



# Multilateral ECM (Energy Cost Monitoring)

Nomura Lab at Keio Economic Observatory (KEO), Keio University, Tokyo

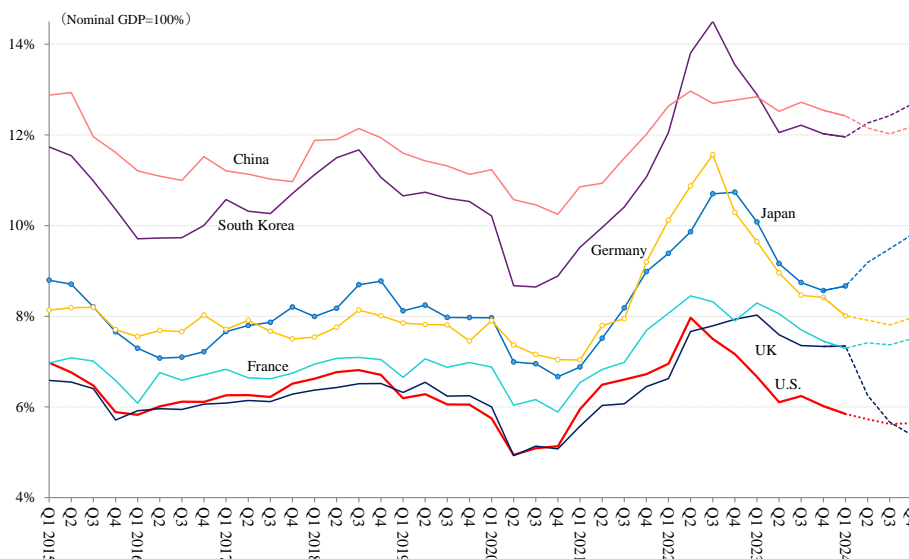
ECM\_202407<sup>1</sup>

August 3, 2024

Koji Nomura, Sho Inaba, and Mansaku Yoshida

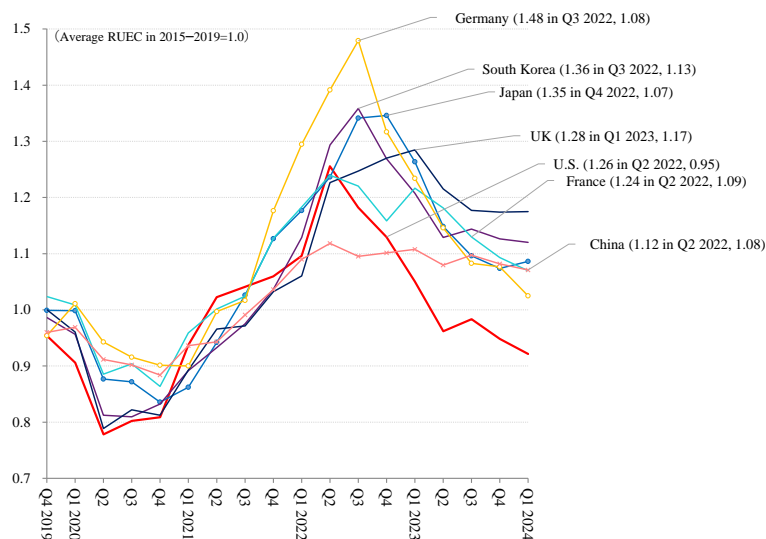
## 1 RUEC (Real Unit Energy Cost)

### 1.1 RUEC Levels



Unit: Share (GDP at current market prices in each period=100% in each country). Period: Q1 2015–Q4 2024. Notes: The dotted line represents forecasts for Q2–Q4 in 2024. The prices are seasonally adjusted and include taxes and subsidies. The volumes are seasonally adjusted.

### 1.2 Post-Pandemic RUEC Indices

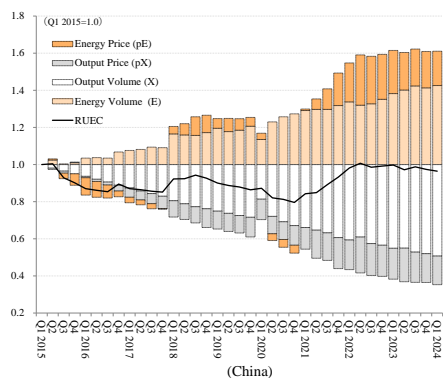


Unit: Index (average RUEC in 2015–2019=1.0 in each country). Period: Q4 2019–Q1 2024. Notes: The counts after the country name indicate the peaks in RUEC surges and the recovered level as of Q1 2024 relative to the pre-pandemic level. The prices are seasonally adjusted and include taxes and subsidies. The volumes are seasonally adjusted.

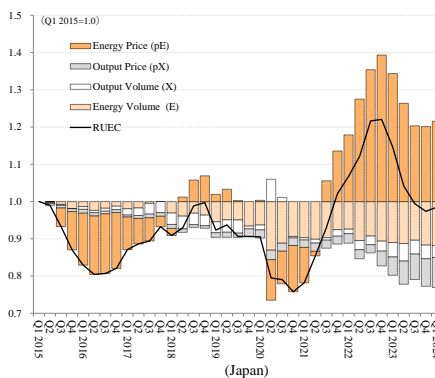
<sup>1</sup> The ECM constructs monthly and quarterly indicators such as Real PLI (Price Level Index) for energy, RUEC (Real Unit Energy Cost), and EITE (Energy-Intensive Trade-Exposed) Output Index. ECM\_202407 covers seven countries for RUEC (Italy is excluded due to the delay in publishing economic statistics and the uncertain impact of subsidies) and four countries for EITE output. For the details on the measurement framework and primary data sources, see Nomura, Koji and Sho Inaba (2024) "Post-Pandemic Surges of Real Unit Energy Costs in Eight Industrialized Countries," RCGW Discussion Paper, No.70, Research Center on Global Warming, Development Bank of Japan, March. The ECM estimates will continue to be revised as new energy and economic statistics are released. Further information, please contact us at multilateralecm@gmail.com.

