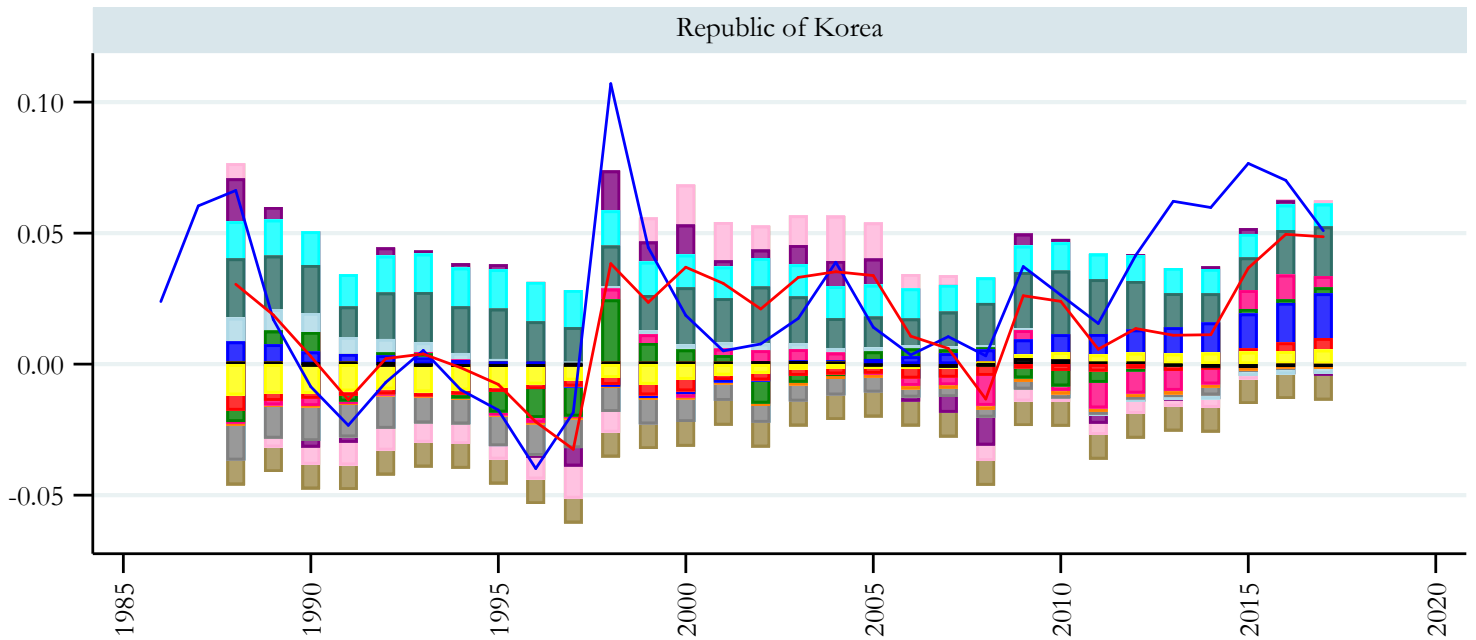
## Portugal



year

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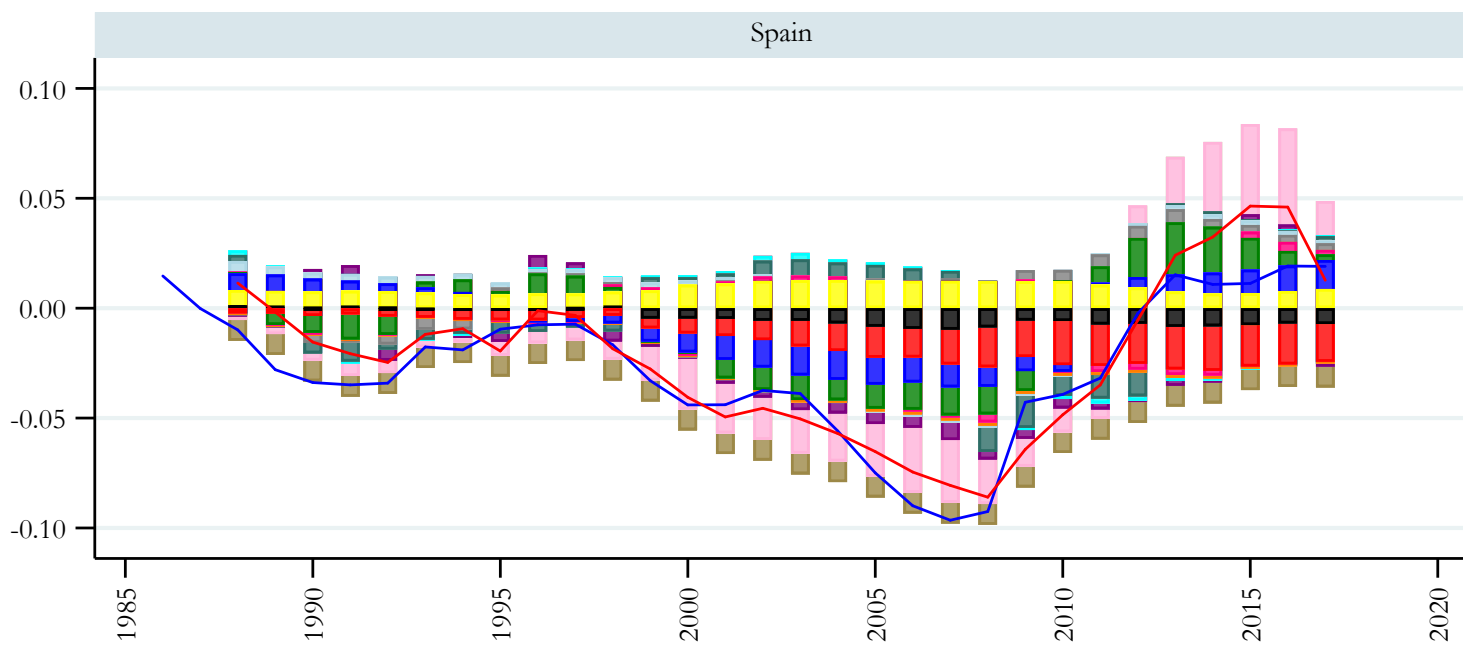
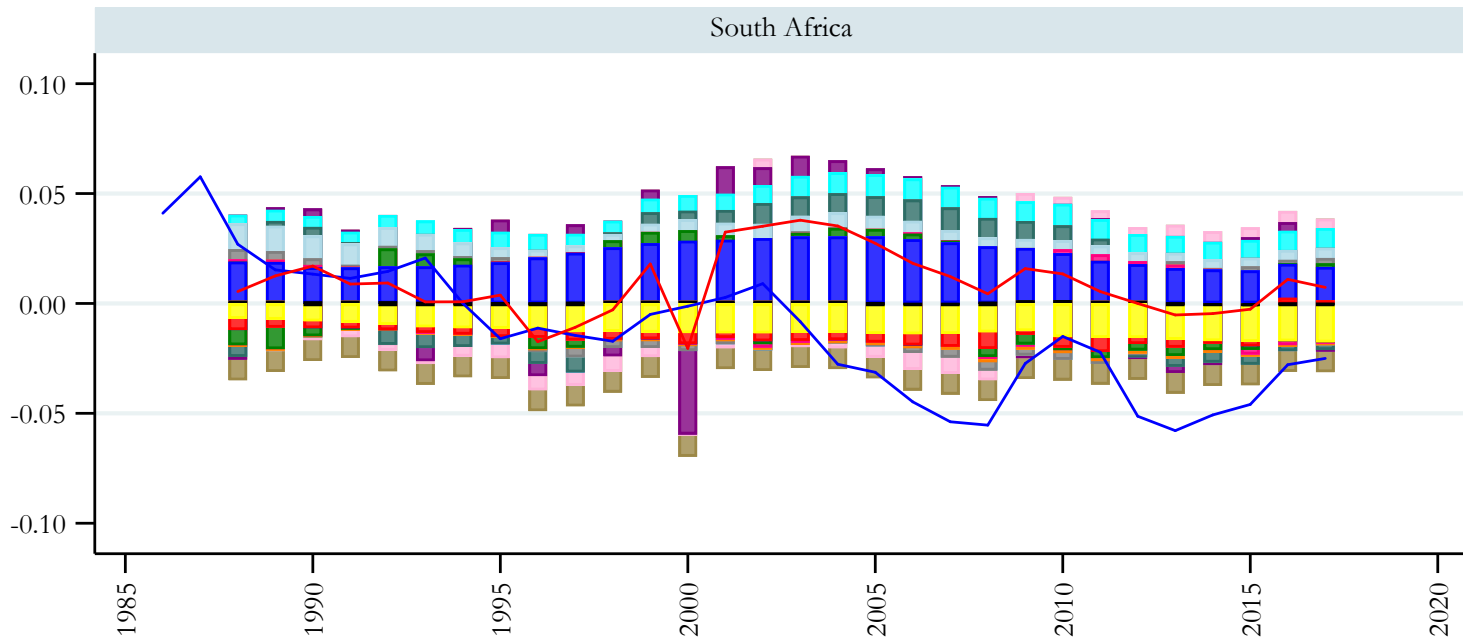
# CA: Contributions to EBA Fitted Values



year

- |                                |                               |
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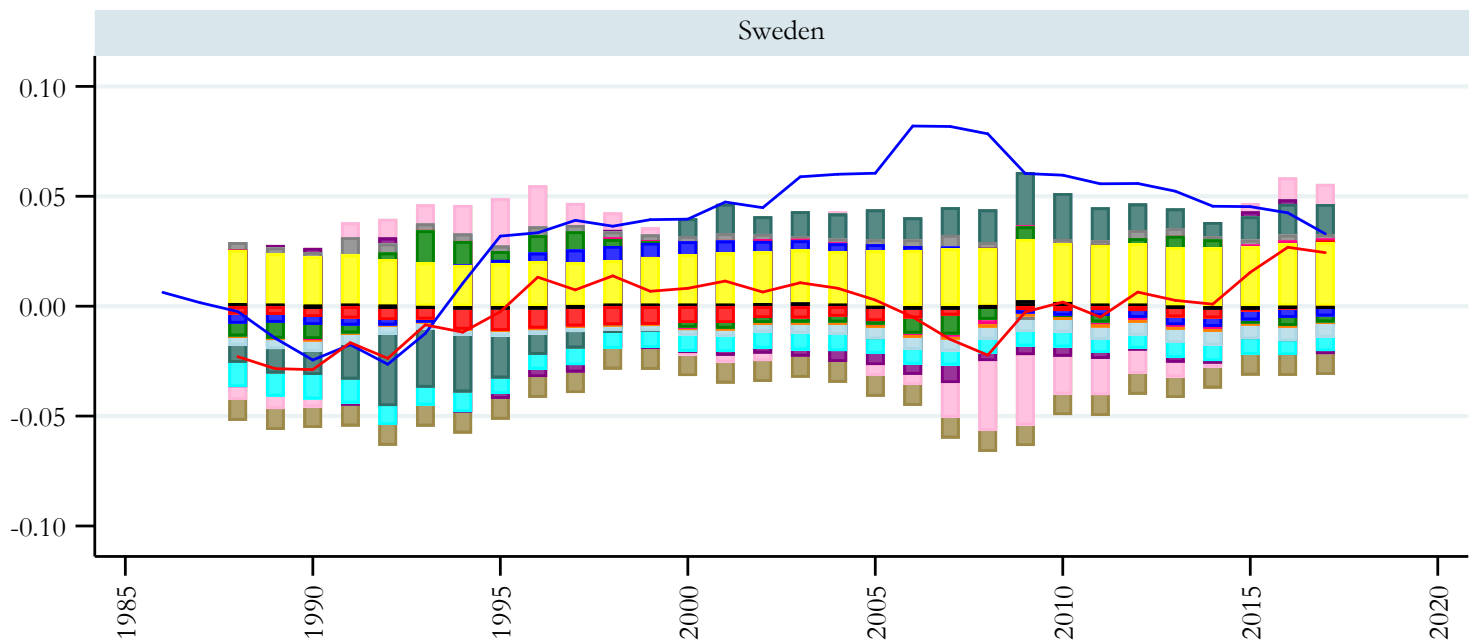
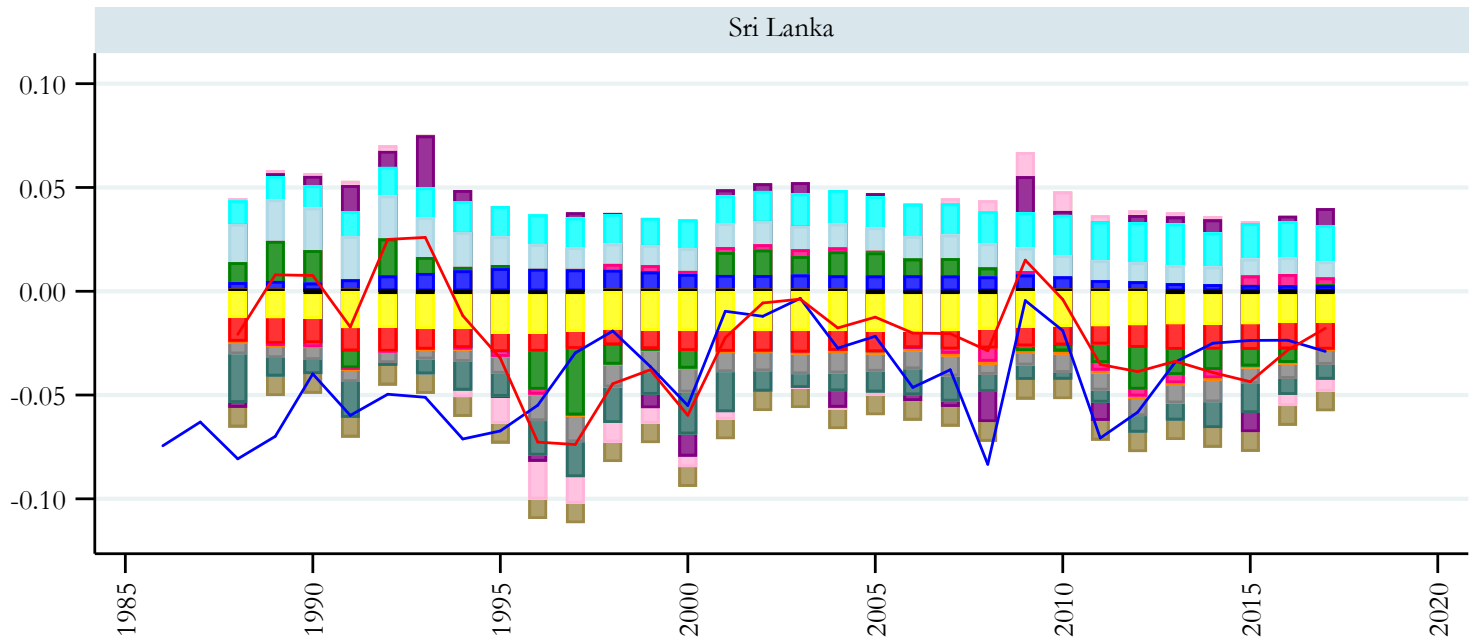
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year

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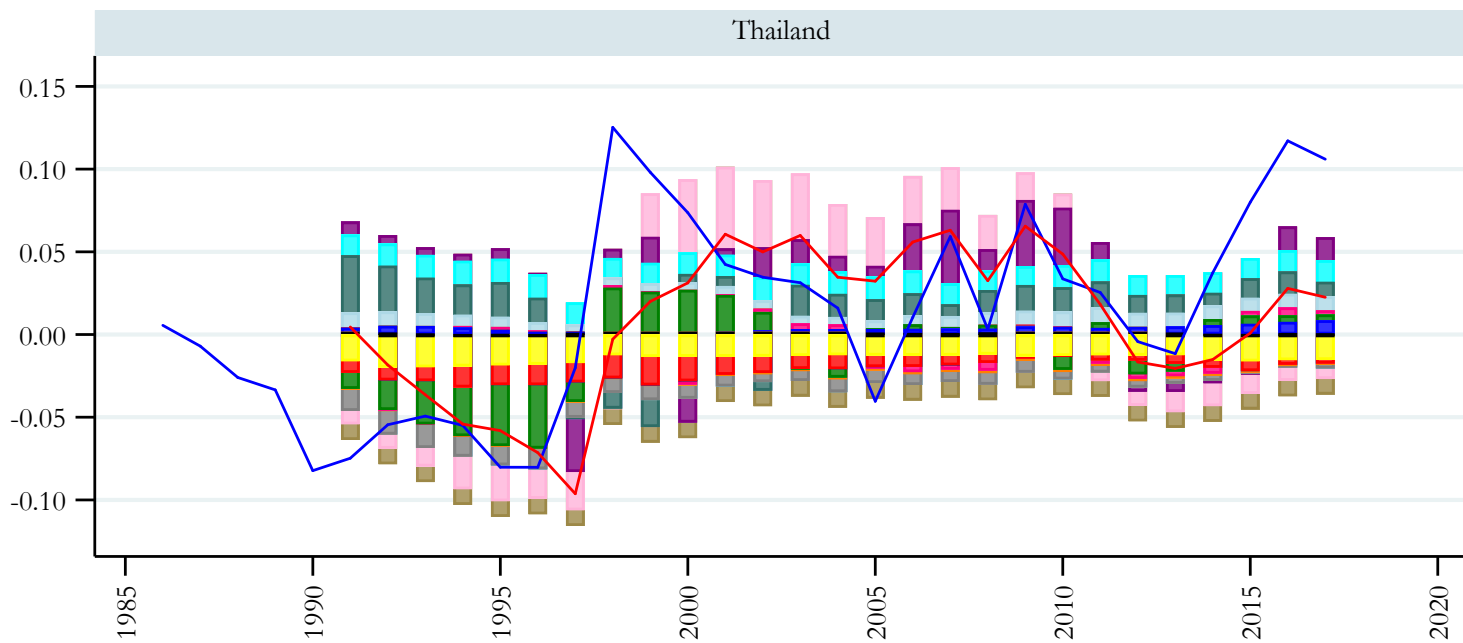
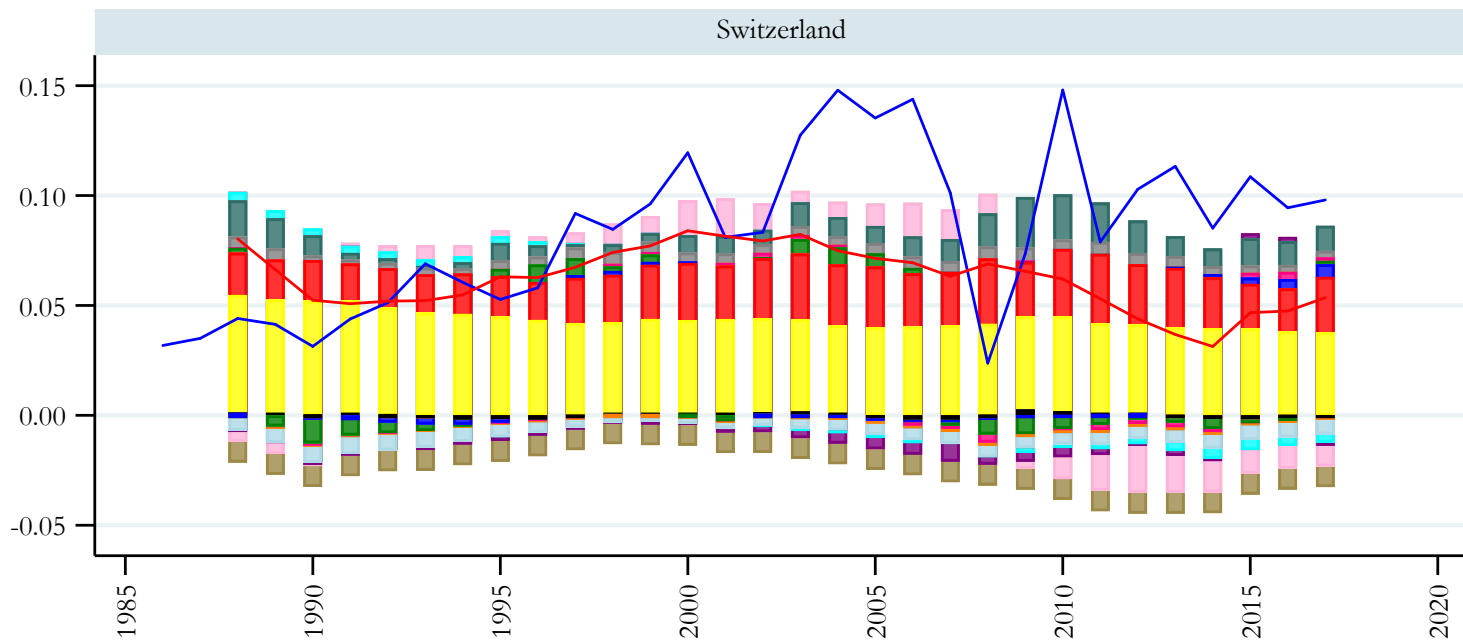


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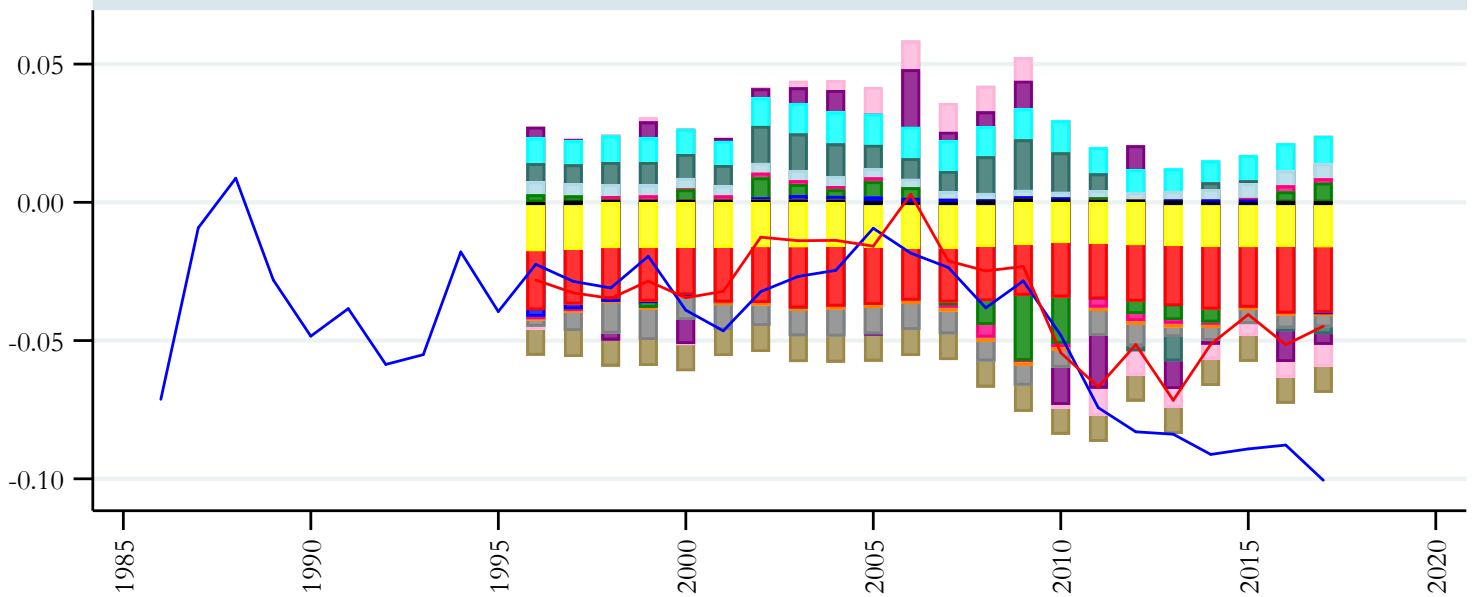


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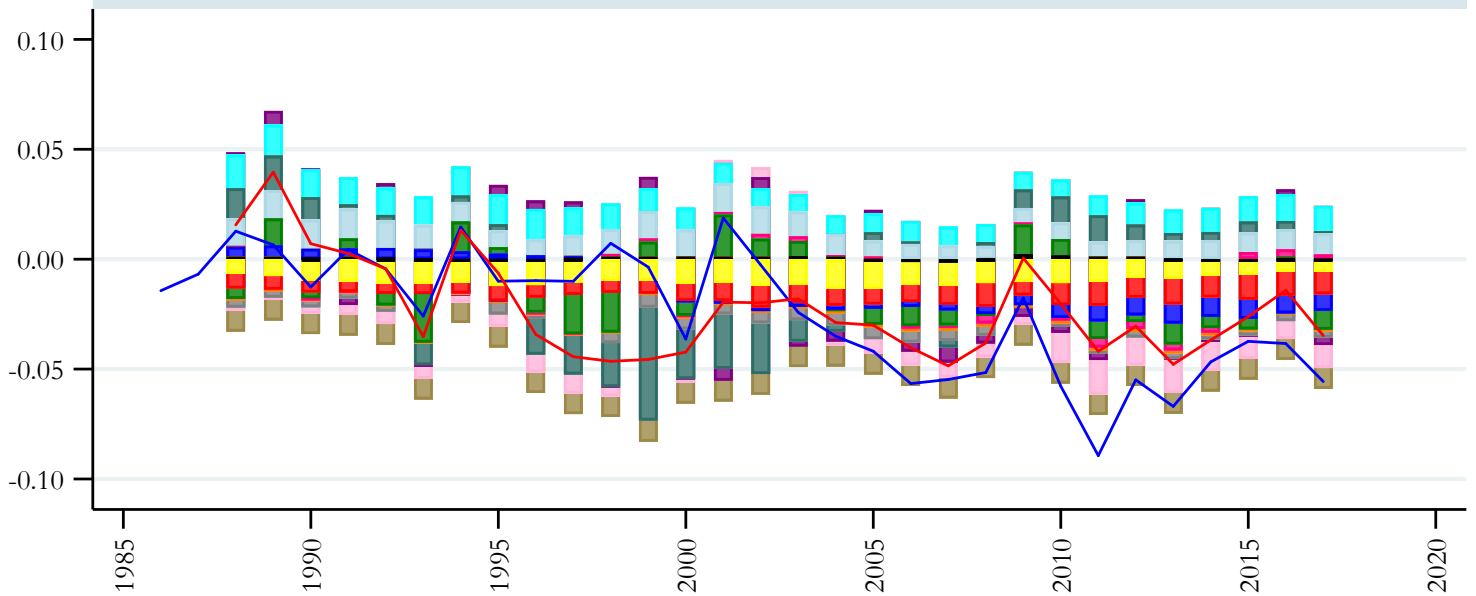
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Tunisia



Turkey

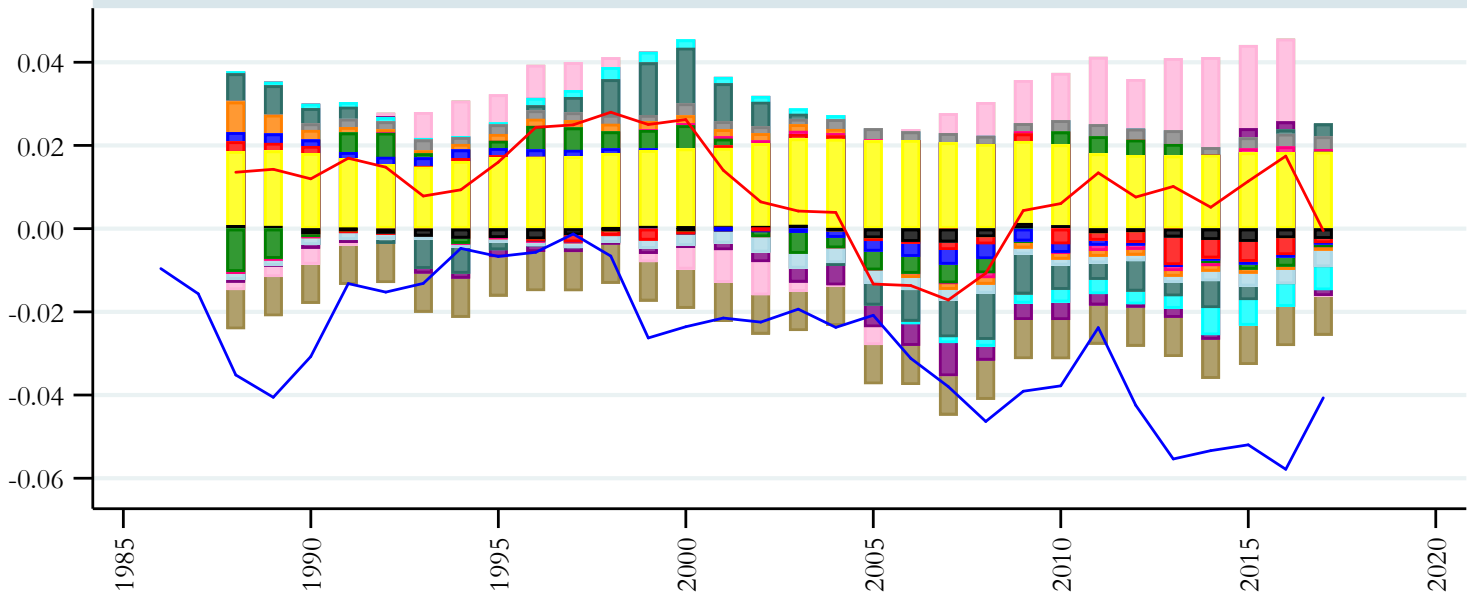


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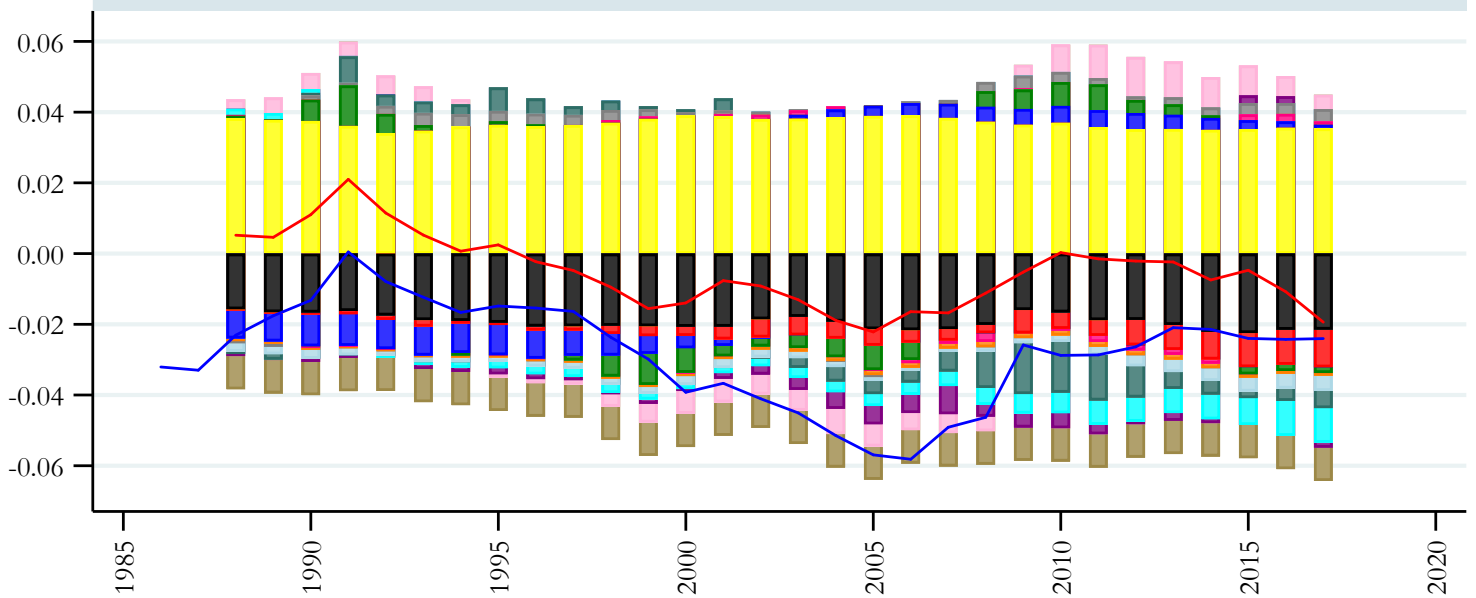
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# CA: Contributions to EBA Fitted Values

## United Kingdom



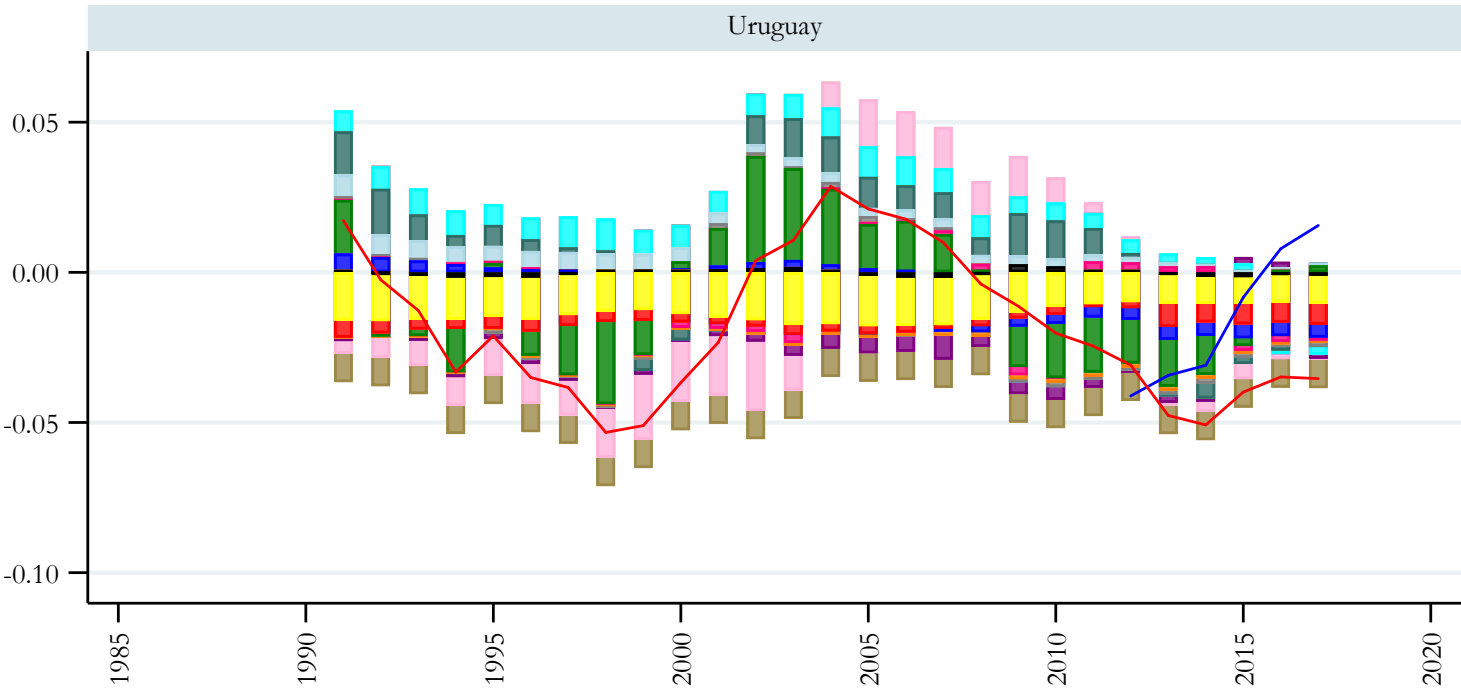
## United States of America



year

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- fitted\_ca

CA: Contributions to EBA Fitted Values

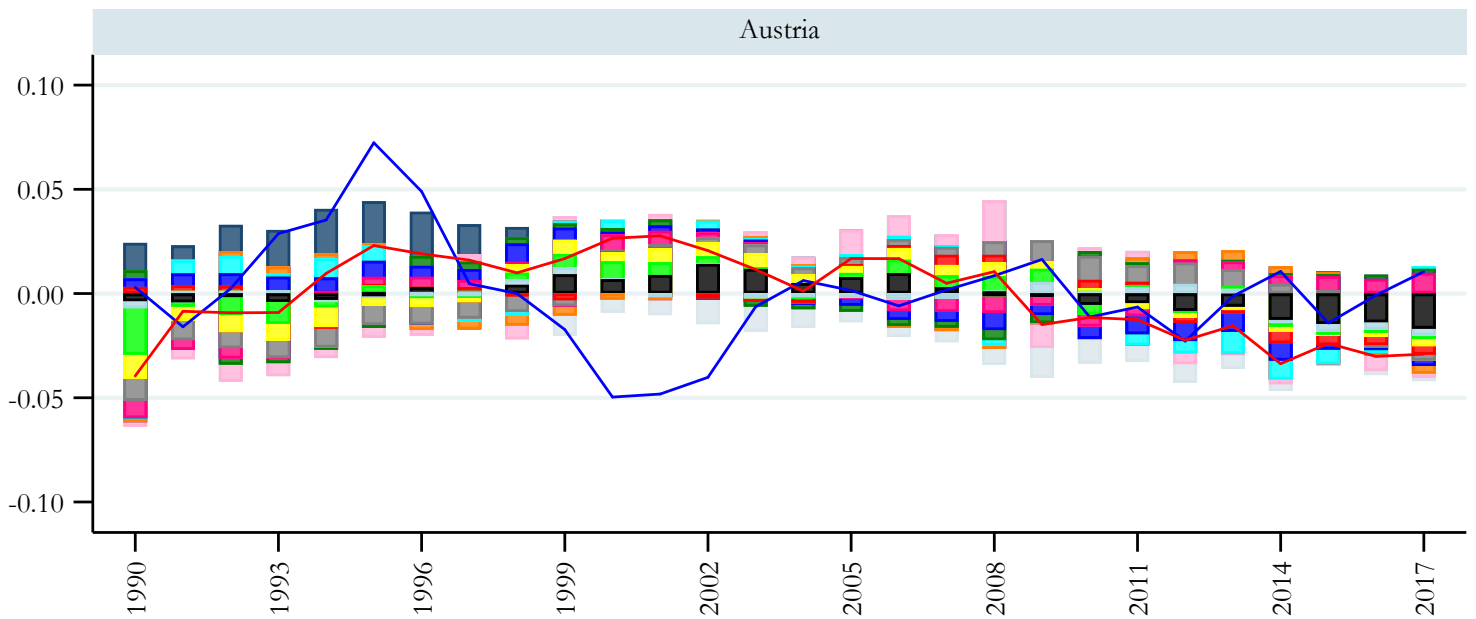
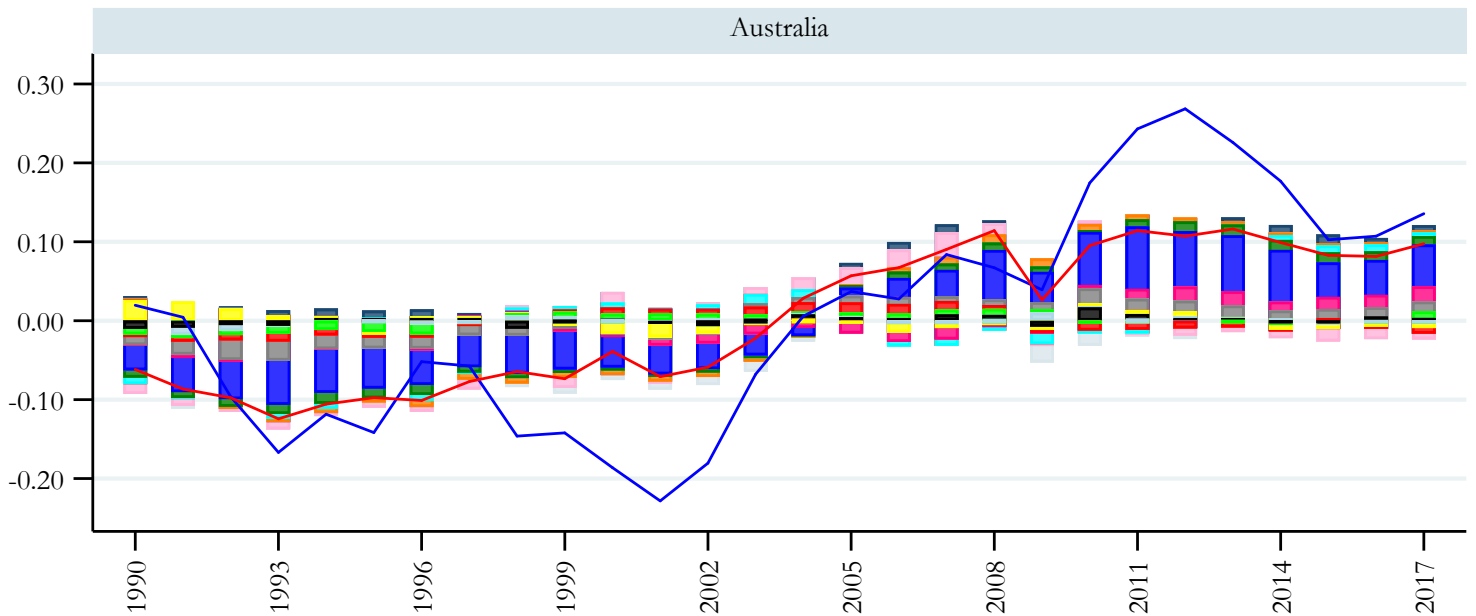


year

- |                                |                               |
|--------------------------------|-------------------------------|
| Constant term                  | Detrended Credit              |
| $Kcon^*(Reserves\ chg.)/GDP$   | Public Health Spending        |
| Cyclically adj. Fiscal Balance | ICRG-12 Institution           |
| Forecasted Growth              | Oil+Gas Balance               |
| ToTgap*Openness                | Output Gap                    |
| Demographic terms              | NFA terms                     |
| Lagged GDP pw terms            | VIX + Share of Reserves terms |
| Current Account to GDP ratio   | fitted_ca                     |

