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Monitoring business cycle fluctuations in Asia

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APPENDIX

Monitoring Business Cycle Fluctuations in Asia

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Table A: List of Indicators by Economy**Table A1: People's Republic of China Components**

Description	Group	Start	End	Transformation
Volume of Transportation in Costal Ports (100 million metric tons)	Consumption	Jan-02	Dec-19	YoY % change
Consumer Price Index (NSA, 2015=100)	Consumption	Jan-00	Dec-19	YoY % change
Survey-Based Urban Unemployment Rate (EOP, NSA, %)	Consumption	Jan-17	Dec-19	Level (%)
Retail Sales (NSA, 100 million yuan)	Consumption	Jan-00	Dec-19	YoY % change
Consumer Confidence (NSA, 100+=Optimistic)	Consumption	Jan-00	Dec-19	Index
Domestic Mobile Phone Shipments (NSA, 10,000 units)	Consumption	Jan-12	Dec-19	YoY % change
Composite PMI: Headline: sa: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite PMI: Headline: sa: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
Index: Shanghai Stock Exchange: Composite	Financial	Jan-00	Dec-19	YoY % change
Private Sector Credit (EOP, NSA, billion yuan)	Financial	Jan-02	Dec-19	YoY % change
Money Supply: M2 (EOP, billion yuan)	Government	Jan-00	Dec-19	YoY % change
General Govt Budget Surplus/Deficit (NSA billion yuan)	Government	Jan-00	Dec-19	YoY % change
Official Reserve Assets (NSA, EOP, 100 million US\$)	Government	Jun-15	Dec-19	YoY % change
IP: Electricity Production (NSA, 100 million kWh)	Investment	Jan-00	Dec-19	YoY % change
PMI: Manufacturing (SA, 50+=Expansion)	Investment	Jan-05	Dec-19	Index
Real Industrial Value Added (NSA, YoY % change)	Investment	Jan-00	Dec-19	Index
Motor Vehicle Production (NSA, 10,000 units)	Investment	Nov-08	Dec-19	YoY % change
Real Estate: Floor Space of Buildings under Construction (YTD, million m ²)	Investment	Feb-01	Dec-19	YoY % change
Macroeconomic Climate Index: Leading Index (NSA, 2015=100)	Investment	Dec-15	Dec-19	Index
Direct Investment Abroad by Nonfinancial Enterprises (YTD, million US\$)	Investment	Jan-01	Dec-19	YoY % change
J.P. Morgan Real Broad Effective Exchange Rate Index, CPI-Based (2010=100)	International Trade	Jan-00	Dec-19	YoY % change
Exports: fob	International Trade	Jan-00	Dec-19	YoY % change
Imports: cif	International Trade	Jan-00	Dec-19	YoY % change

Source: Authors.

Table A2: Hong Kong, China Components

Description	Group	Start	End	Transformation
Consumer Price Index Composite	Consumption	Jan-00	Dec-19	YoY % change
Property Market Rental Index (1999=100)	Consumption	Jan-00	Dec-19	YoY % change
Number of Agreements for Sale and Purchase of Building Units	Consumption	Jan-00	Dec-19	YoY % change
Residential Mortgage Survey	Consumption	Jan-05	Dec-19	YoY % change
Unemployment Rate [3-month average]	Consumption	Jan-00	Dec-19	Level (%)
Retail Sales	Consumption	Jan-00	Dec-19	YoY % change
New Vehicle Registrations	Consumption	Jan-00	Dec-19	YoY % change
Electricity Consumption: Industrial	Consumption	Jan-00	Nov-19	YoY % change
Imports: Consumer Goods	Consumption	Jan-00	Dec-19	YoY % change
Imports: Foodstuffs	Consumption	Jan-00	Dec-19	YoY % change
Imports: Fuels	Consumption	Jan-00	Dec-19	YoY % change
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
Composite Purchasing Managers' Index: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite Purchasing Managers' Index: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Discount Window Base Rate	Financial	Jan-00	Dec-19	Level (%)
Money Supply, M2	Financial	Jan-00	Dec-19	YoY % change
Demand Deposits	Financial	Jan-00	Dec-19	YoY % change
Exchange Fund Assets: Foreign Currency	Financial	Jan-00	Dec-19	YoY % change
Stock Price Index: Hang Seng Bank	Financial	Jan-00	Dec-19	YoY % change
Market Capitalization	Financial	Jan-04	Dec-19	YoY % change
Total Domestic Loans and Advances to Customers	Financial	Jan-00	Dec-19	YoY % change
Official Reserve Assets	Government	Apr-00	Dec-19	YoY % change
General Government Consolidated Account: Surplus/Deficit	Government	Jan-00	Dec-19	YoY % change
Debt Guaranteed by Government	Government	Jan-00	Dec-19	YoY % change
Foreign Reserves: Foreign Dollar Assets Excluding Forward Transactions	Government	Jan-00	Dec-19	YoY % change
Quarry Production	Investment	Jan-00	Nov-19	YoY % change
Material Cost Index: Public: Aggregates	Investment	Jan-00	Nov-19	YoY % change
Usable Floor Area of Completed New Buildings	Investment	Jan-03	Dec-19	YoY % change
Centa-City Leading Index	Investment	Jan-00	Dec-19	YoY % change
Imports: Raw Materials and Semi Manufactures	Investment	Jan-00	Dec-19	YoY % change
Imports: Capital Goods	Investment	Jan-00	Dec-19	YoY % change
J.P. Morgan Real Broad Effective Exchange Rate Index	International Trade	Jan-00	Dec-19	YoY % change
Merchandise Exports	International Trade	Jan-00	Dec-19	YoY % change
Visitor Arrivals	International Trade	Jan-00	Dec-19	YoY % change
Hotel Occupancy Rate: All Categories	International Trade	Jan-00	Dec-19	YoY % change

Source: Authors.

Table A3: India Components

Description	Group	Start	End	Transformation
Unemployment Rate	Consumption	Jan-16	Dec-19	Level (%)
Consumer Price Index	Consumption	Jan-01	Dec-19	YoY % change
Consumption of Petroleum Products	Consumption	Jan-00	Dec-19	YoY % change
Wholesale Price Index	Consumption	Jan-00	Dec-19	YoY % change
Composite PMI: Headline: sa: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite PMI: Headline: sa: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
Repo Rate	Financial	May-00	Dec-19	Level (%)
Stock Price Index	Financial	Jan-00	Dec-19	YoY % change
National SE of India Market Capitalization	Financial	Jan-03	Dec-19	YoY % change
Private Sector Credit	Financial	Jan-00	Dec-19	YoY % change
Money Supply: M2	Financial	Jan-00	Dec-19	YoY % change
Central Government: Gross Fiscal Surplus/Deficit	Government	Jan-00	Dec-19	YoY % change
International Liquidity Reserves	Government	Jan-00	Dec-19	YoY % change
Motor Vehicle Production	Investment	May-01	Dec-19	YoY % change
Industrial Production Index	Investment	Jan-00	Dec-19	YoY % change
Agricultural Production: Stock of Foodgrains	Investment	Jan-00	Dec-19	YoY % change
Electricity Generation	Investment	May-01	Dec-19	YoY % change
Eight Core Industries Index: Coal	Investment	Apr-04	Dec-19	YoY % change
Eight Core Industries Index: Crude Oil	Investment	Apr-04	Dec-19	YoY % change
Eight Core Industries Index: Natural Gas	Investment	Apr-04	Dec-19	YoY % change
Eight Core Industries Index: Petroleum Refinery Products	Investment	Apr-04	Dec-19	YoY % change
Eight Core Industries Index: Fertilizers	Investment	Apr-04	Dec-19	YoY % change
Eight Core Industries Index: Steel	Investment	Apr-04	Dec-19	YoY % change
Eight Core Industries Index: Cement	Investment	Apr-04	Dec-19	YoY % change
Eight Core Industries Index: Electricity	Investment	Apr-04	Dec-19	YoY % change
Infrastructure Industries Index	Investment	Apr-04	Dec-19	YoY % change
Foreign Investment Inflows: Direct Investment	Investment	Mar-11	Dec-19	YoY % change
Exports	International Trade	Jan-00	Dec-19	YoY % change
Imports	International Trade	Jan-00	Dec-19	YoY % change
J.P. Morgan Real Broad Effective Exchange Rate Index	International Trade	Jan-00	Dec-19	YoY % change

Source: Authors.

Table A4: Indonesia Components

Description	Group	Start	End	Transformation
PT Astra: Motorcycle Sales: Local	Consumption	Jan-00	Dec-19	YoY % change
PT Astra: Motor Vehicle Sales: Local	Consumption	Jan-00	Dec-19	YoY % change
Consumer Price Index	Consumption	Jan-00	Dec-19	YoY % change
Price Expectations	Consumption	Jan-06	Dec-19	YoY % change
Retail Sales Survey	Consumption	Jul-05	Dec-19	YoY % change
Retail Sales Volume	Consumption	Jan-03	Dec-19	YoY % change
Household Income Allocation: Consumption (%)	Consumption	Jan-12	Dec-19	YoY % change
Household Income Allocation: Loan Repayments (%)	Consumption	Jan-12	Dec-19	YoY % change
Household Income Allocation: Savings (%)	Consumption	Jan-12	Dec-19	YoY % change
Imports of Consumption Goods (NSA, '000 US\$)	Consumption	Jan-04	Dec-19	YoY % change
Composite PMI: Headline: sa: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite PMI: Headline: sa: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
7-Day Reverse Repo Rate (average, %)	Financial	Jul-05	Dec-19	YoY % change
Money Supply: M2 (EOP, NSA, billion rupiah)	Financial	Jan-00	Dec-19	YoY % change
Outstanding Loans of Micro/Small/Medium Enterprises (EOP, NSA, billion rupiah)	Financial	Jul-05	Dec-19	YoY % change
Property Loans in Rupiah and Foreign Currencies (EOP, NSA, billion rupiah)	Financial	Apr-04	Dec-19	YoY % change
Stock Price Index: Jakarta Composite (Aug-10-82=100)	Financial	Jan-00	Dec-19	YoY % change
IDX Trading Volume (EOP, NSA, million shares)	Financial	Feb-06	Dec-19	YoY % change
Private Sector Credit (EOP, NSA, billion rupiah)	Financial	Jan-00	Dec-19	YoY % change
International Reserve	Government	Jan-00	Dec-19	YoY % change
Sharia Monetary Operation (SMO)	Government	Apr-08	Dec-19	YoY % change
Government Debt (EOP, NSA, billion rupiah)	Government	Jul-05	Dec-19	YoY % change
Reserve Assets (NSA, EOP, million US\$)	Government	Jan-00	Dec-19	YoY % change
Central Government Operations: Surplus/Deficit (NSA, billion rupiah)	Government	Jan-01	Dec-19	YoY % change
IP: Manufacturing: Large & Medium Enterprises (NSA, 2010=100)	Investment	Jan-00	Dec-19	YoY % change
Motor Vehicle Production (NSA, units)	Investment	Jan-05	Dec-19	YoY % change
Imports of Capital Goods (NSA, '000 US\$)	Investment	Jan-04	Dec-19	YoY % change
J.P. Morgan Real Broad Effective Exch Rate Index, CPI-Based (2010=100)	International Trade	Jan-00	Dec-19	YoY % change
Exports of Goods, fob (NSA, '000 US\$)	International Trade	Jan-04	Dec-19	YoY % change
Imports of Raw Materials and Auxiliary Goods (NSA, '000 US\$)	International Trade	Jan-04	Dec-19	YoY % change

Source: Authors.

Table A5: Kazakhstan Components

Description	Group	Start	End	Transformation
Real Effective Exchange Rate (NSA, Dec-13=100)	Trade	Jan-1995	Dec-19	Level (%)
Assets of the National Fund of Kazakhstan (EOP, NSA, million US\$)	Government	Jan-2001	Dec-19	YoY % change
Loans (EOP, NSA, million KZT)	Financial	Jan-1996	Dec-19	YoY % change
Net International Reserves (NSA, EOP, million US\$)	Government	Dec-1993	Dec-19	YoY % change
Consumer Prices (SA, Dec-15=100)	Consumption	Dec-1992	Dec-19	YoY % change
Production: Coal (NSA, '000 tons)	Investment	Nov-2000	Dec-19	YoY % change
Production: Crude Oil Excluding Gas Condensate (NSA, '000 tons)	Investment	Nov-2000	Dec-19	YoY % change
Retail Trade (NSA, 2005=100)	Consumption	Dec-2000	Dec-19	YoY % change
Private Sector Credit (EOP, NSA, million KZT)	Financial	Dec-1997	Dec-19	YoY % change
Imports (NSA, million US\$)	Trade	Jan-2004	Dec-19	YoY % change
Exports (NSA, million US\$)	Trade	Jan-2004	Dec-19	YoY % change
Real Wages Index: Previous Month=100	Consumption	Dec-2000	Dec-19	Index
Sentix Economic Indicator: Asia ex-Japan	Exogenous International	Jul-2002	Dec-19	YoY % change
US Industrial Production Index	Exogenous International	Jan-1920	Dec-19	Index
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-1960	Dec-19	Index

Source: Authors.