### 1.3 RUEC Decomposition

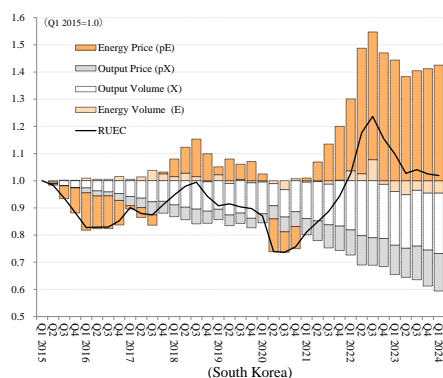
• Asia (China, Japan, and South Korea) and the U.S.



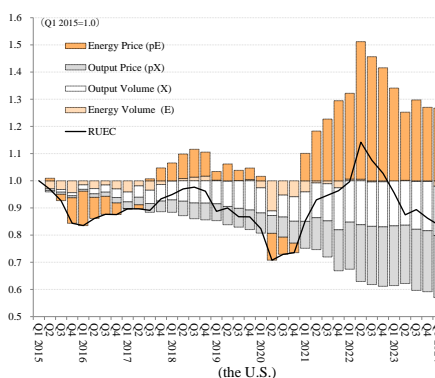
(China)



(Japan)



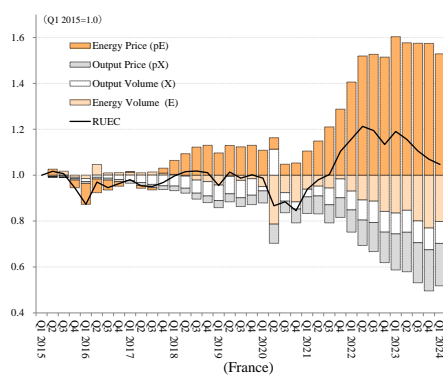
(South Korea)



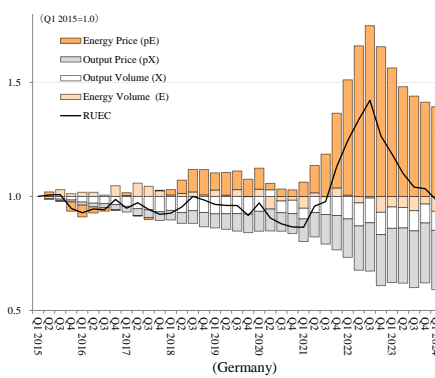
(the U.S.)

Unit: Index (RUEC in Q1 2015=1.0). Period: Q1 2015–Q1 2024. Notes: The prices are seasonally adjusted and include taxes and subsidies. The volumes are seasonally adjusted.

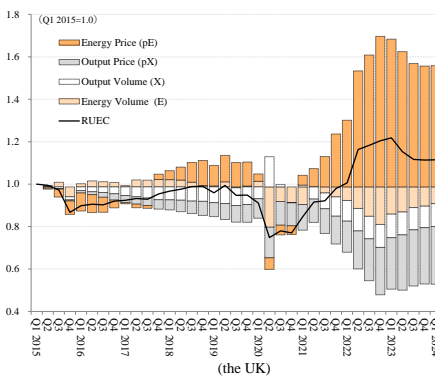
• EU (Germany, France) and the UK



(France)



(Germany)