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

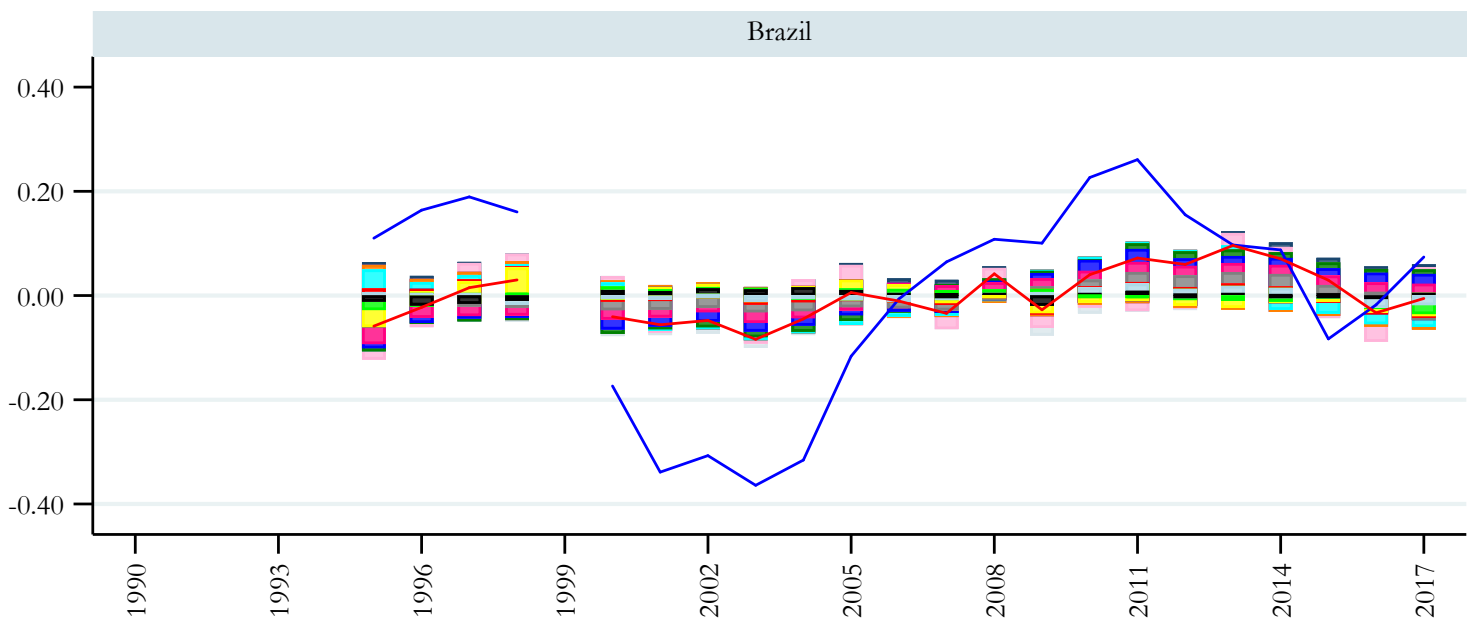
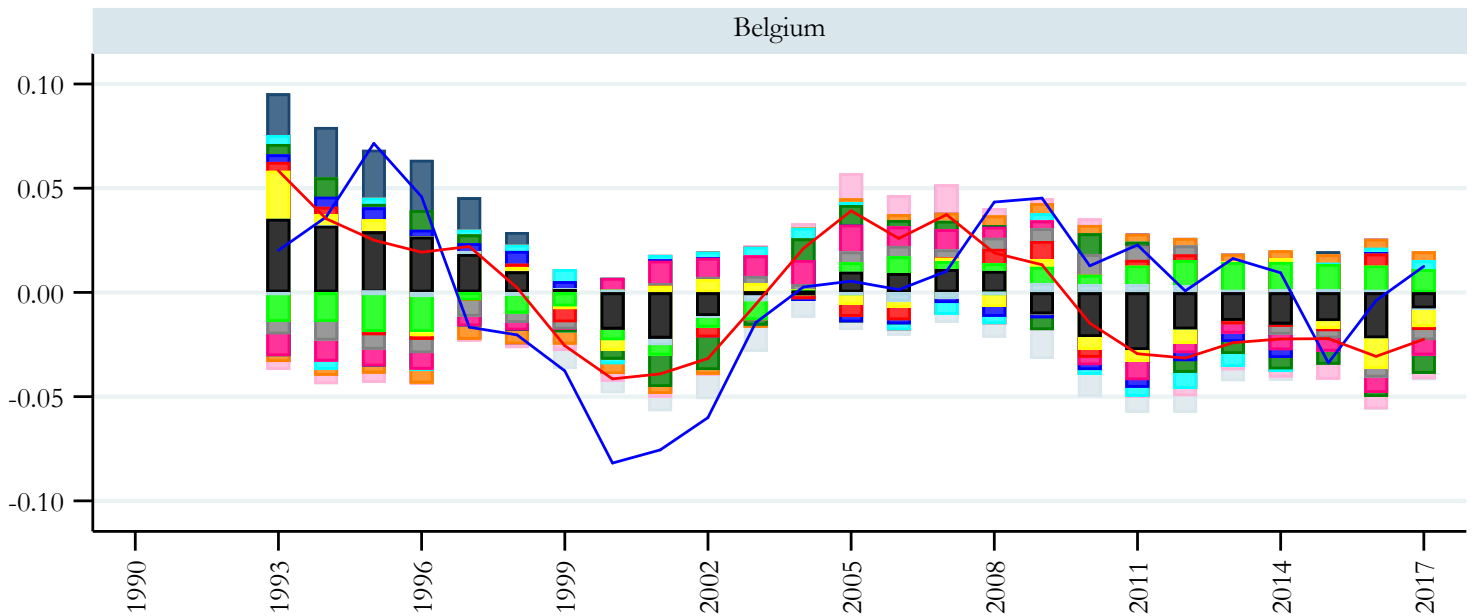
# Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



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)

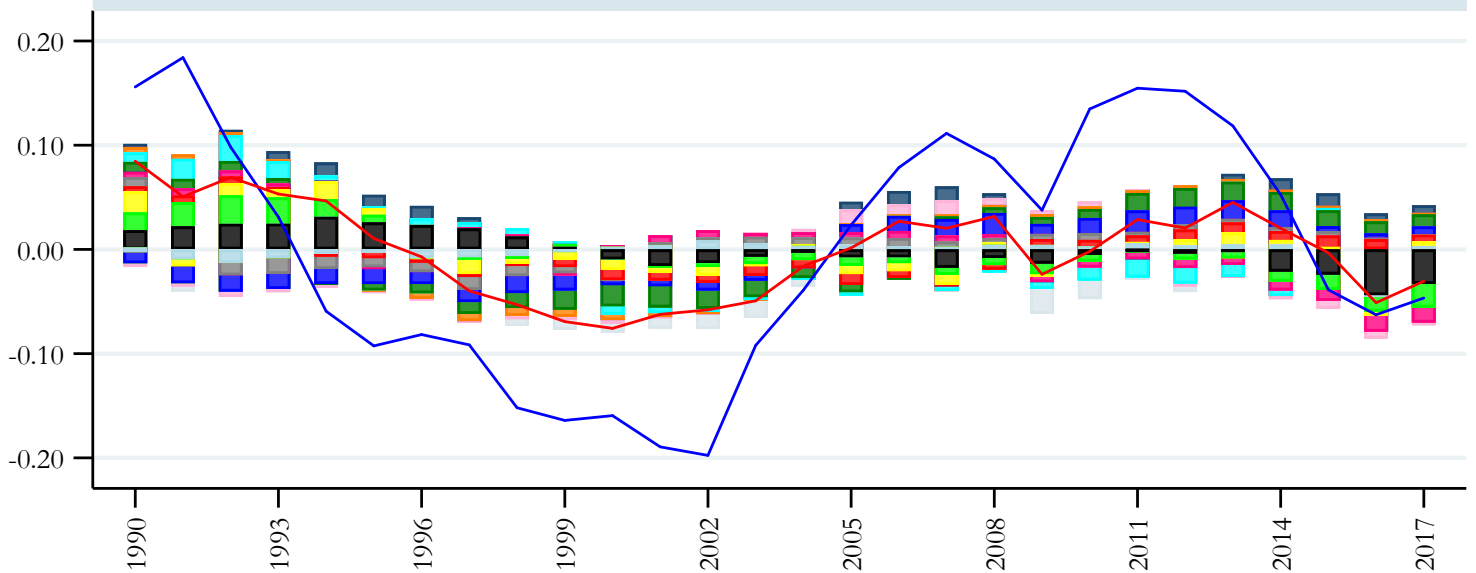


year

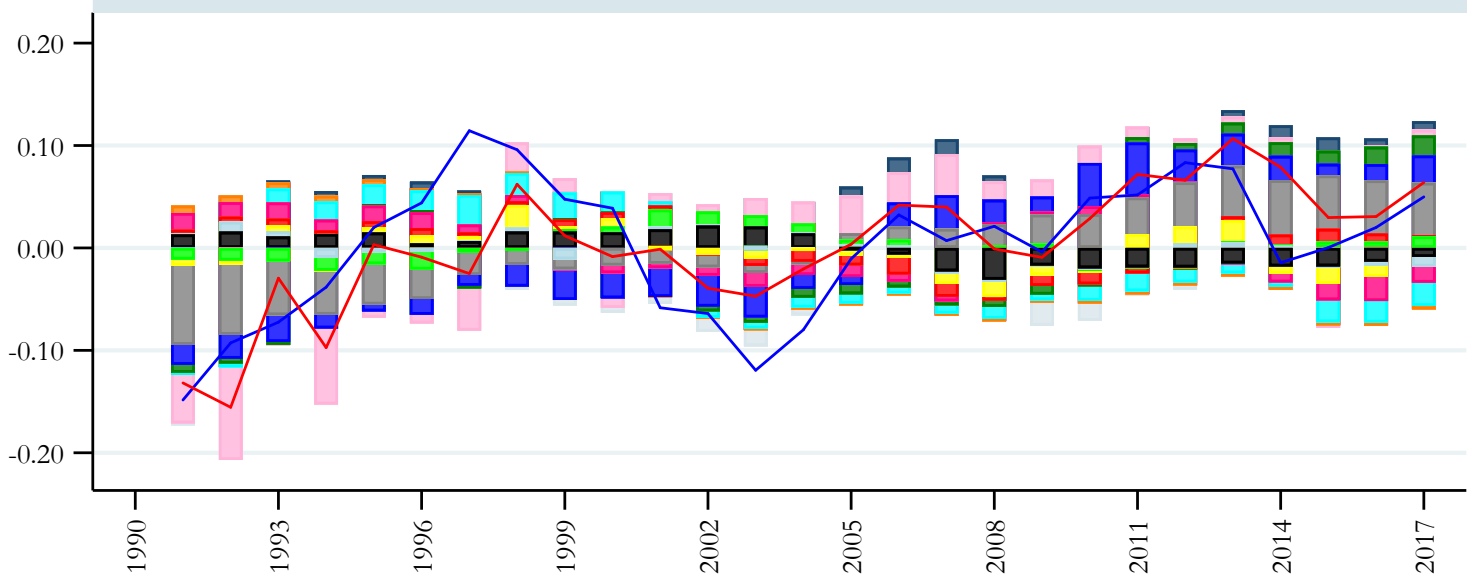
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- Private credit/GDP gap (Detrended) (rel to TRD PRT)
- Lag of Public Health Expenditure (rel to TRD PRT)
- Lagged NFA
- Fitted b

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

## Canada



## Chile



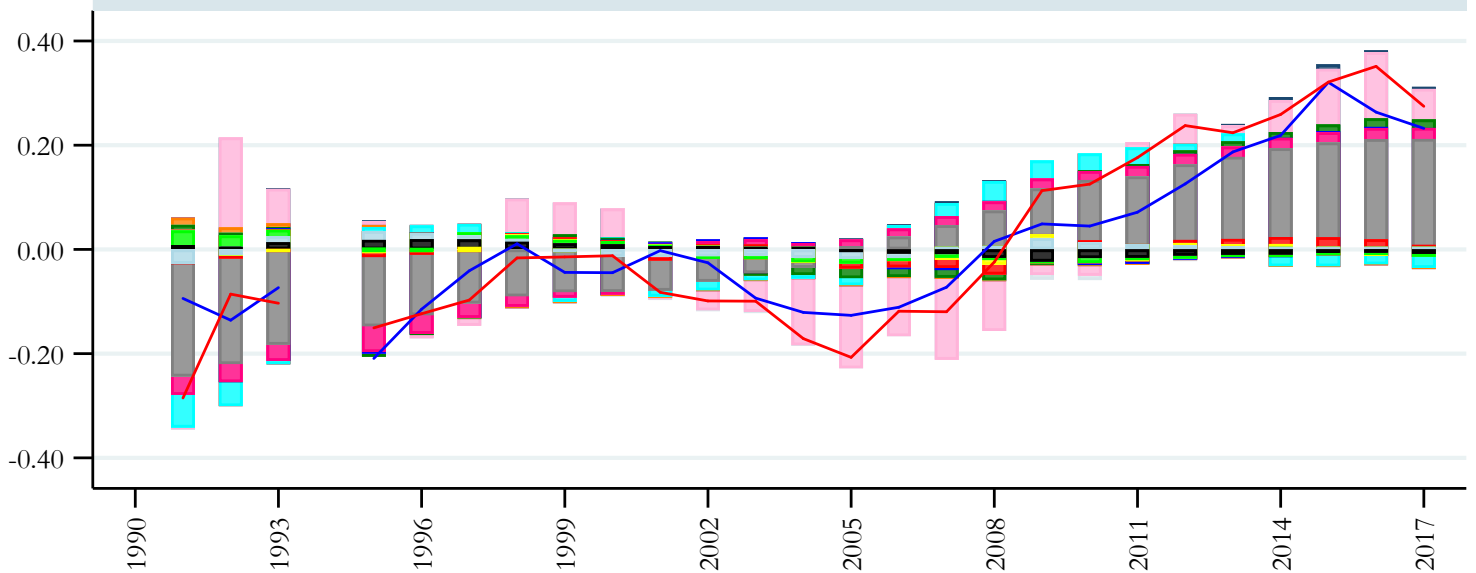
year

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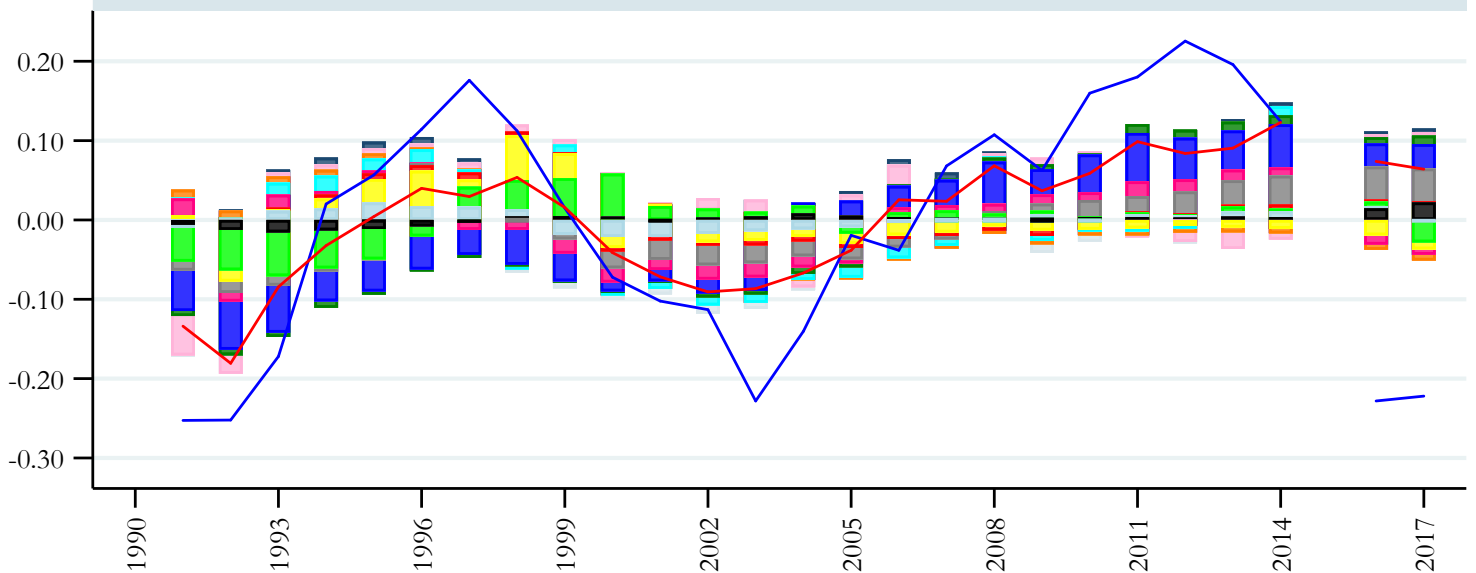


# Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)

China



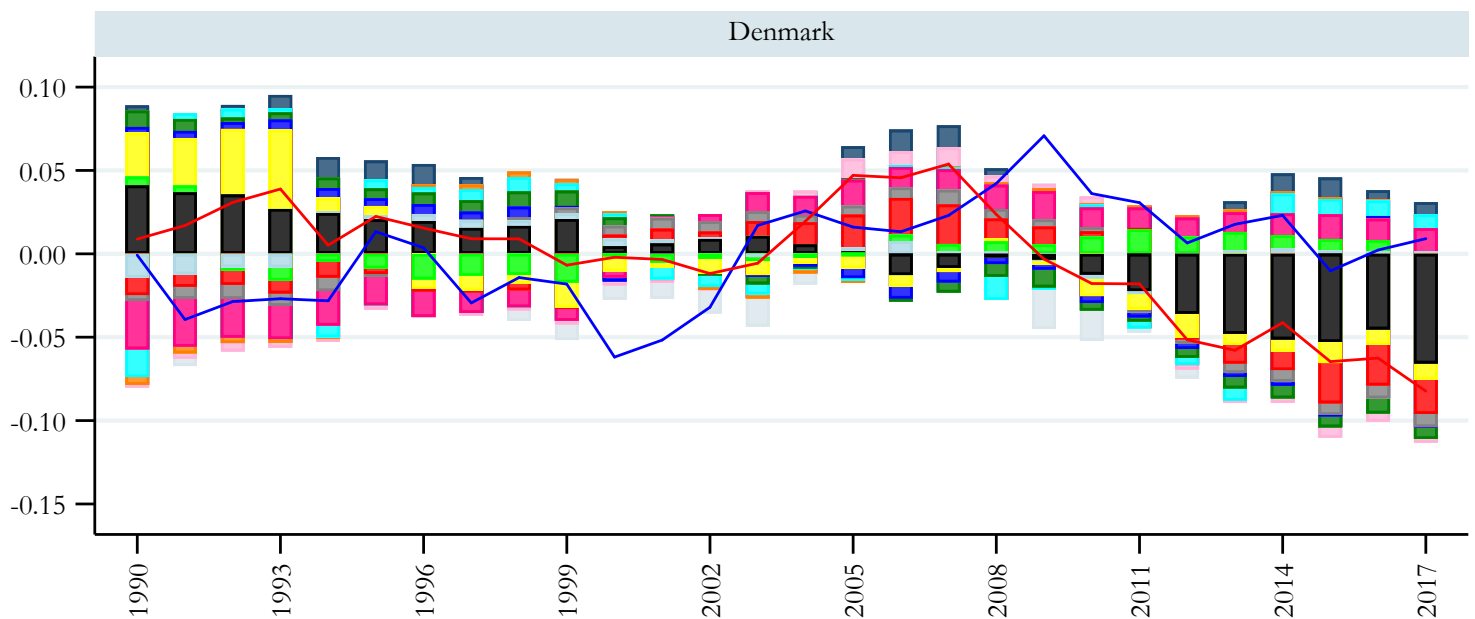
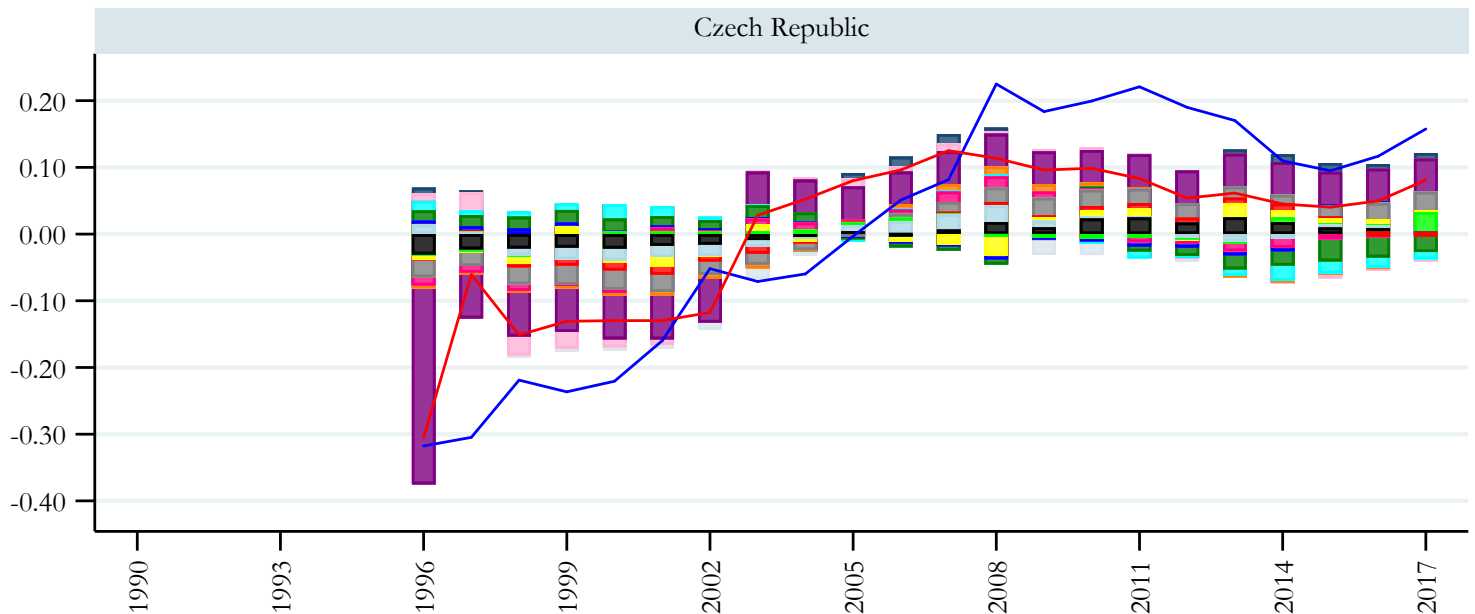
Colombia



year

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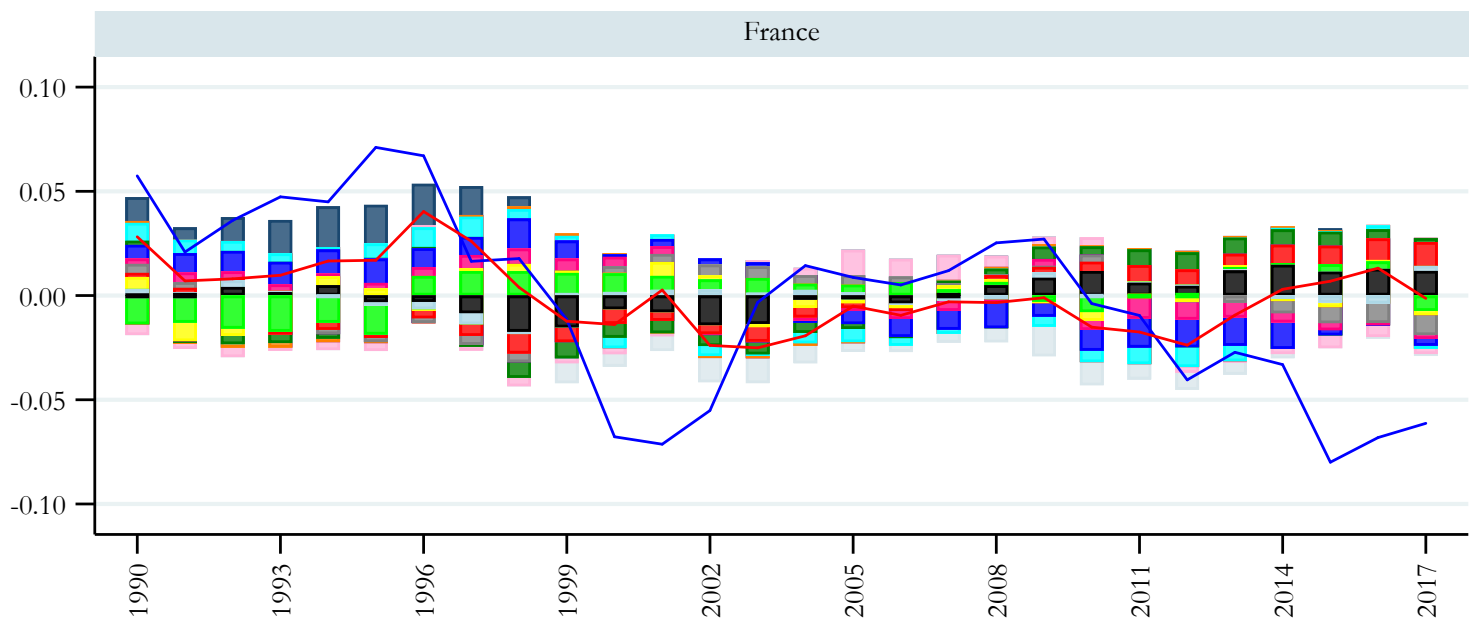
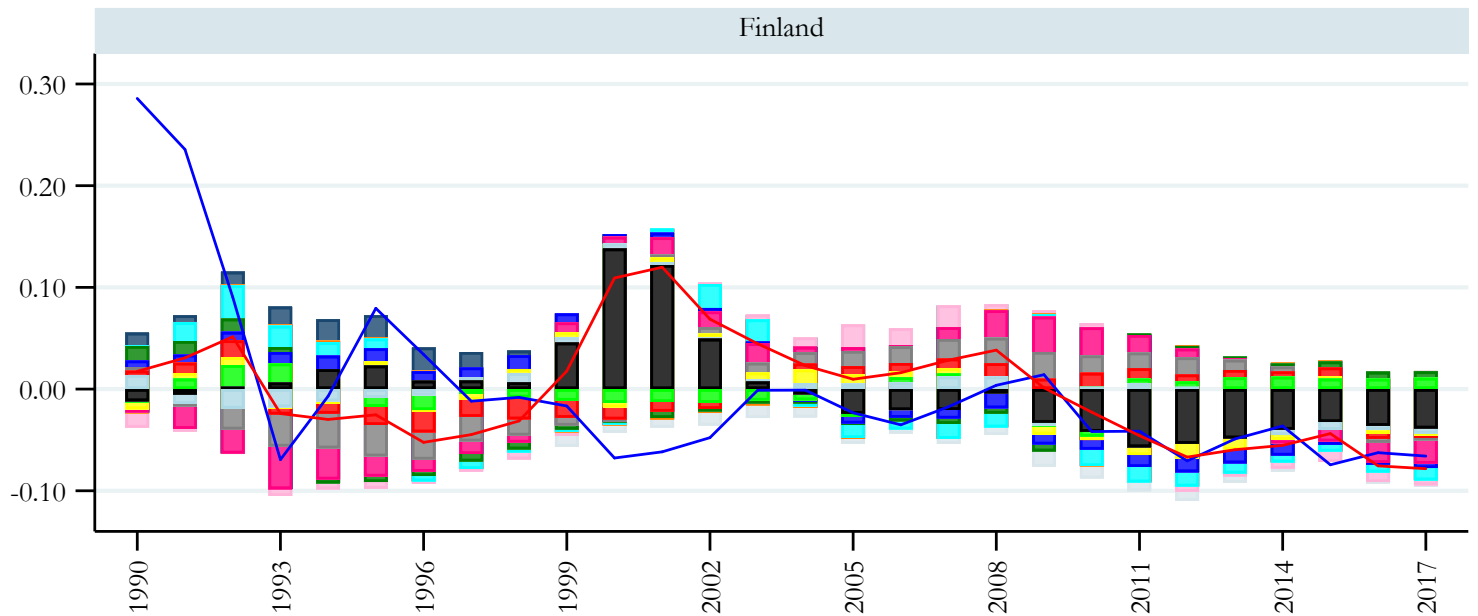
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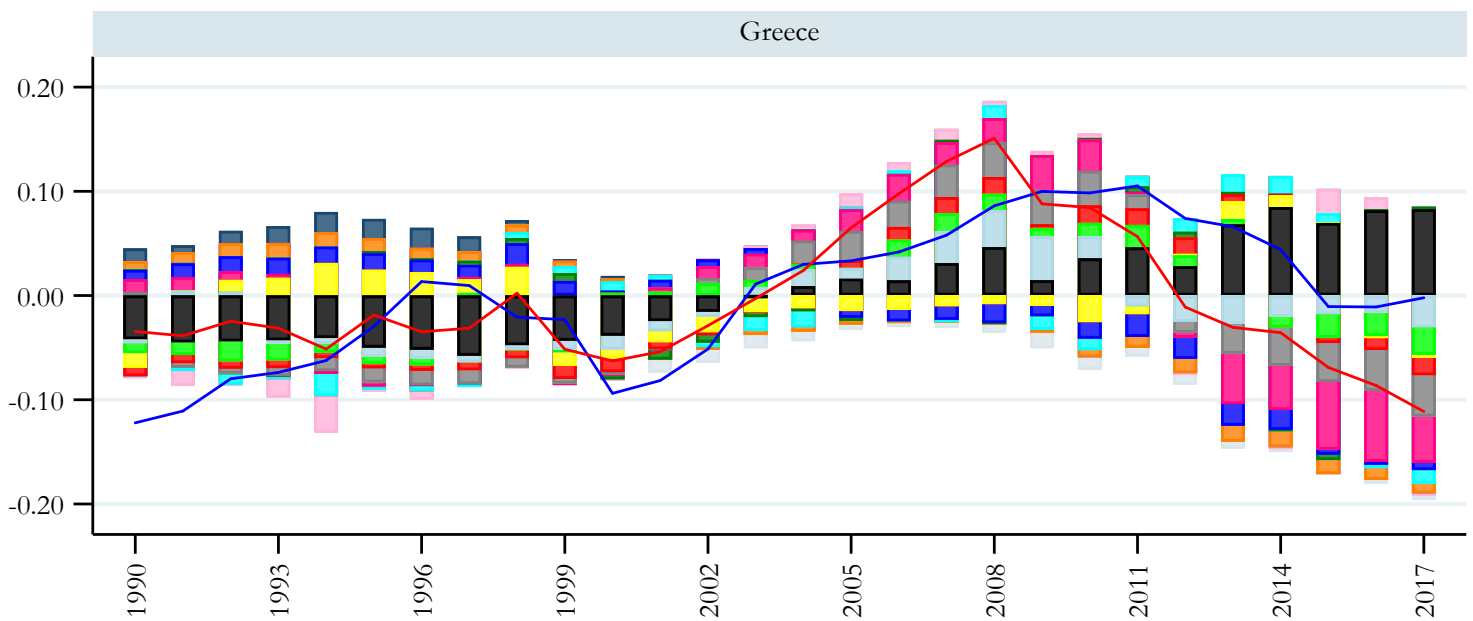
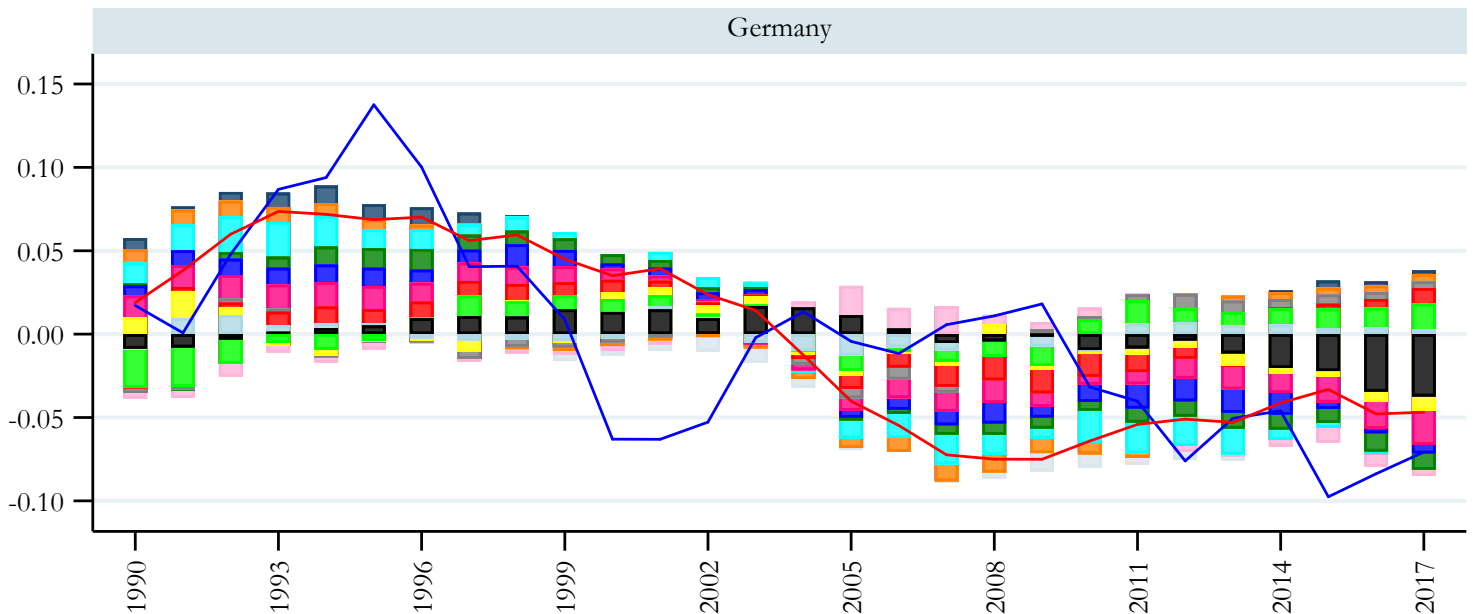
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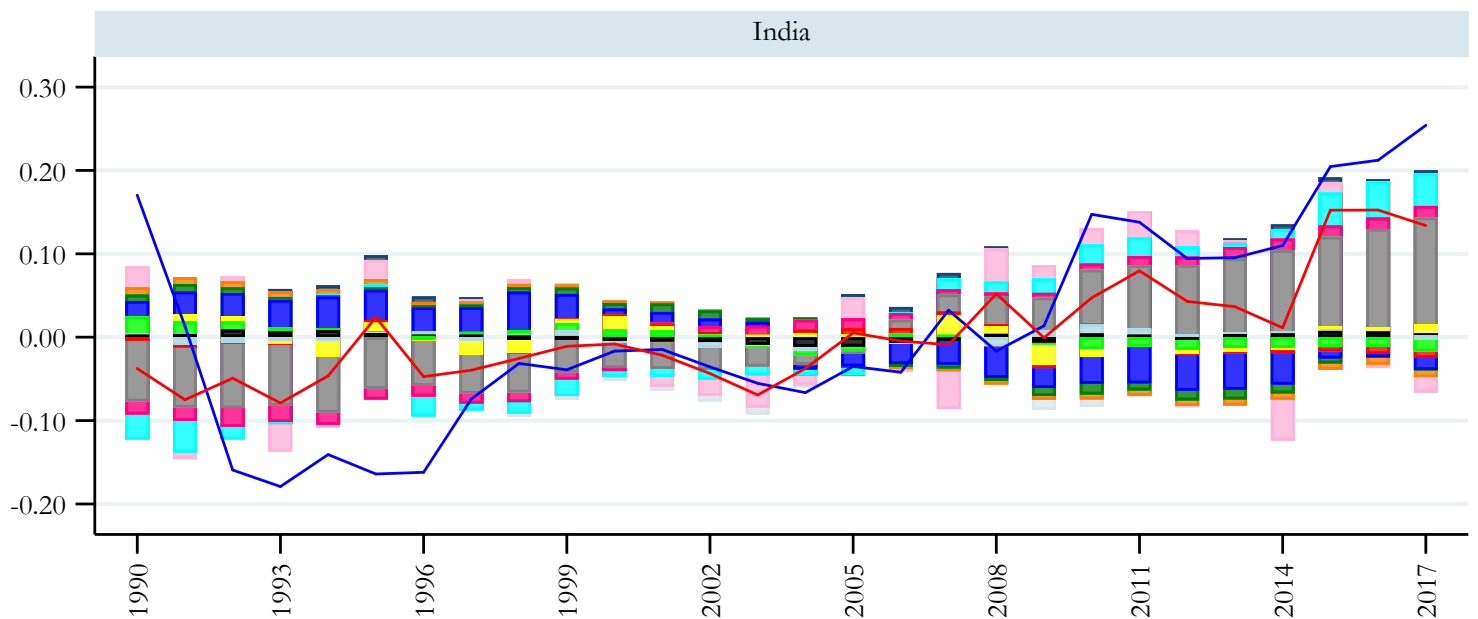
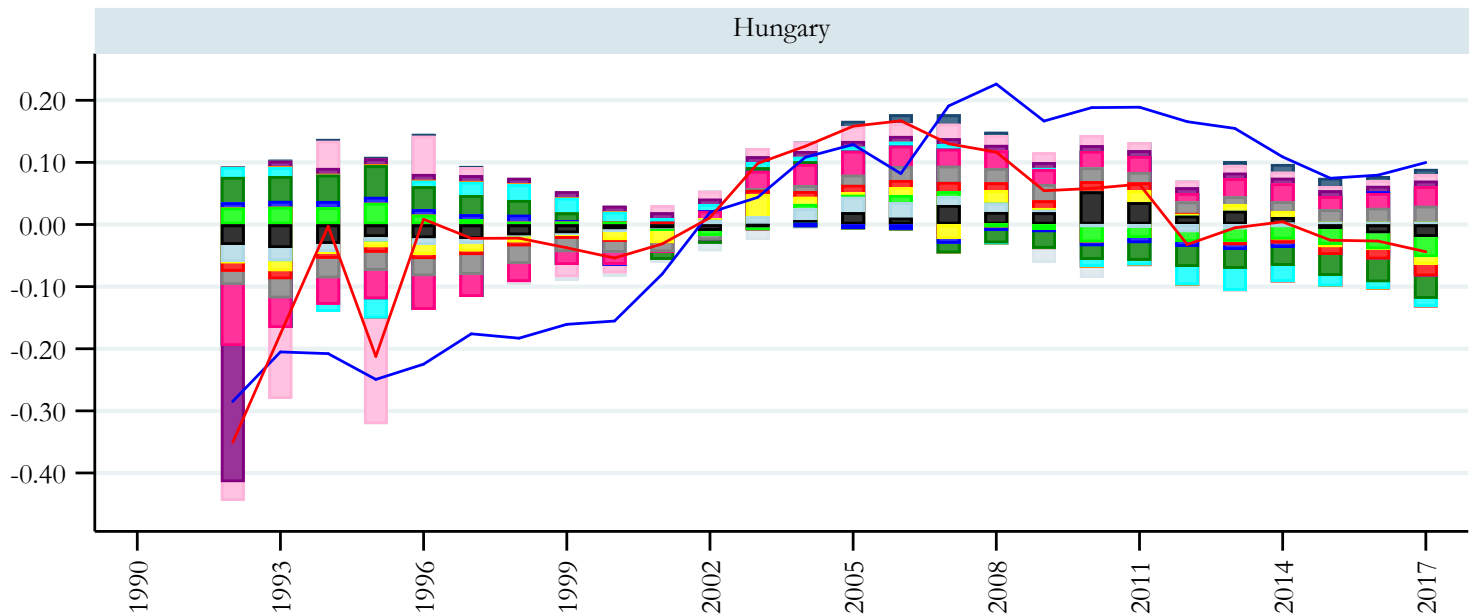
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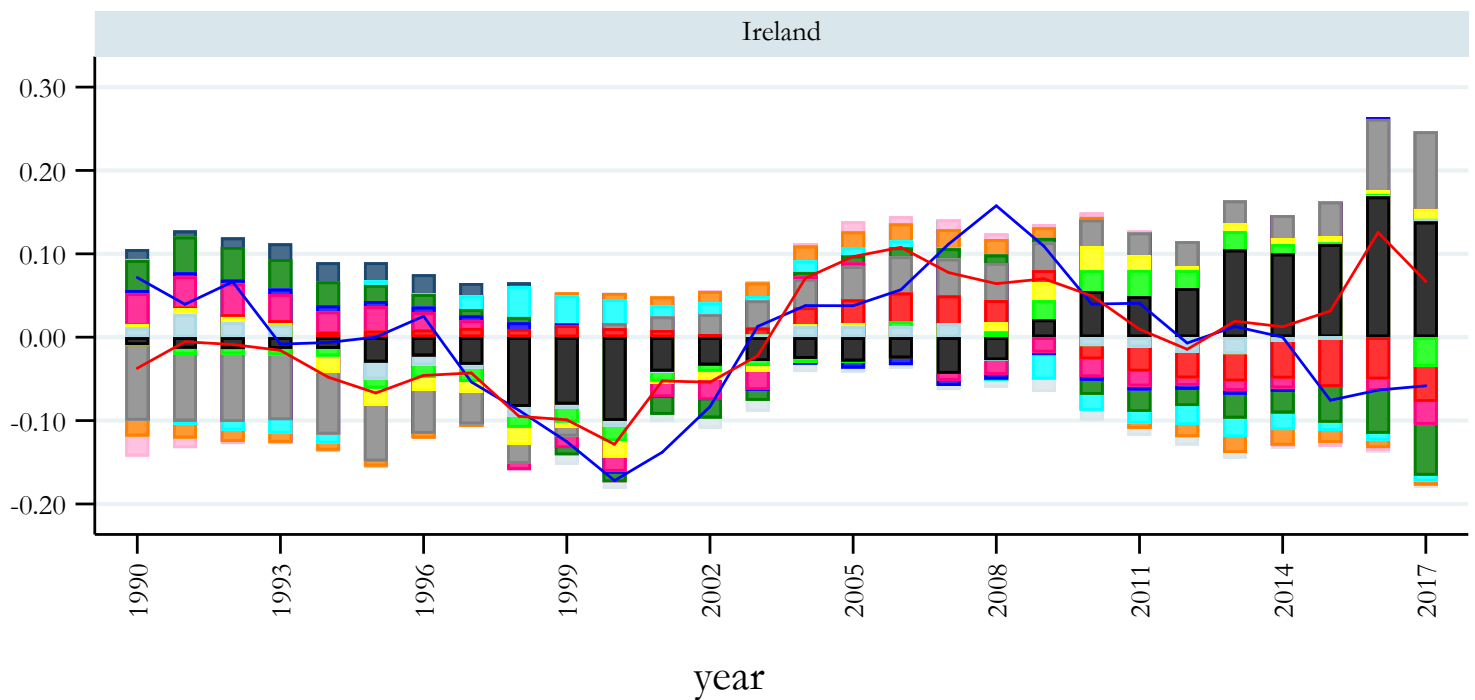
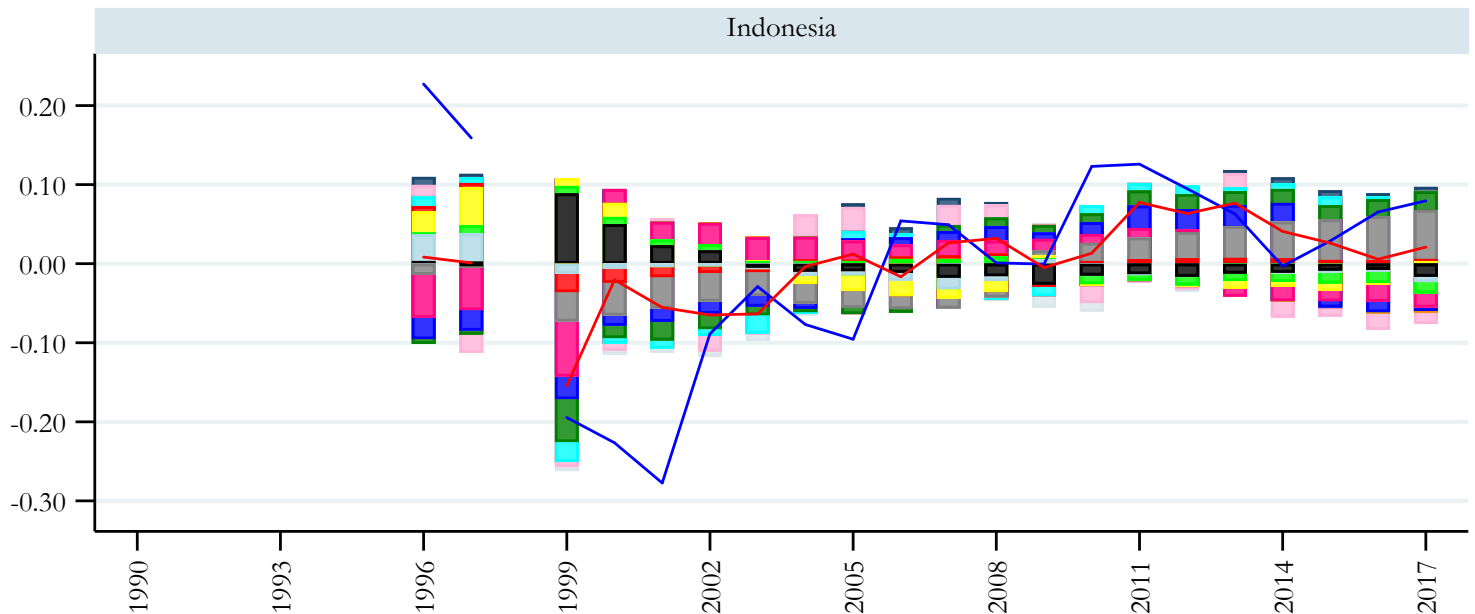
# Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)