Table A6: Republic of Korea Components

Description	Group	Start	End	Transformation
Domestic Credit Card Usage (NSA, billion won)	Consumption	Jan-03	Dec-19	YoY % change
CPI: All Items Excluding Agricultural Products & Oil (NSA, 2015=100)	Consumption	Jan-00	Dec-19	YoY % change
House Sales Price (SA, Nov-17=100)	Consumption	Jan-11	Dec-19	YoY % change
House Purchase Price Composite Index (Jan-19=100)	Consumption	Jan-00	Dec-19	YoY % change
Electricity Consumption (NSA, '000 kWh)	Consumption	Jan-00	Dec-19	YoY % change
Unemployment Rate (SA, %)	Consumption	Jan-00	Dec-19	Level (%)
Retail Sales Value Index (NSA, 2015=100)	Consumption	Jan-00	Dec-19	YoY % change
Consumer Survey: Composite Consumer Sentiment Index (NSA, 100=Neutral)	Consumption	Jul-08	Dec-19	YoY % change
Composite PMI: Headline: sa: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite PMI: Headline: sa: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
Private Sector Credit (EOP, NSA, billion won)	Financial	Jan-00	Dec-19	YoY % change
Bank of Korea Base Rate (% per annum)	Financial	Jan-00	Dec-19	Level (%)
Money Supply: M2 (avg, SA, billion won)	Financial	Jan-00	Dec-19	YoY % change
Bank of Net Foreign Assets (EOP, NSA, billion won)	Financial	Jan-00	Dec-19	YoY % change
Bank of Net Domestic Assets (EOP, NSA, billion won)	Financial	Jan-00	Dec-19	YoY % change
Loans to Households: Depository Corporations (EOP, NSA, billion won)	Financial	Oct-03	Dec-19	YoY % change
Bank of Korea Loans & Discounts (EOP, billion won)	Financial	Jan-00	Dec-19	YoY % change
Stock Price Index: Korea Composite [KOSPI] (Jan-04-80=100)	Financial	Jan-00	Dec-19	YoY % change
Market Capitalization: Korea Composite [KOSPI] (EOP, billion won)	Financial	Jan-02	Dec-19	YoY % change

Continued on the next page

Description	Group	Start	End	Transformation
Foreign Purchases of Stocks and Bonds (NSA, billion won)	Financial	Mar-10	Dec-19	YoY % change
Foreign Exchange Holdings [Gold+SDRs] (EOP, NSA, million US\$)	Financial	Jan-00	Dec-19	YoY % change
Central Government Debt (EOP, trillion won)	Government	Dec-13	Dec-19	YoY % change
Central Government Budget Surplus/Deficit (NSA, billion won)	Government	Jan-00	Dec-19	YoY % change
BOP: Financial Account: Direct Investment (NSA, million US\$)	Government	Jan-00	Dec-19	YoY % change
Building Permits (NSA, units)	Investment	Jan-00	Dec-19	YoY % change
All Industry Production Including Construction (SA, 2015=100)	Investment	Jan-00	Dec-19	YoY % change
Index of Equipment Investment: Commodities (SA, 2015=100)	Investment	Jan-00	Dec-19	YoY % change
Production Capacity Index (NSA, 2015=100)	Investment	Jan-00	Dec-19	YoY % change
Capacity Utilization Index: Manufacturing (SA, 2015=100)	Investment	Jan-00	Dec-19	YoY % change
Oil and Gas Production (EOP, NSA, '000 barrels)	Investment	Jan-00	Dec-19	YoY % change
Machinery Orders Received (NSA, million won)	Investment	Jan-00	Dec-19	YoY % change
Machinery Orders Received: Iron Structures (NSA, million won)	Investment	Jan-00	Dec-19	YoY % change
Volume Index of Services: All Industries (SA, 2015=100)	Investment	Jan-00	Dec-19	YoY % change
Producers' Shipment Index (PSI) (SA)	Investment	Jan-00	Dec-19	YoY % change
Producers' Inventory Index (PII) (SA)	Investment	Jan-00	Dec-19	YoY % change
J.P. Morgan Real Broad Effective Exchange Rate Index, CPI-Based (2010=100)	International Trade	Jan-00	Dec-19	YoY % change
Tourist Arrivals (NSA, persons)	International Trade	Jan-00	Dec-19	YoY % change
Imports: KCS: Consumer Goods	International Trade	Jan-00	Dec-19	YoY % change
Exports: KCS: Food and Goods for Direct Consumption	International Trade	Jan-00	Dec-19	YoY % change
Exports: KCS: Crude Materials and Fuels	International Trade	Jan-00	Dec-19	YoY % change
Exports: KCS: Light Industry Products	International Trade	Jan-00	Dec-19	YoY % change
Exports: KCS: Heavy Industry Products	International Trade	Jan-00	Dec-19	YoY % change
Imports: KCS: Industrial Materials and Fuels	International Trade	Jan-00	Dec-19	YoY % change
Imports: KCS: Capital Goods	International Trade	Jan-00	Dec-19	YoY % change

Source: Authors.

Table A7: Malaysia Components

Description	Group	Start	End	Transformation
CPI: All Groups (NSA, 2010=100)	Consumption	Jan-00	Dec-19	YoY % change
Motor Vehicle Sales (NSA, units)	Consumption	Jan-00	Dec-19	YoY % change
Unemployment Rate (NSA, %)	Consumption	Jan-10	Dec-19	Level (%)
Sales of Manufactured Products (NSA, million ringgit)	Consumption	Jan-08	Dec-19	YoY % change
Distributive Trade (NSA, million ringgit)	Consumption	Jan-13	Dec-19	YoY % change
Composite PMI: Headline: sa: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite PMI: Headline: sa: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
Debt Securities in the Primary Market (EOP, million ringgit)	Financial	Jan-00	Dec-19	YoY % change
Overnight Policy Rate (avg, %)	Financial	May-04	Dec-19	Level (%)
Islamic Interbank Rates: Overnight (%)	Financial	Feb-15	Dec-19	Level (%)
Stock Price Index: FTSE Bursa Malaysia KLCI (avg, Jan-1-77=100)	Financial	Jan-00	Dec-19	YoY % change
Local Companies	Financial	Jan-00	Dec-19	YoY % change
Foreign Companies	Financial	Jan-00	Dec-19	YoY % change
Banking System: Total Deposits	Financial	Jan-07	Dec-19	YoY % change
Private Sector Credit (EOP, NSA, million ringgit)	Financial	Jan-00	Dec-19	YoY % change
Money Supply: M2 (EOP, million ringgit)	Government	Jan-00	Dec-19	YoY % change
Net Official Reserves (EOP, NSA, million ringgit)	Government	Jan-00	Dec-19	YoY % change
Federal Government Budget: Overall Balance (NSA, million ringgit)	Government	Jan-07	Dec-19	YoY % change
Number of Housing Units Approved for Construction (NSA, number)	Investment	Jan-00	Oct-19	YoY % change
IP Excluding Construction (NSA, 2015=100)	Investment	Jan-00	Dec-19	Index
IP: Elec Machinery, Apparatus Appliances and Supplies (NSA, 2015=100)	Investment	Jan-15	Nov-19	YoY % change
IP: Construction-Related Cluster (NSA, 2015=100)	Investment	Jan-07	Nov-19	YoY % change
Production of Natural Rubber (metric tons)	Investment	May-08	Dec-19	YoY % change
Closing Stock of Oil Palm Products: Palm Oil (EOP, metric tons)	Investment	Jan-12	Dec-19	YoY % change
Manufacturing PMI: Headline: sa: Malaysia	Investment	Feb-17	Dec-19	YoY % change
Coincident Index (NSA, 2005=100)	Investment	Jan-00	Nov-19	YoY % change
J.P. Morgan Real Broad Effective Exchange Rate Index, CPI-Based (2010=100)	International Trade	Jan-00	Dec-19	YoY % change
Exports fob: sa	International Trade	Jan-00	Dec-19	YoY % change
Imports cif: sa	International Trade	Jan-00	Dec-19	YoY % change

Source: Authors.

Table A8: Philippines Components

Description	Group	Start	End	Transformation
Real Minimum Daily Wage Rate: 2012 Prices: NCR: Non Agricultural (spliced)	Consumption	Jan-00	Dec-19	YoY % change
Real Minimum Daily Wage Rate: 2012 Prices: NCR: Agri: Plantation (spliced)	Consumption	Jan-00	Dec-19	YoY % change
Real Minimum Daily Wage Rate: 2012 Prices: NCR: Agri: Non Plantation (spliced)	Consumption	Jan-00	Dec-19	YoY % change
Light Rail Transit: Blue Line: Passenger Movement	Consumption	Jan-04	Dec-19	YoY % change
CPI: All Items (SA, 2012=100)	Consumption	Jan-00	Dec-19	YoY % change
Wholesale Price Index: All Items (NSA, 1998=100)	Consumption	Jan-00	Dec-19	YoY % change
Net Sales Index (NSI): Value	Consumption	Jan-01	Dec-19	YoY % change
Net Sales Index (NSI): Volume	Consumption	Jan-01	Dec-19	YoY % change
CAMPI Motor Vehicle Sales: Passenger Cars (NSA, units)	Consumption	Jan-06	Dec-19	YoY % change
CAMPI Motor Vehicle Sales: Commercial Vehicles (NSA, units)	Consumption	Jan-06	Dec-19	YoY % change
Composite PMI: Headline: sa: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite PMI: Headline: sa: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
Dividend Yield Ratio	Financial	Jul-06	Dec-19	Index
Number of Companies listed in PSE	Financial	Jan-00	Dec-19	YoY % change
PB Ratio	Financial	Jul-06	Dec-19	Level (%)
PE Ratio	Financial	Jul-06	Dec-19	Level (%)
Equity Market Index: Month End: PSEi	Financial	Jan-00	Dec-19	YoY % change
Market Capitalization	Financial	Jan-00	Dec-19	YoY % change
Time Deposit Rate: Long-Term: More Than 360 Days (% per annum)	Financial	Jan-00	Dec-19	Level (%)
Time Deposit Rate: Short-Term: Less Than 360 Days (% per annum)	Financial	Jan-00	Dec-19	Level (%)
Savings Deposit Rate (% per annum)	Financial	Jan-00	Dec-19	Level (%)
Bank Average Lending Rate (% per annum)	Financial	Jan-00	Dec-19	Level (%)
Interbank Call Loan Rate (% per annum)	Financial	Jan-00	Dec-19	Level (%)
Universal and Commercial Bank Loans Including Memo Items (EOP, million pesos)	Financial	Dec-01	Dec-19	YoY % change
Private Sector Credit (EOP, NSA, million pesos)	Financial	Dec-01	Dec-19	YoY % change
M2 [SRF-Based] (EOP, NSA, million pesos)	Government	Jan-00	Dec-19	YoY % change
Central Government Budget Surplus/Deficit (NSA, million pesos)	Government	Jan-00	Dec-19	YoY % change
Central Government Revenue: Tax Revenue (NSA, million pesos)	Government	Jan-00	Dec-19	YoY % change
Central Government Revenue: Nontax Revenue (NSA, million pesos)	Government	Jan-00	Dec-19	YoY % change
International Reserves: Net (EOP, NSA, million US\$)	Government	Jan-00	Dec-19	YoY % change
Reverse Repo Rate: Overnight [Borrowing] (EOP, % per annum)	Government	Jan-05	Dec-19	Level (%)
IPI Volume (2000=100, spliced)	Investment	Jan-00	Dec-19	YoY % change
IPI Value (2000=100, spliced)	Investment	Jan-00	Dec-19	YoY % change
Manufacturing Production: Volume Index: Manufacturing (NSA, 2000=100)	Investment	Jan-00	Dec-19	YoY % change
Manufacturing Production: Value Index: Manufacturing (NSA, 2000=100)	Investment	Jan-00	Dec-19	YoY % change

Continued on the next page

Description	Group	Start	End	Transformation
BOP: Direct Investment: Domestic (NSA, million US\$)	Investment	Jan-05	Dec-19	YoY % change
BOP: Financial Account: Direct Investment (NSA, million US\$)	Investment	Jan-05	Dec-19	YoY % change
Private Building Construction: Residential (RE)	Investment	Jan-00	Dec-19	YoY % change
Private Building Construction: Non Residential (NR)	Investment	Jan-00	Dec-19	YoY % change
Purchasing Managers' Index (PMI)	Investment	Jan-11	Dec-19	Index
Average Capacity Utilization Rate: 2000=100: Manufacturing Enterprises (spliced)	Investment	Jan-00	Dec-19	Level (%)
Visitor Arrivals: Total	International Trade	Jan-00	Dec-19	YoY % change
Real Effective Exchange Rates	International Trade	Jan-00	Dec-19	YoY % change
BOP: Goods & Services: Exports (NSA, million US\$)	International Trade	Jan-00	Dec-19	YoY % change
BOP: Goods & Services: Imports (NSA, million US\$)	International Trade	Jan-00	Dec-19	YoY % change
BOP: OFW Remittances (NSA, '000 US\$)	International Trade	Jan-00	Dec-19	YoY % change

Source: Authors.

Table A9: Singapore Components

Description	Group	Start	End	Transformation
CPI: All Items (SA, 2019=100)	Consumption	Jan-00	Dec-19	YoY % change
Retail Sales (SA, 2017=100)	Consumption	Jan-00	Dec-19	YoY % change
Sales Volume Index of Food & Beverage Services (SA, 2017=100)	Consumption	Jan-00	Dec-19	YoY % change
Motor Vehicle Population (EOP, NSA, units)	Consumption	Jan-00	Dec-19	YoY % change
Telecom: International Telephone Call Minutes (NSA, million)	Consumption	Jan-00	Dec-18	YoY % change
Composite PMI: Headline: sa: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite PMI: Headline: sa: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
Singapore Overnight Rate Average (% per annum)	Financial	Jul-05	Dec-19	Level (%)
Private Sector Credit (EOP, NSA, million US\$)	Financial	Jan-00	Dec-19	YoY % change
Money Supply: M2 (EOP, SA, million US\$)	Financial	Jan-00	Dec-19	YoY % change
Bk Deposits of Nonbank Customers (EOP, NSA, million US\$)	Financial	Jan-00	Dec-19	YoY % change
Domestic Liquidity Indicator [change on 3 months ago] (NSA, %)	Financial	Jan-02	Sep-19	Level (%)
Dom Bank Units: Net Foreign Assets/Liabilities (EOP, NSA, million US\$)	Financial	Jan-00	Dec-19	YoY % change
Stock Price Index: Straits Times (avg, Jan-09-08=3344.53)	Financial	Jan-00	Dec-19	YoY % change
Nominal Effective Exchange Rates (Jan-99=100)	Government	Jan-00	Dec-19	YoY % change
Foreign Reserves (EOP, NSA, million US\$)	Government	Jan-00	Dec-19	YoY % change
Central Government: Cash Surplus/Deficit (NSA, million US\$)	Government	Apr-11	Dec-19	YoY % change
IP: Manufacturing [Excluding Rubber Processing] (SA, 2019=100)	Investment	Jan-00	Dec-19	YoY % change
PMI: Manufacturing (SA, 50+=Expansion)	Investment	Jan-00	Dec-19	YoY % change
Business Formation (NSA, number)	Investment	Jan-00	Dec-19	YoY % change
Business Cessation (NSA, number)	Investment	Jan-00	Dec-19	YoY % change
Hotel: Standard Average Occupancy Rate (%)	International Trade	Jan-00	Dec-19	Level (%)
Tourist Arrivals (SA, persons)	International Trade	Jan-00	Dec-19	YoY % change
Air Passenger Arrivals (NSA, persons)	International Trade	Jan-00	Dec-19	YoY % change
Outbound Departures of Singapore Residents (NSA, persons)	International Trade	Jan-11	Dec-19	YoY % change
Imports: 2018p: sa: Oil	International Trade	Jan-00	Dec-19	YoY % change
Imports: 2018p: sa: Non-Oil	International Trade	Jan-00	Dec-19	YoY % change
Domestic Exports: 2018p: sa: Oil	International Trade	Jan-00	Dec-19	YoY % change
Domestic Exports: 2018p: sa: Non-Oil	International Trade	Jan-00	Dec-19	YoY % change
Re-Exports: 2018p: sa: Oil	International Trade	Jan-00	Dec-19	YoY % change
Re-Exports: 2018p: sa: Non-Oil	International Trade	Jan-00	Dec-19	YoY % change

Source: Authors.