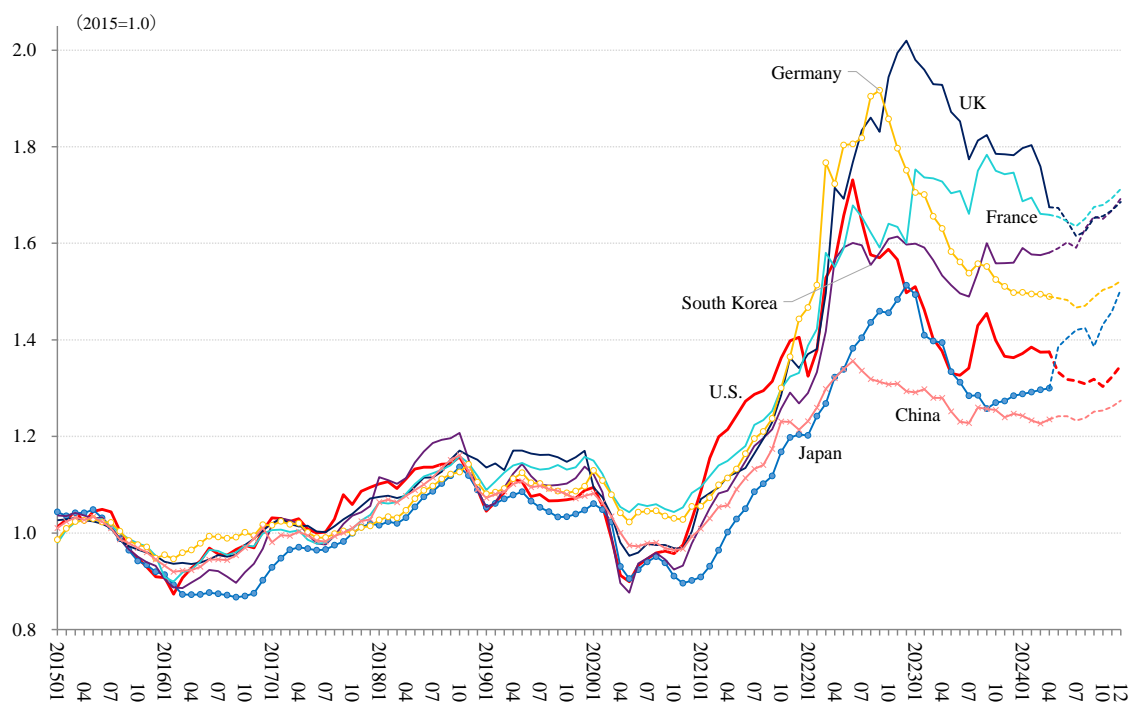


(the UK)

Unit: Index (RUEC in Q1 2015=1.0). Period: Q1 2015–Q1 2024. Notes: The prices are seasonally adjusted and include taxes and subsidies. The volumes are seasonally adjusted.

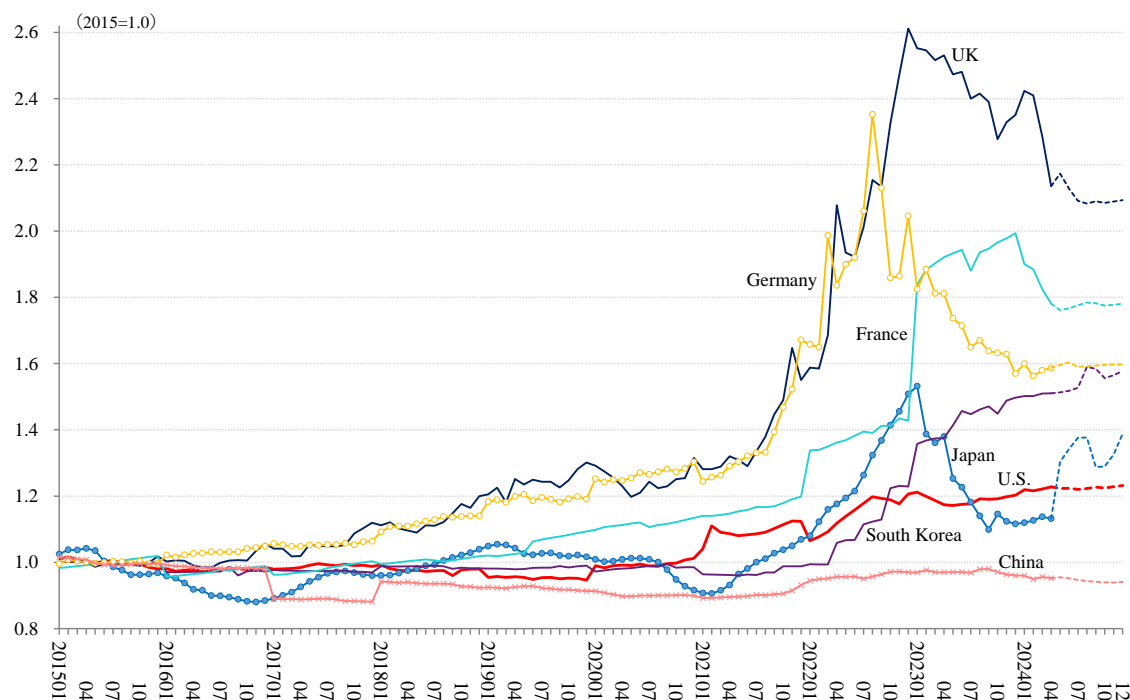
## 2 Energy Prices

### 2.1 Quality-adjusted Energy Prices for Final Use



Unit: Index (average price at local currency unit in 2015=1.0 in each country). Period: January 2015– April 2024. Notes: The dotted line represents forecasts for May–December 2024. Quality-adjusted energy price is defined as the implicit Translog index. The prices are seasonally adjusted and include taxes and subsidies.

### 2.2 Electricity price

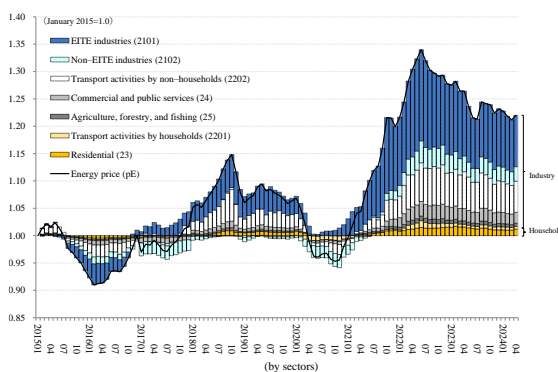
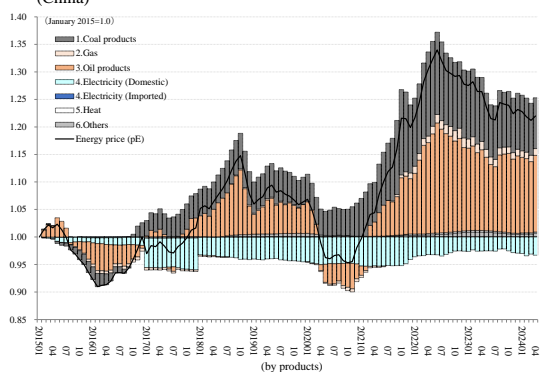


Unit: Index (price at local currency unit in 2015=1.0 in each country). Period: January 2015– April 2024. Notes: The dotted line represents forecasts for May–December 2024. Energy price is defined as the implicit Translog index. The prices are seasonally adjusted and include taxes and subsidies.