year

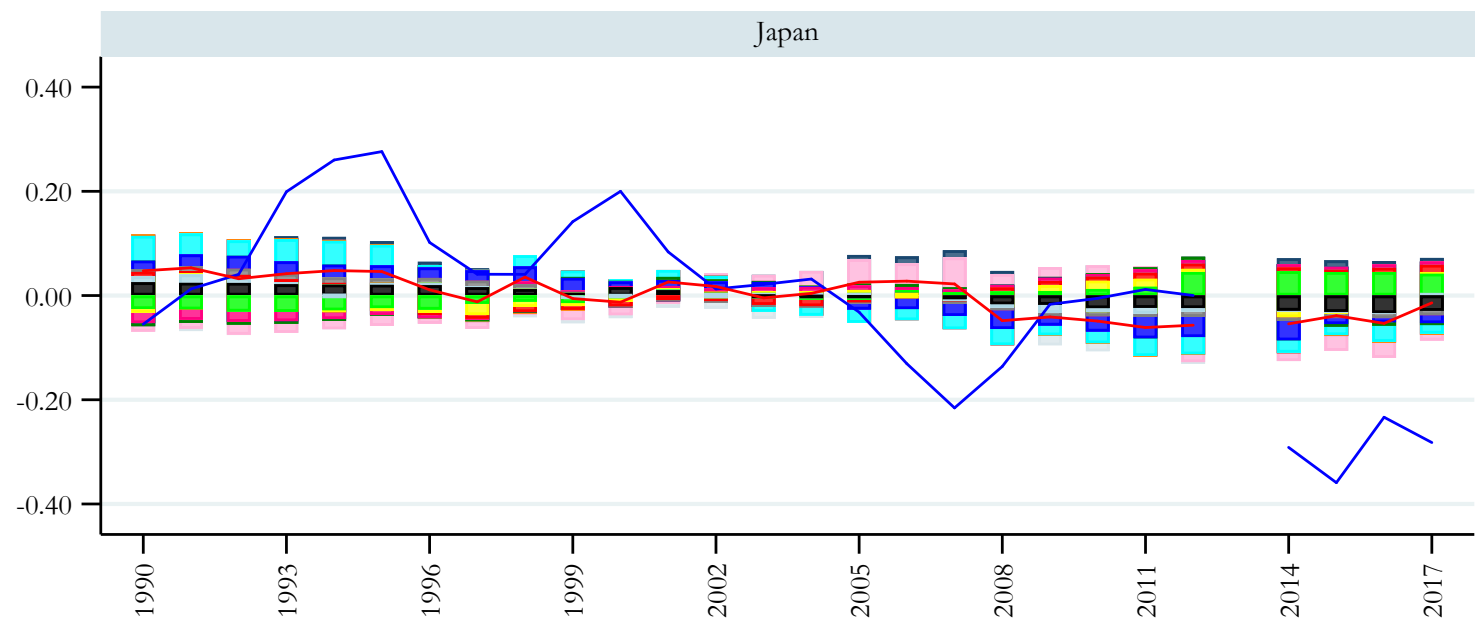
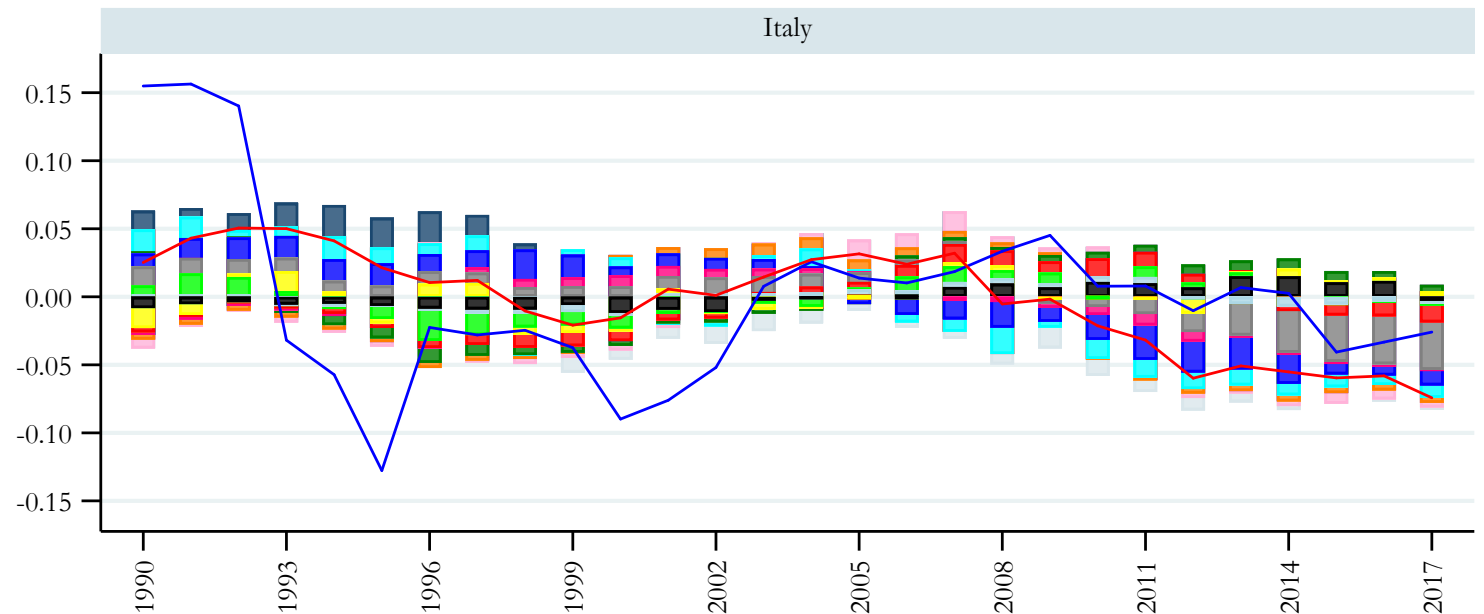
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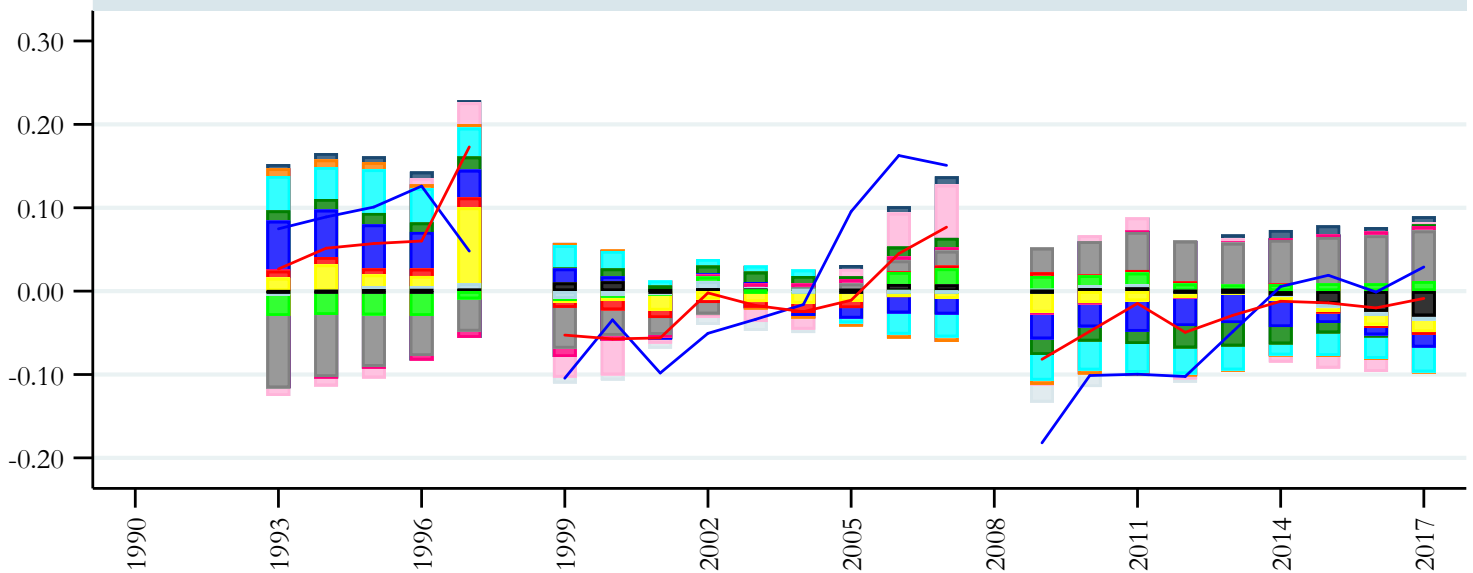


year

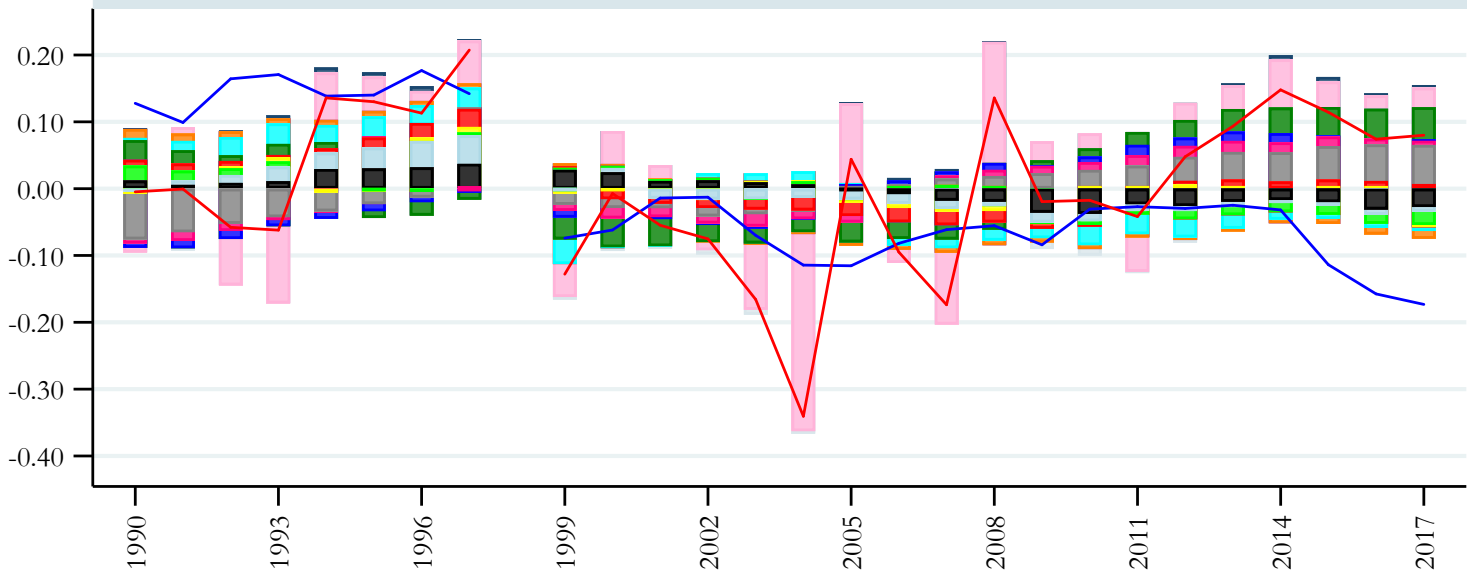
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# Contribution to REER Fitted Values (Demeaned, relative to country mean over sample period)

## Korea



## Malaysia

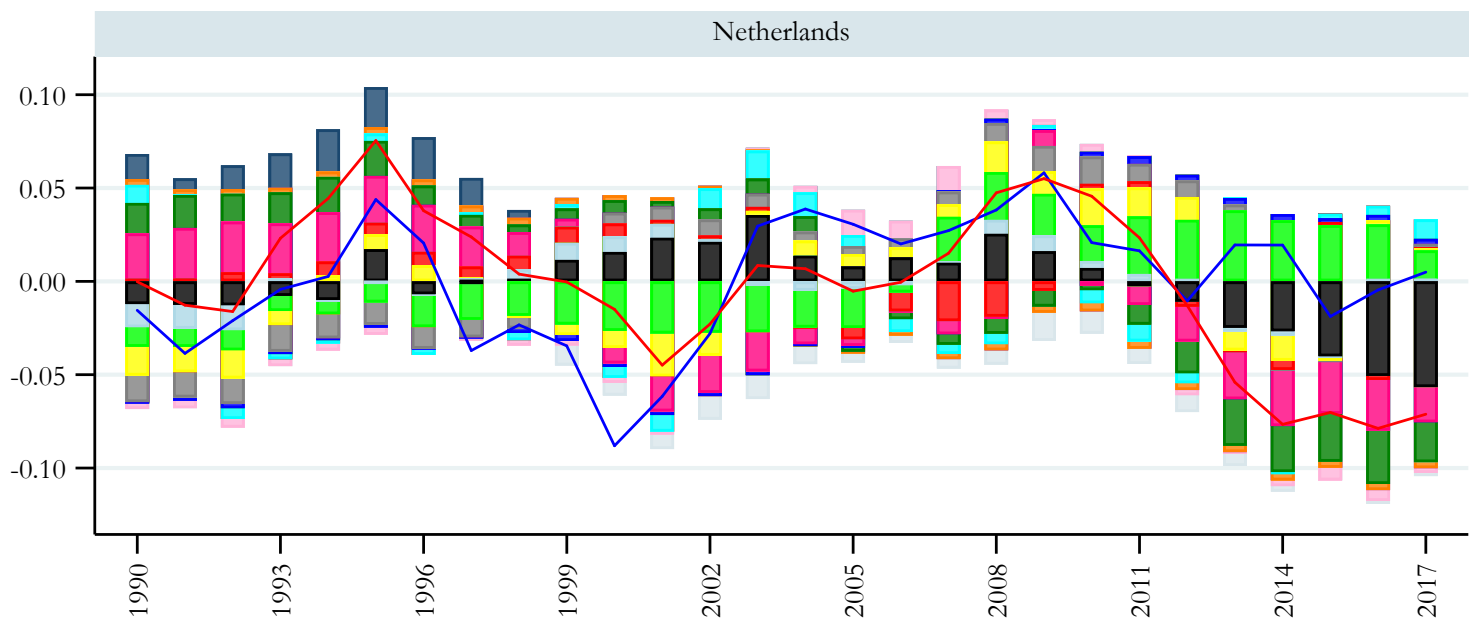
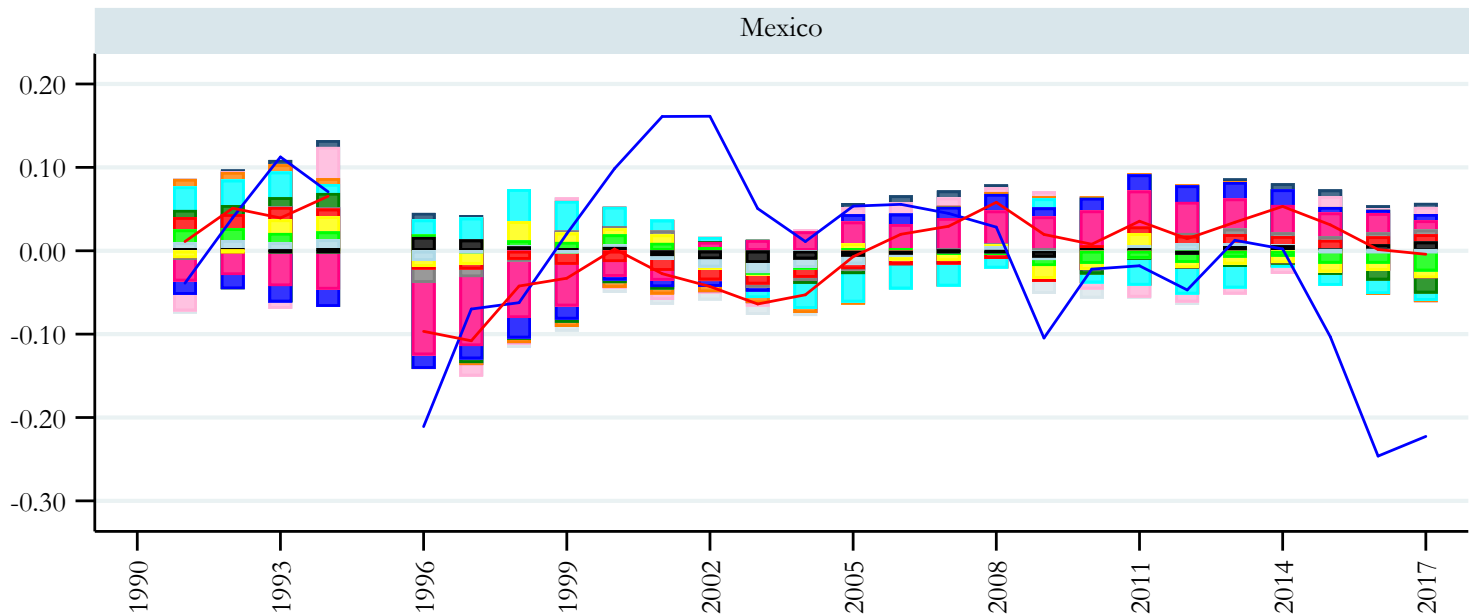