Table A10: Taipei,China Components

Description	Group	Start	End	Transformation
CPI: All Items (SA, 2016=100)	Consumption	Jan-00	Dec-19	YoY % change
Wholesale Price Index (SA, 2016=100)	Consumption	Jan-00	Dec-19	YoY % change
Construction Cost Index (NSA, 2016=100)	Consumption	Jan-00	Dec-19	YoY % change
Unemployment Rate (SA, %)	Consumption	Jan-00	Dec-19	Level (%)
Average Monthly Earnings: Industry and Services (NSA, NT\$/month)	Consumption	Jan-00	Dec-19	YoY % change
Sales: Domestic Sales (DS): Manufacturing	Consumption	Jan-00	Dec-19	YoY % change
Composite PMI: Headline: sa: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite PMI: Headline: sa: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
New Loans by Five Leading Banks (NSA, million NT\$)	Financial	Jan-00	Dec-19	YoY % change
Stock Price Index: Weighted Price (Jun-30-66=100)	Financial	Jan-00	Dec-19	YoY % change
Private Sector Credit (EOP, NSA, million NT\$)	Financial	Jan-00	Dec-19	YoY % change
Monetary Aggregates: M2 (SA, billion NT\$)	Government	Jan-00	Dec-19	YoY % change
General Government Finance: Surplus/Deficit (NSA, 100 million NT\$)	Government	Jan-00	Dec-19	YoY % change
Housing Construction License Households (NSA, units)	Investment	Jan-01	Dec-19	YoY % change
IP Industry excl Building Construction (SA, 2016=100)	Investment	Jan-00	Dec-19	Index
Manufacturing Inventories (NSA, 2016=100)	Investment	Jan-00	Dec-19	YoY % change
Manufacturing Shipments (NSA, 2016=100)	Investment	Jan-00	Dec-19	YoY % change
Motor Vehicle Production (NSA, Units)	Investment	Aug-02	Dec-19	YoY % change
Labor Productivity: Industry (NSA, 2016=100)	Investment	Jan-00	Dec-19	YoY % change
Manufacturing Inventories (NSA, 2016=100)	Investment	Jan-00	Dec-19	YoY % change
Manufacturing Inventory Ratio (NSA, %)	Investment	Jan-00	Dec-19	YoY % change
Manufacturing PMI (SA, 50+=Expansion)	Investment	Jul-12	Dec-19	Index
Producers Shipment Index (PSI): Manufacturing	Investment	Jan-00	Dec-19	Index
Producers Inventory Index (PII): Manufacturing [Mfg]	Investment	Jan-00	Dec-19	Index
J.P. Morgan Real Broad Effective Exchange Rate Index, CPI-Based (2010=100)	International Trade	Jan-00	Dec-19	YoY % change
Export Orders Trend Index by Number of Enterprises (50+=Growth)	International Trade	Jan-00	Dec-19	YoY % change
Total Export: Custom Clearance	International Trade	Jan-00	Dec-19	YoY % change
Total Import: Custom Clearance	International Trade	Jan-00	Dec-19	YoY % change

Source: Authors.

Table A11: Thailand Components

Description	Group	Start	End	Transformation
No of Job Vacancies: SA	Consumption	Jan-00	Dec-19	YoY % change
Avg Mthly Wage: Total: SA	Consumption	Jan-01	Dec-19	YoY % change
No of New Applicants: SA	Consumption	Jan-00	Dec-19	YoY % change
Unemployment Rate (NSA, %): SA	Consumption	Jan-01	Dec-19	Level (%)
Consumer Confidence Index (NSA, > 50=Growth): SA	Consumption	Jan-00	Dec-19	YoY % change
CPI: All Commodities (NSA, 2015=100): SA	Consumption	Jan-00	Dec-19	YoY % change
Retail Sales Index (RSI): At 2002 Price: SA	Consumption	Jan-00	Dec-19	YoY % change
Producer Price Index (NSA, 2010=100): SA	Consumption	Jan-00	Dec-19	YoY % change
Shipment Index (SI):SA	Consumption	Jan-00	Dec-19	YoY % change
Composite PMI: Headline: sa: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite PMI: Headline: sa: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
Stock Price Index: Bangkok SET (April 30, 1975=100): SA	Financial	Jan-00	Dec-19	YoY % change
Private Investment Index (PII): SA	Financial	Jan-05	Dec-19	YoY % change
Money Market Rate: Interbank Overnight Lending Rate (% per annum): NSA	Financial	Jan-00	Dec-19	YoY % change
One-Day Repurchase Rate (% , avg): NSA	Financial	Jun-00	Dec-19	Level (%)
Private Sector Credit (EOP, NSA, million baht): SA	Financial	Jan-03	Dec-19	YoY % change
Monetary Aggregates: Broad Money (NSA, EOP, million baht): SA	Government	Jan-00	Dec-19	YoY % change
Open Market Operations: Current Account Balances (million baht): SA	Government	Feb-07	Dec-19	YoY % change
Public Debt Outstanding (NSA, EOP, billion baht): SA	Government	Jan-05	Dec-19	YoY % change
Central Government Budget Surplus/Deficit (NSA, million baht): NSA	Government	Oct-02	Dec-19	YoY % change
BOP: Overall Balance (NSA, million baht): NSA	Government	Jan-05	Dec-19	YoY % change
International Reserves (NSA, EOP, million baht): NSA	Government	Jan-00	Dec-19	YoY % change
HPI: Single-Detached House, Including Land [3-Mo Avg] (NSA, Jan-09=100): SA	Investment	Mar-08	Dec-19	YoY % change
Production Value Index (PVI): SA	Investment	Jan-00	Dec-19	YoY % change
Value Added Production Index: SA, Spliced	Investment	Jan-00	Dec-19	YoY % change
Capacity Utilization Rate: 2016=100: SA, Spliced	Investment	Jan-00	Dec-19	YoY % change
Expected Business Sentiment (NSA, % balance): SA	Investment	Jan-00	Dec-19	YoY % change
Finished Goods Inventory Index (FII): SA	Investment	Jan-00	Dec-19	YoY % change
Foreign Direct Investment: Net: NSA	Investment	Jan-05	Dec-19	YoY % change
Real Effective Exchange Rate Index (2012=100): SA	International Trade	Jan-00	Dec-19	YoY % change
Export Value Index (SA, 2012=100, baht)	International Trade	Jan-00	Dec-19	YoY % change
Import Value Index (SA, 2012=100, baht)	International Trade	Jan-00	Dec-19	YoY % change

Source: Authors.

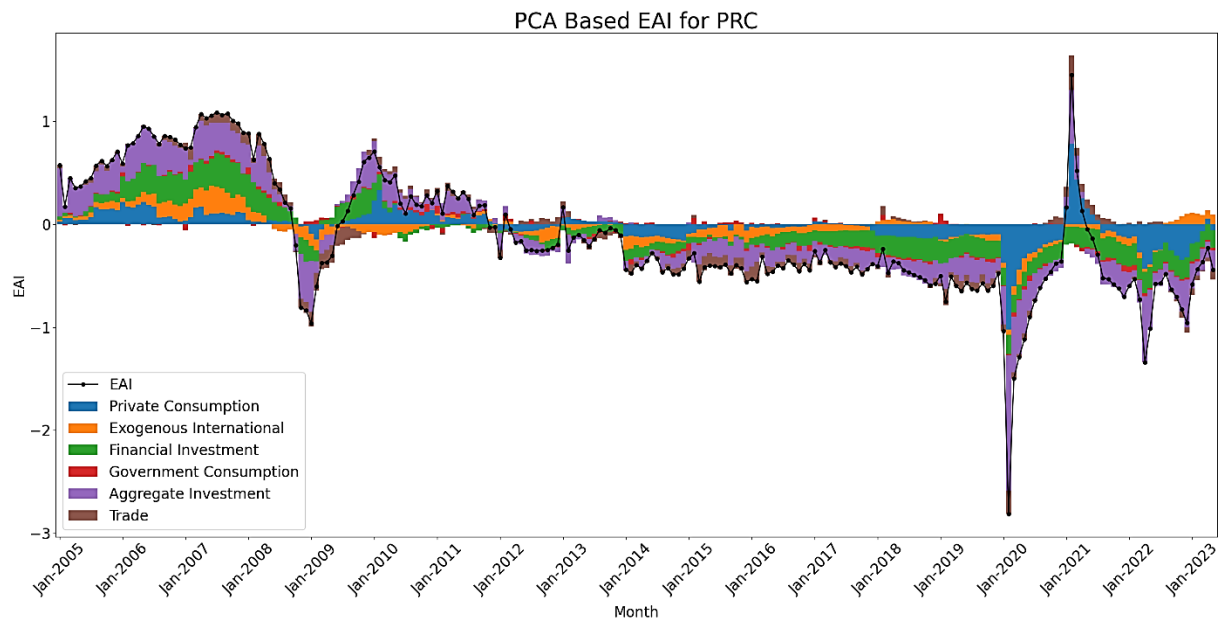
Table A12: Viet Nam Components

Description	Group	Start	End	Transformation
Vehicle Sales (NSA, units)	Consumption	Jan-13	Dec-19	YoY % change
Labour Employed Index for Industrial Enterprises: MoM	Consumption	Nov-14	Dec-19	Index
Retail Sales: Total	Consumption	Jan-00	Dec-19	YoY % change
Consumer Price Index: All Items	Consumption	Jul-01	Dec-19	YoY % change
Motor Vehicle Sales: Including MBV & Lexus: Total	Consumption	Jan-11	Dec-19	YoY % change
Freight Carried: YTD: Total	Consumption	Jan-00	2017m2	YoY % change
Composite PMI: Headline: sa: Developed Markets	Exogenous International	Oct-16	Dec-19	Index
Composite PMI: Headline: sa: Emerging Markets	Exogenous International	Oct-16	Dec-19	Index
Effective Federal Funds Rate	Exogenous International	Jan-00	Dec-19	Level (%)
Commodity Price Index: Energy	Exogenous International	Jan-00	Dec-19	YoY % change
Commodity Price Index: Non-Energy: Agriculture	Exogenous International	Jan-00	Dec-19	YoY % change
Credit to the Economy (EOP, NSA, billion dong)	Financial	Apr-12	2019m1 1	YoY % change
Ho Chi Minh Stock Exchange: VN Index (Jul-28-2000=100)	Financial	Feb-04	Dec-19	YoY % change
Deposits of Economic Entities at Credit Institutions (EOP, billion dong)	Financial	Apr-12	2019m1 1	YoY % change
Refinancing Rate (% , EOP)	Government	Aug-03	Dec-19	Level (%)
Realized Investment from General Government Budget (NSA, billion dong)	Government	Jan-04	Dec-19	YoY % change
International Liquidity: International Reserves	Government	Dec-00	2019m1 0	YoY % change
Banking Survey: Money: SA	Government	Dec-00	2019m9	YoY % change
Banking Survey: Foreign Assets: Net	Government	Dec-00	2019m9	YoY % change
Industrial Production Index	Investment	Jan-08	Dec-19	Index
FDI: YTD: Registered Cap: Total	Investment	Dec-13	Dec-19	YoY % change
Manufacturing PMI: Headline: sa: Vietnam	Investment	Feb-17	Dec-19	Index
J.P. Morgan Real Broad Effective Exchange Rate Index, CPI-Based (2010=100)	International Trade	Jan-00	Dec-19	YoY % change
International Visitors ('000 persons)	International Trade	Sep-04	Dec-19	YoY % change
Exports	International Trade	Jan-00	Dec-19	YoY % change
Imports	International Trade	Jan-00	Dec-19	YoY % change

Source: Authors.