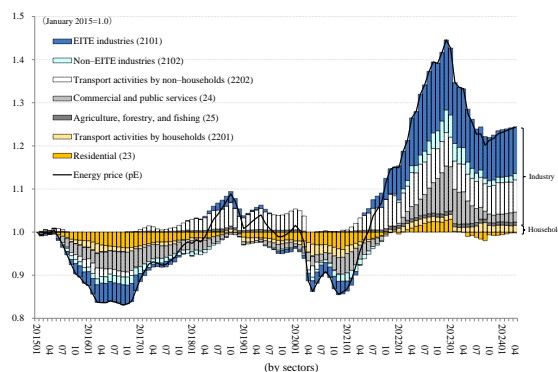
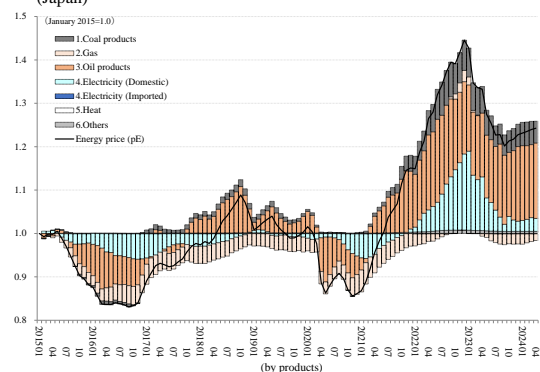
### 2.3 Sources of Energy Price Changes

• Asia (China, Japan, and South Korea) and the U.S.

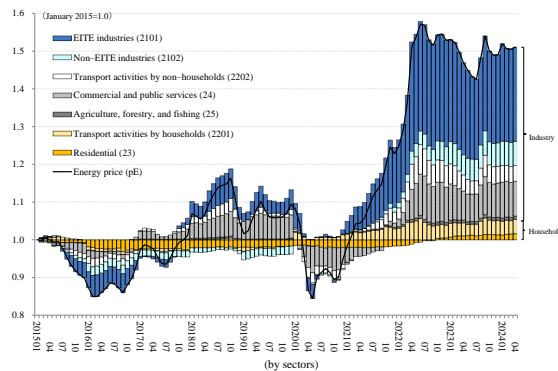
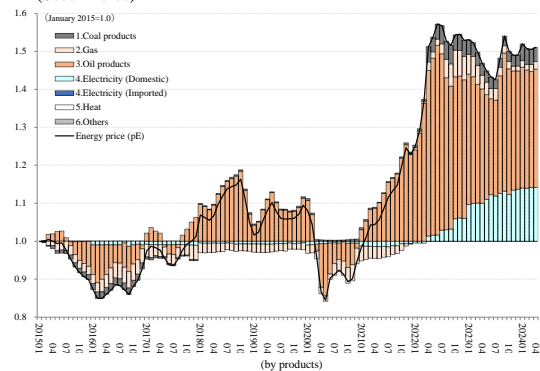
(China)



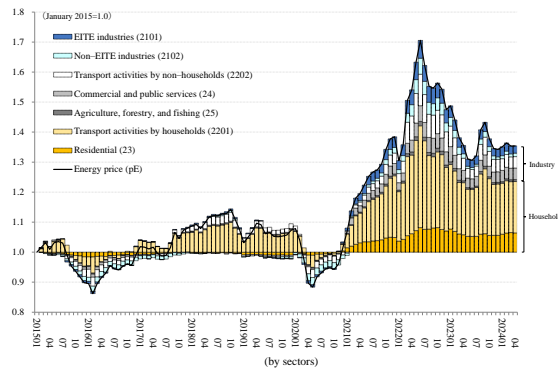
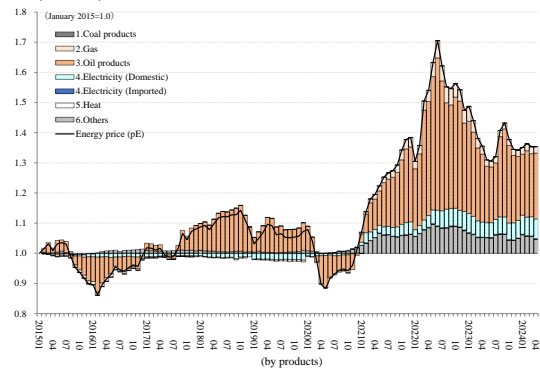
(Japan)



(South Korea)



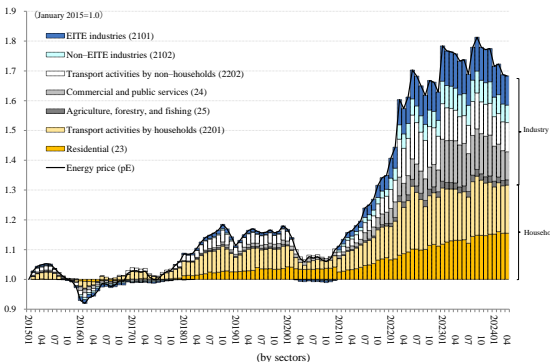
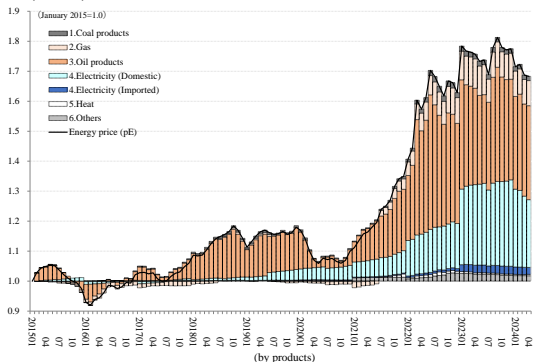
(the U.S.)