year

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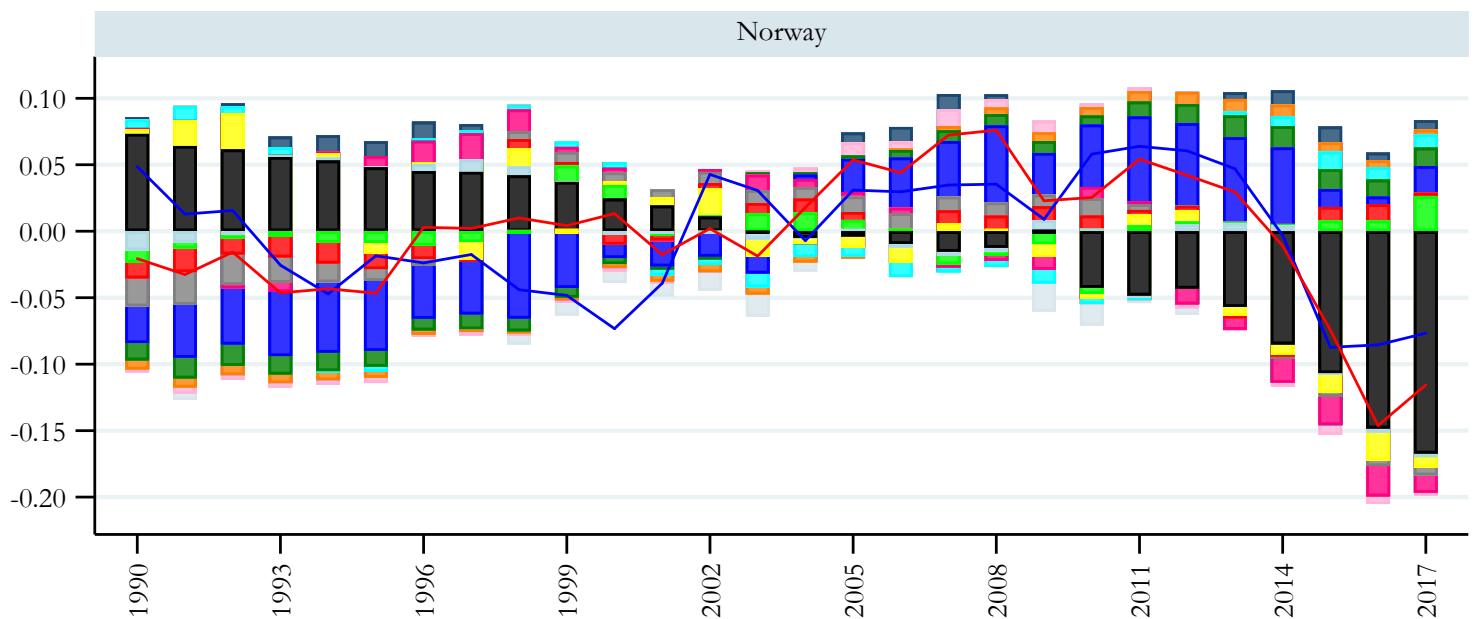
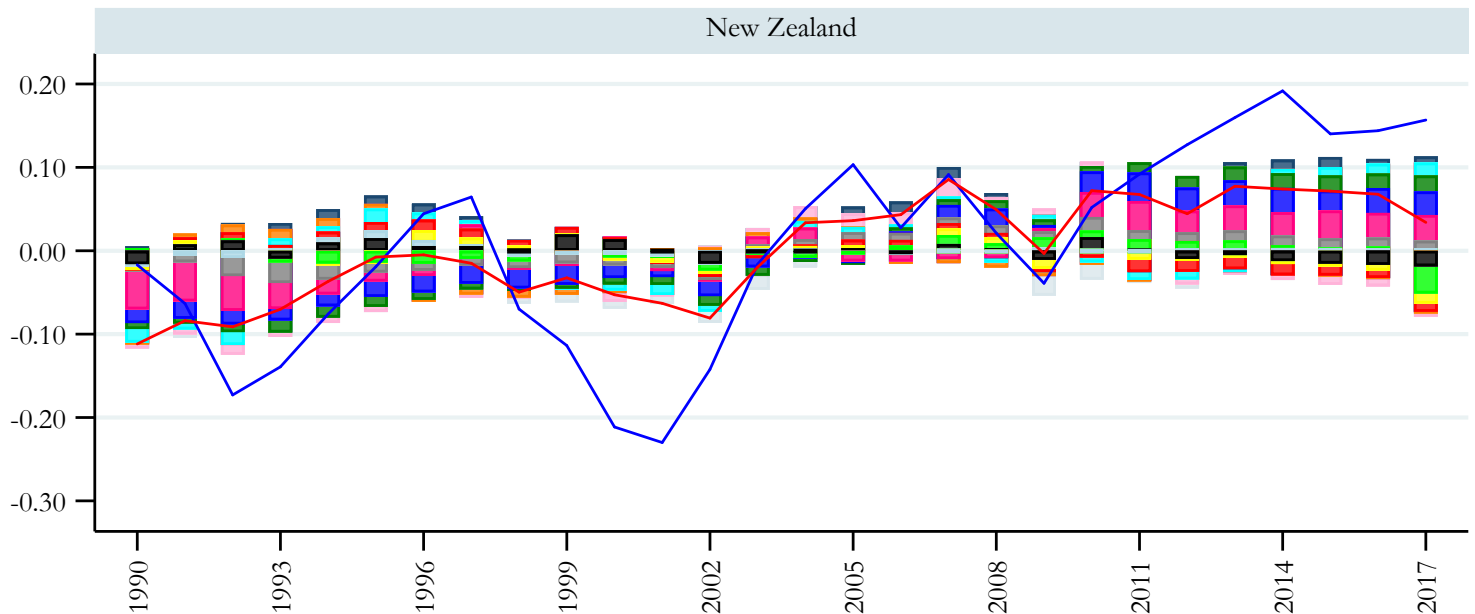
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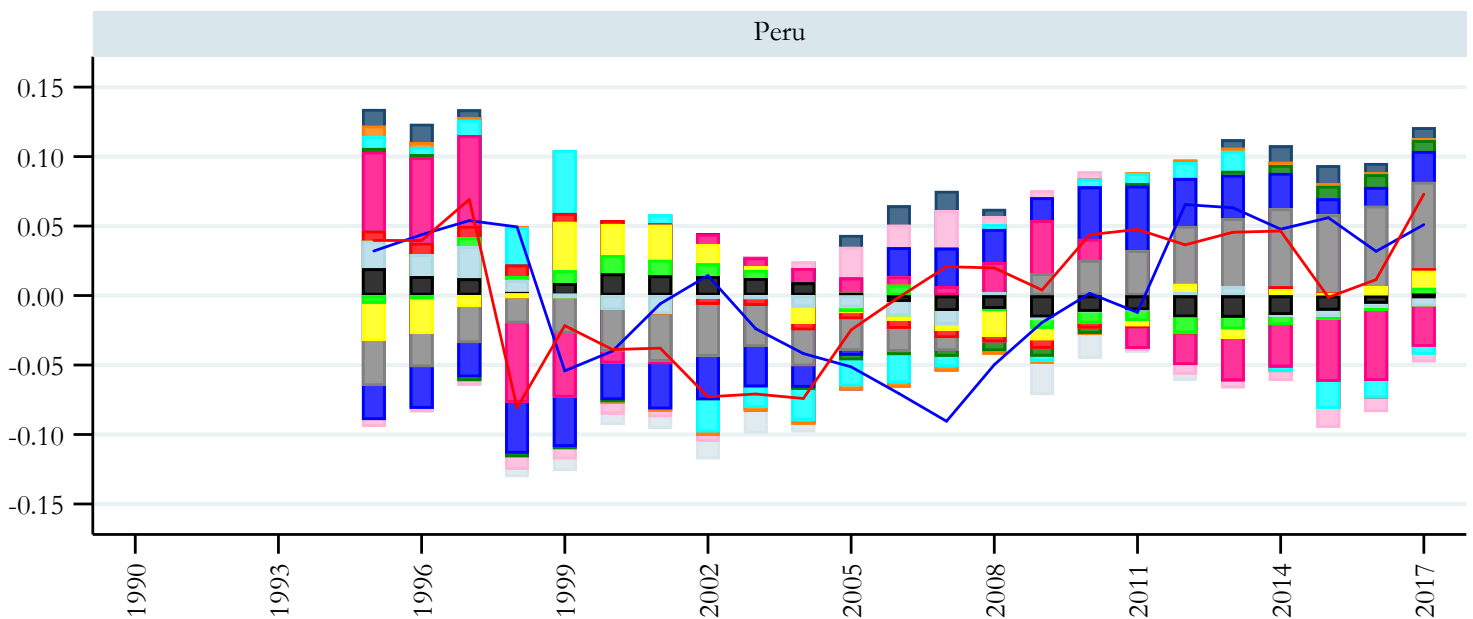
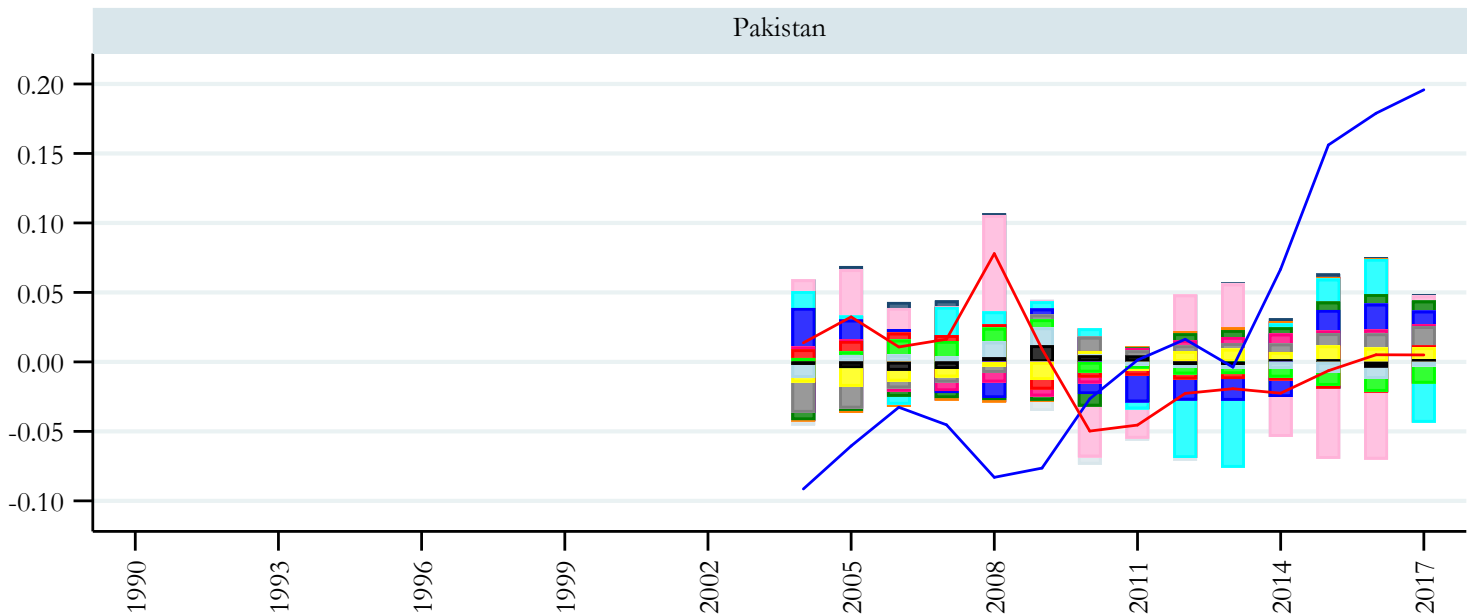
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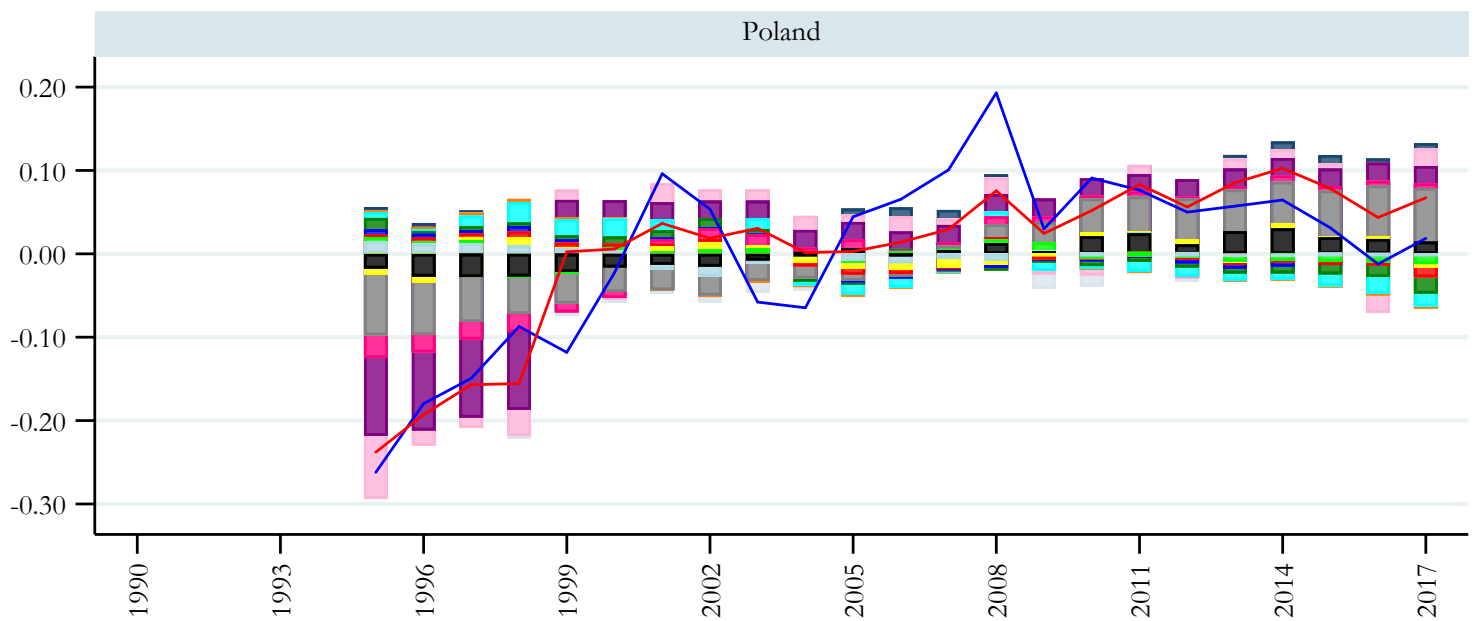
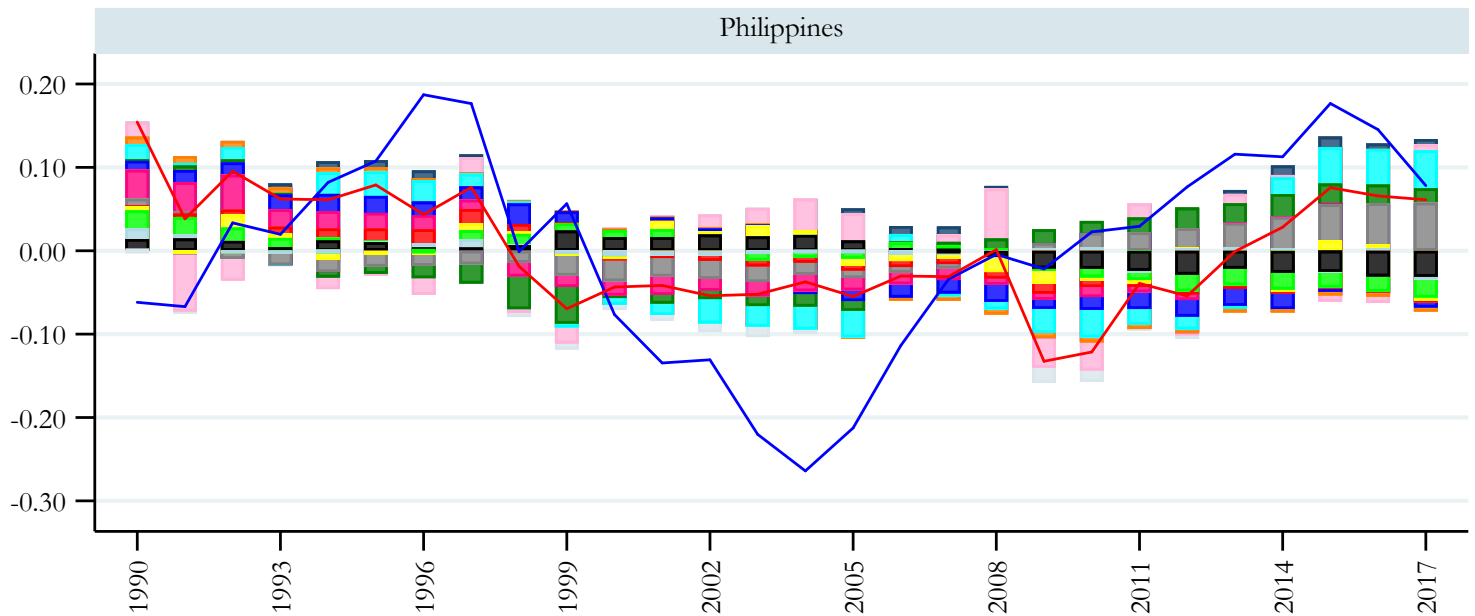
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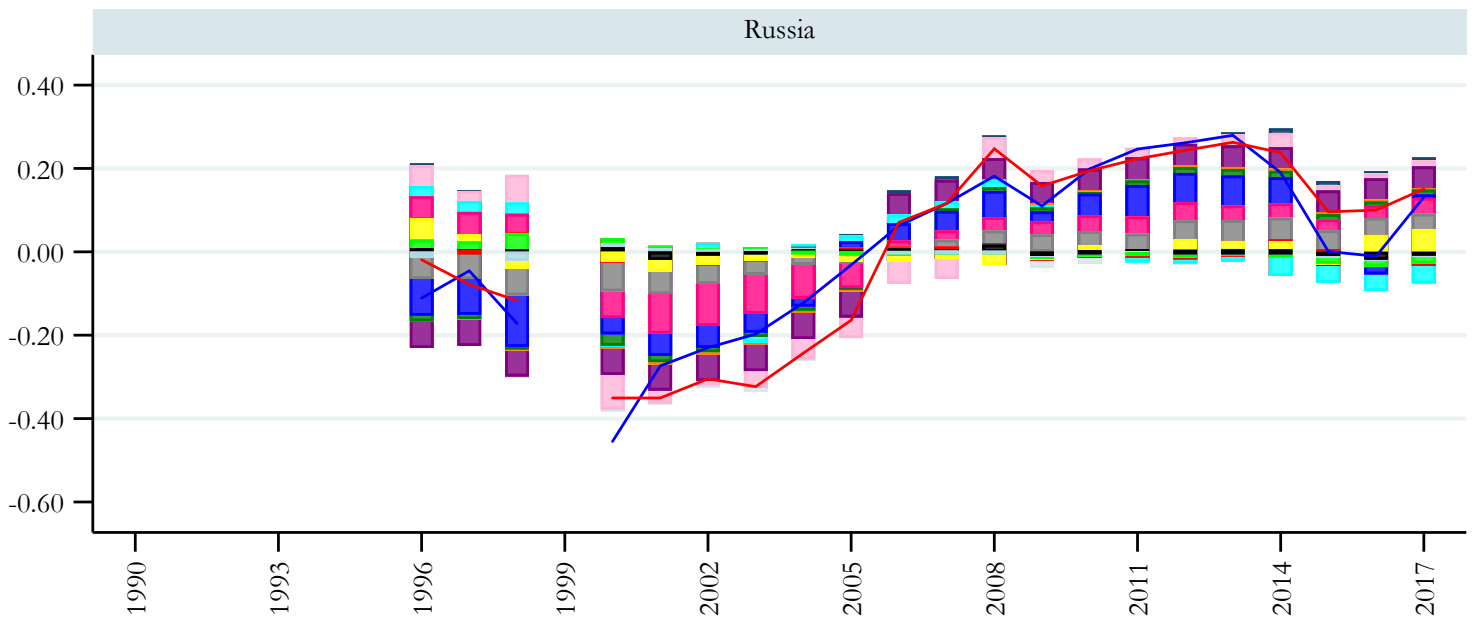
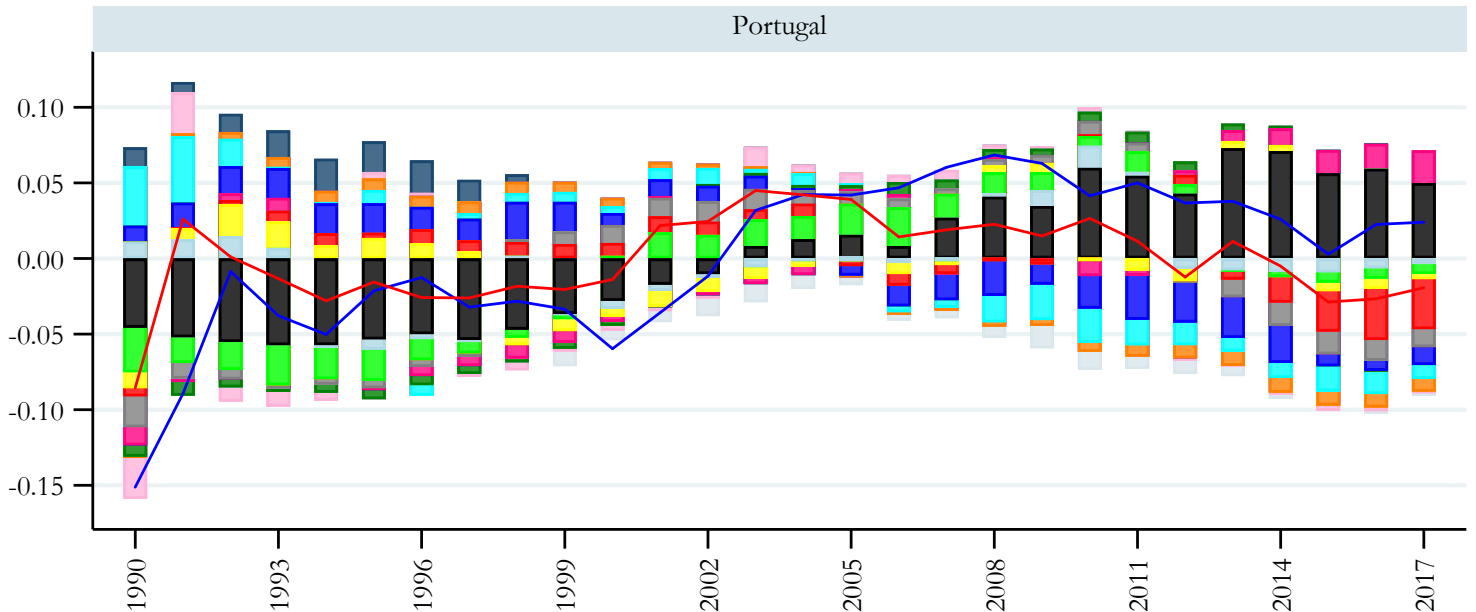
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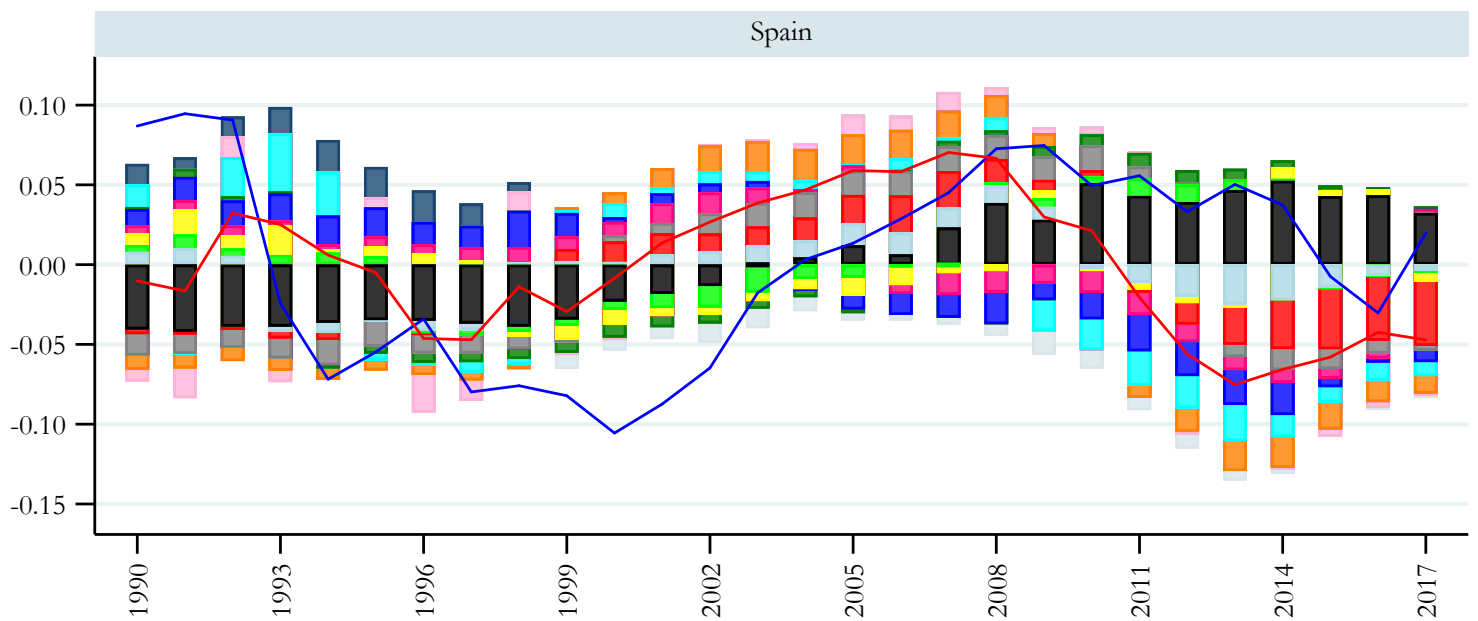
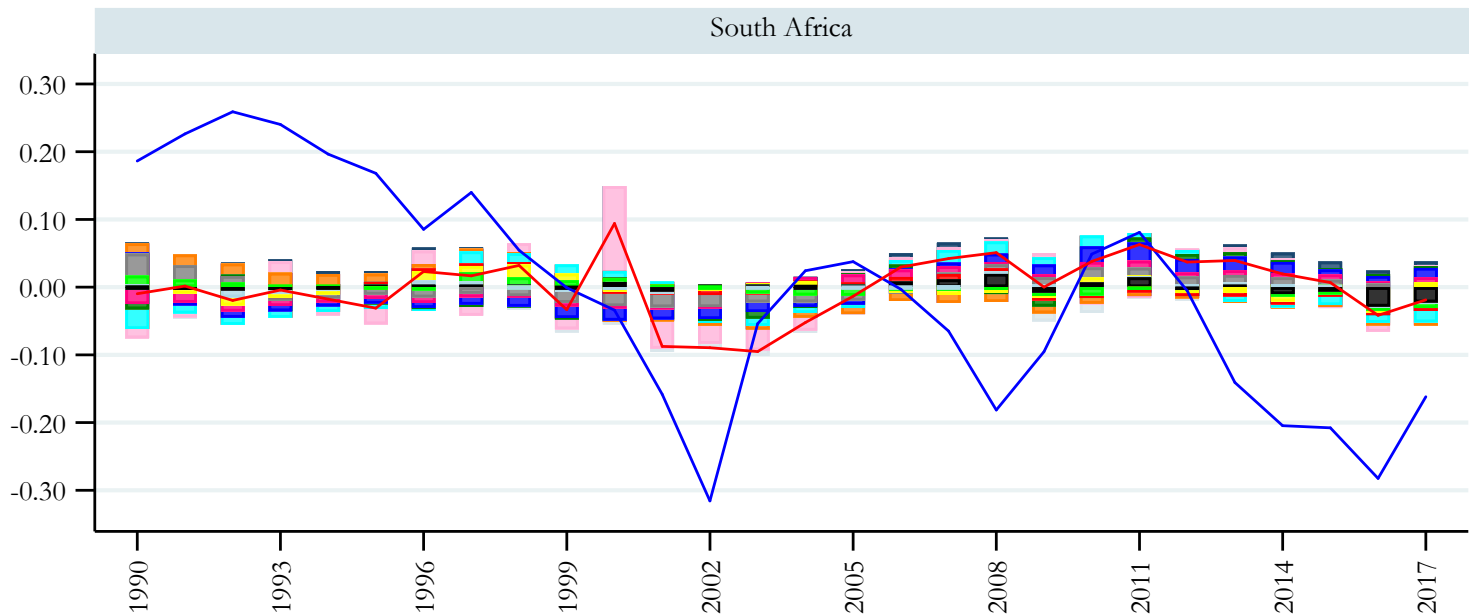
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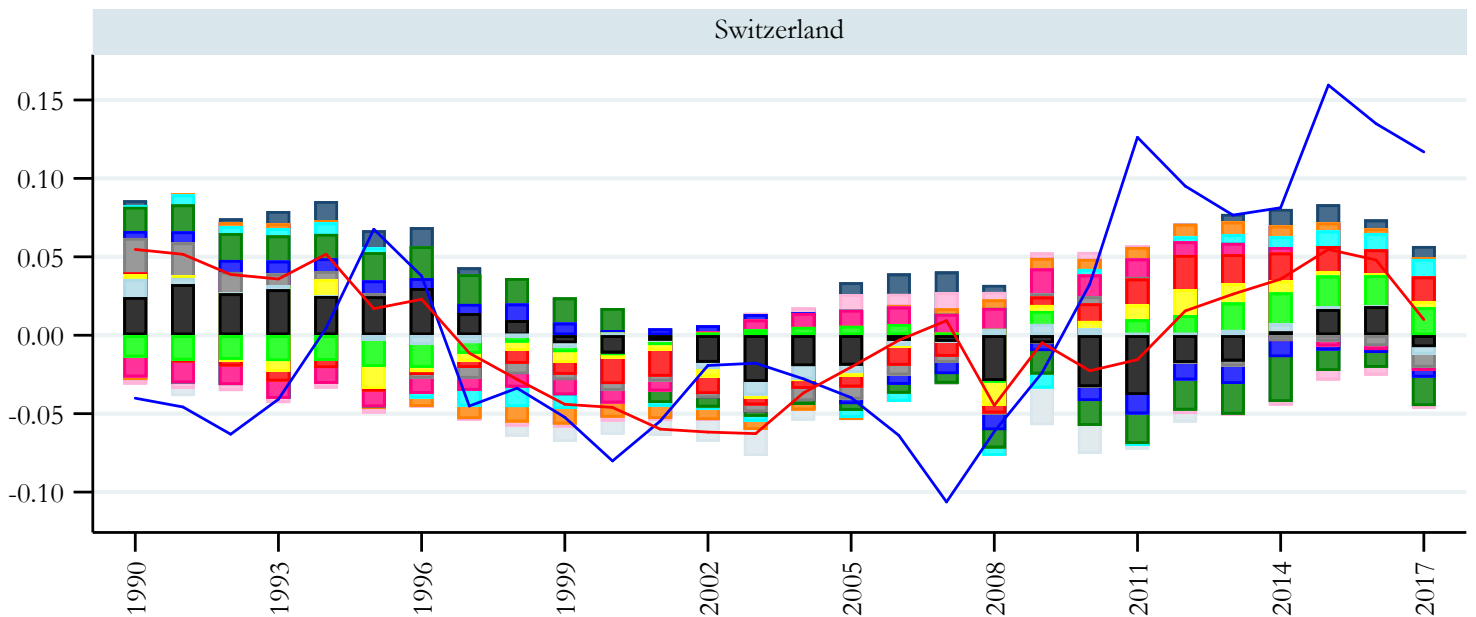
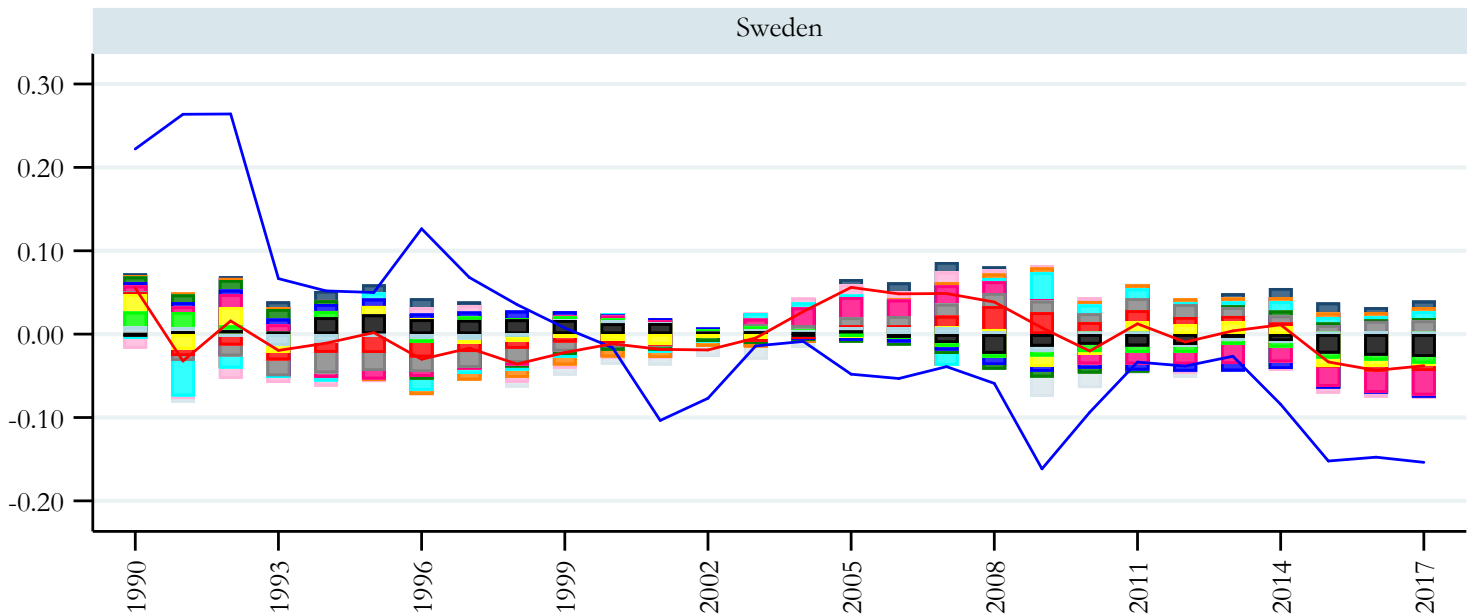
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year

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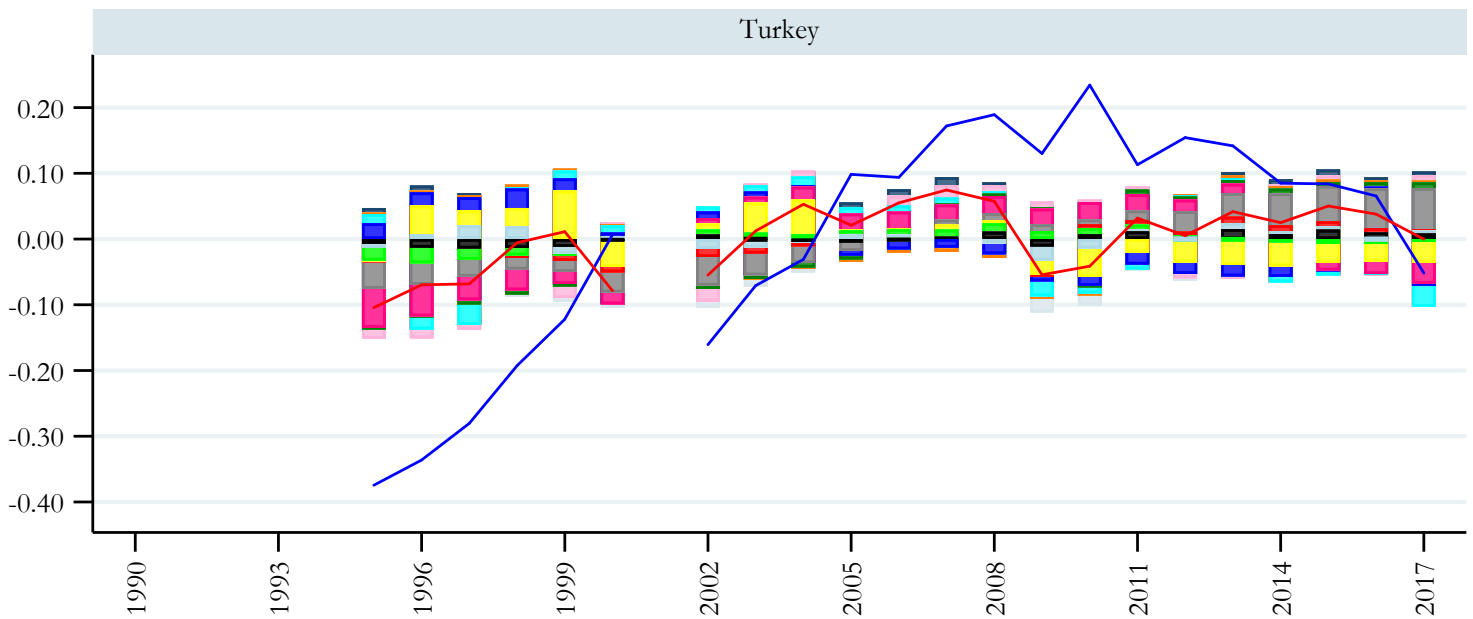
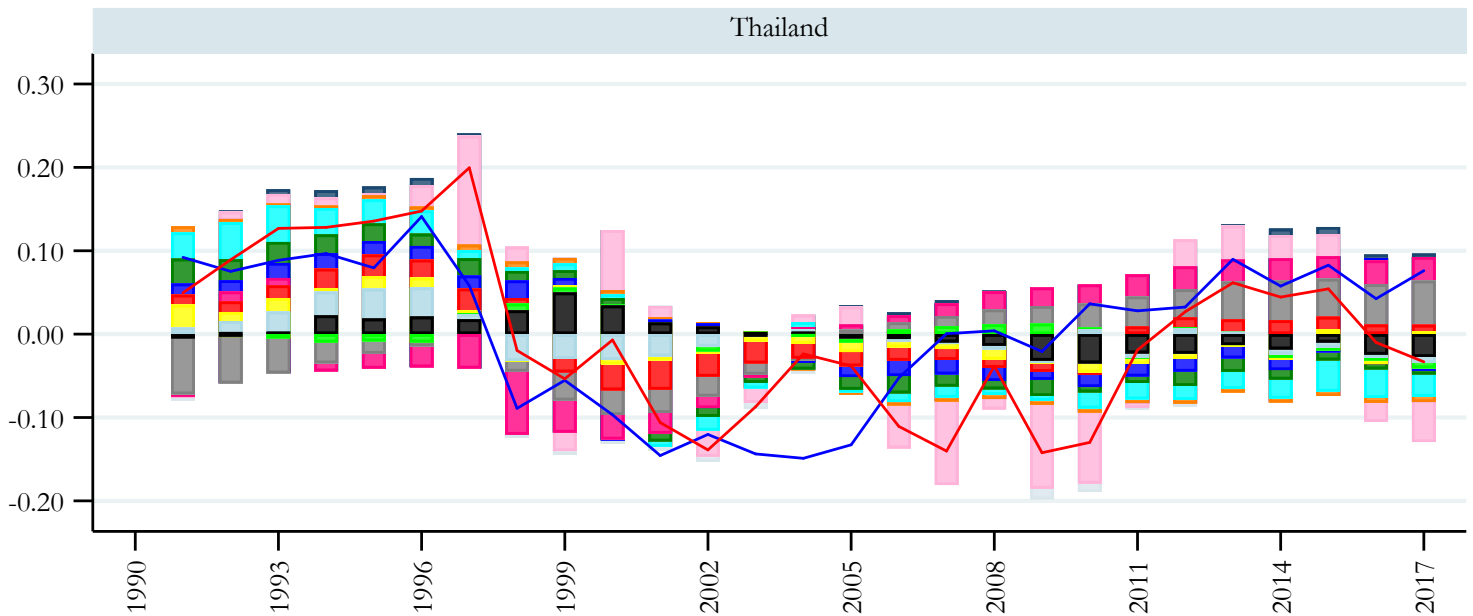
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year

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

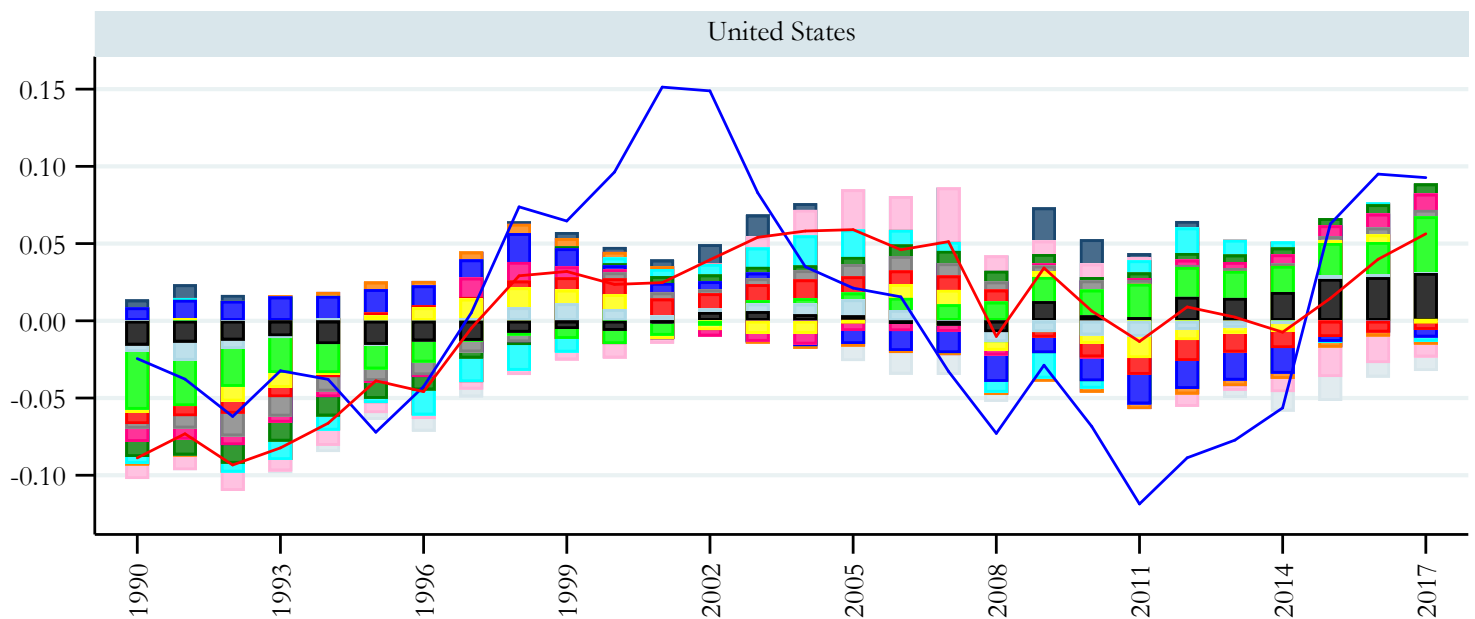
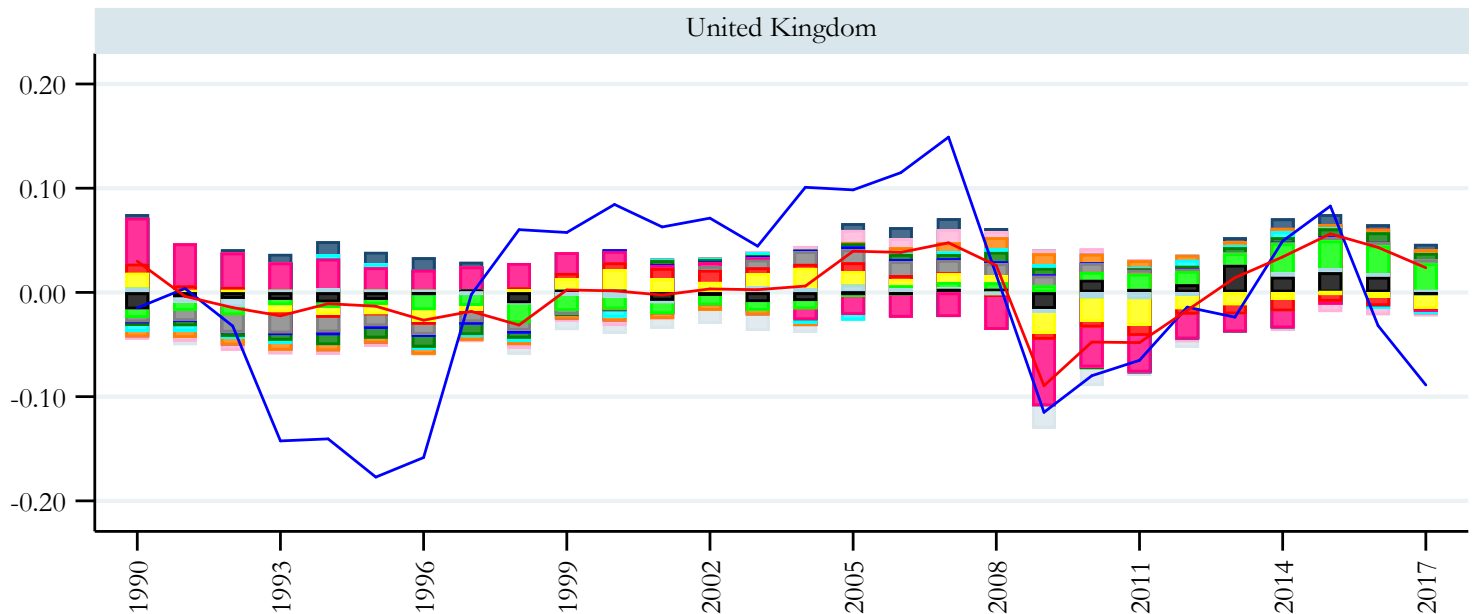


year

- 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)