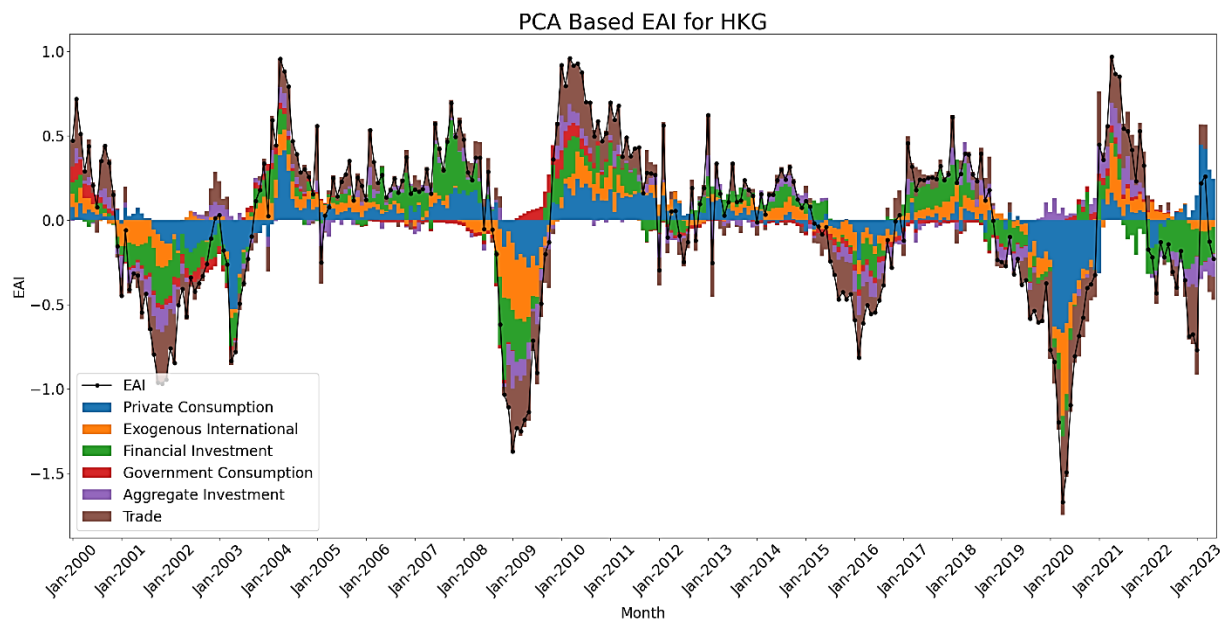
Figure A: PCA-Based EAI over Time

Figure A1: People's Republic of China's Economic Activity Index (PCA-Based)



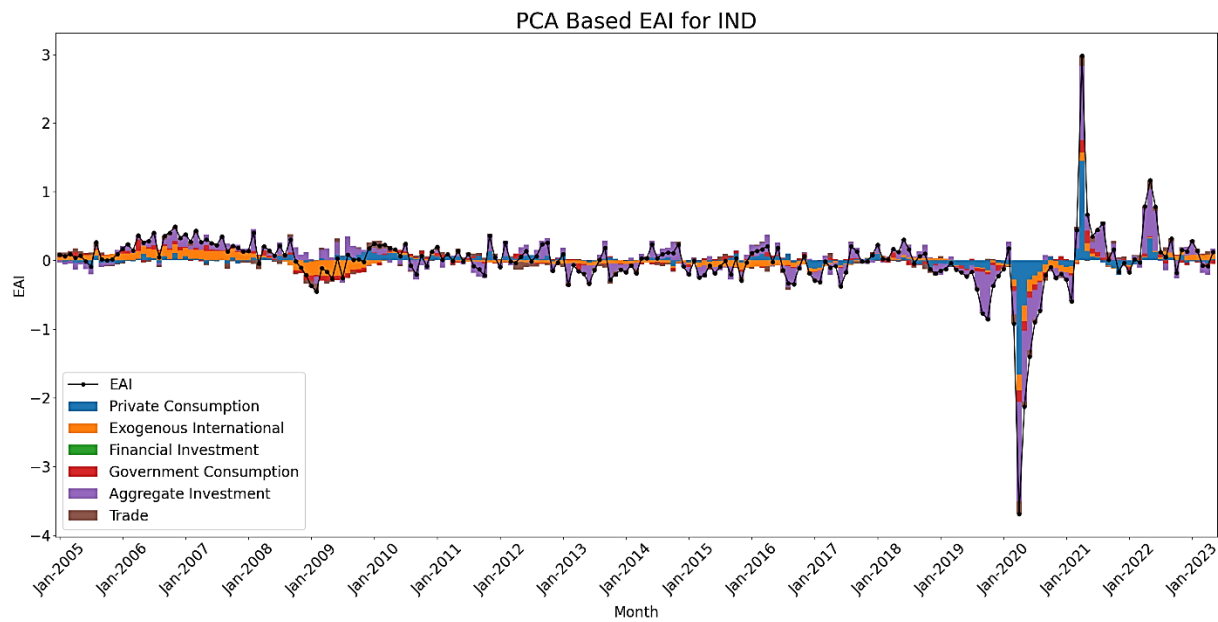
Source: Authors' estimates.

Figure A2: Hong Kong, China's Economic Activity Index (PCA-Based)



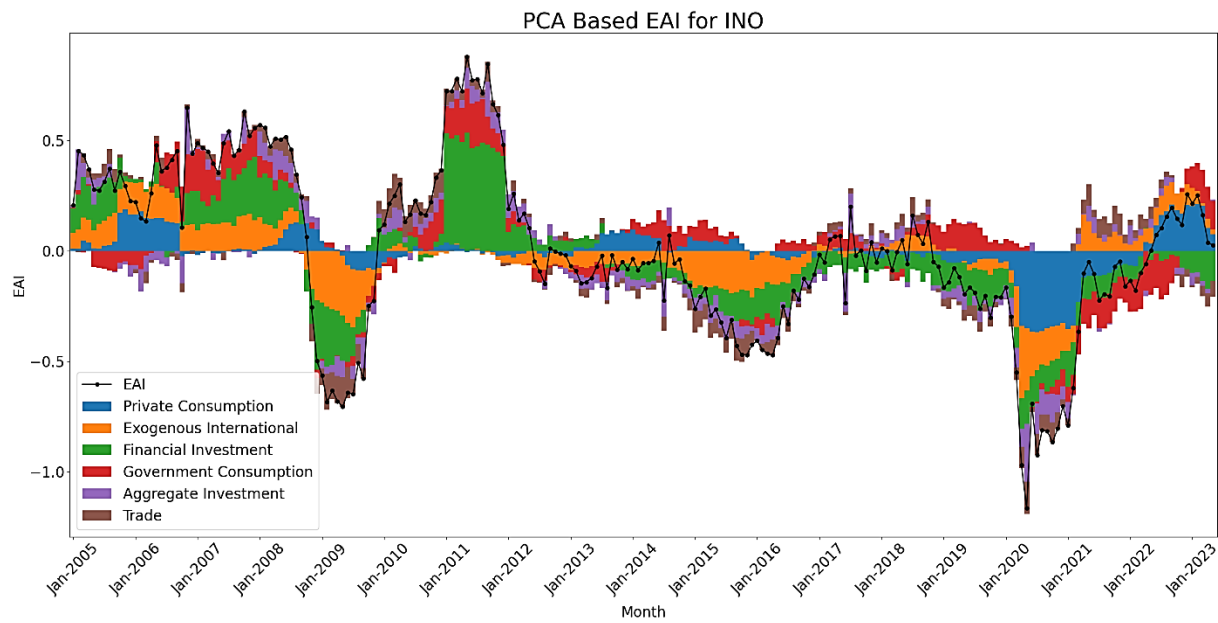
Source: Authors' estimates.

Figure A3: India's Economic Activity Index (PCA-Based)



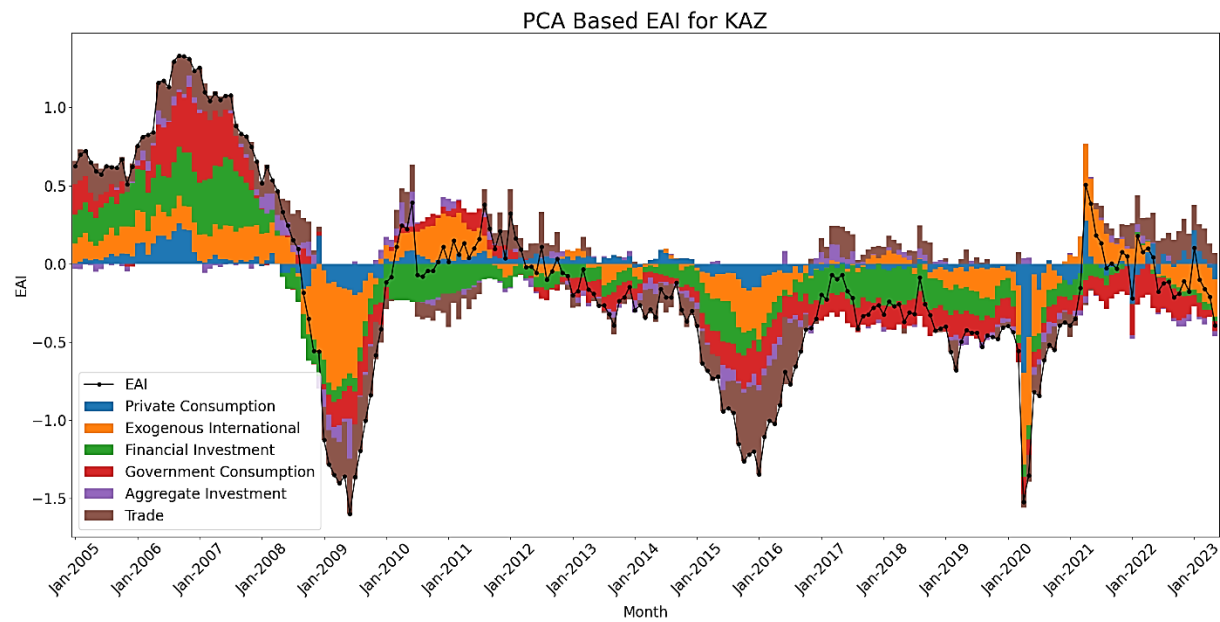
Source: Authors' estimates.

Figure A4: Indonesia's Economic Activity Index (PCA-Based)



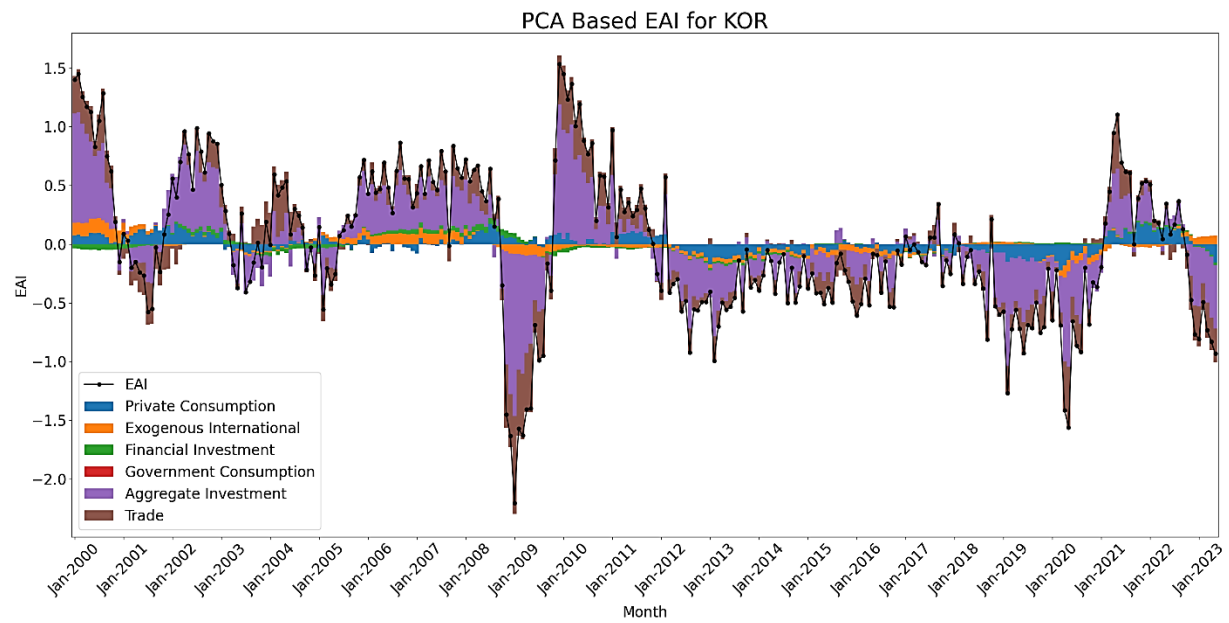
Source: Authors' estimates.

Figure A5: Kazakhstan's Economic Activity Index (PCA-Based)



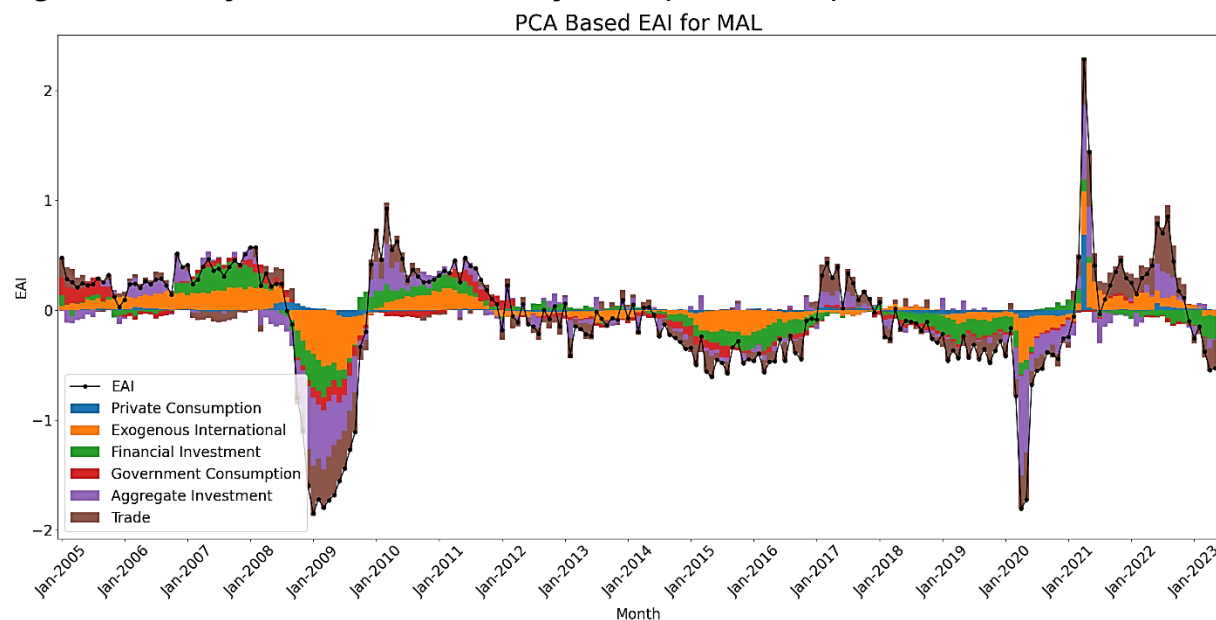
Source: Authors' estimates.