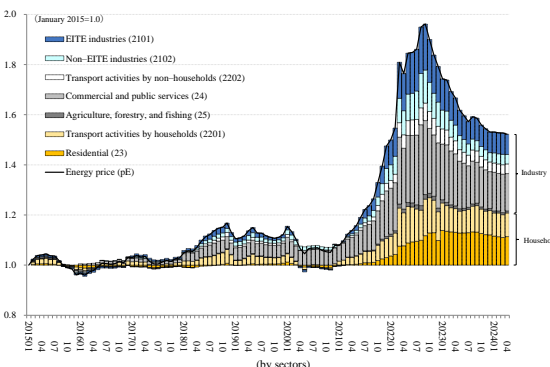
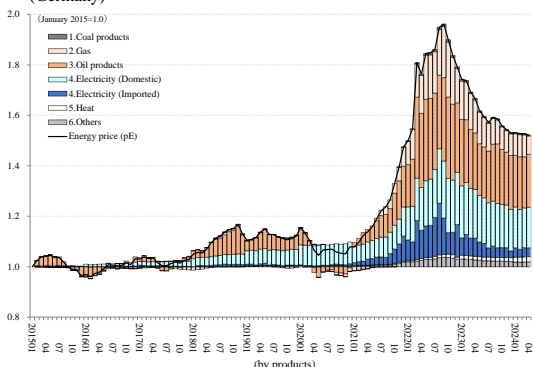
Unit: Index (price at local currency unit in January 2015=1.0 in each country). Period: January 2015– April 2024. Note: The prices are seasonally adjusted and include taxes and subsidies.

• EU (Germany, France) and the UK

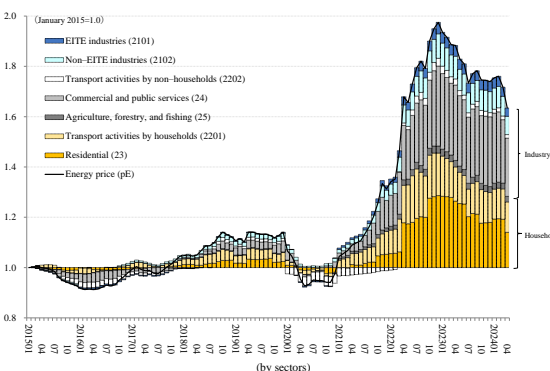
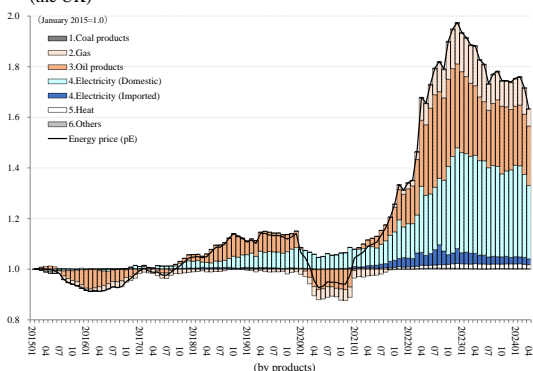
(France)



(Germany)