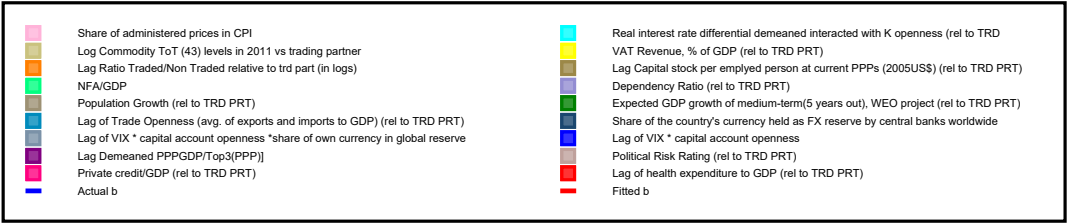
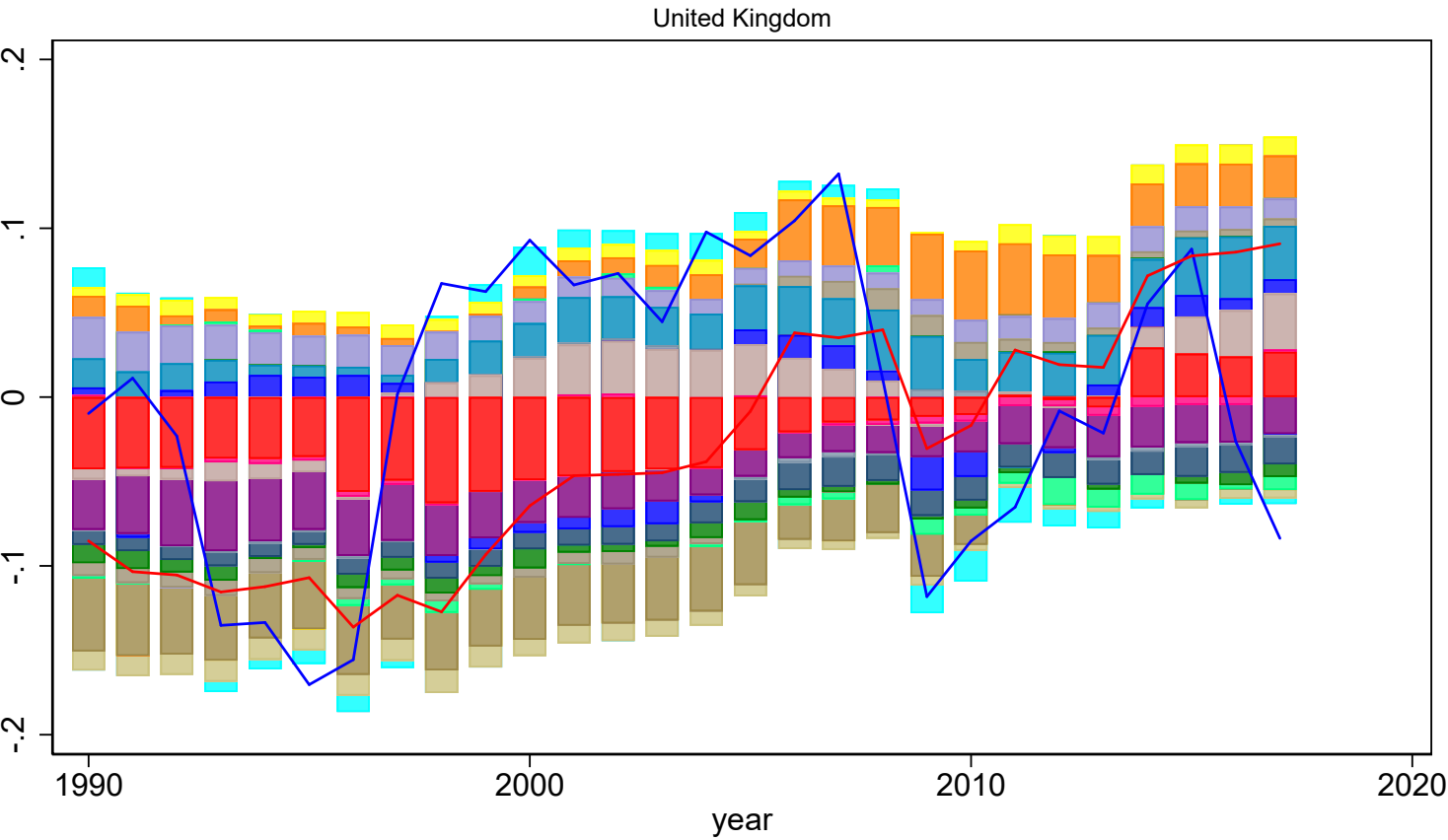
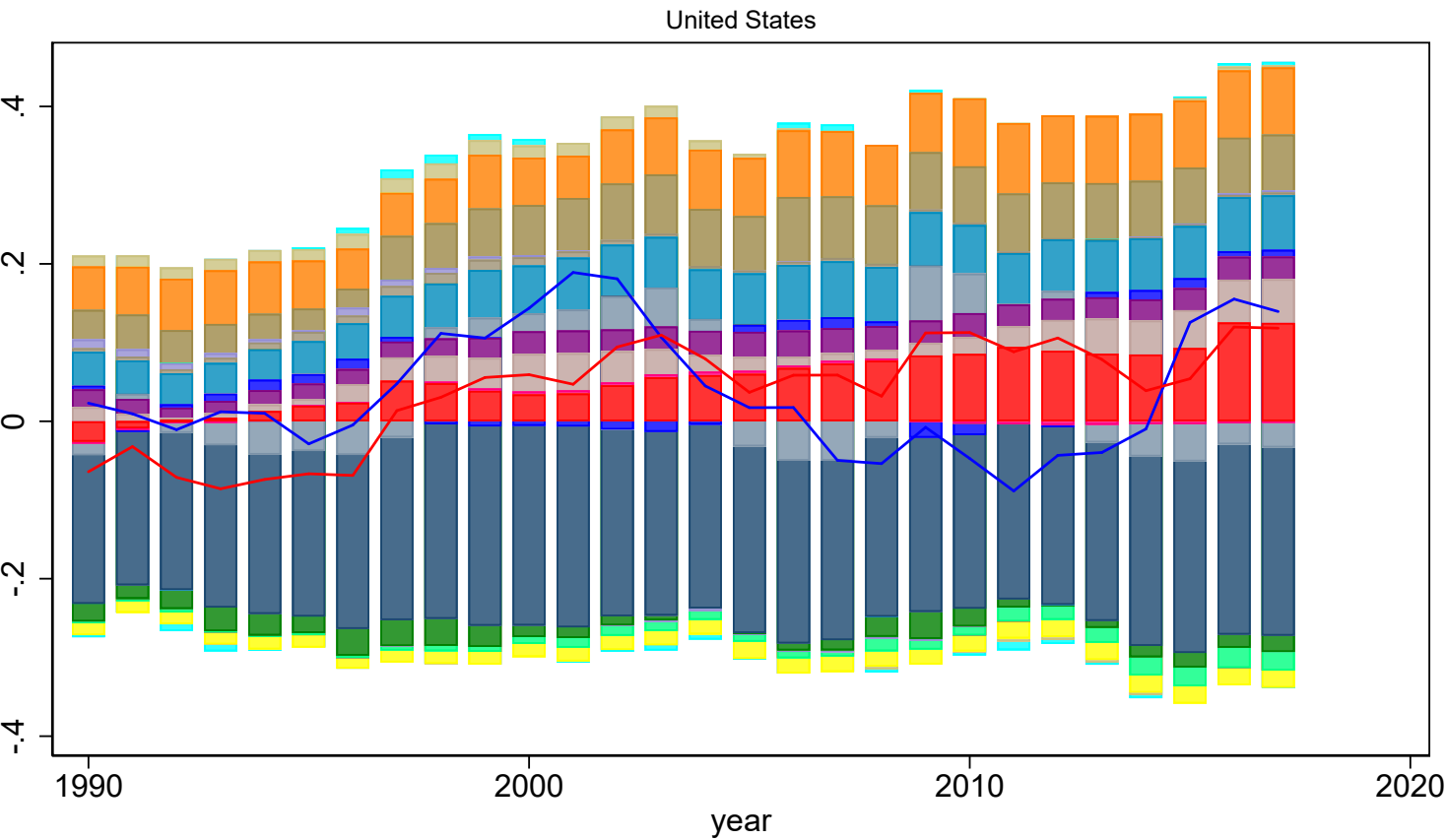


year

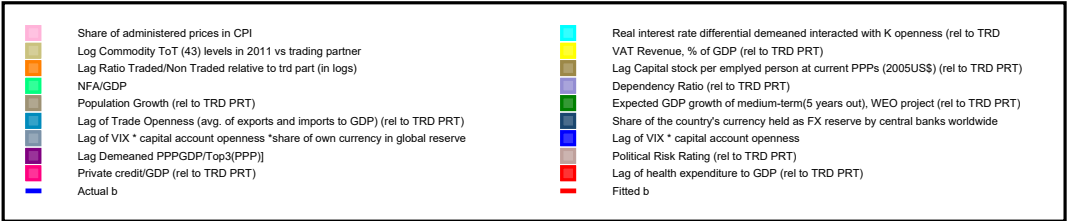
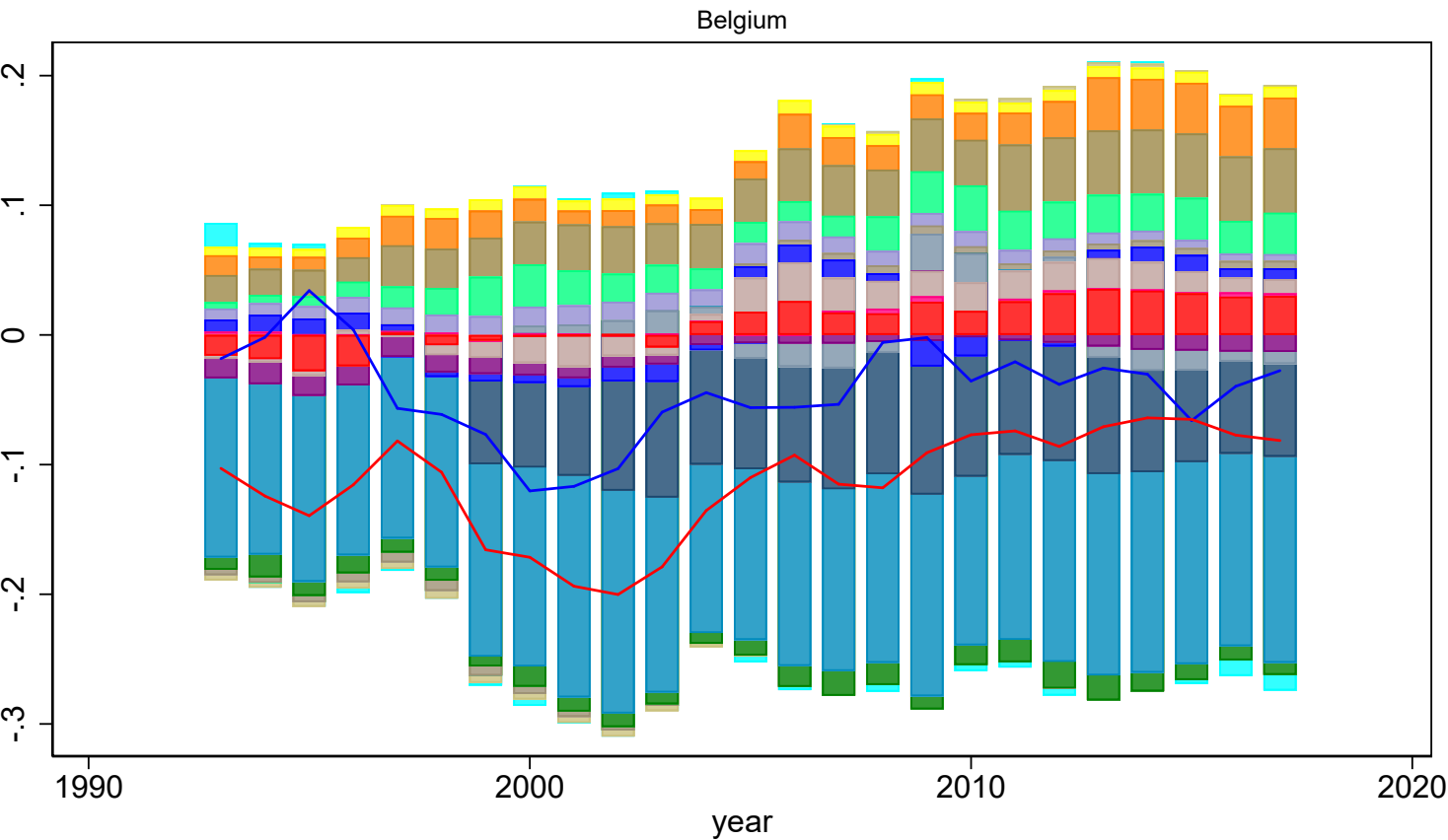
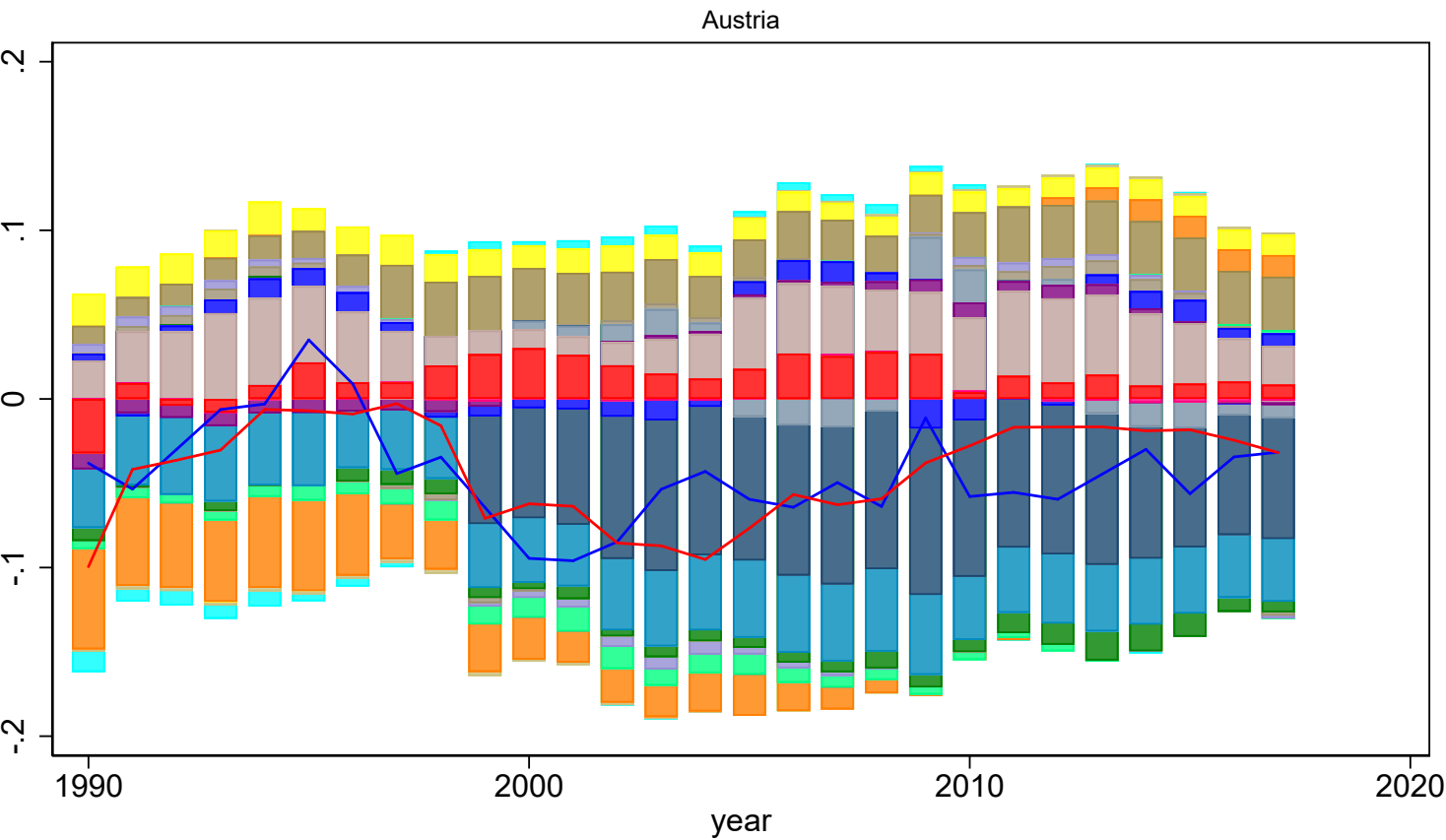
- |   |   |
|---|---|
| ■ VIX + Share of Reserves terms   | ■ Change in reserves to GDP*capital control (rel to TRD PRT)                  |
| ■ Share of administered prices  | ■ Population Growth (rel to TRD PRT)  |
| ■ Expected GDP growth of medium-term (rel to TRD PRT)                         | ■ Lag 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  |

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

# EBA - Contributions to the REER (level) Fitted Values

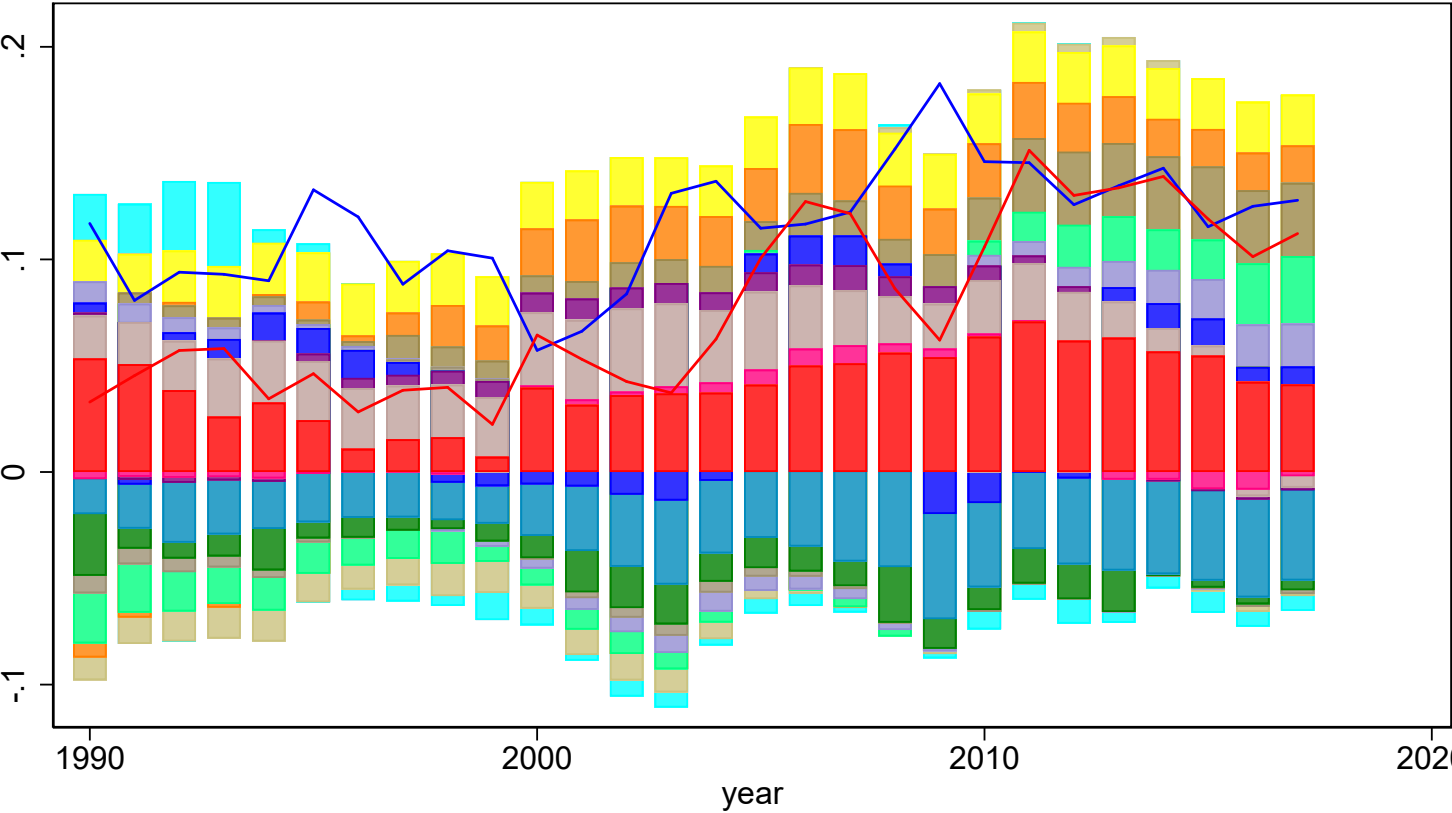


# EBA - Contributions to the REER (level) Fitted Values

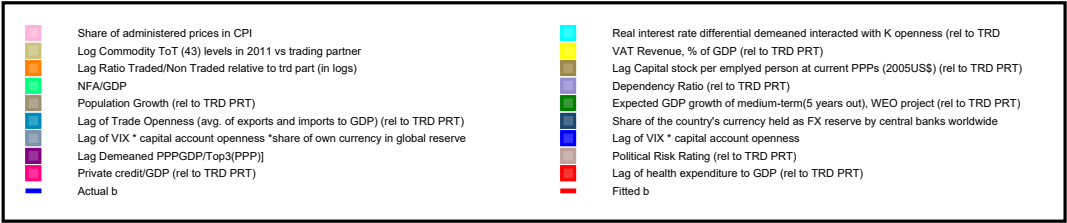
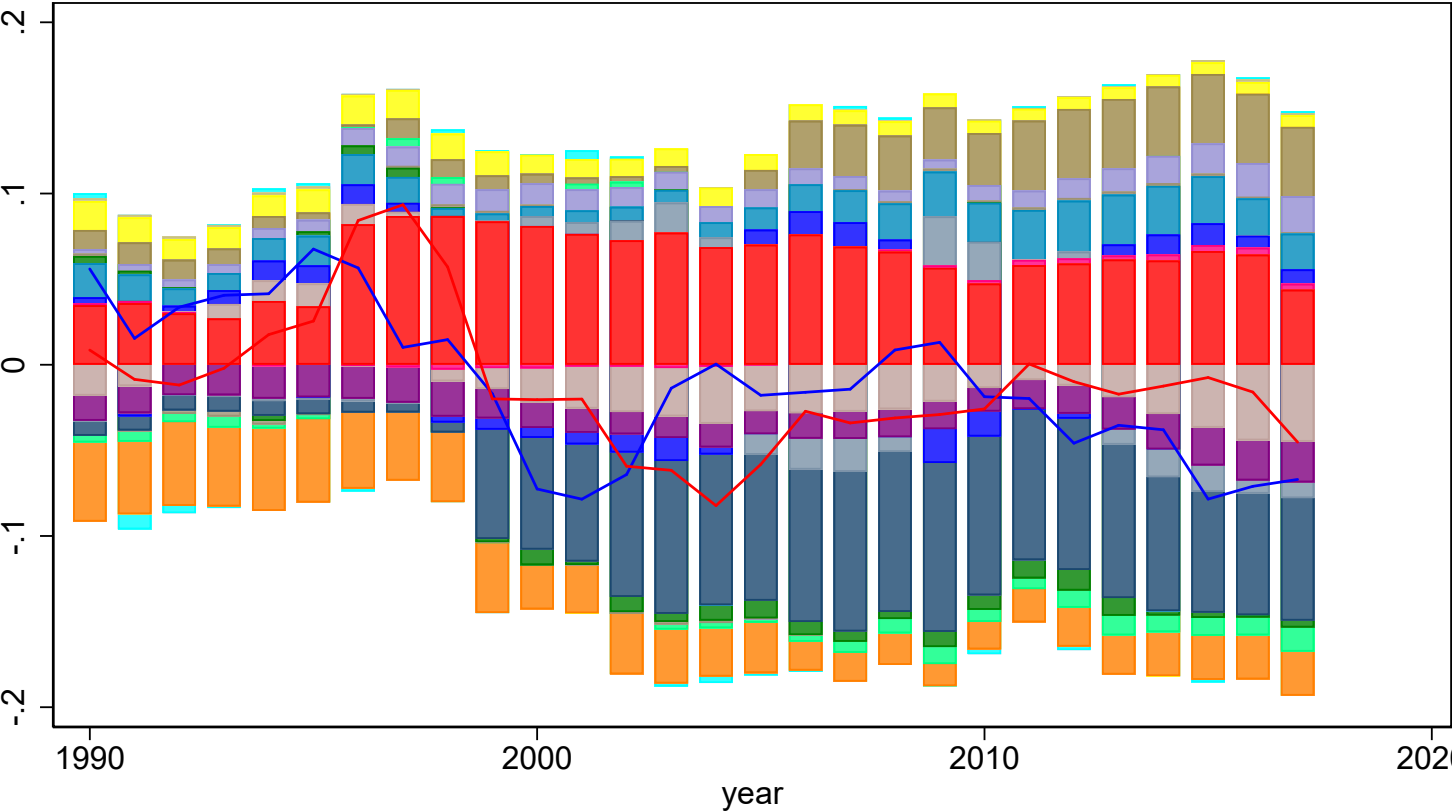


# EBA - Contributions to the REER (level) Fitted Values

Denmark

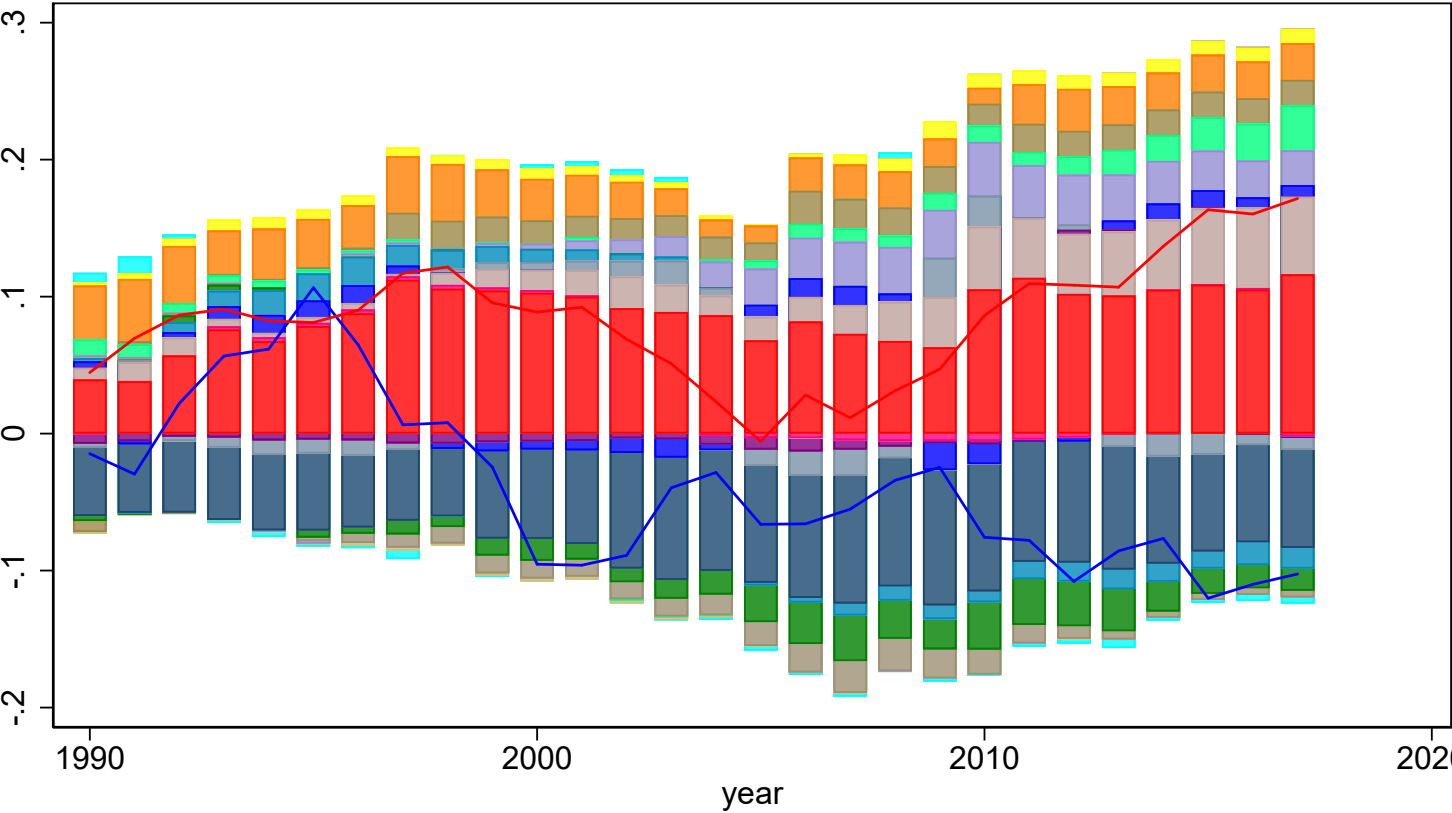


France

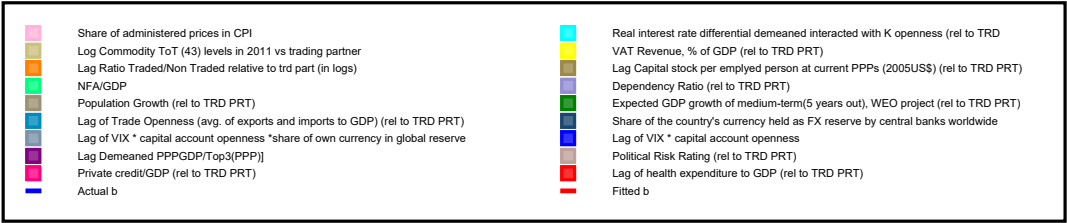
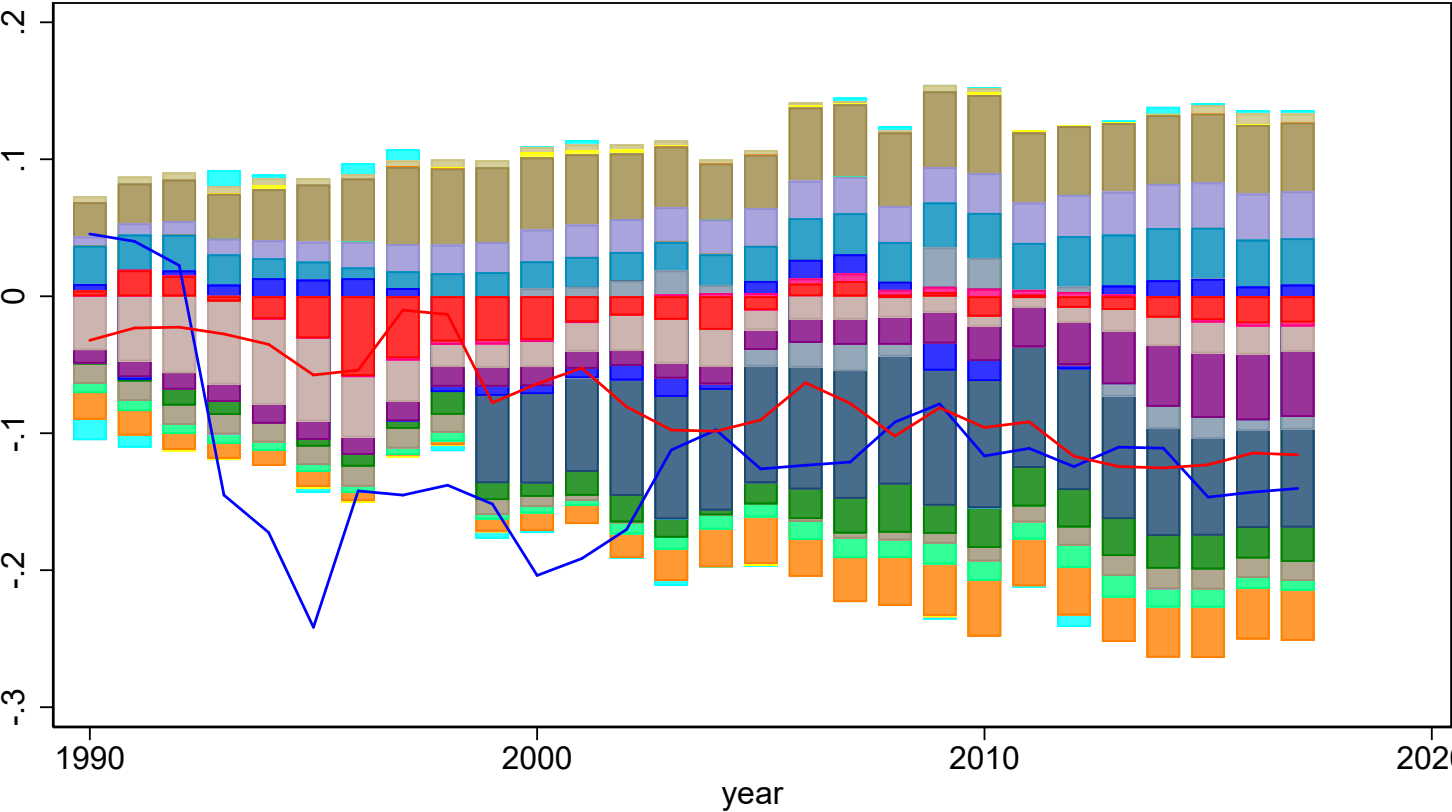


# EBA - Contributions to the REER (level) Fitted Values

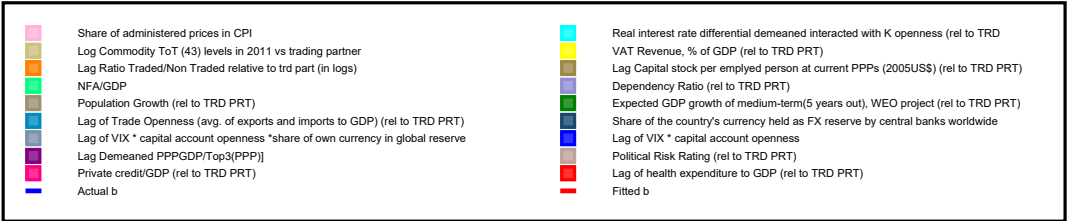
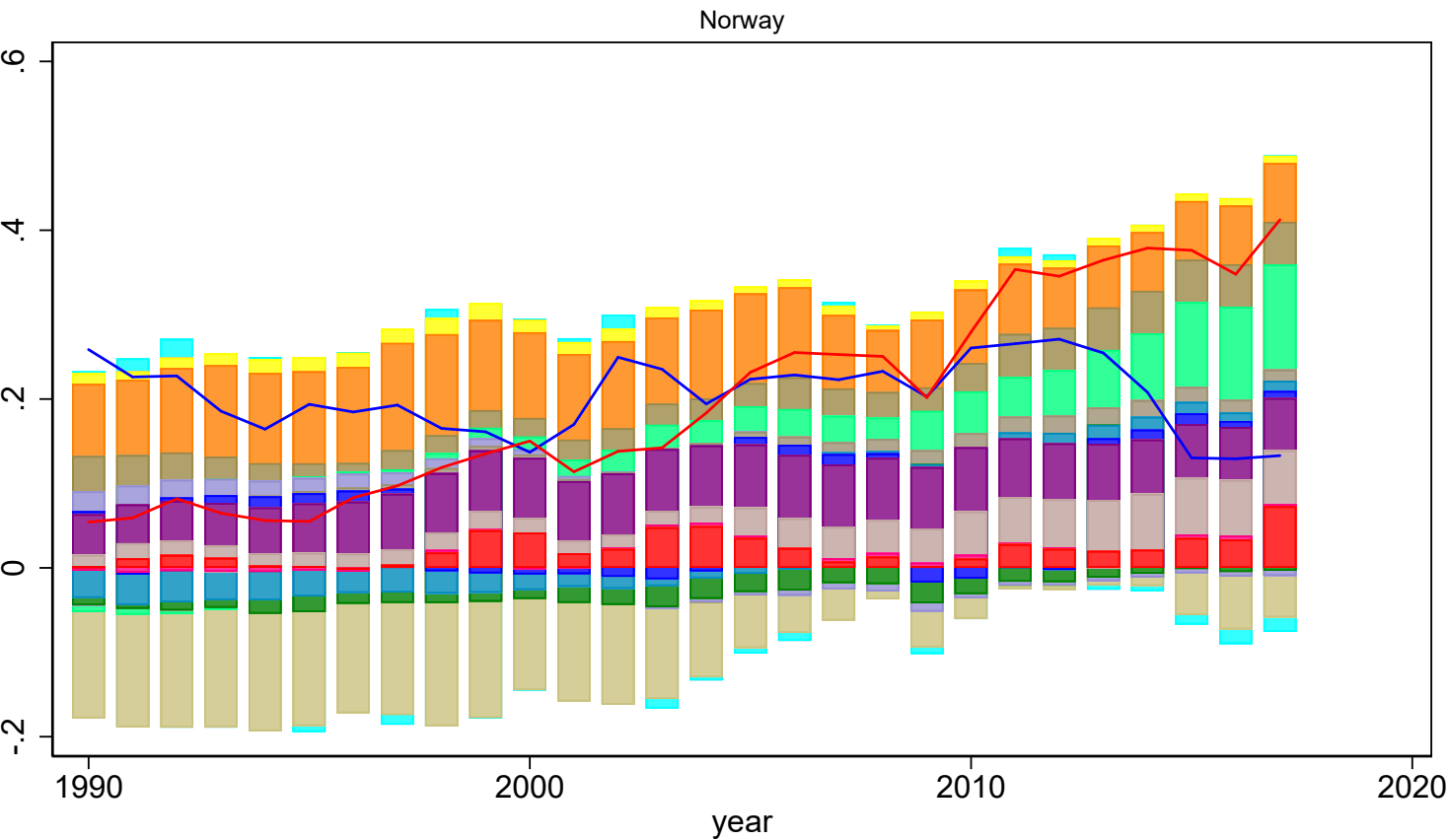
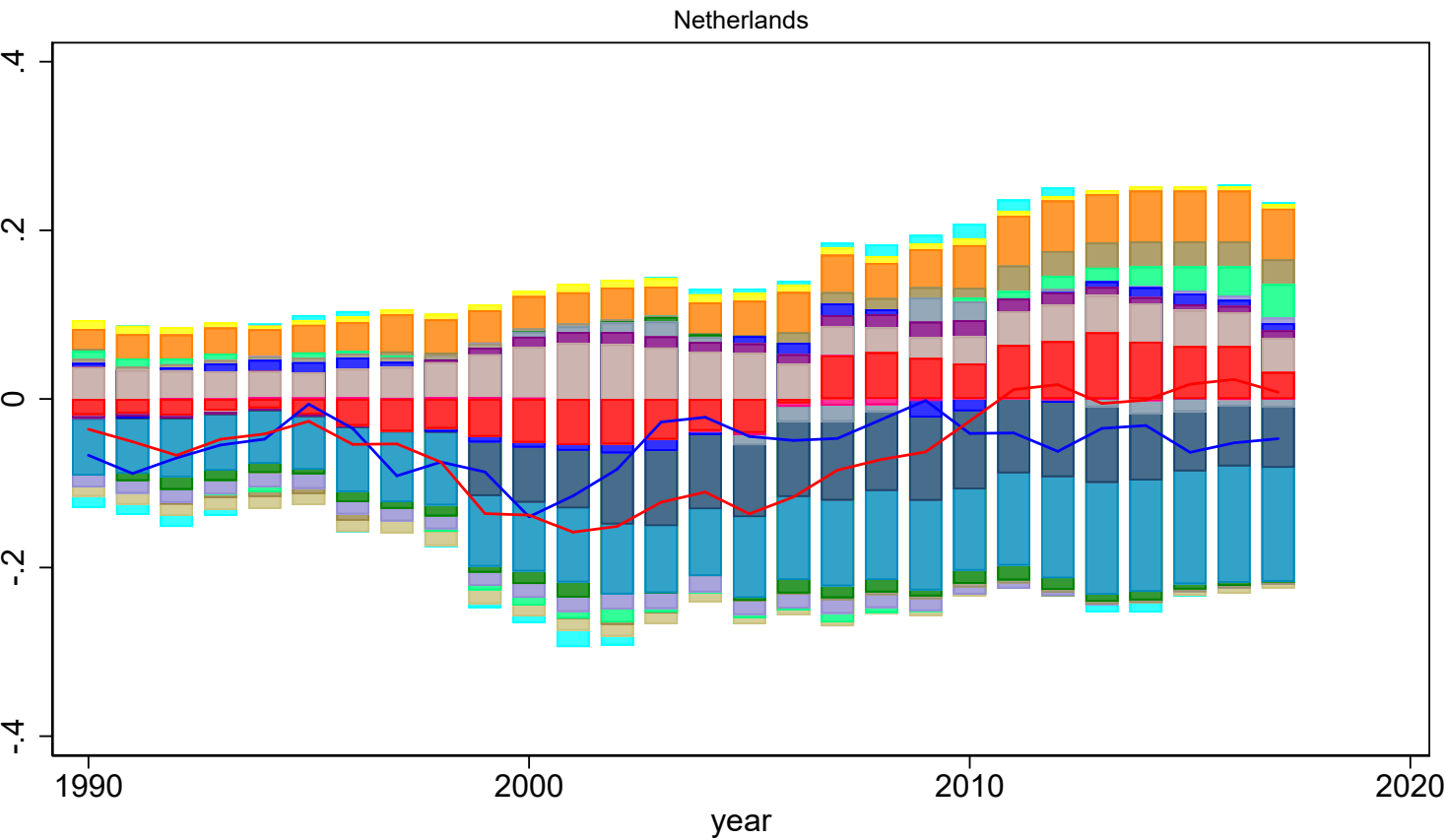
Germany