Figure A6: Republic of Korea's Economic Activity Index (PCA-Based)



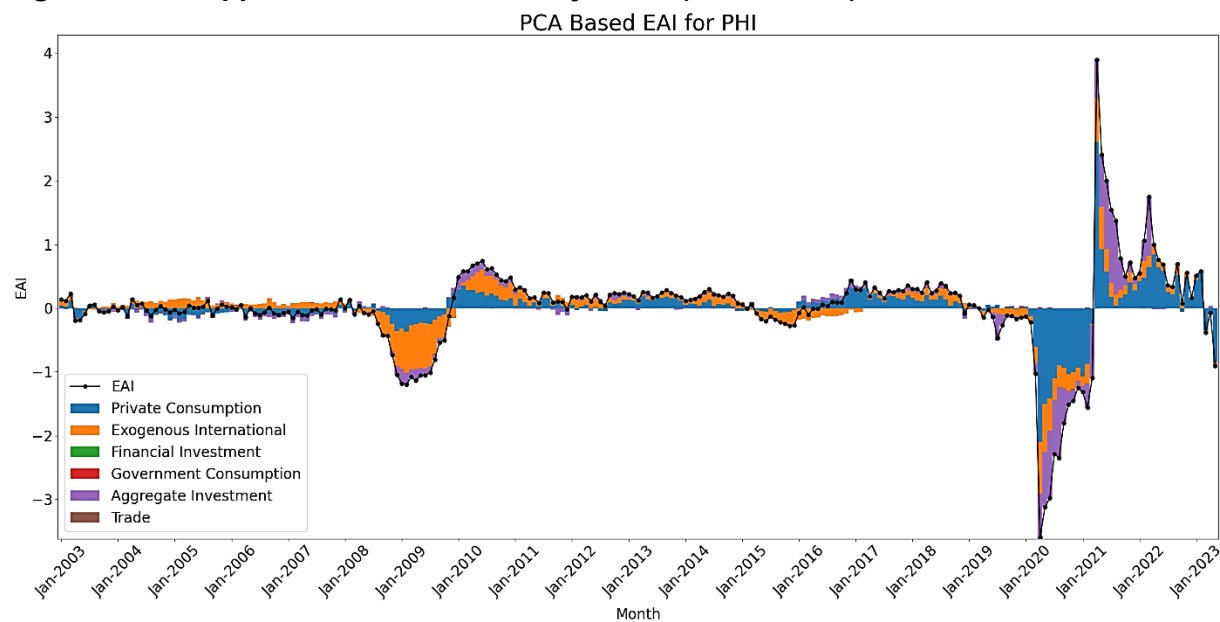
Source: Authors' estimates.

Figure A7: Malaysia's Economic Activity Index (PCA-Based)



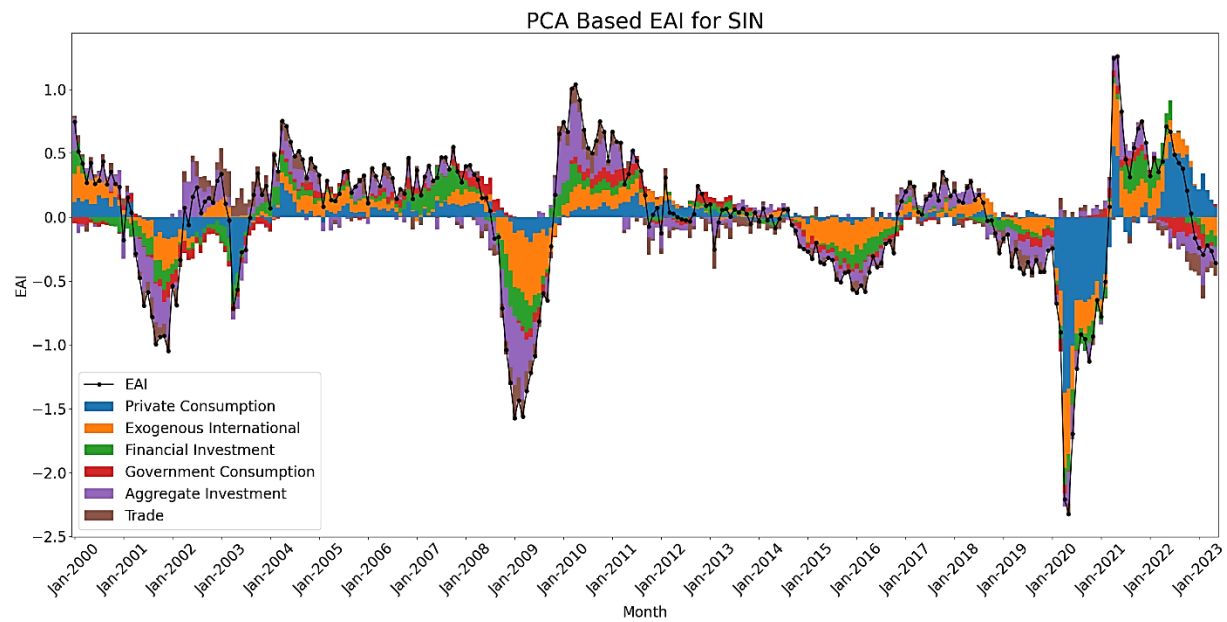
Source: Authors' estimates.

Figure A8: Philippines' Economic Activity Index (PCA-Based)



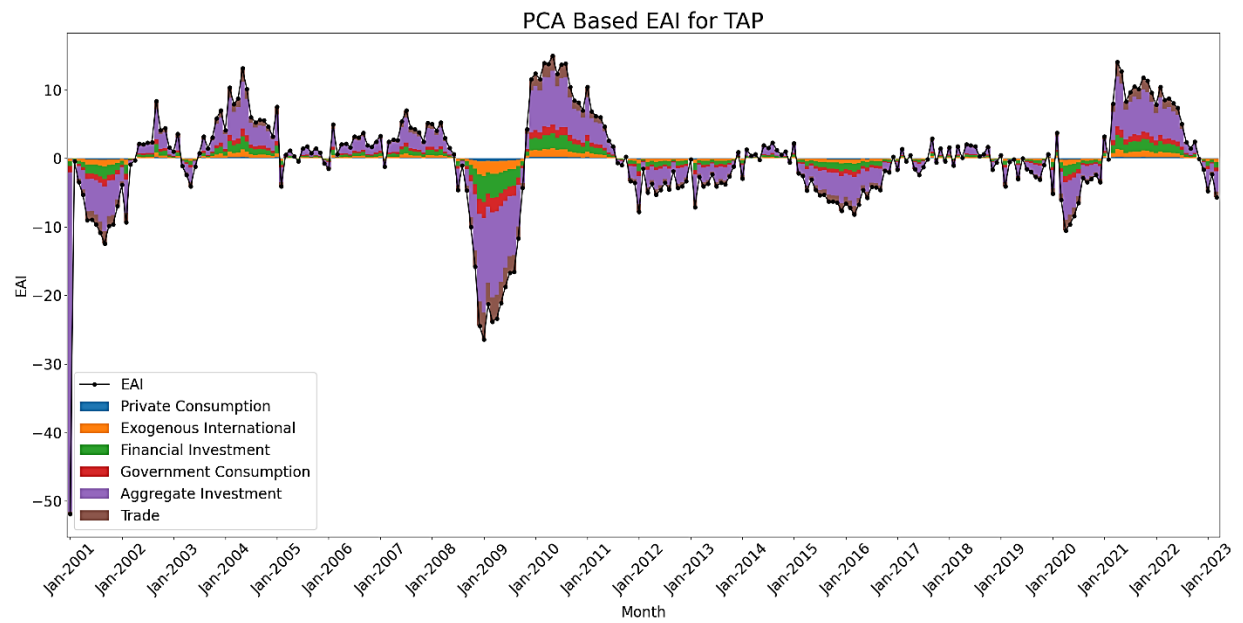
Source: Authors' estimates.

Figure A9: Singapore's Economic Activity Index (PCA-Based)



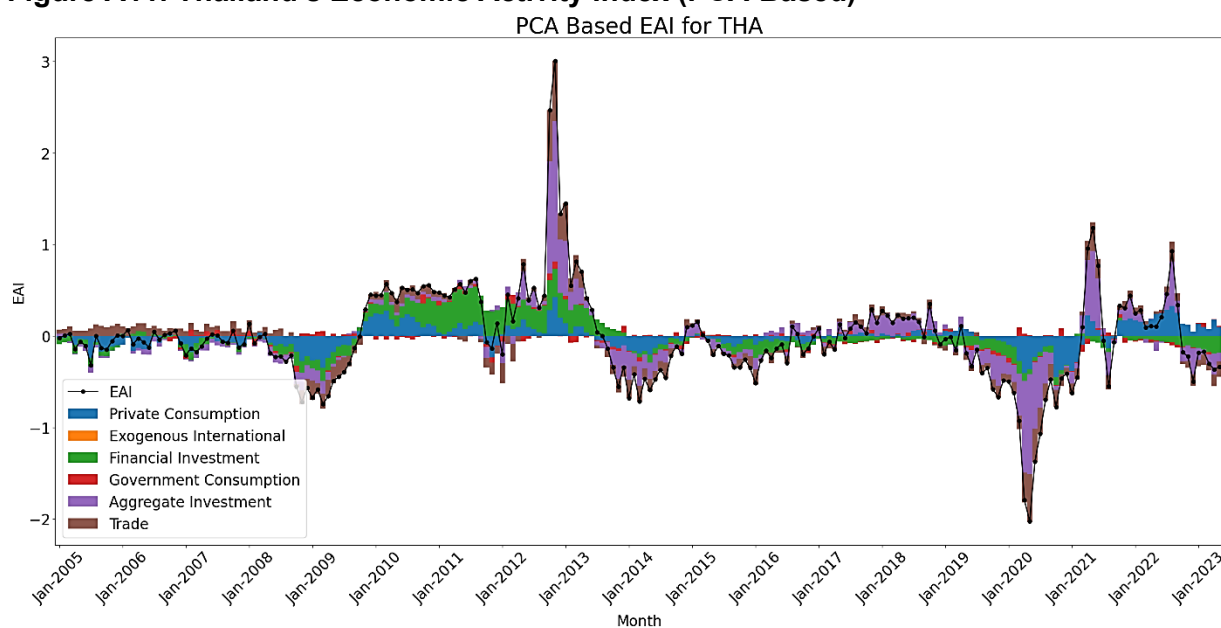
Source: Authors' estimates.

Figure A10: Taipei,China's Economic Activity Index (PCA-Based)



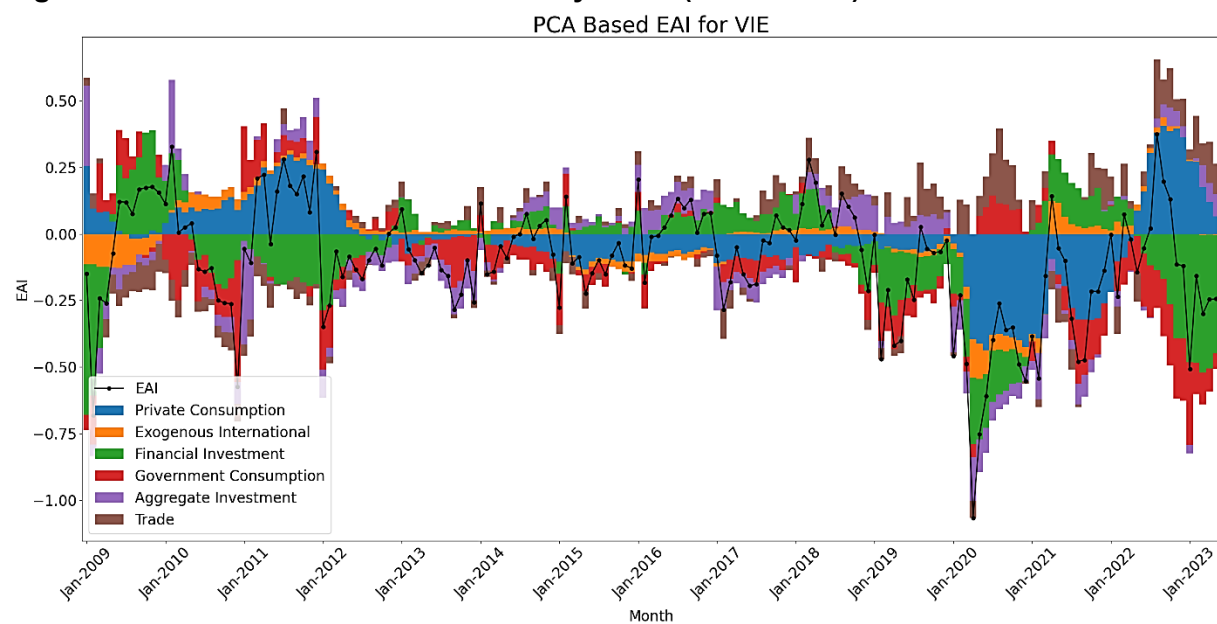
Source: Authors' estimates.

Figure A11: Thailand's Economic Activity Index (PCA-Based)



Source: Authors' estimates.