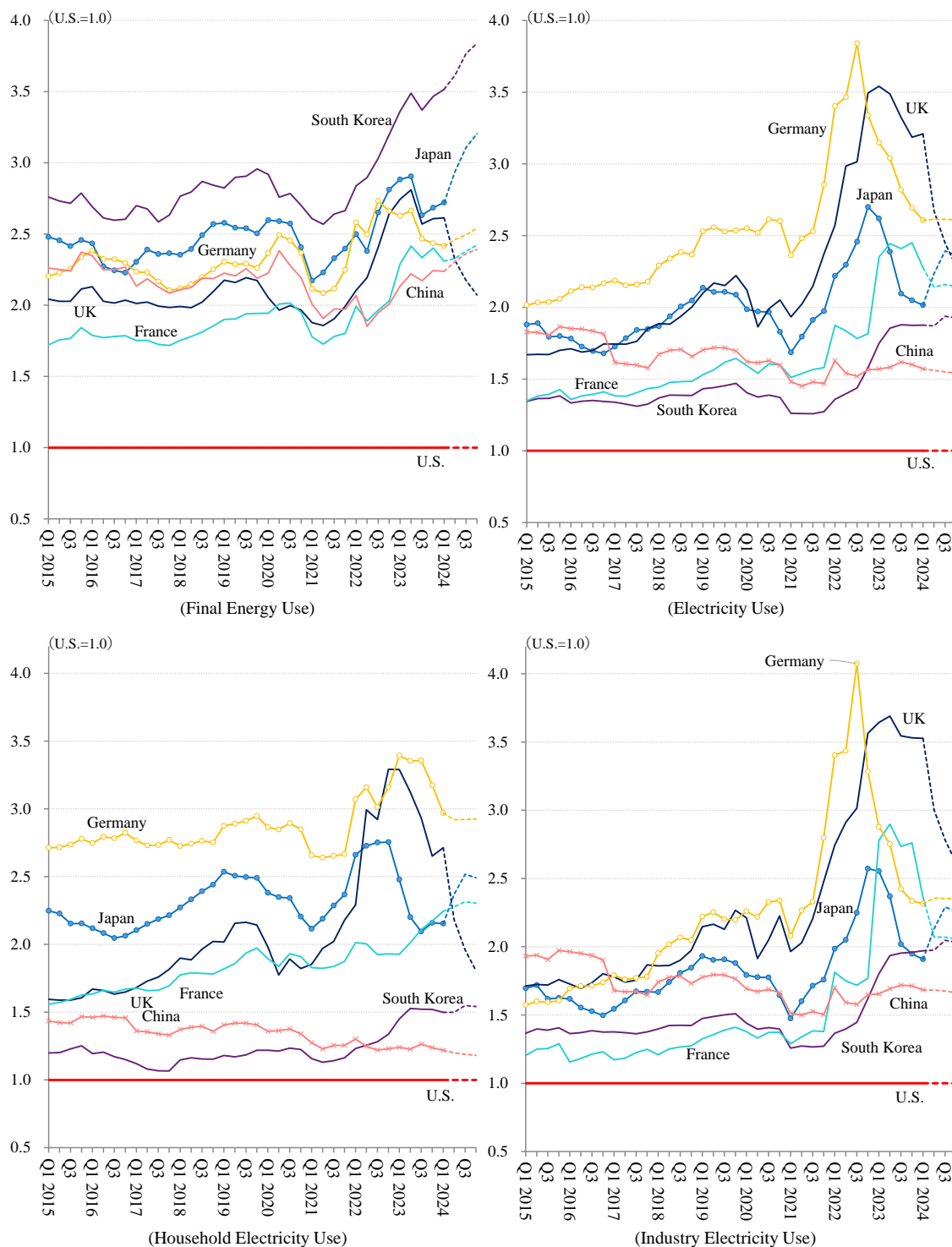


(the UK)



Unit: Index (price at local currency unit in January 2015=1.0 in each country). Period: January 2015– April 2024. Note: The prices are seasonally adjusted and include taxes and subsidies.

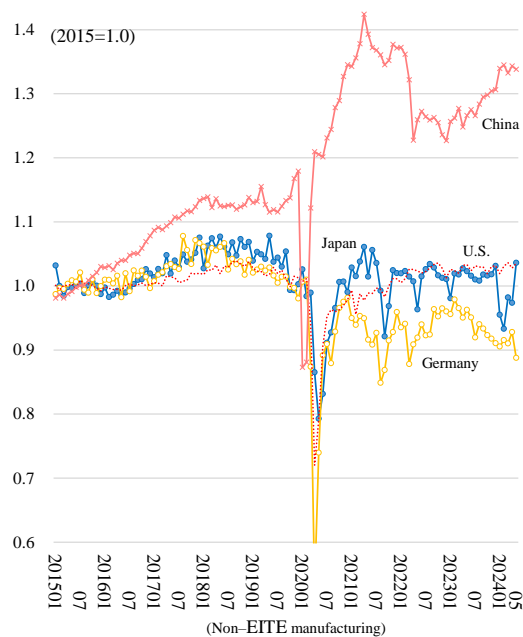
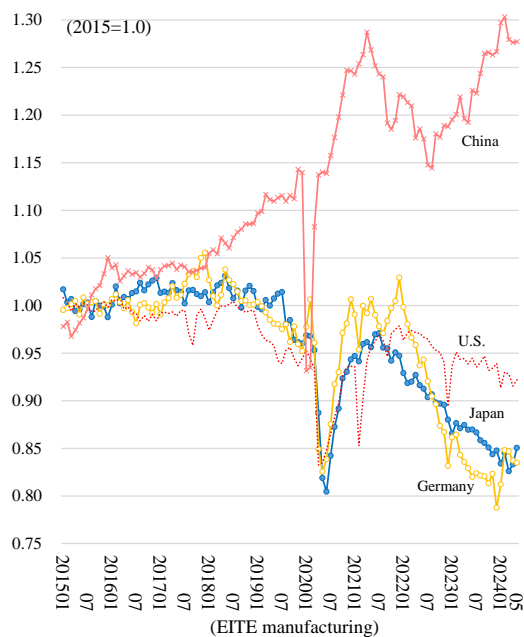
3 Real PLI



Unit: Index (the U.S. REP in each period=1.0). Period: Q1 2015–Q4 2024. Notes: The dotted line represents forecasts for Q2–Q4 in 2024. The prices are seasonally adjusted and include taxes and subsidies.