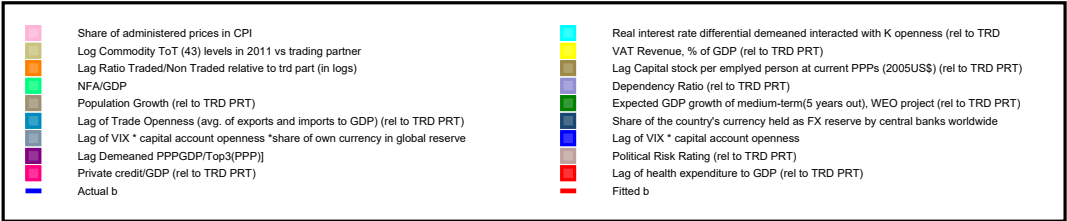
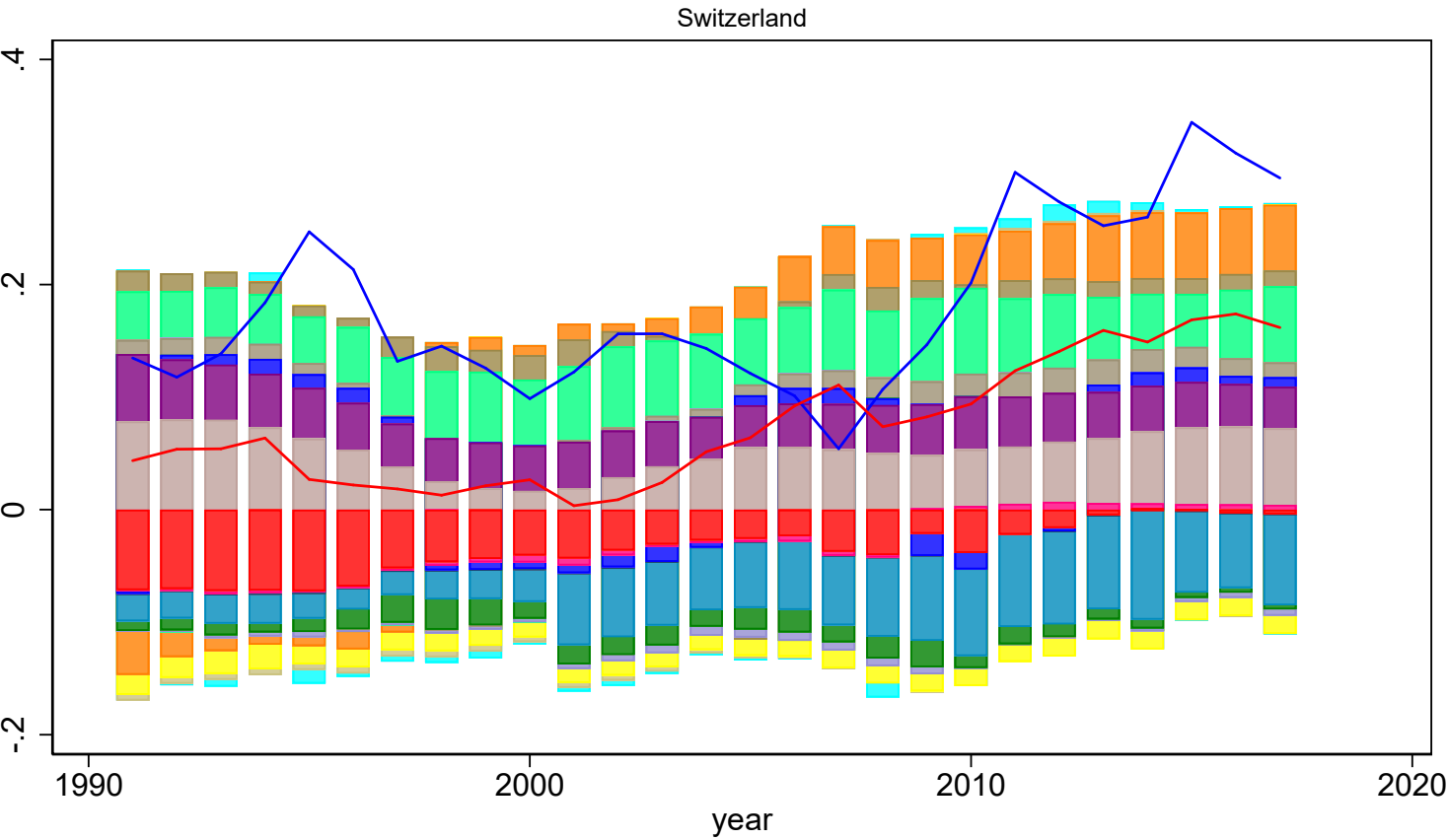
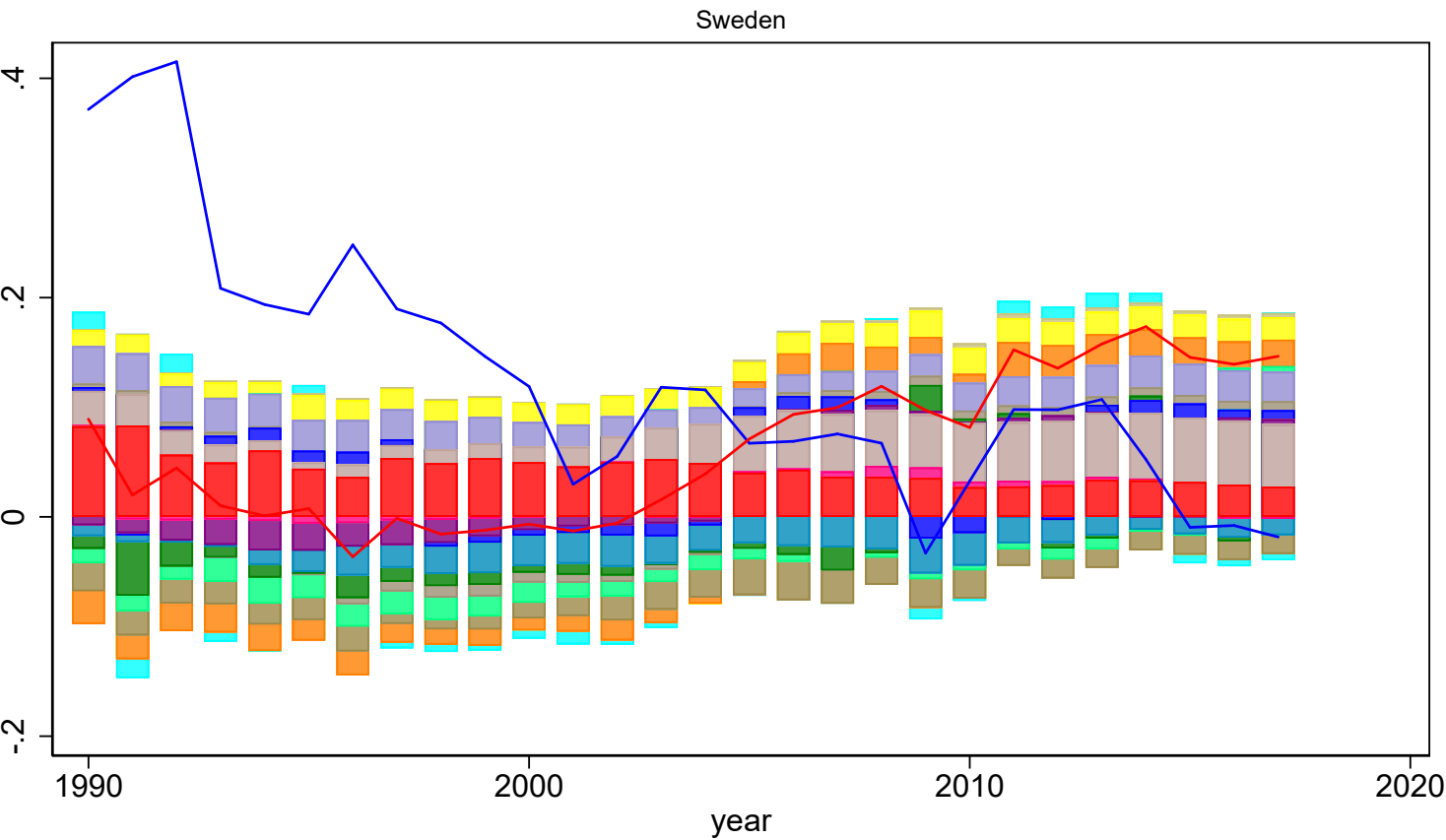
Italy



# EBA - Contributions to the REER (level) Fitted Values

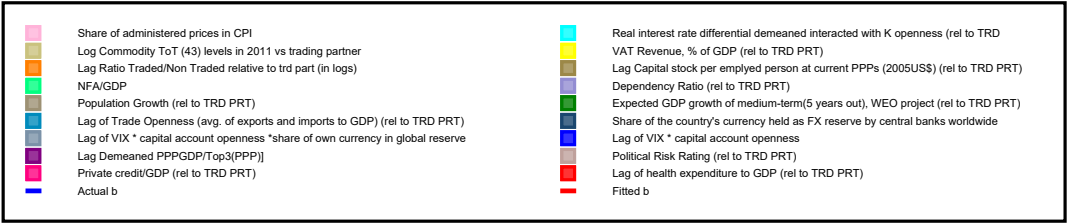
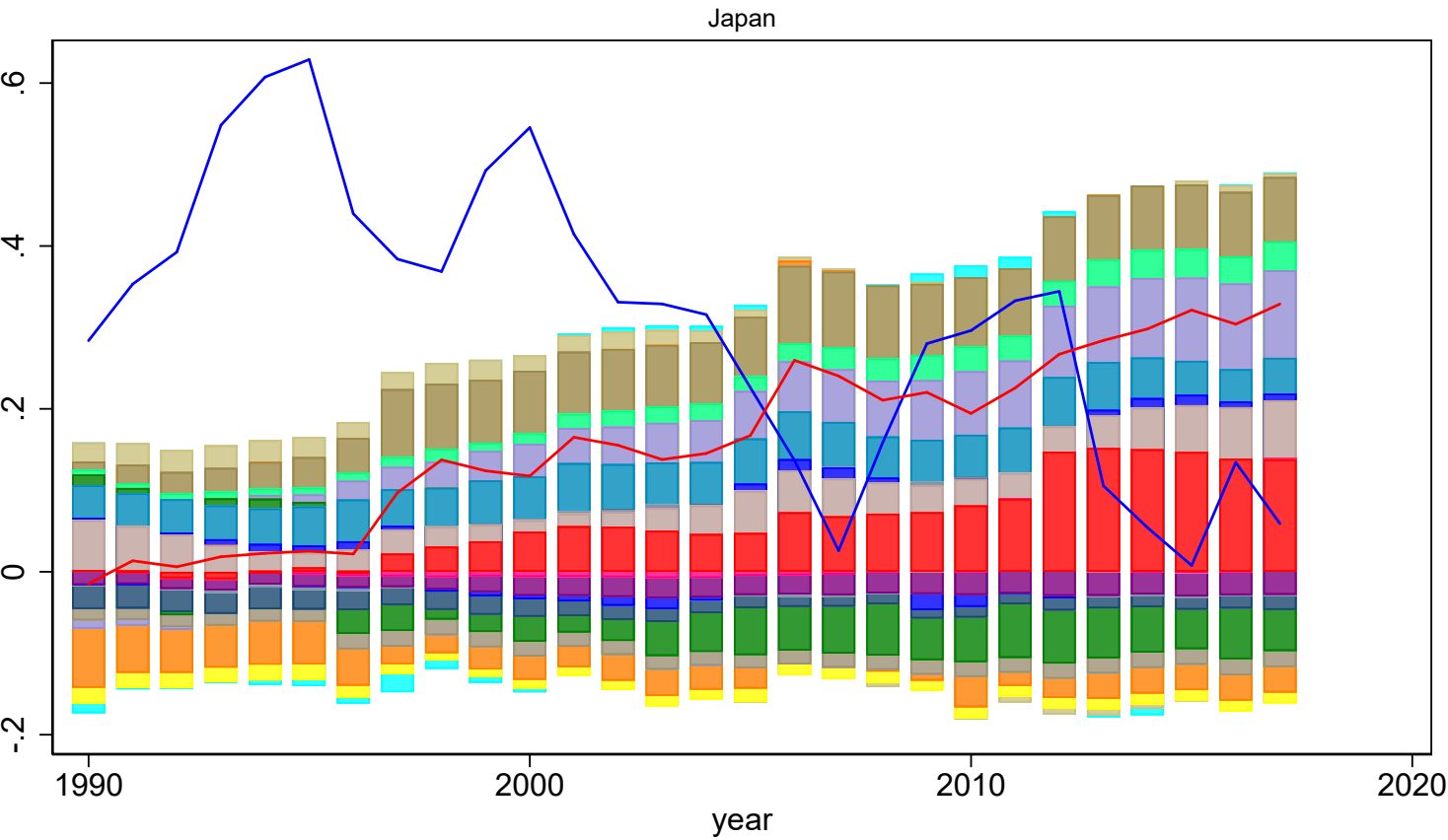
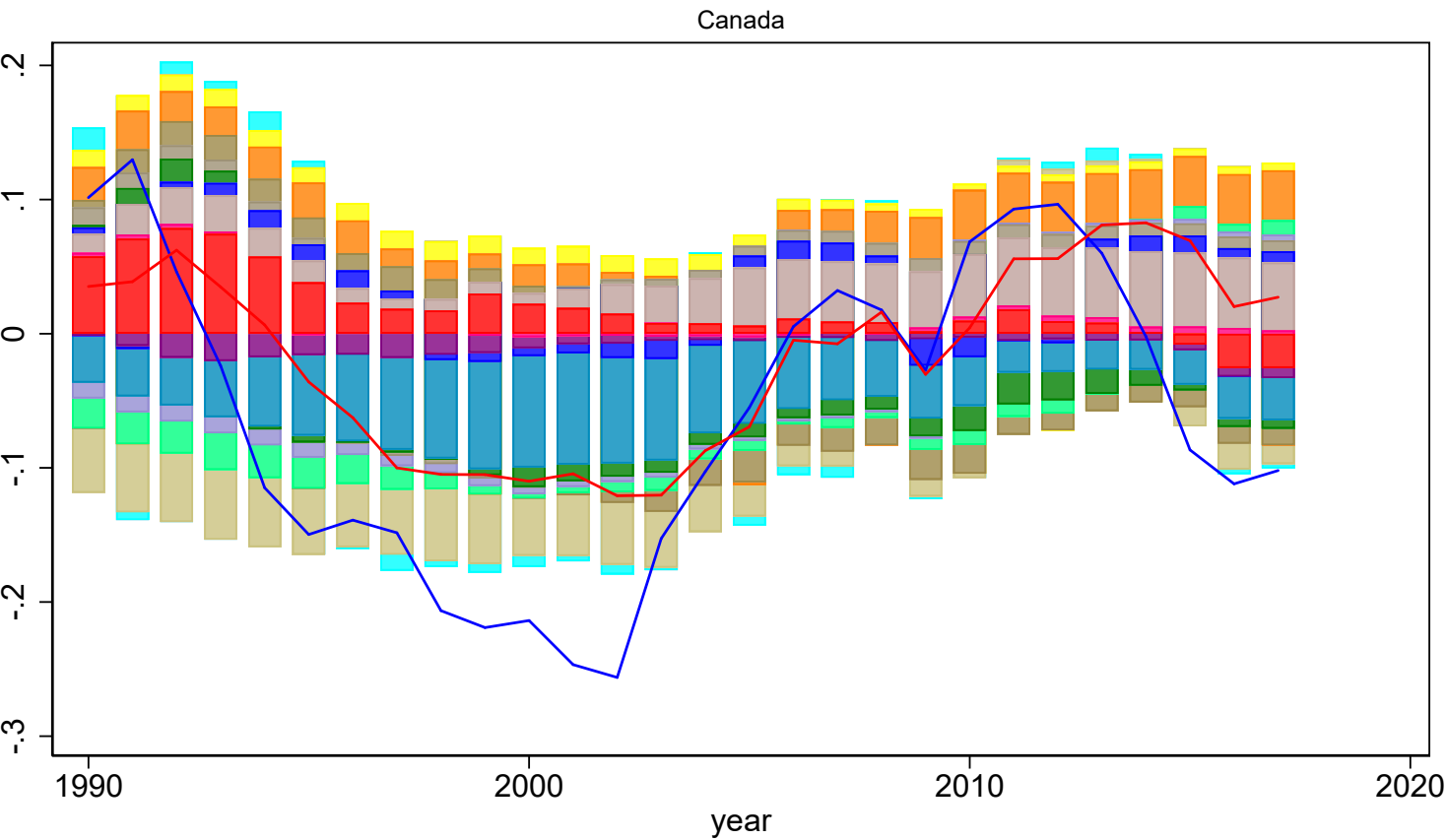


# EBA - Contributions to the REER (level) Fitted Values

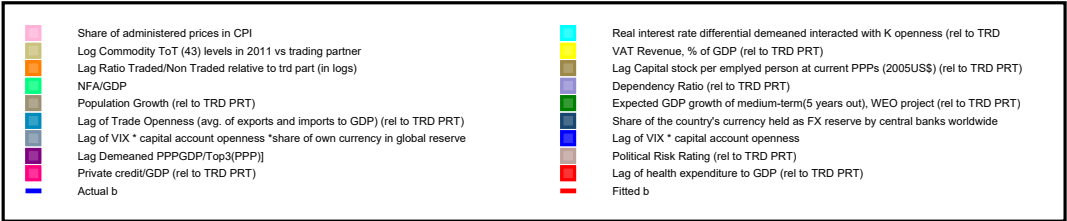
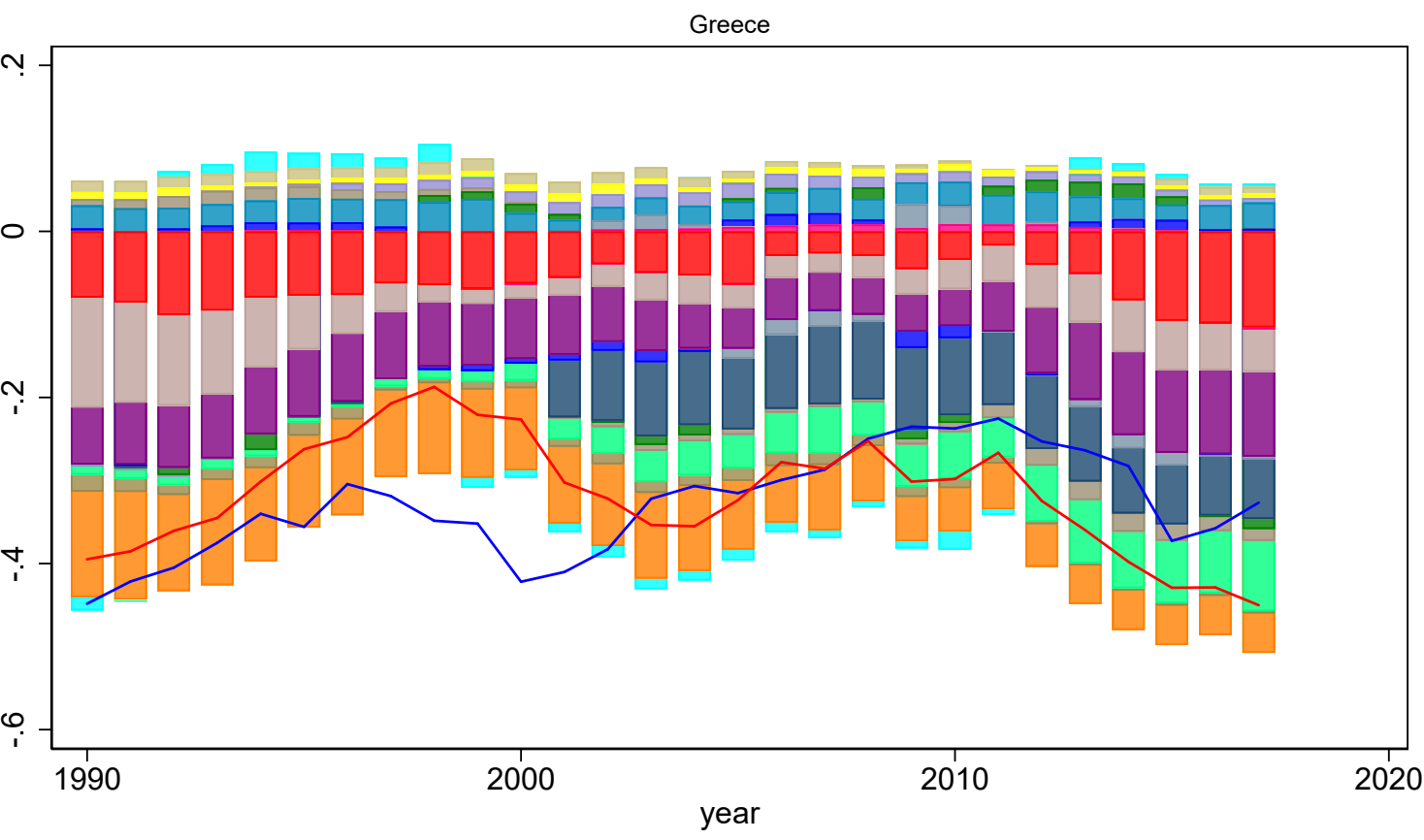
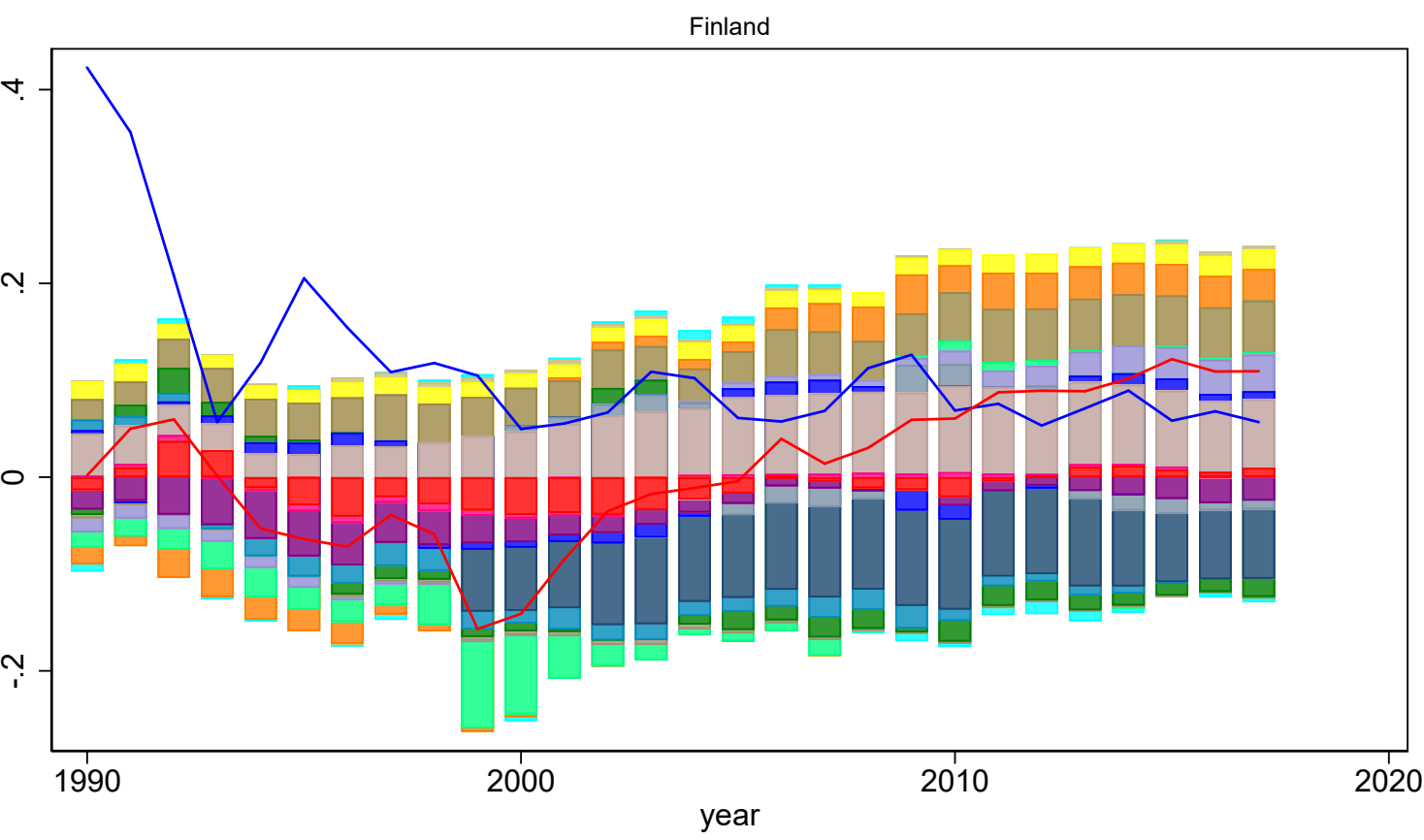




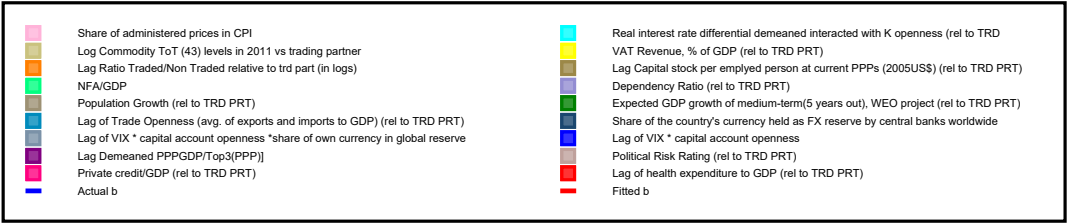
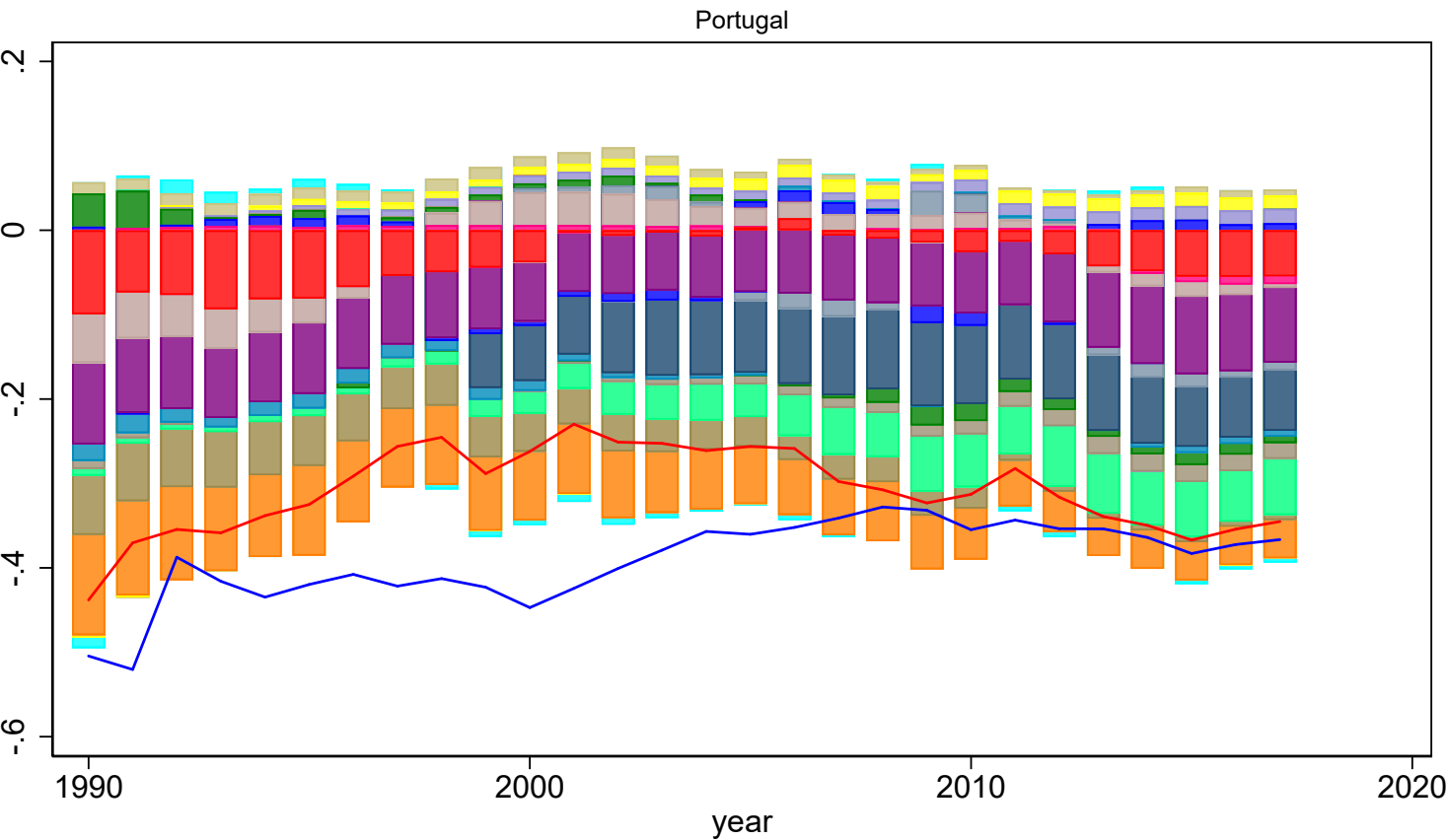
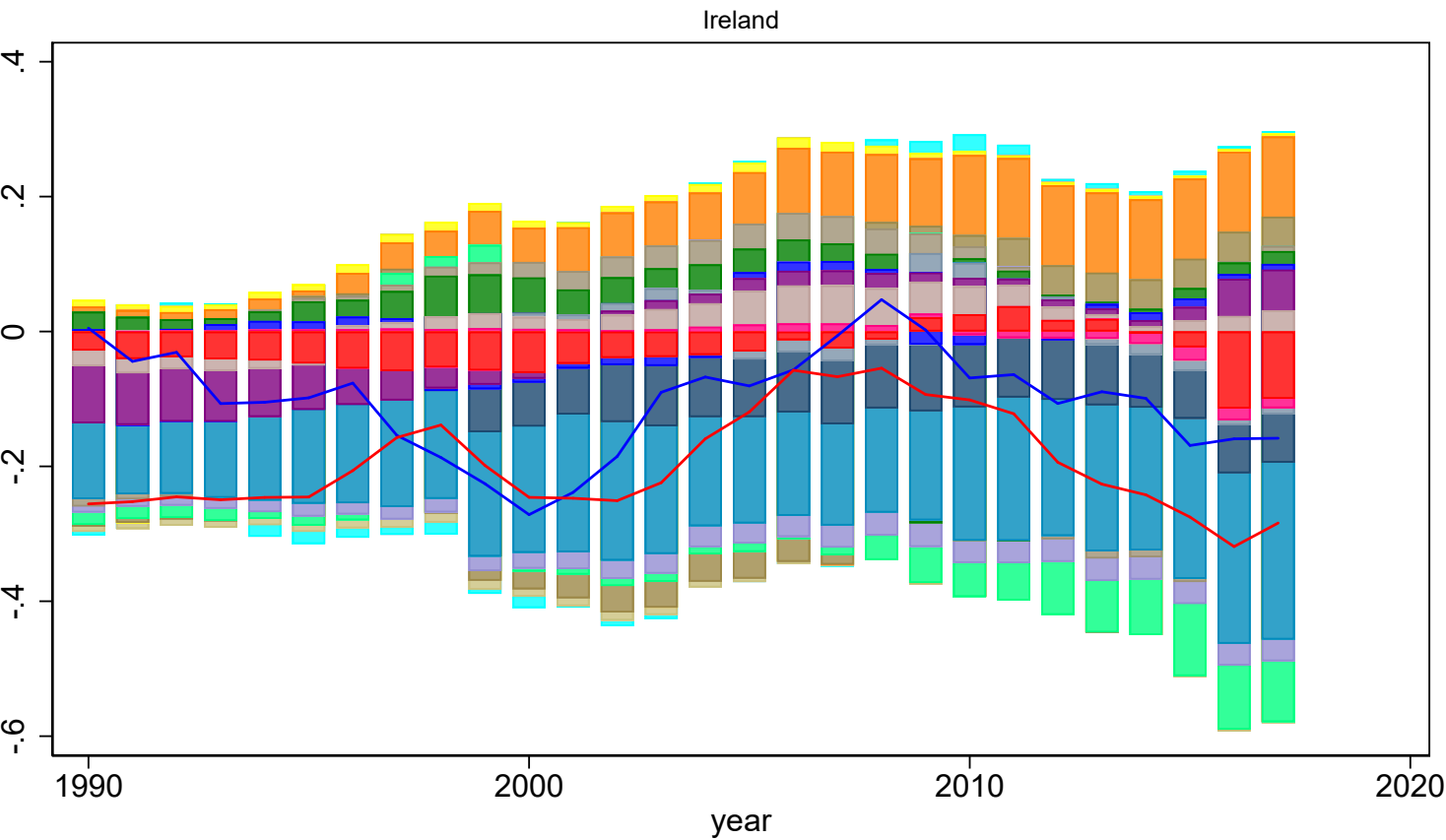
# EBA - Contributions to the REER (level) Fitted Values



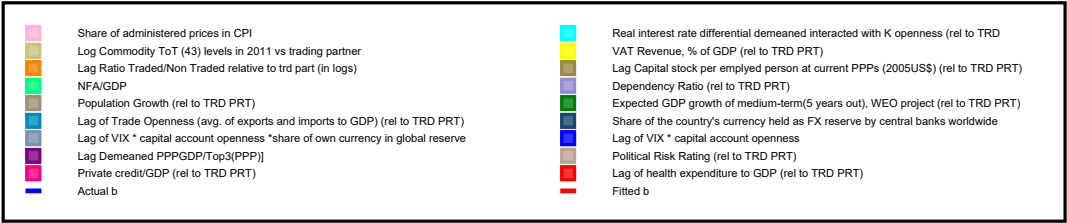
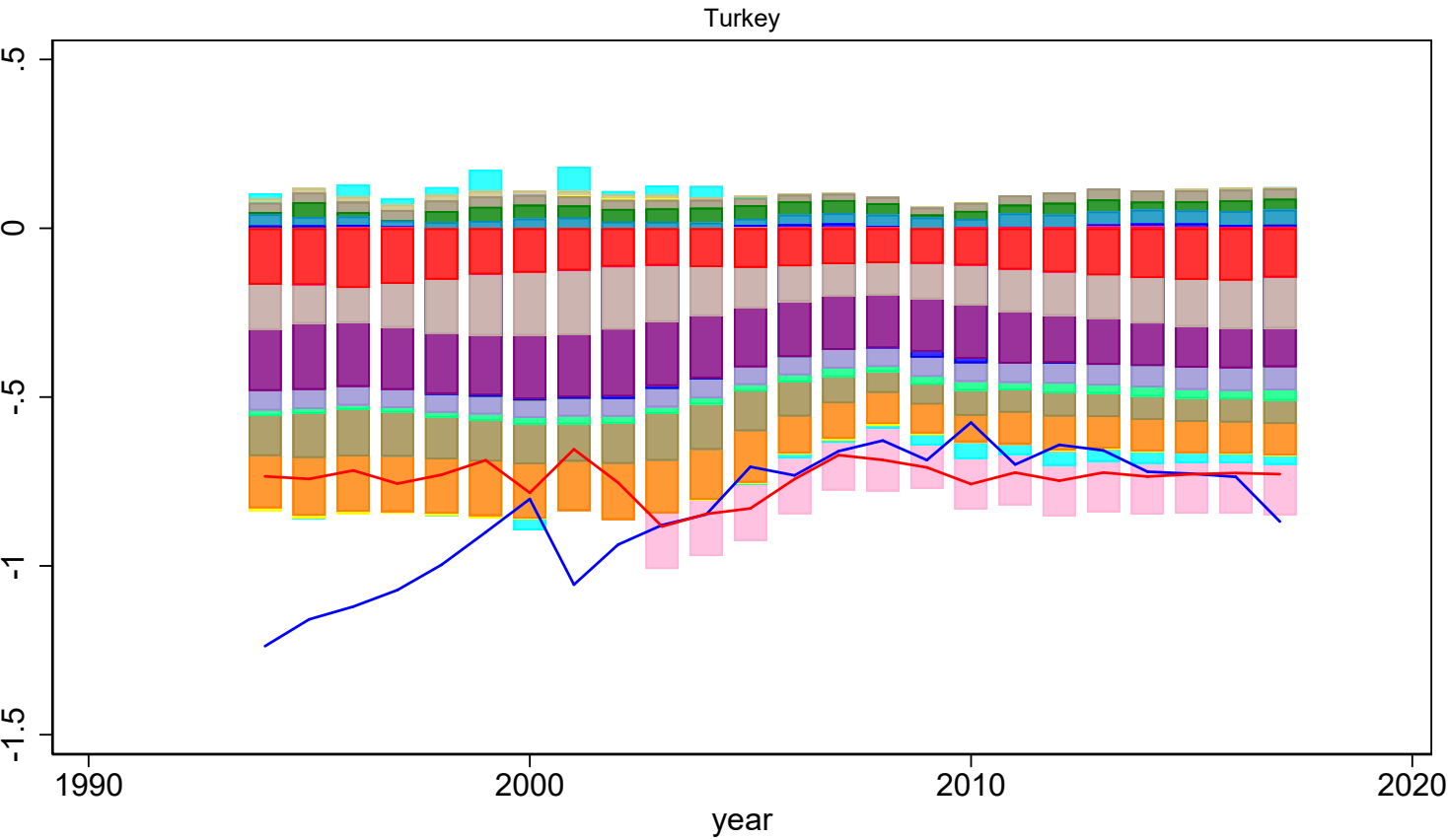
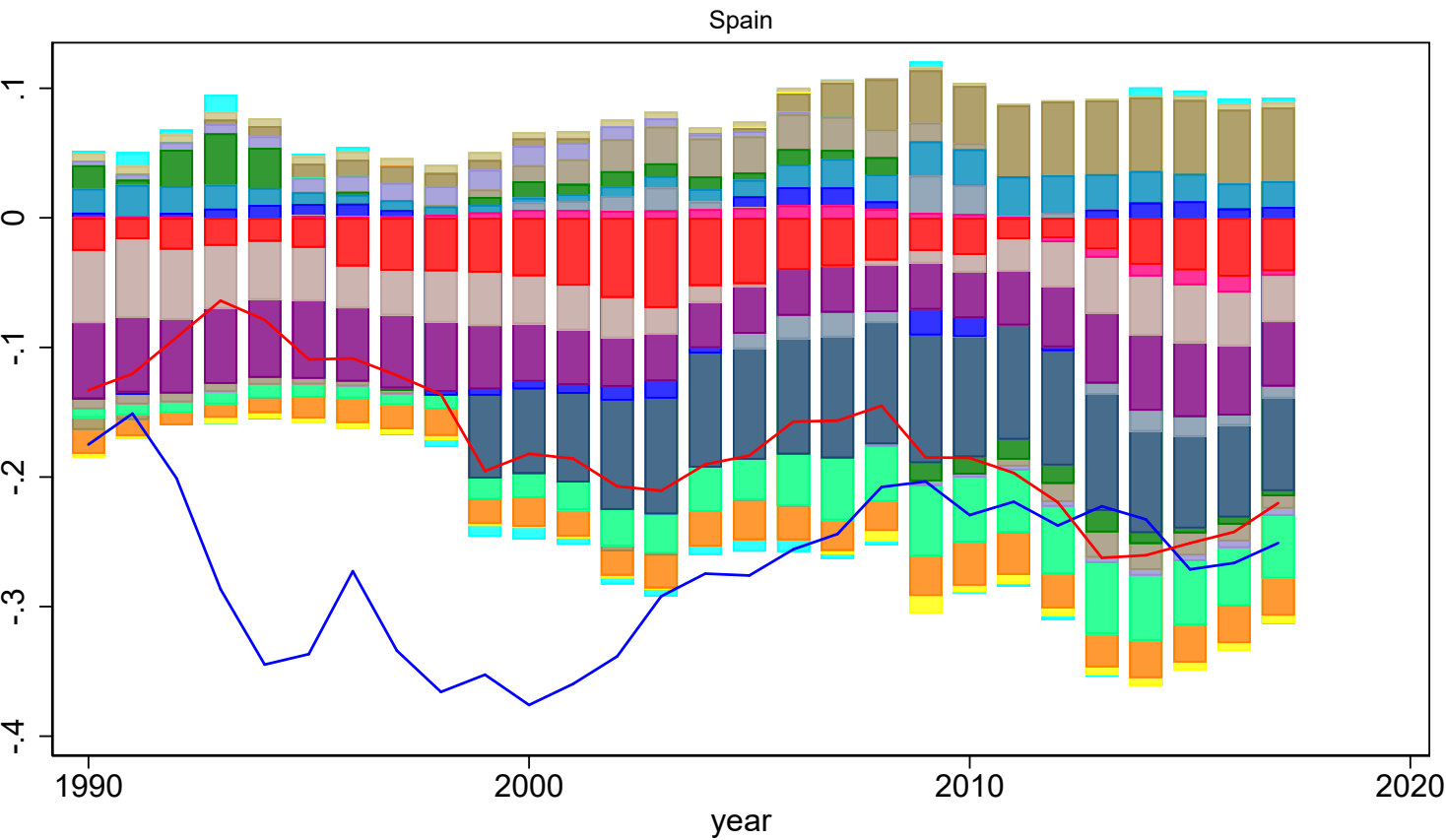
# EBA - Contributions to the REER (level) Fitted Values