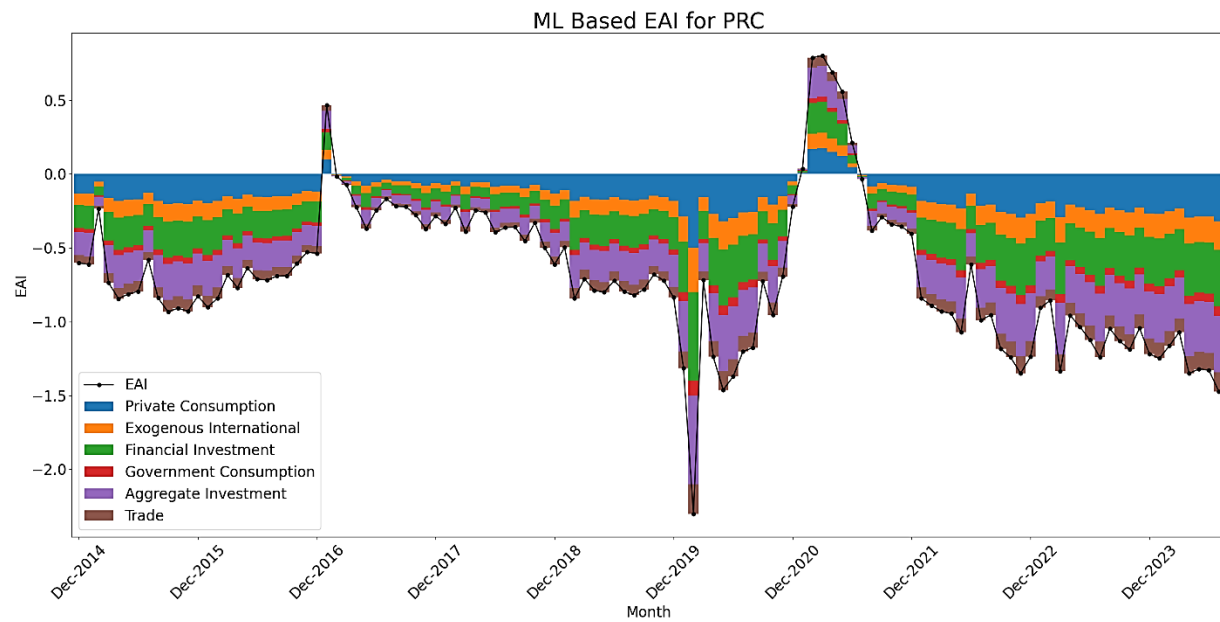
Figure A12: Viet Nam's Economic Activity Index (PCA-Based)



Source: Authors' estimates.

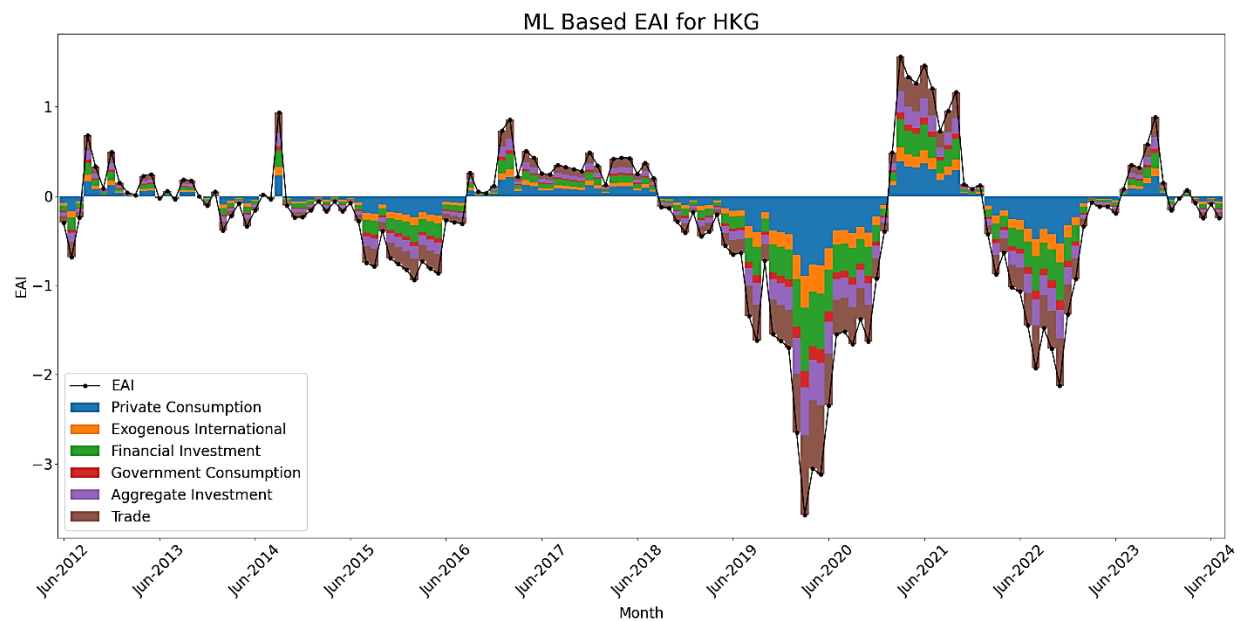
Figure B: ML-Based EAI over Time

Figure B1: People's Republic of China's Economic Activity Index (ML-Based)



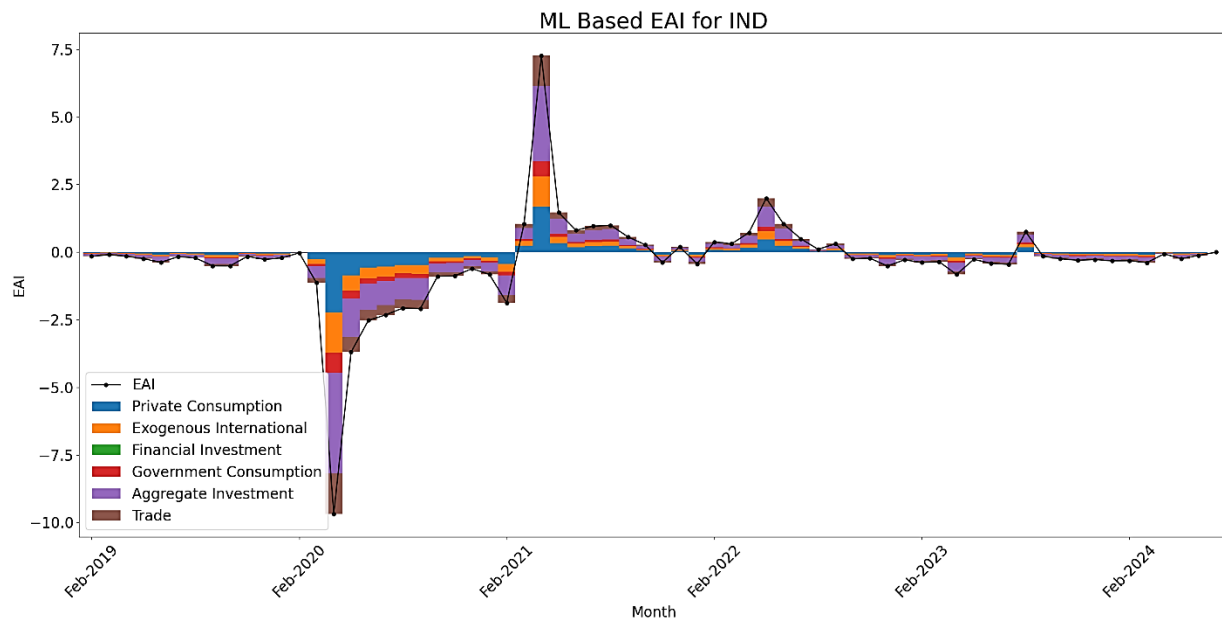
Source: Authors' estimates.

Figure B2: Hong Kong, China's Economic Activity Index (ML-Based)



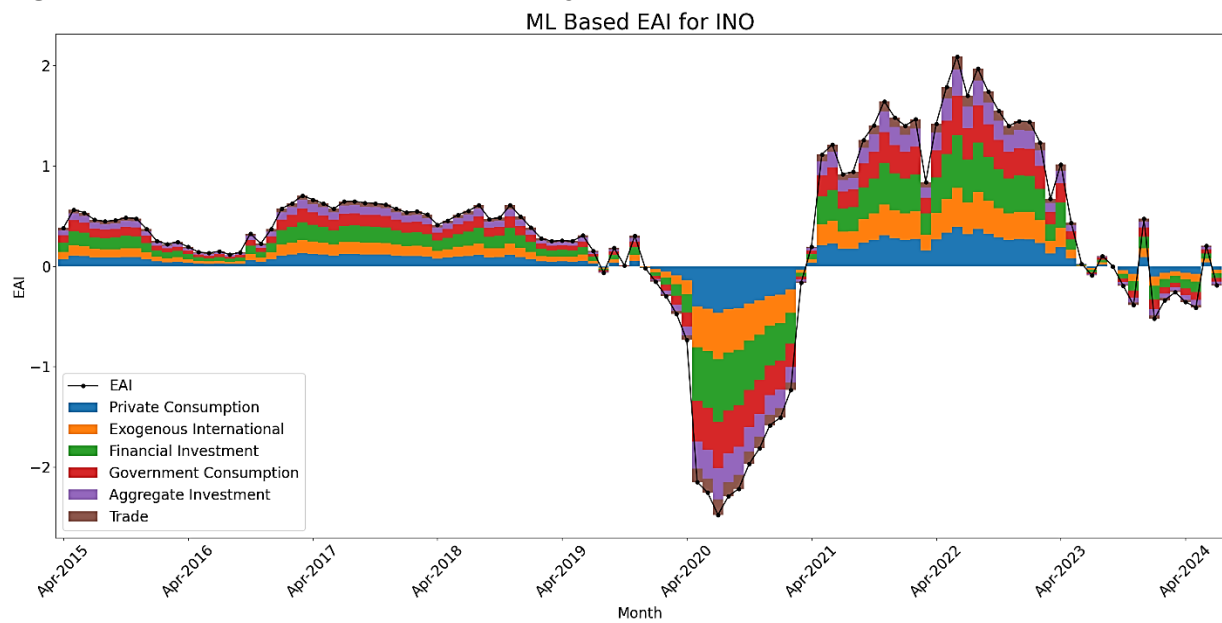
Source: Authors' estimates.

Figure B3: India's Economic Activity Index (ML-Based)



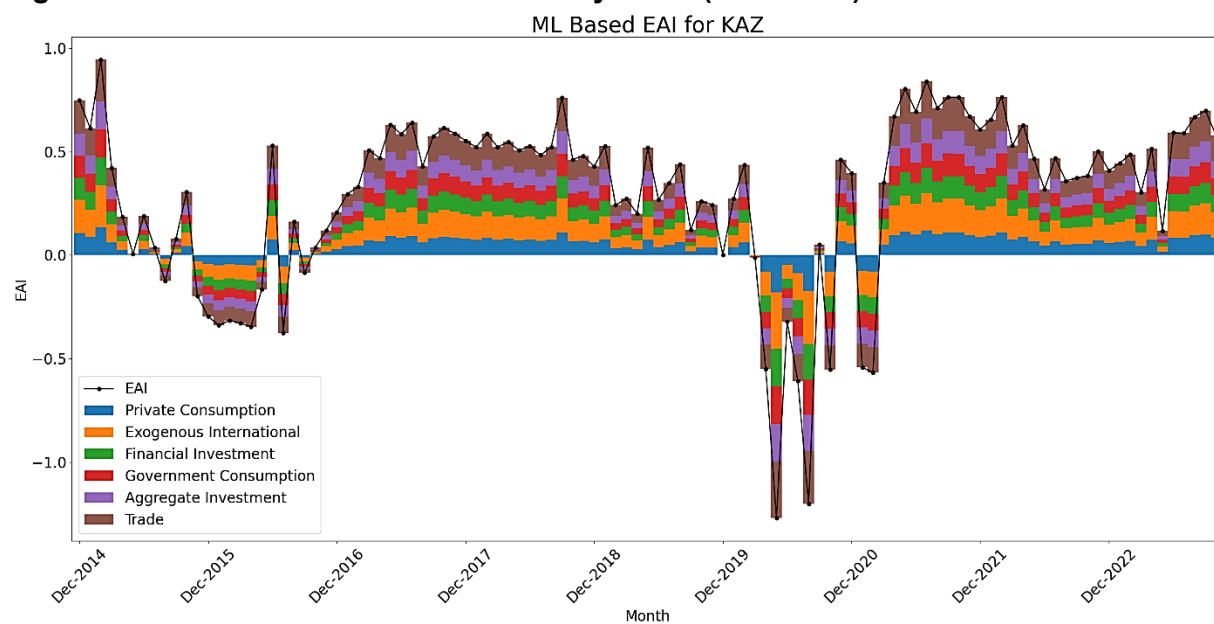
Source: Authors' estimates.