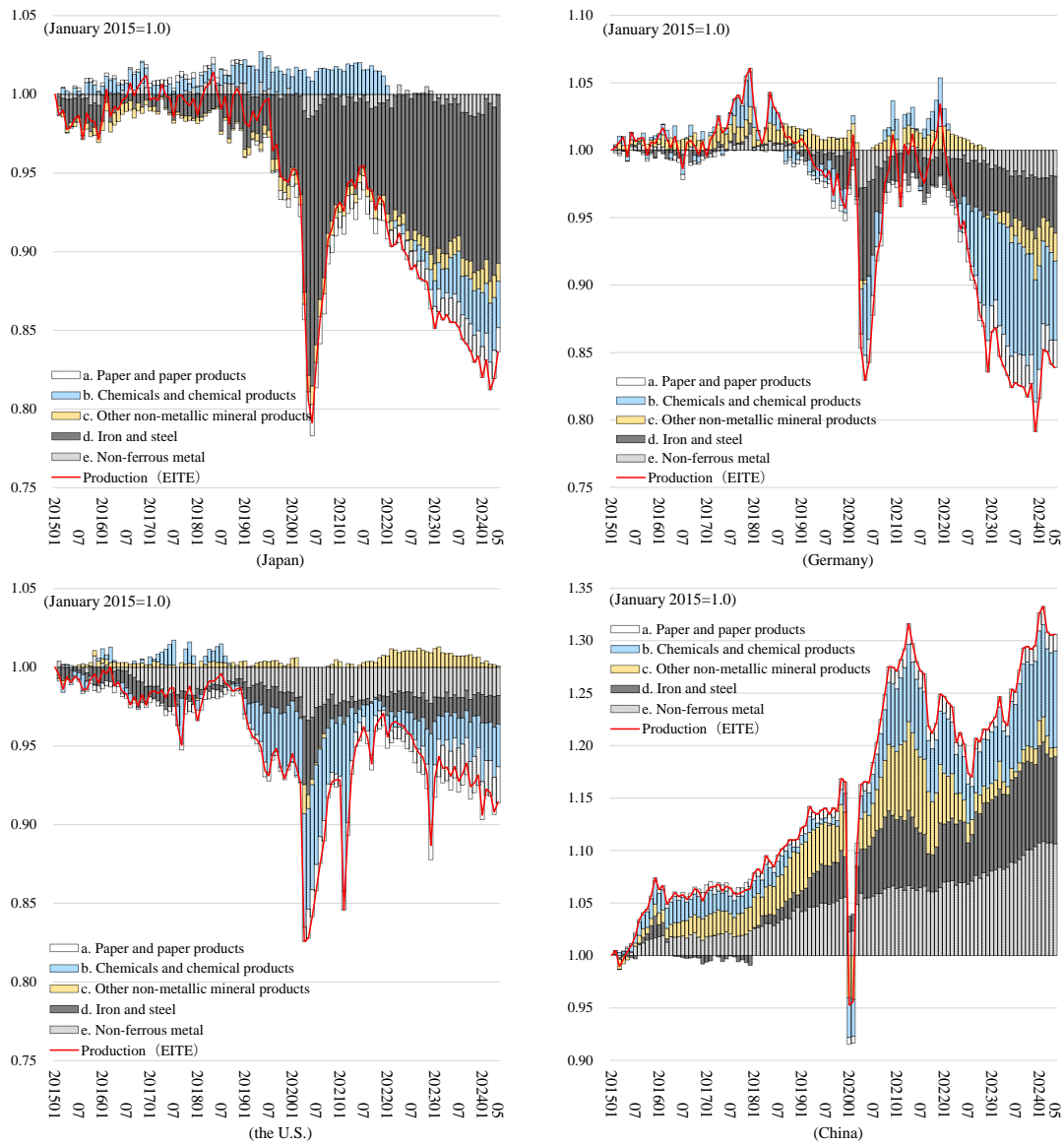
## 4 EITE Output Index

### 4.1 EITE and Non-EITE Outputs



Unit: Index (output in January 2015=1.0). Period: January 2015– May 2024. Sources: our computation is based on (Japan) Cabinet Office, Economic and Social Research Institute (ESRI) *Japanese National Accounts (JNA)*, Ministry of Economy, Trade and Industry (METI) *Indices of Industrial Production, Current Production Statistics*, Bank of Japan (BoJ) *Corporate Goods Price Index (CGPI)*, and National Federation of Ready-Mixed Concrete Industry Associations *National ready-mixed concrete shipments*. (Germany) Statistisches Bundesamt (Destatis) *German National Accounts, Cost Structure Survey in Manufacturing, Mining and Quarrying, Indices of Production in Manufacturing, Index of Import Prices, and Foreign Trade*. (The U.S.) Bureau of Economic Analysis (BEA) *The National Income and Product Accounts (NIPAs)*, Federal Reserve Board (FRB) *Industrial Production and Capacity Utilization*, and Bureau of Labor Statistics (BLS) *Producer Price Indexes*. (China) National Bureau of Statistics of China (NSB) *China's System of National Accounts (CSNA), Producer Price Index, Value-added Industrial Output, and Main Indicators of Industrial Enterprises*. Notes: EITE manufacturing are defined as Paper and paper products, Chemicals and chemical products (excluding pharmaceuticals), Other non-metallic mineral products, Iron and steel, and Non-ferrous metal. Non-EITE manufacturing are all other manufacturing industries. Indices.