# EBA - Contributions to the REER (level) Fitted Values

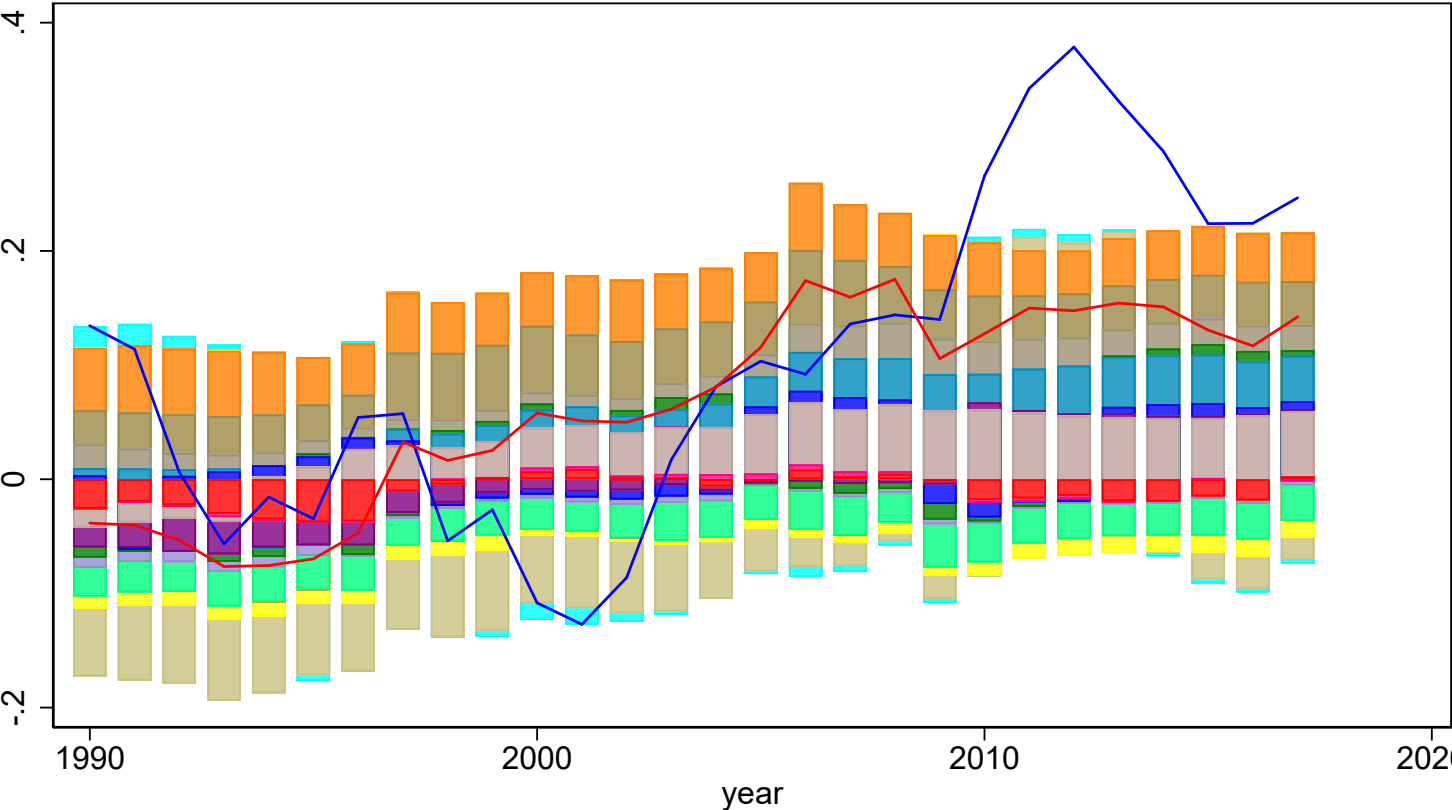


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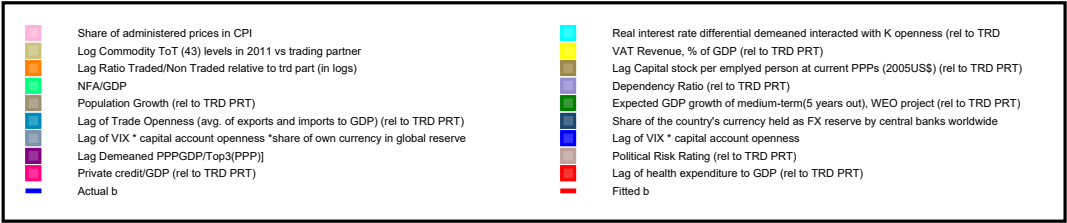
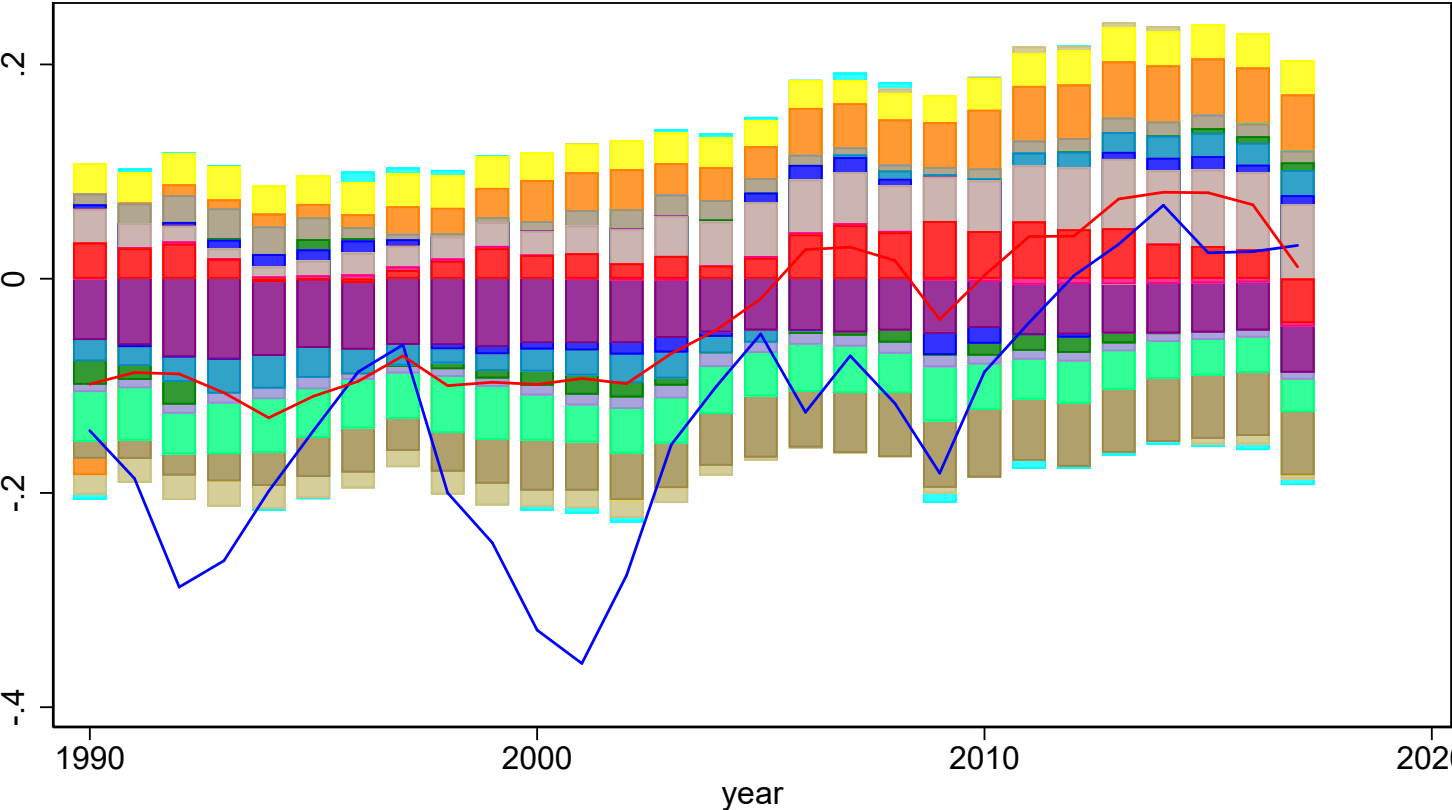


# EBA - Contributions to the REER (level) Fitted Values

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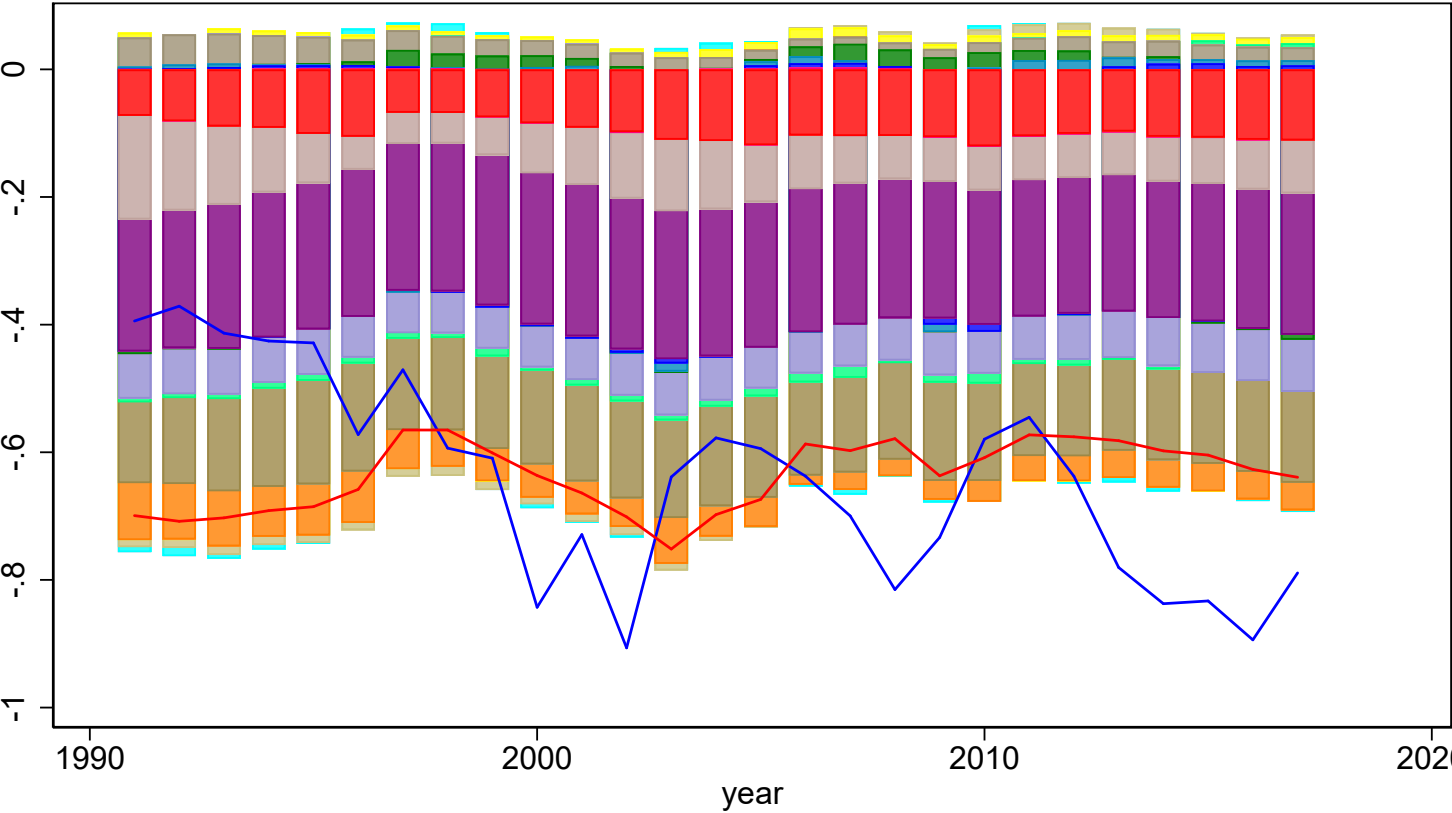


New Zealand

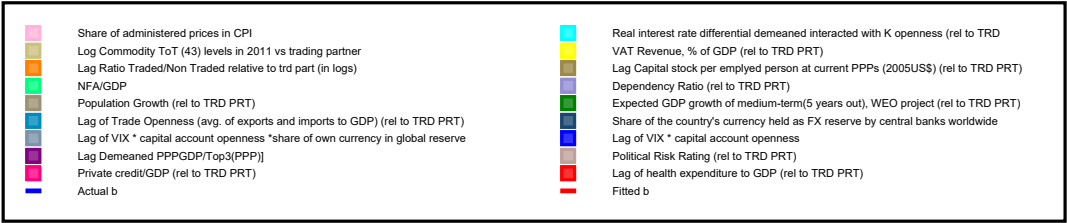
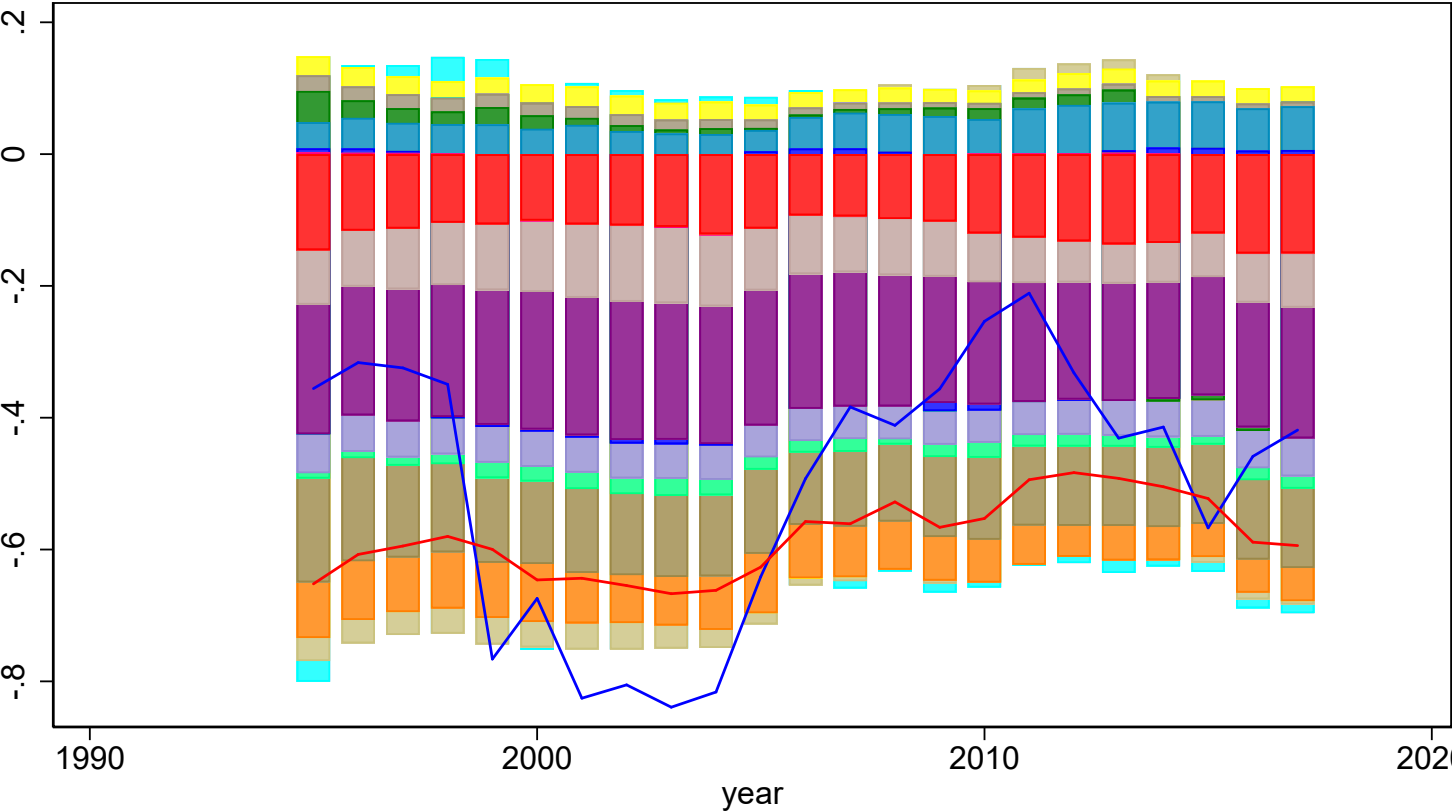


# EBA - Contributions to the REER (level) Fitted Values

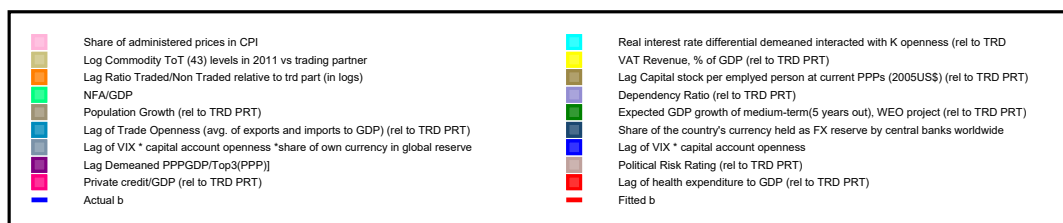
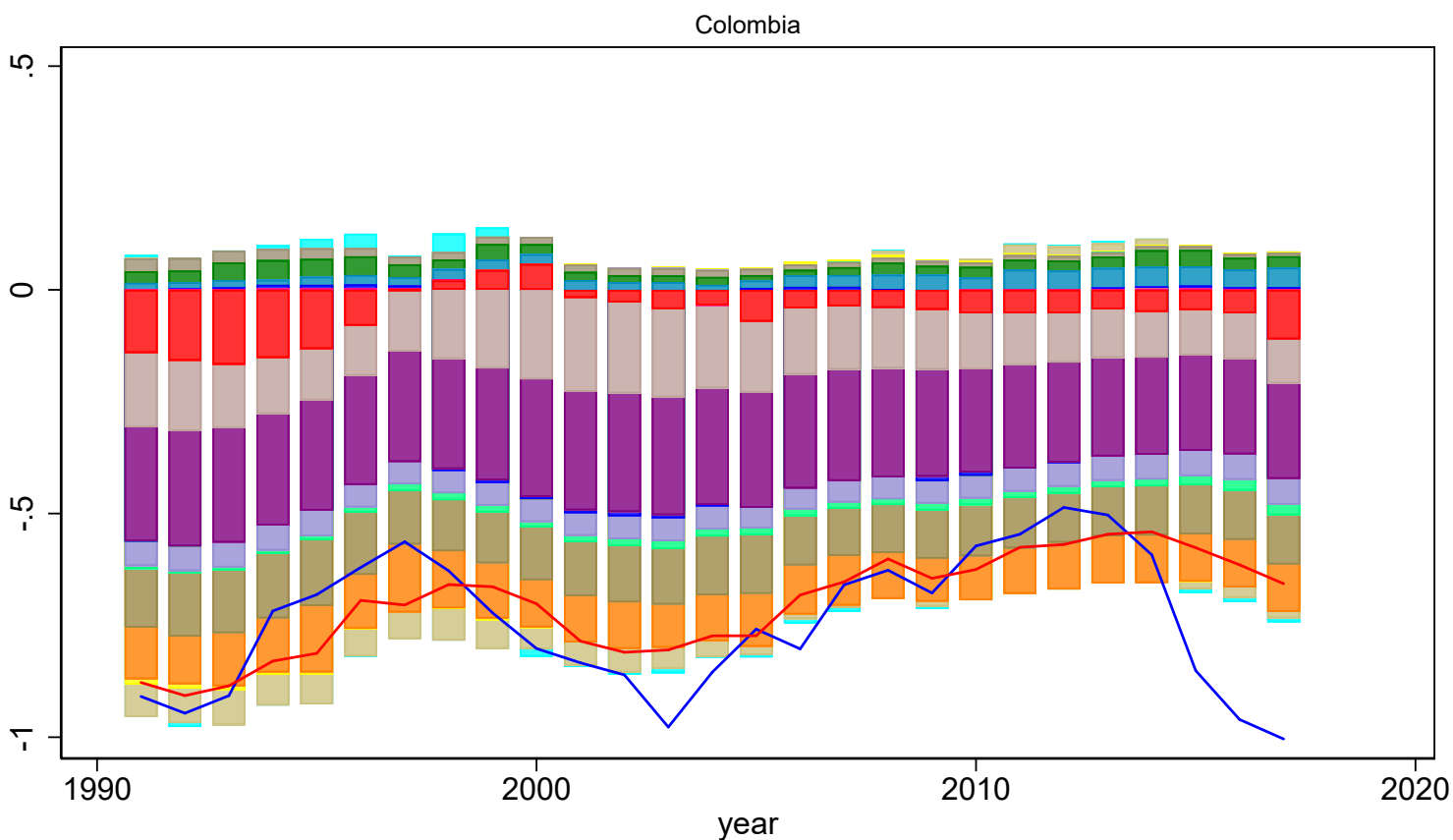
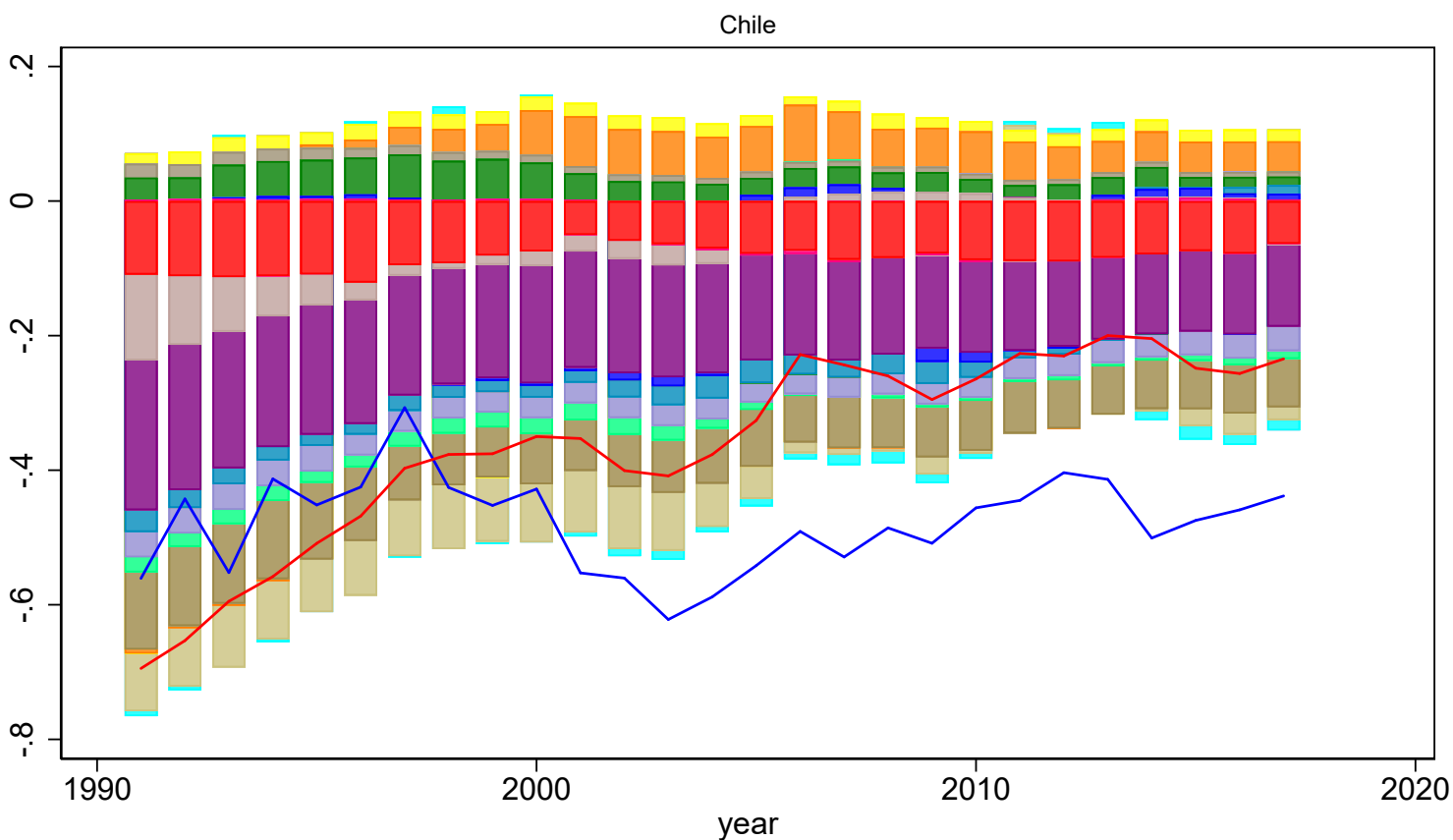
South Africa



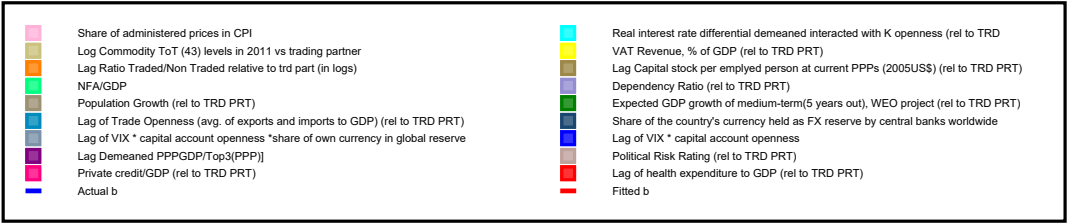
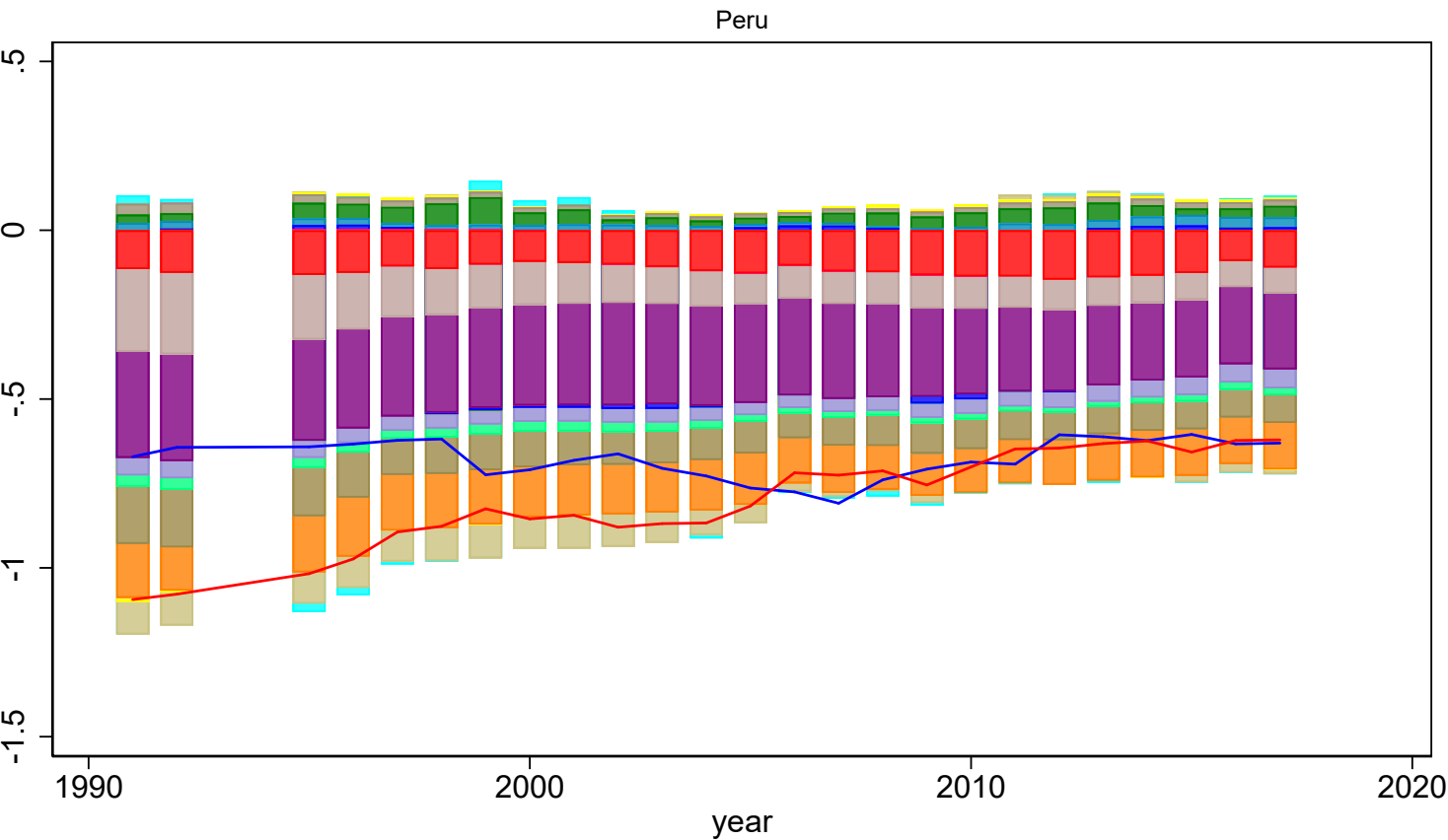
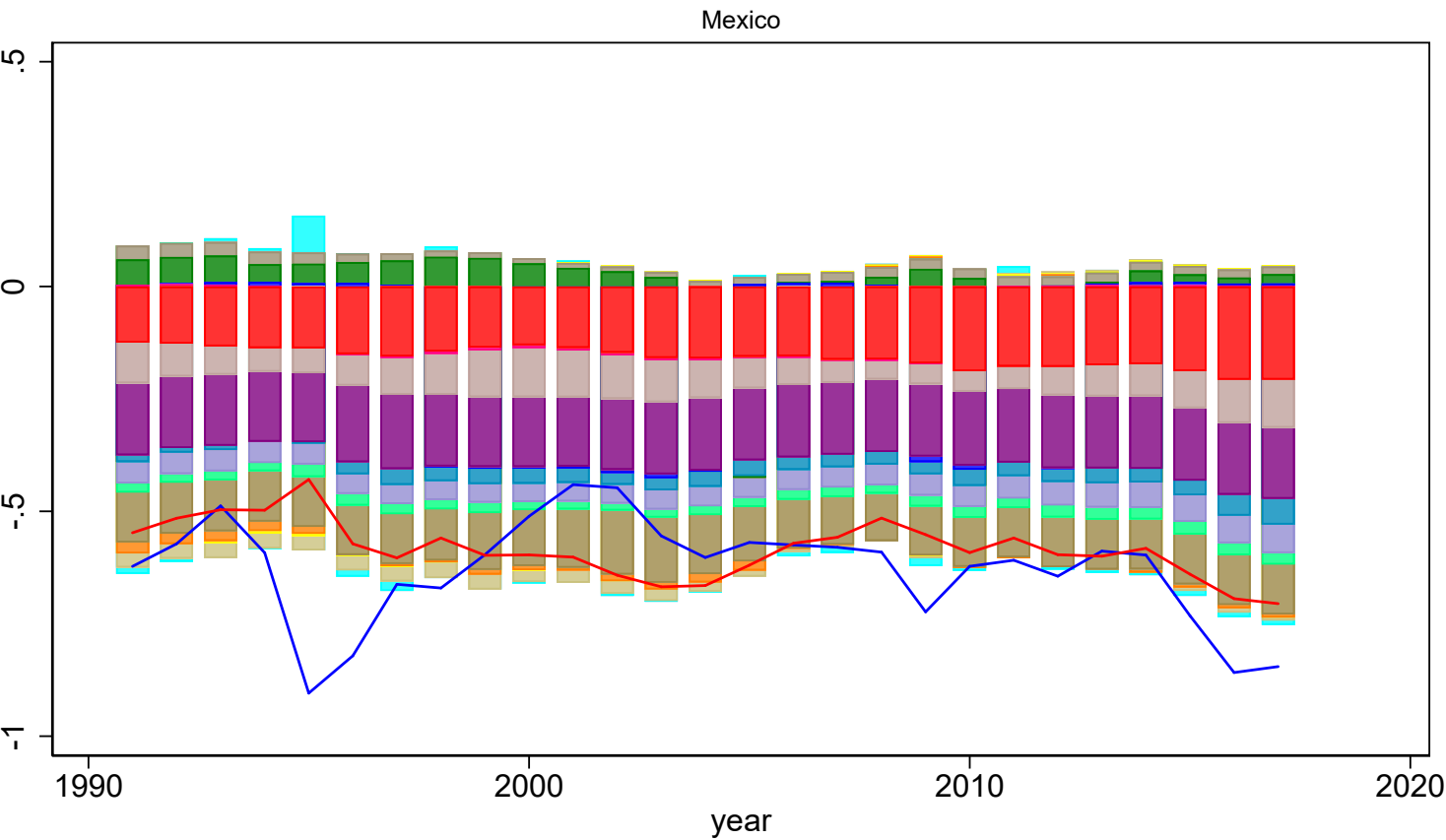
Brazil