Figure B4: Indonesia's Economic Activity Index (ML-Based)



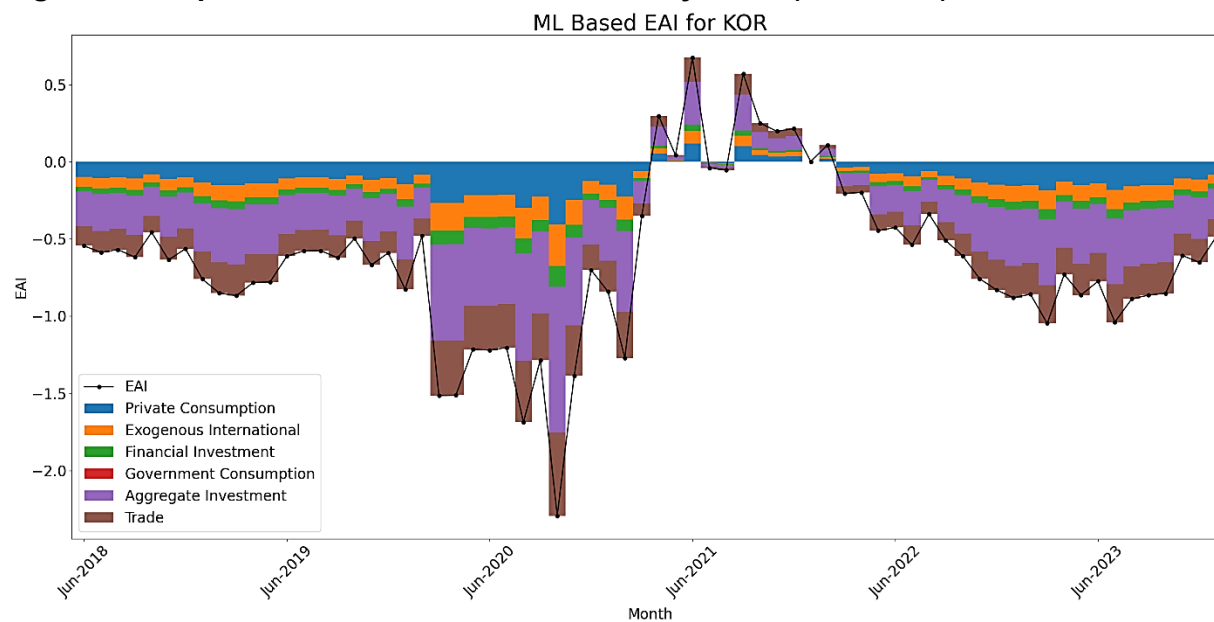
Source: Authors' estimates.

Figure B5: Kazakhstan's Economic Activity Index (ML-Based)



Source: Authors' estimates.

Figure B6: Republic of Korea's Economic Activity Index (ML-Based)



Source: Authors' estimates.

Figure B7: Malaysia's Economic Activity Index (ML-Based)

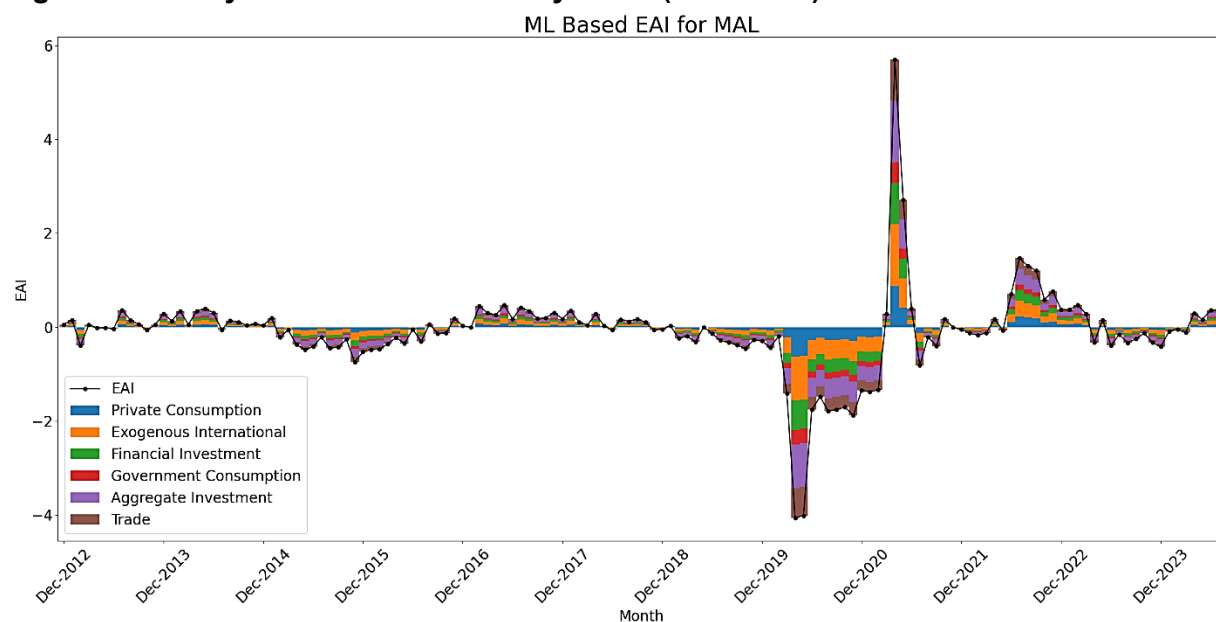


Figure B8: Philippines' Economic Activity Index (ML-Based)

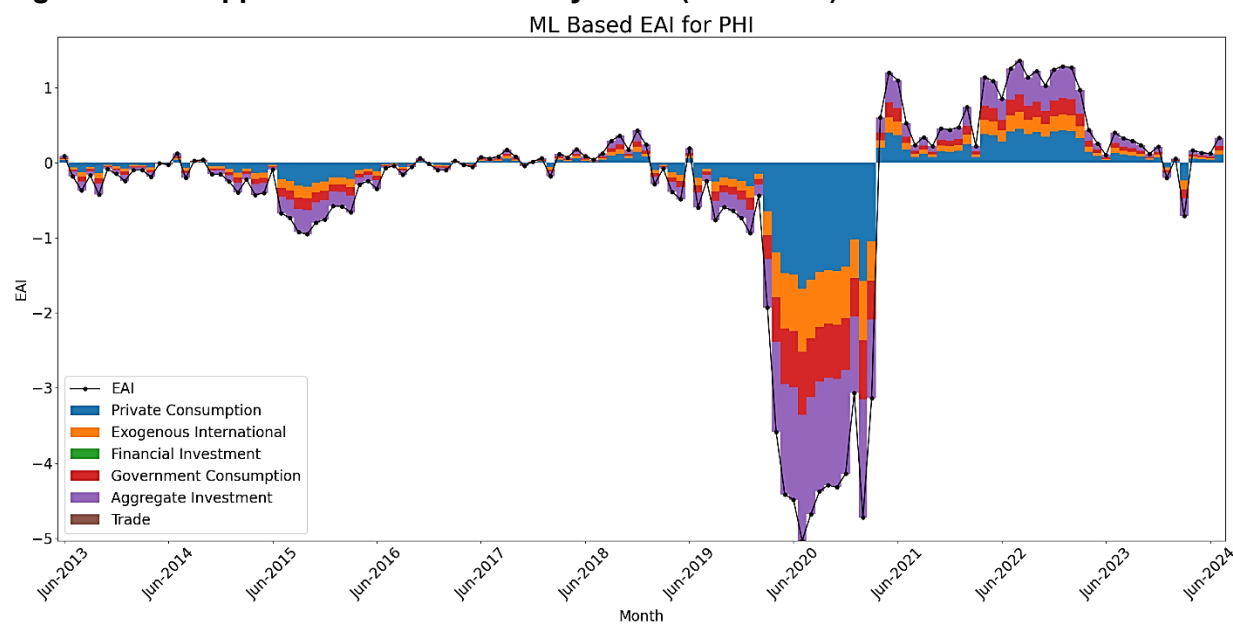
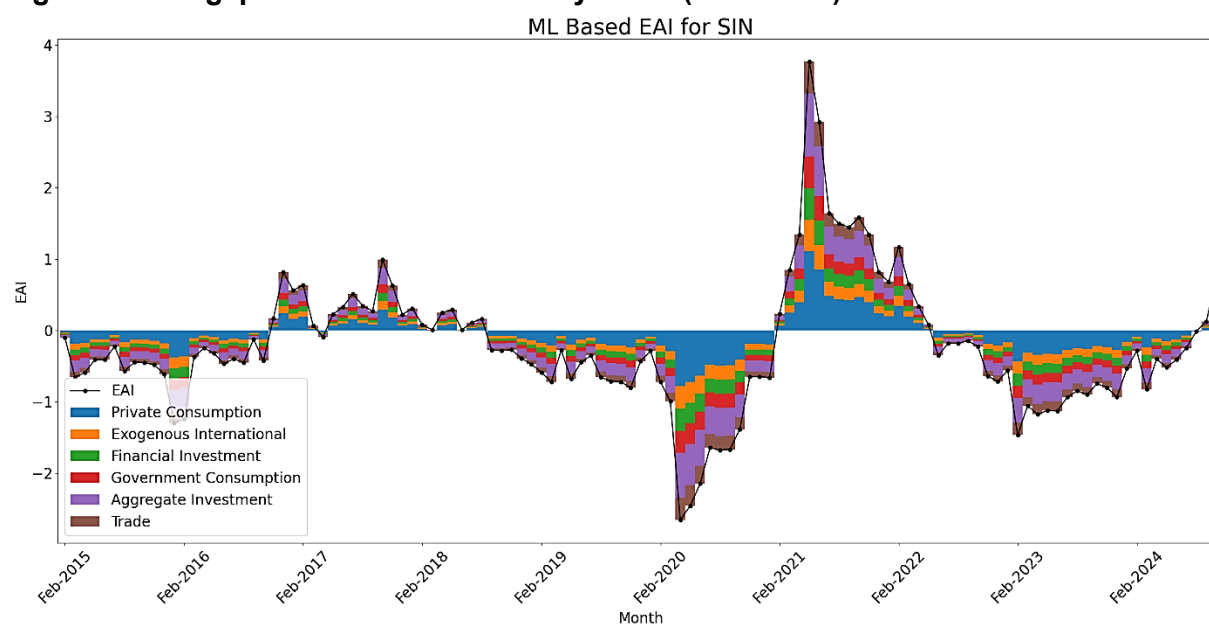
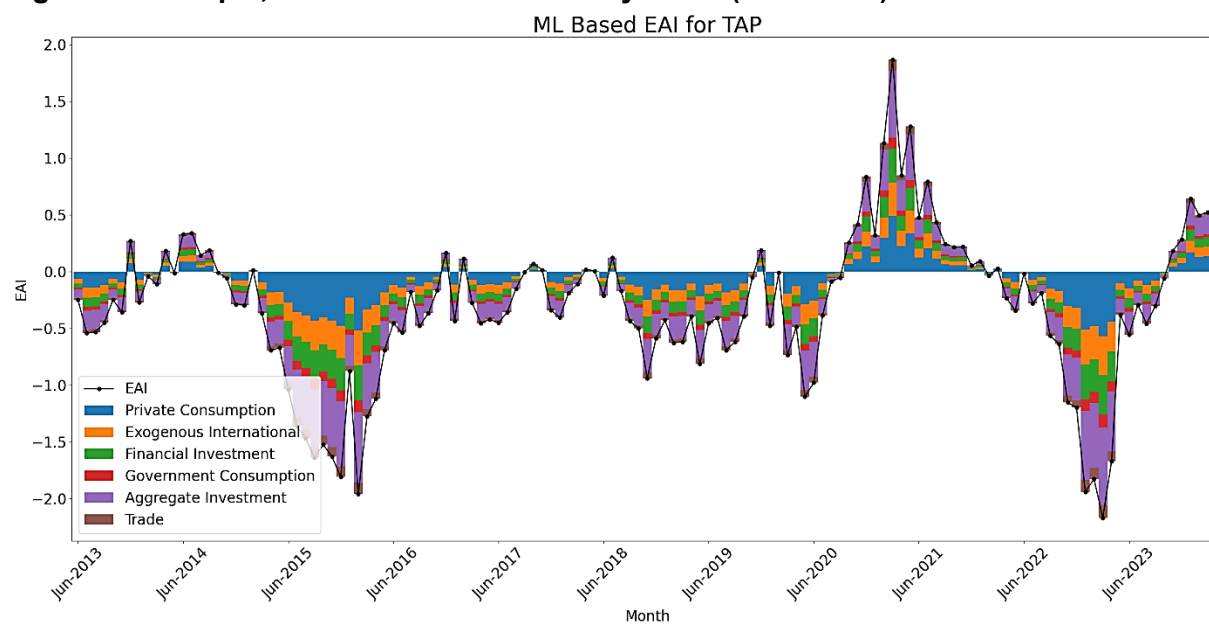


Figure B9: Singapore's Economic Activity Index (ML-Based)



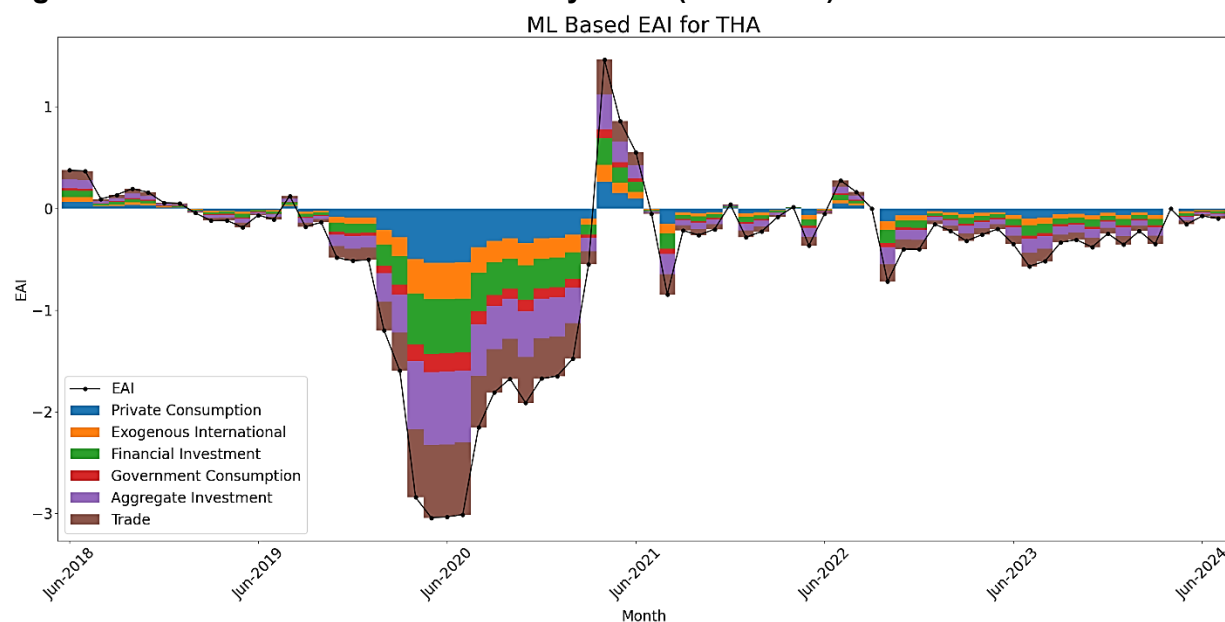
Source: Authors' estimates.