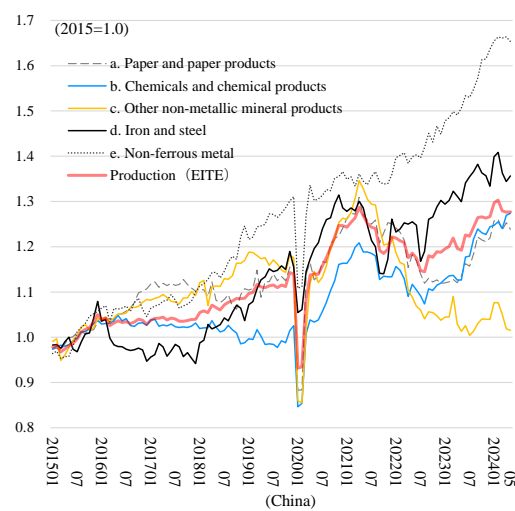
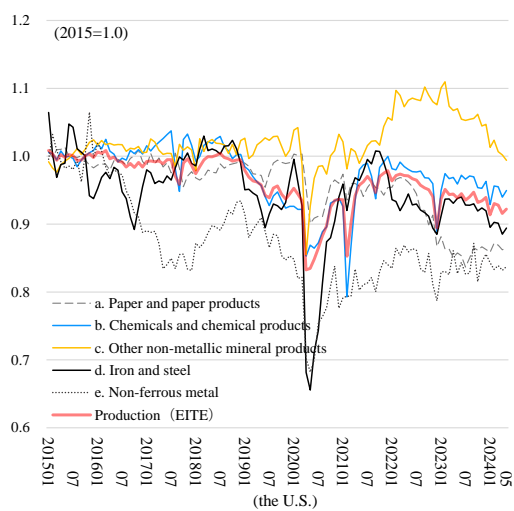
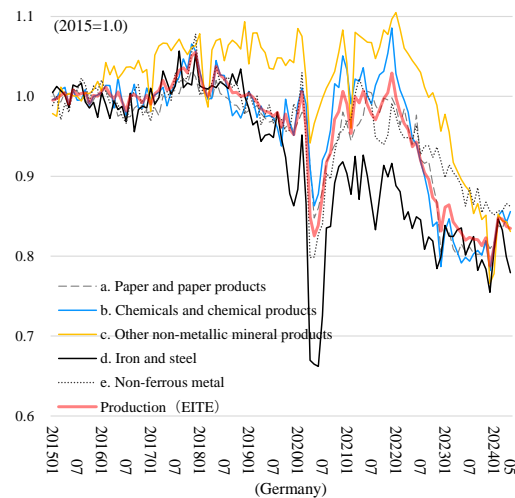
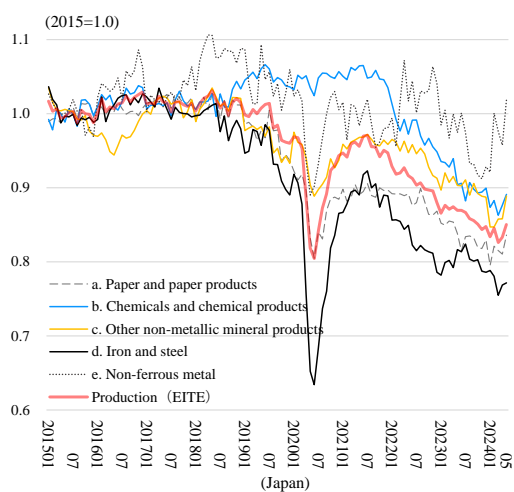
### 4.2 Industry Decomposition of EITE Output Index



Unit: Index (output in January 2015=1.0). Period: January 2015– May 2024. Source: see section 4.1. Note: The industry contribution is based on the Translog index using the previous year's output value share.



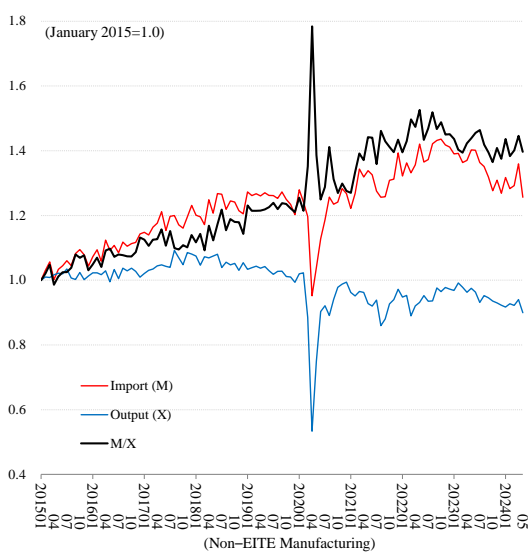
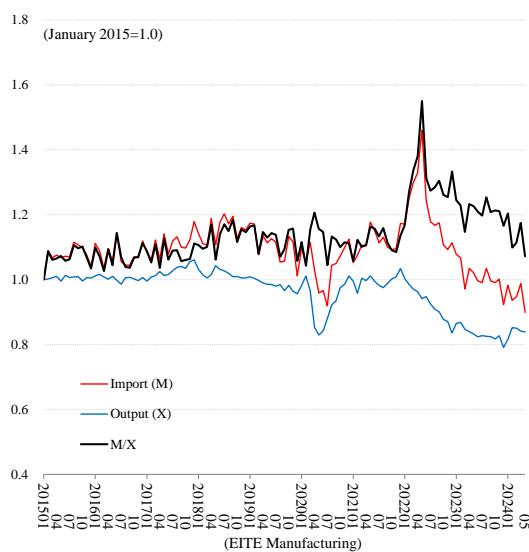
### 4.3 EITE Output Indices by Industry



Unit: Index (output in 2015=1.0). Period: January 2015– May 2024. Source: see section 4.1.

### 4.4 EITE and Non-EITE Output and Import Indices

#### • Germany



Unit: Index (import and output volumes in January 2015=1.0). Period: January 2015– May 2024. Source: see section 4.1.