# EBA - Contributions to the REER (level) Fitted Values

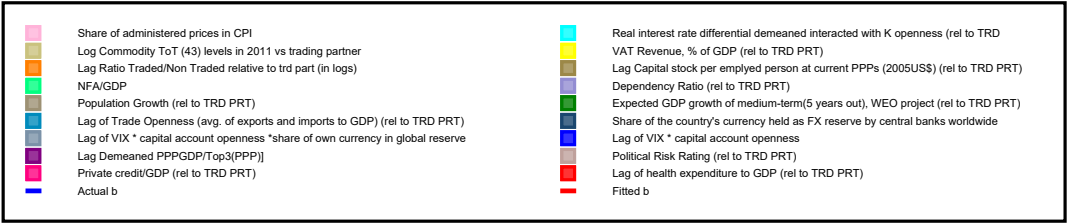
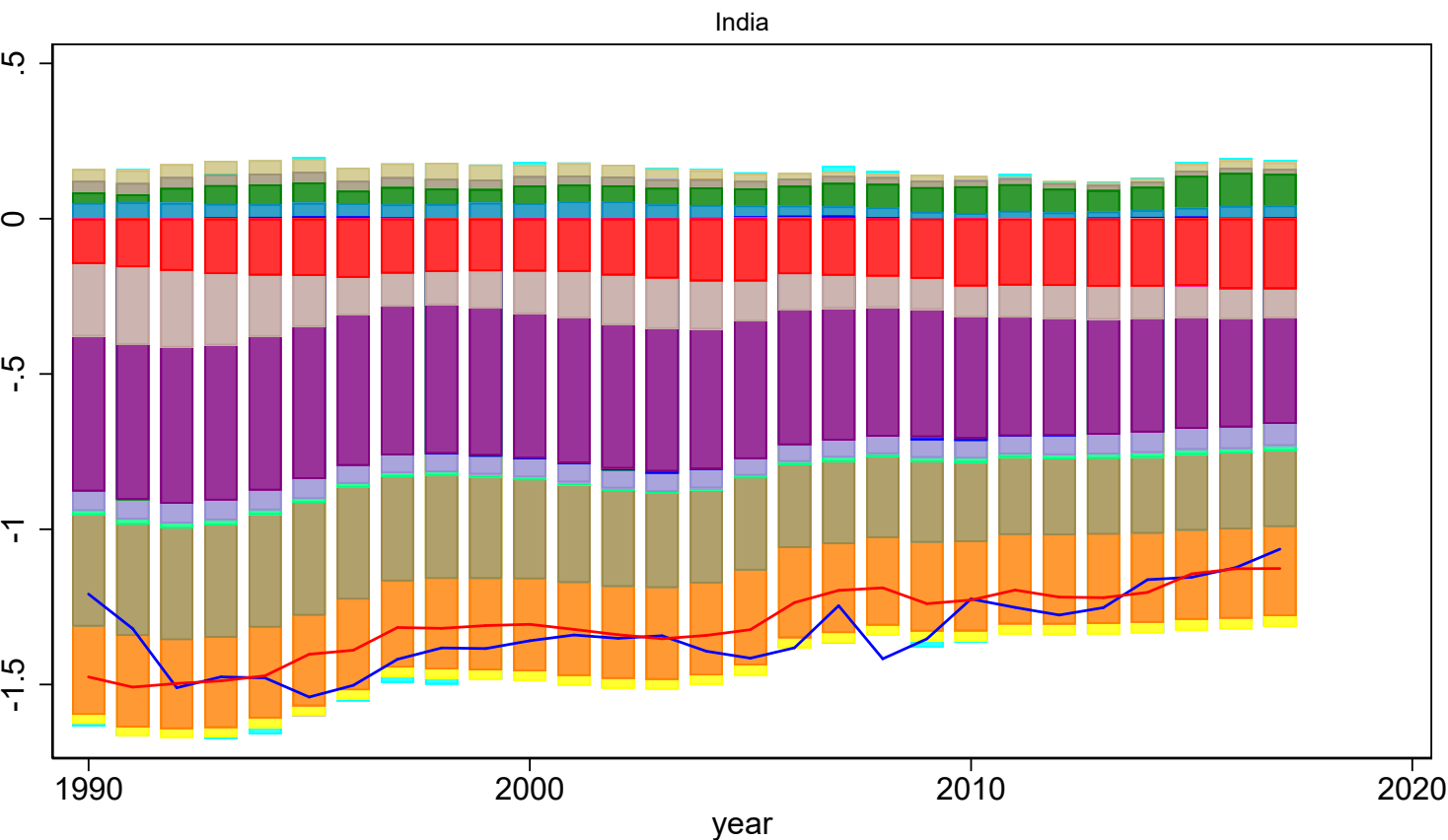
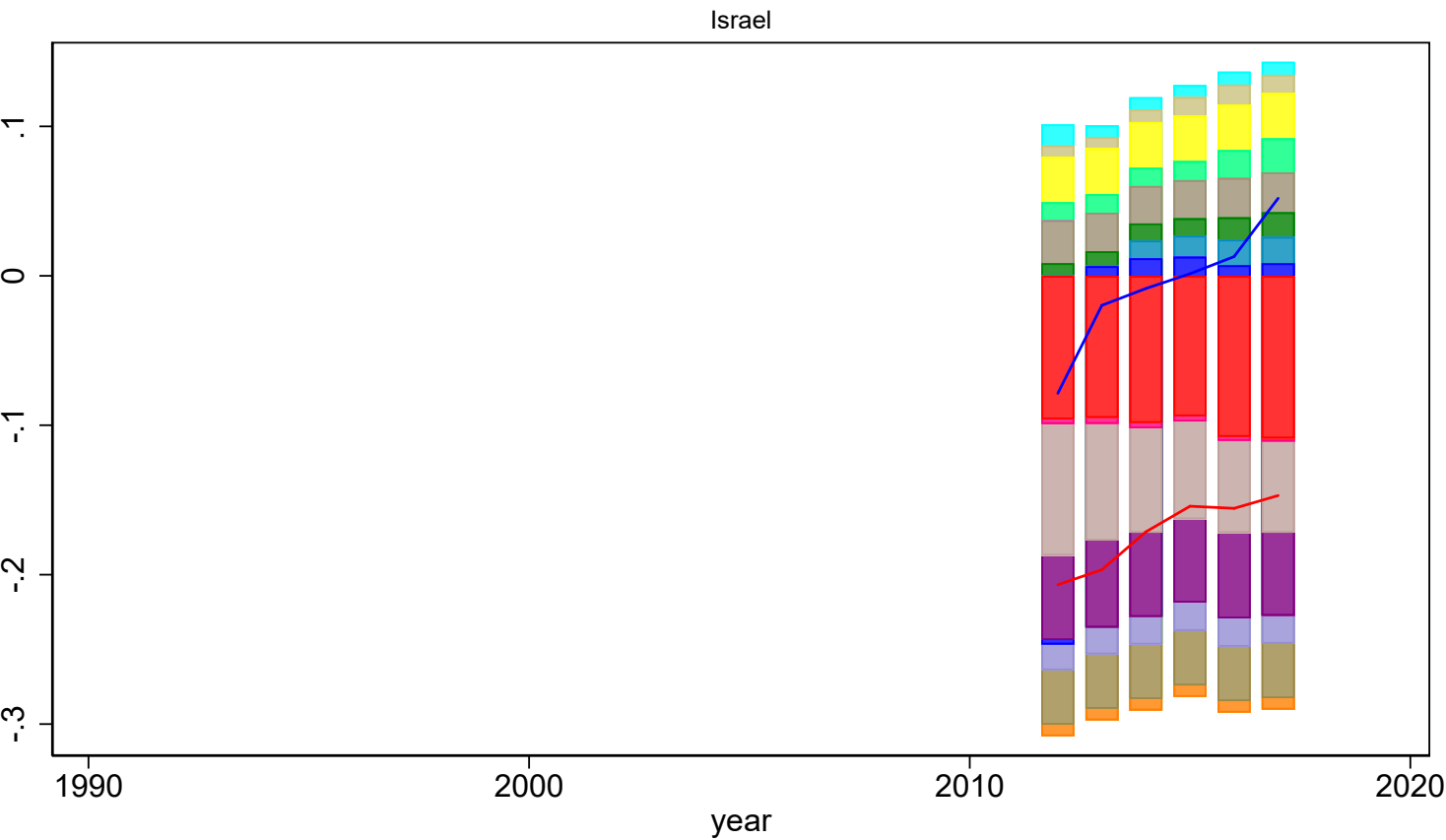


# EBA - Contributions to the REER (level) Fitted Values



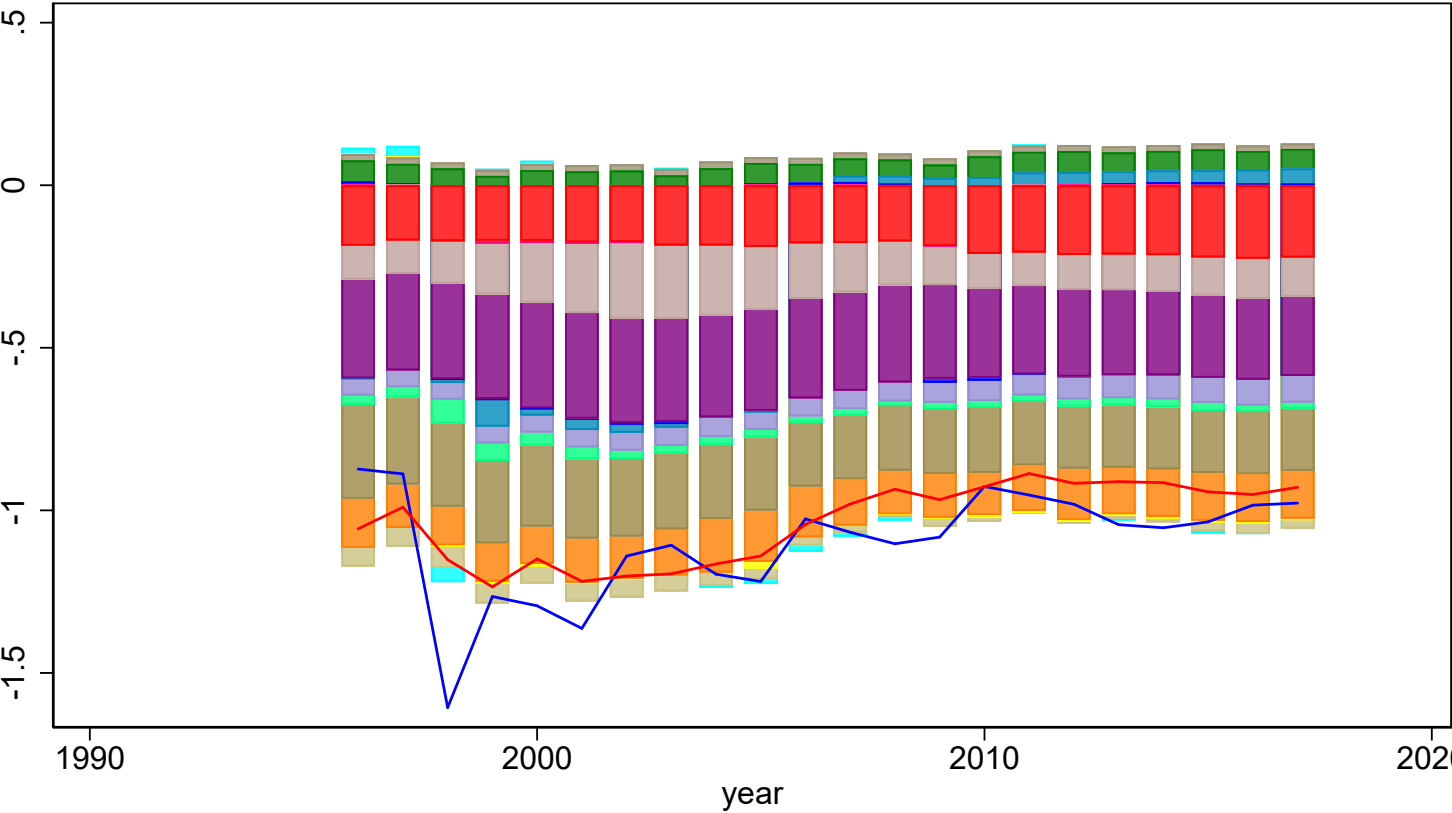


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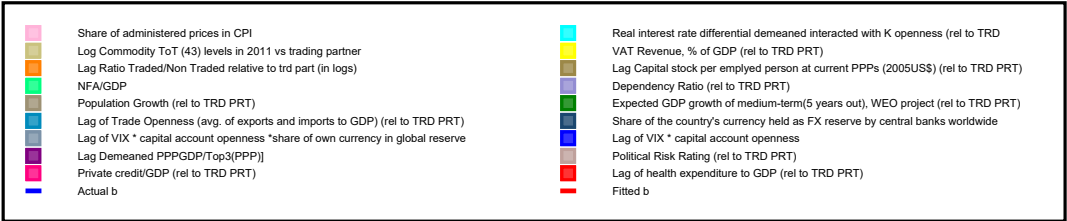
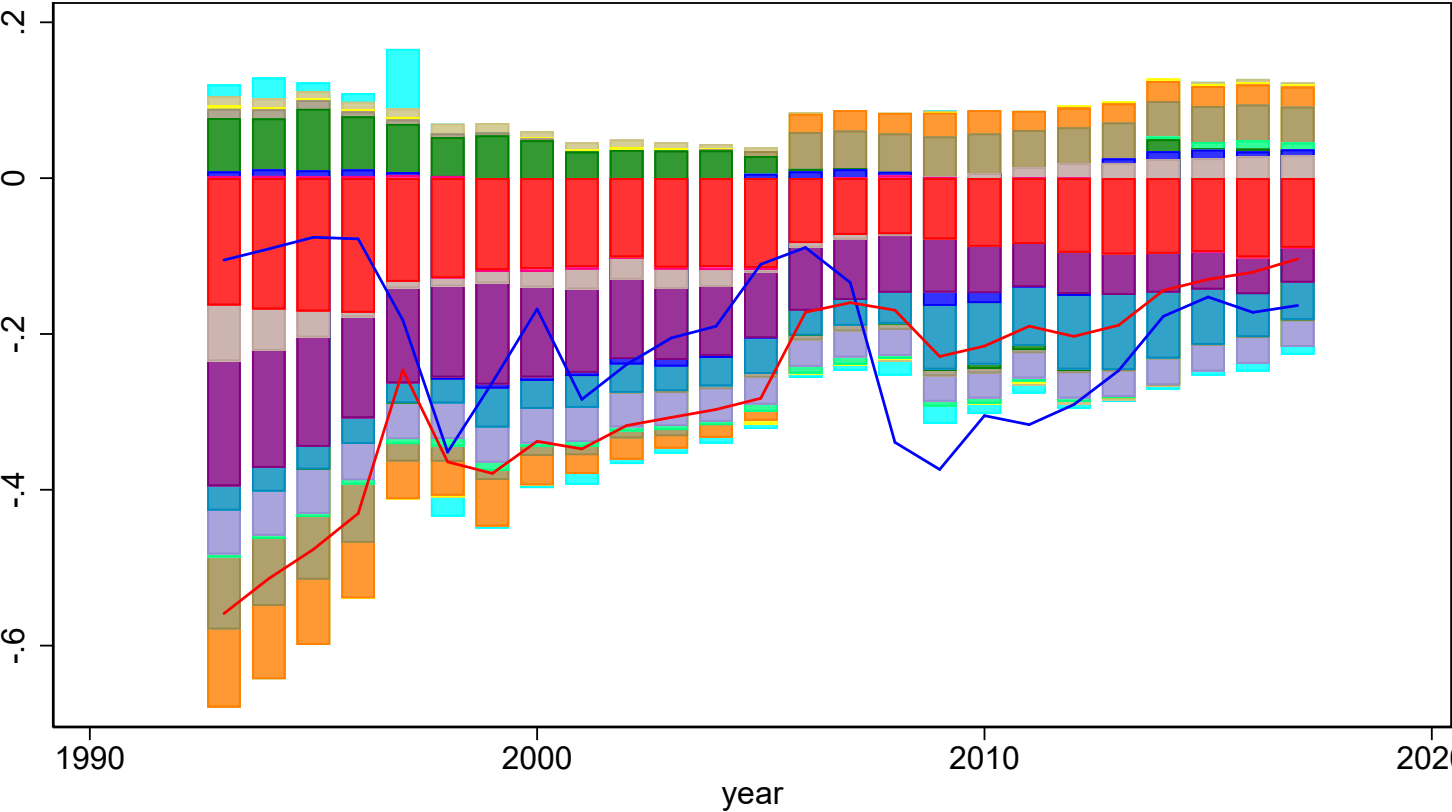


# EBA - Contributions to the REER (level) Fitted Values

Indonesia

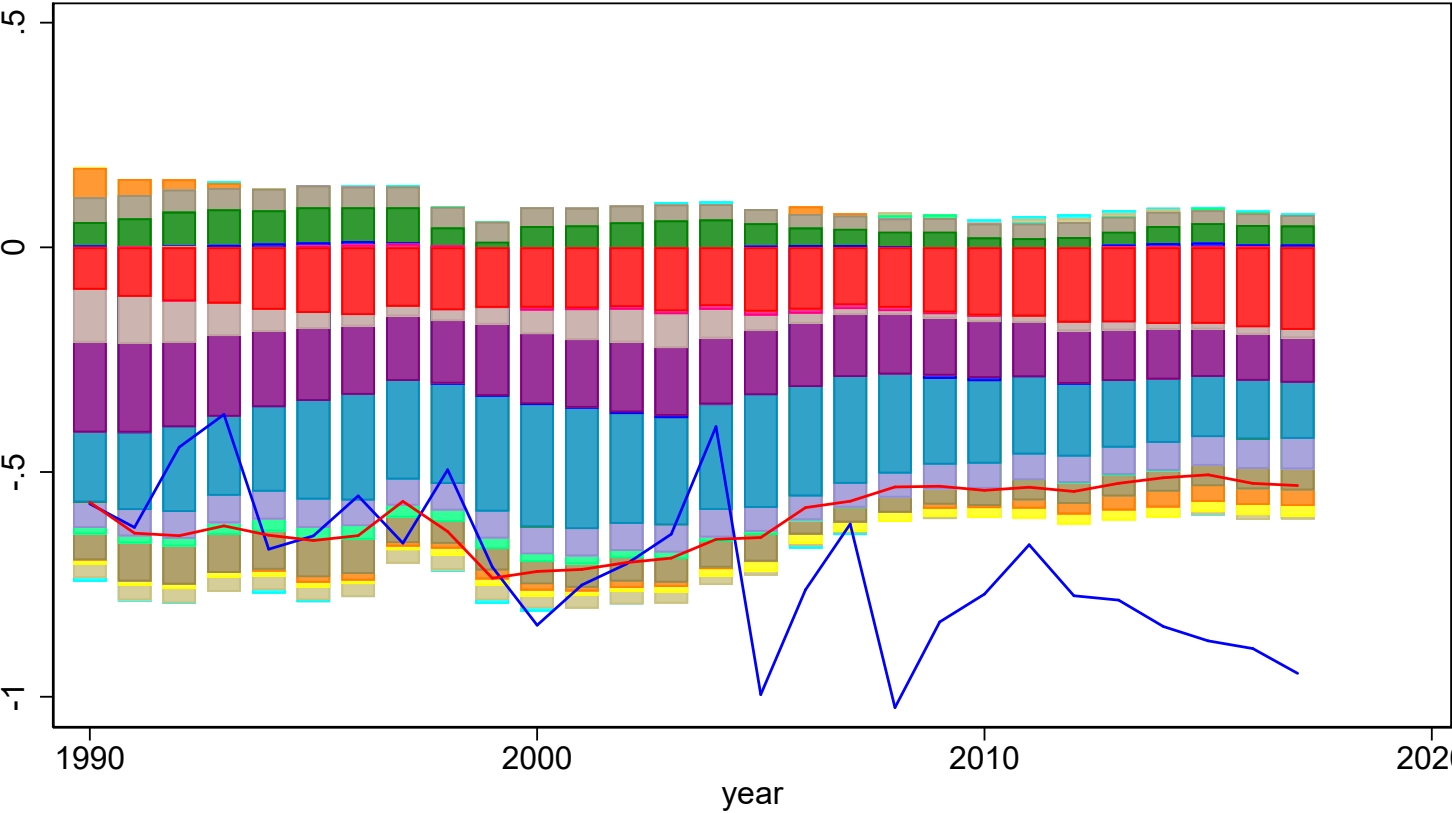


Korea

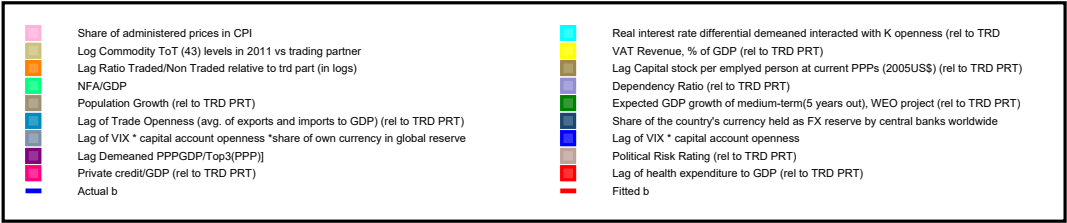
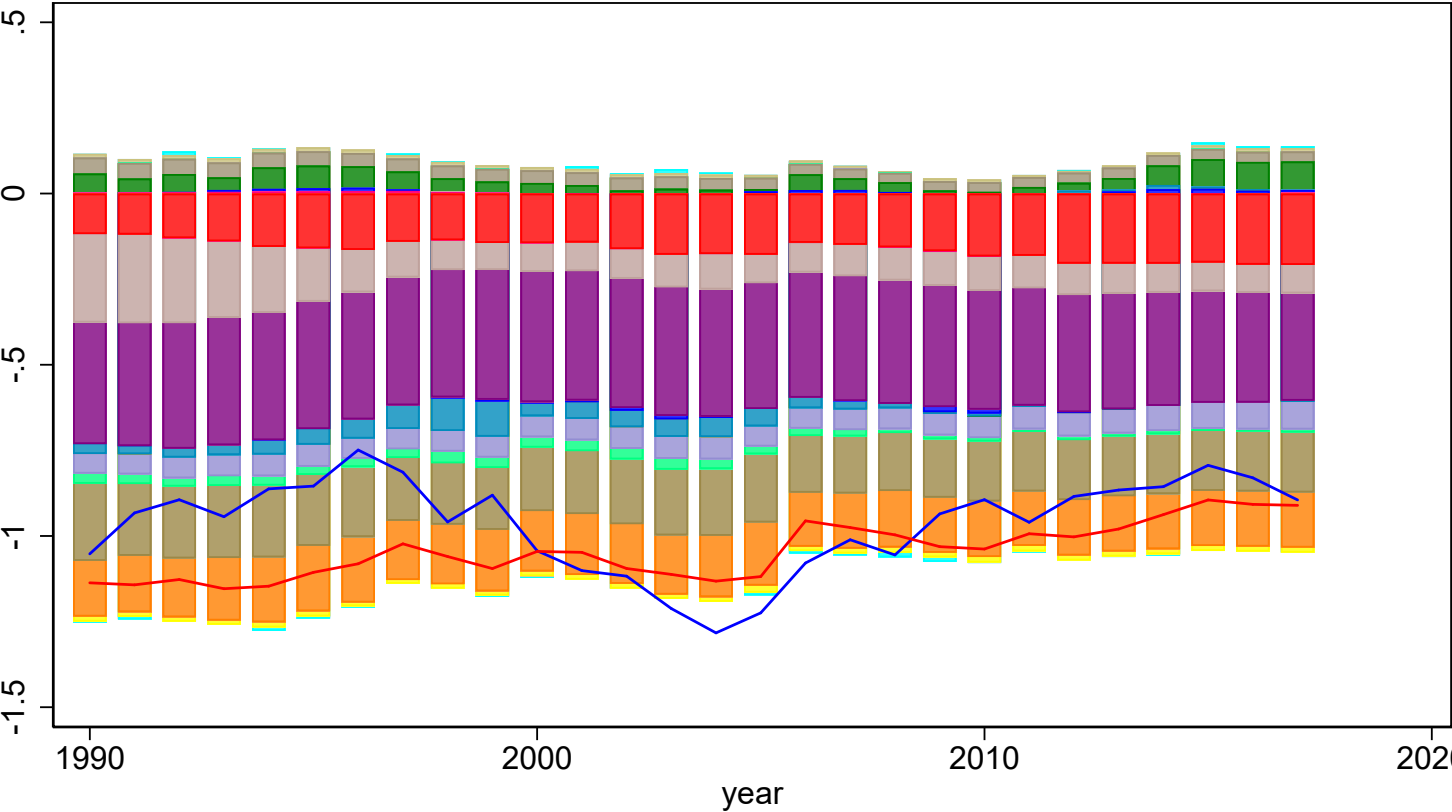


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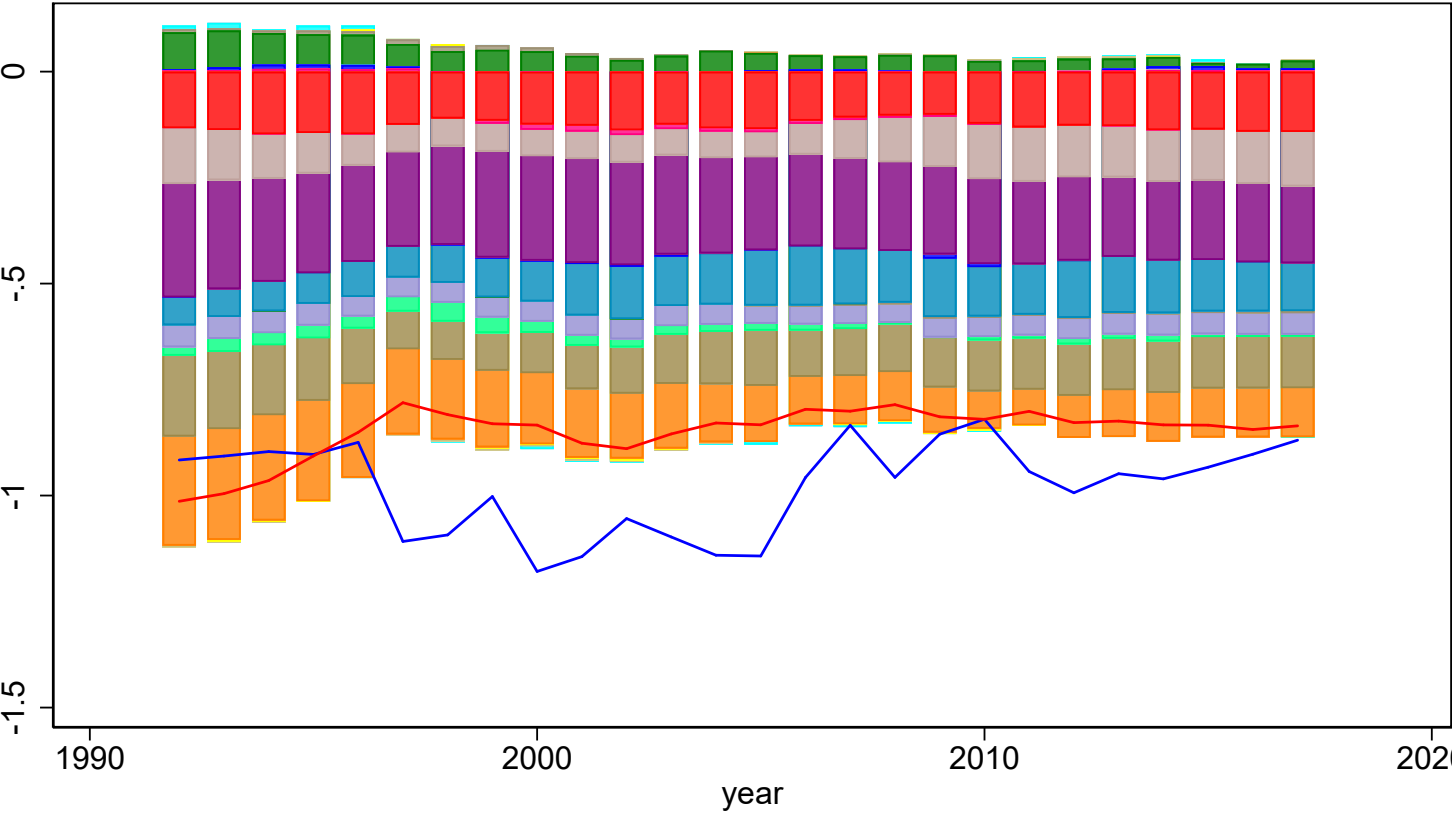


Philippines

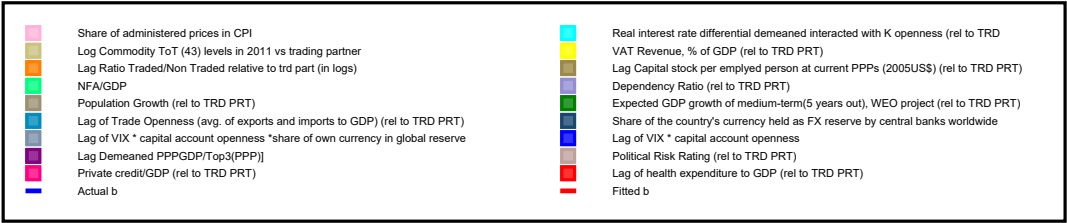
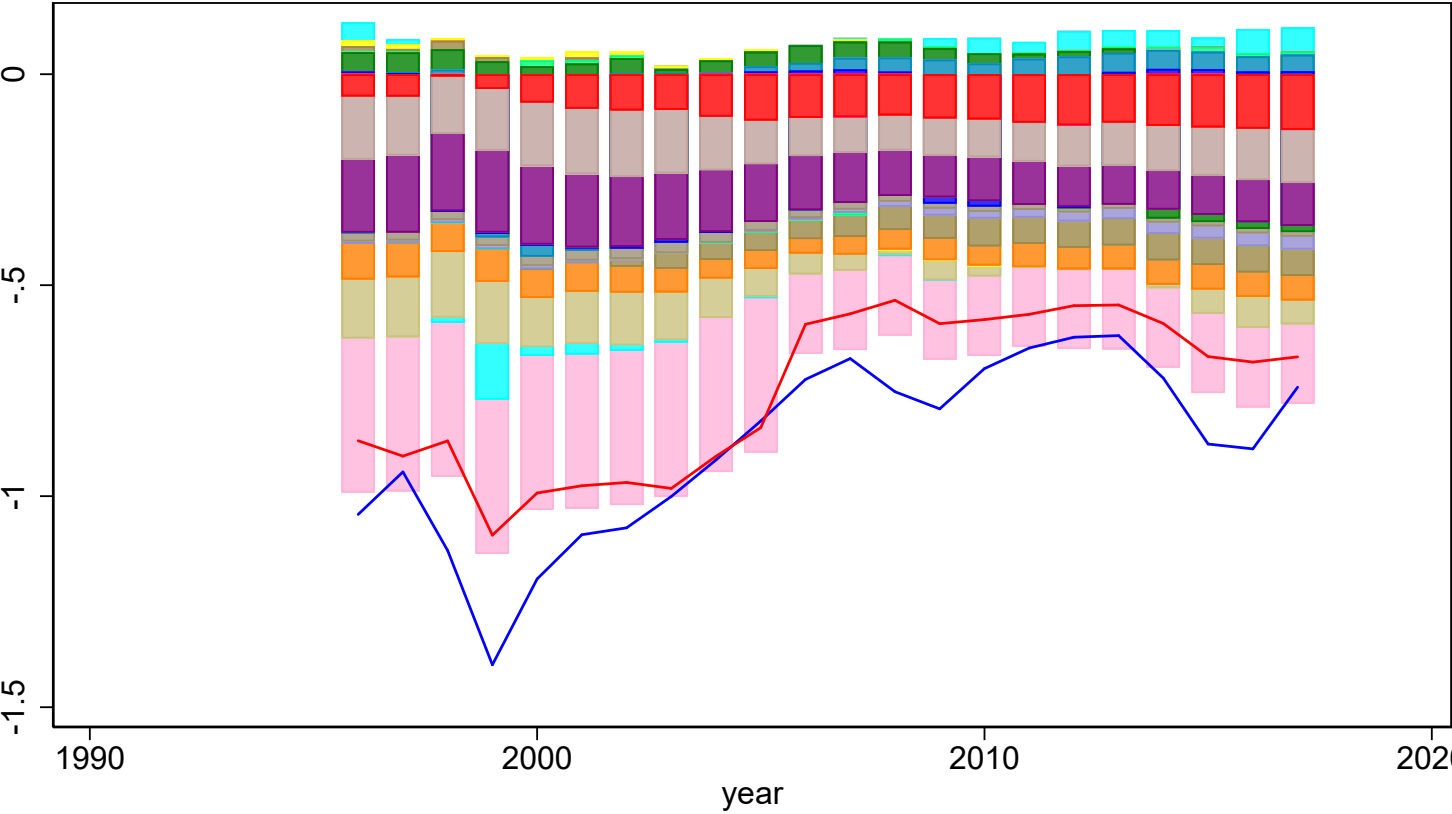


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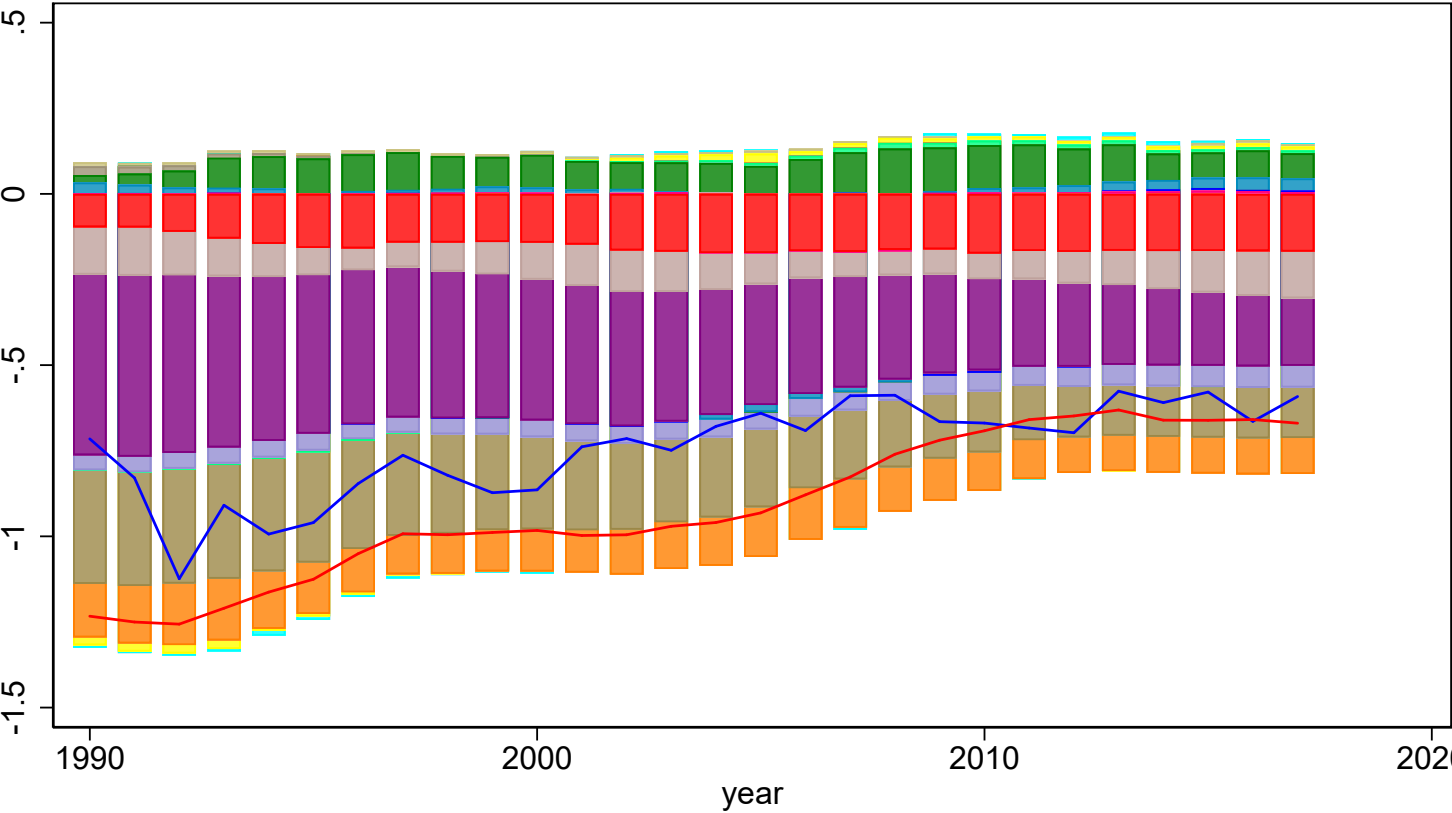


Russia

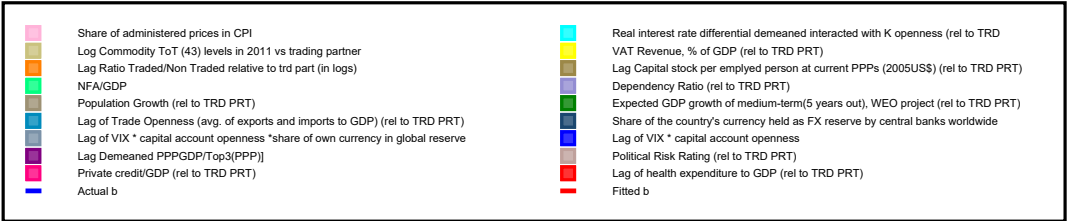
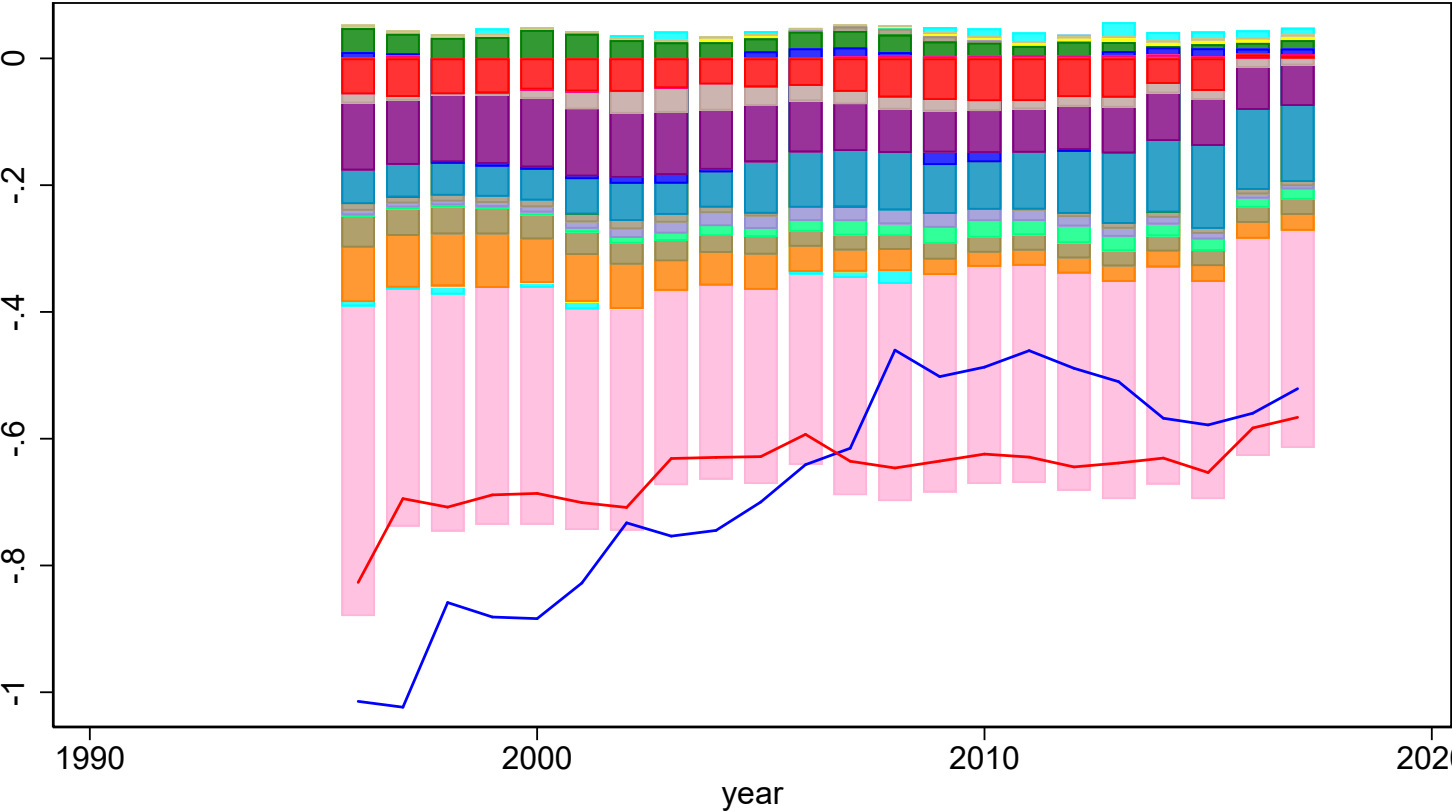


# EBA - Contributions to the REER (level) Fitted Values

China



Czech Republic



# EBA - Contributions to the REER (level) Fitted Values