Figure B10: Taipei,China's Economic Activity Index (ML-Based)



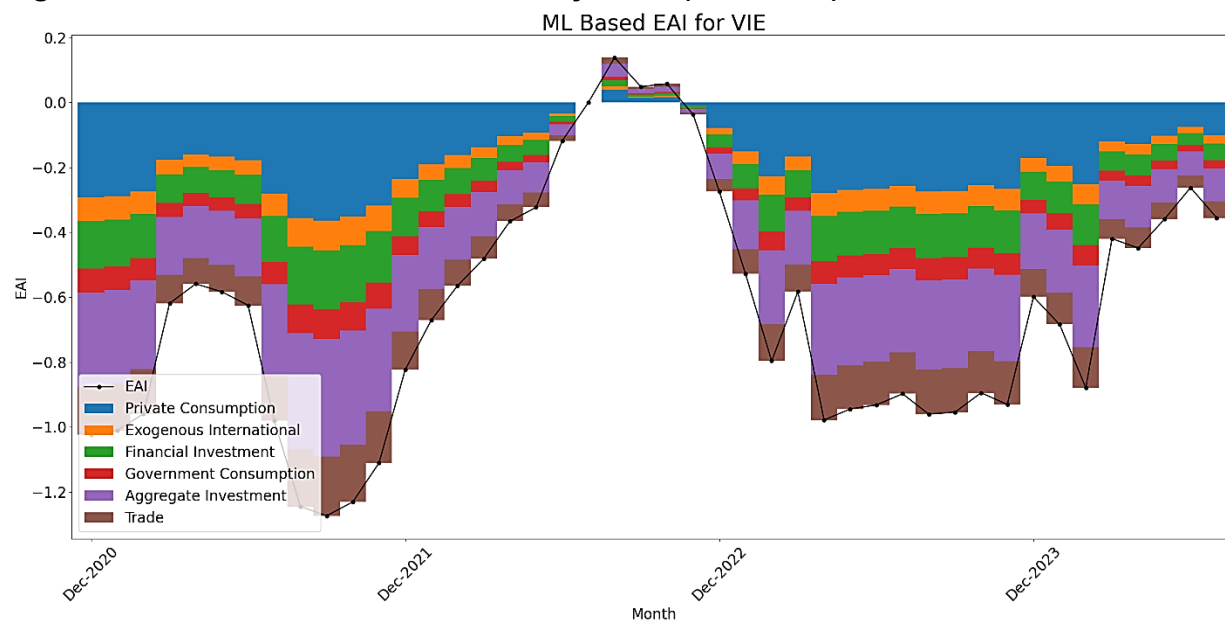
Source: Authors' estimates.

Figure B11: Thailand's Economic Activity Index (ML-Based)



Source: Authors' estimates.

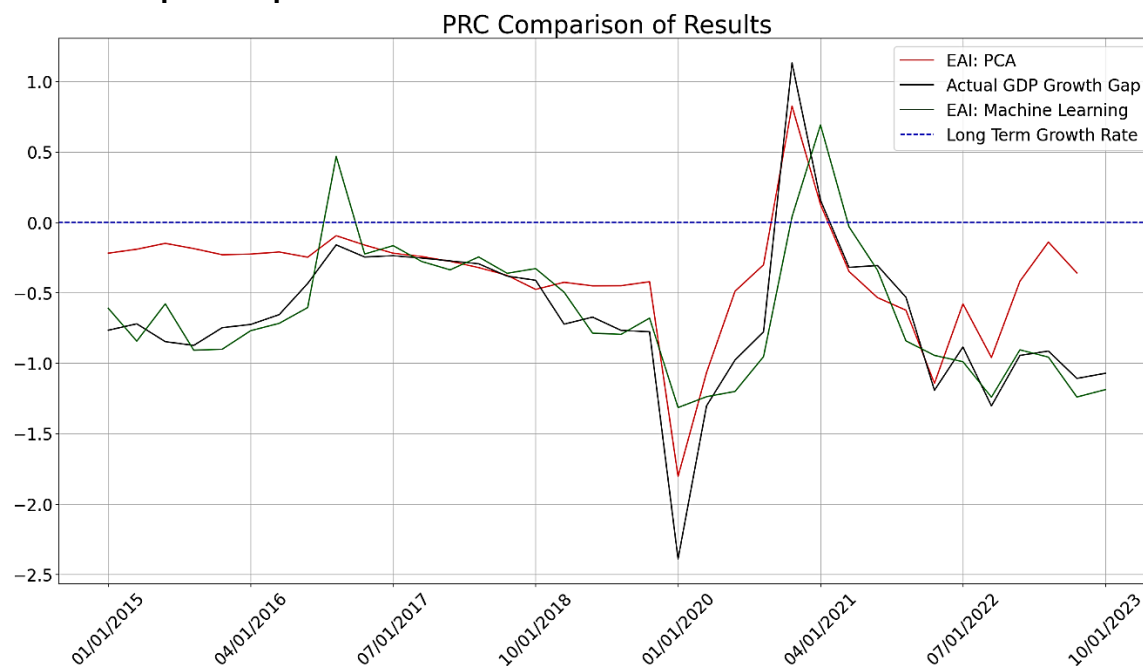
Figure B12: Viet Nam's Economic Activity Index (ML-Based)



Source: Authors' estimates.

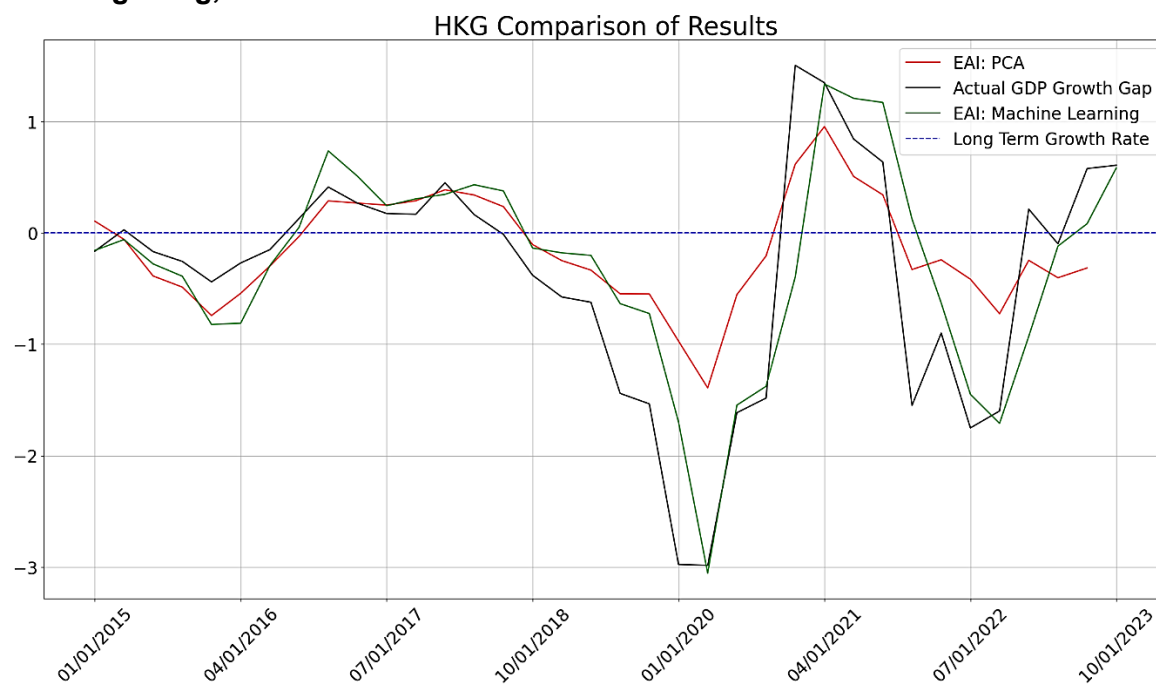
Figure C: PCA vs ML vs Actual Comparison

Figure C1: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for the People's Republic of China



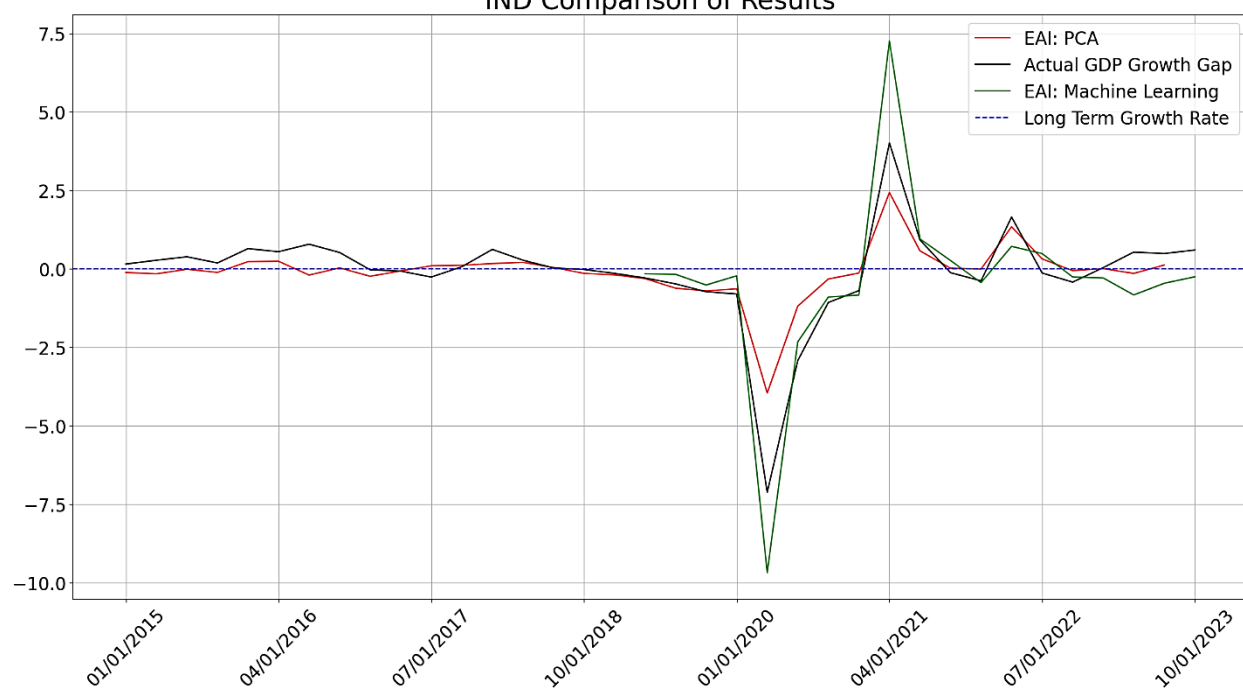
Source: Authors' estimates.

Figure C2: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for Hong Kong, China



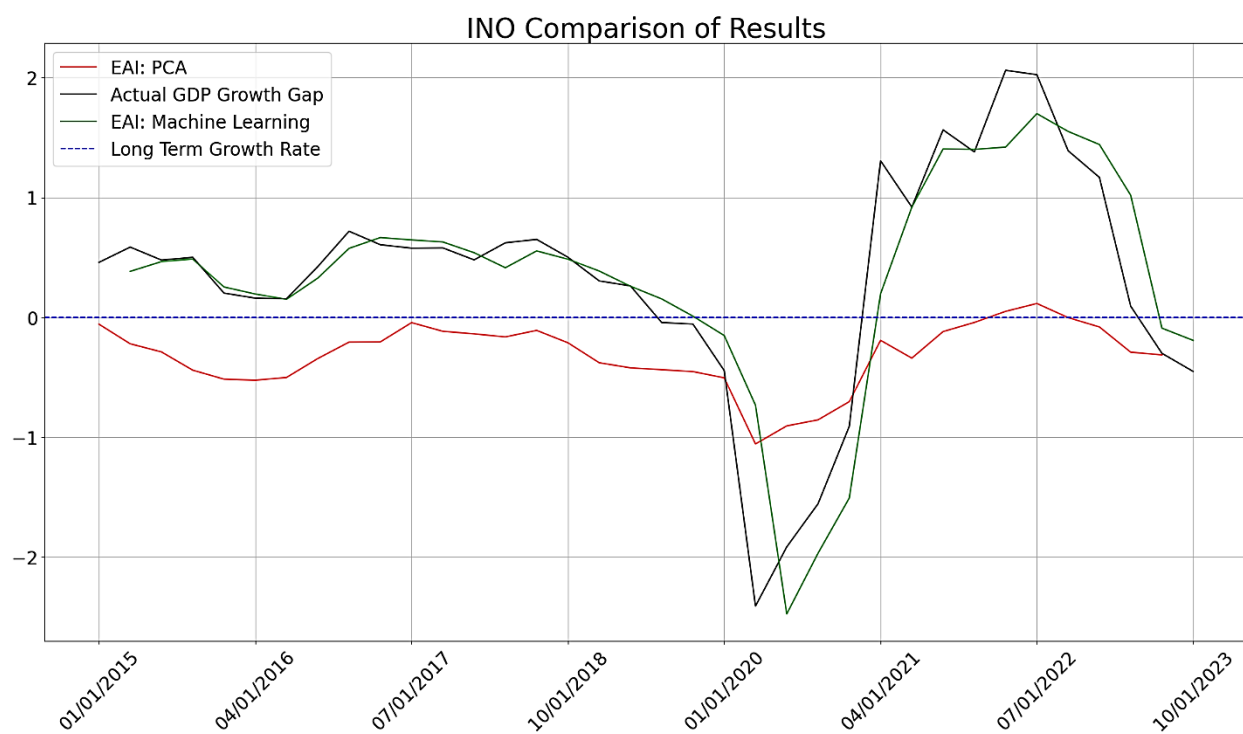
Source: Authors' estimates.

Figure C3: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for India
IND Comparison of Results



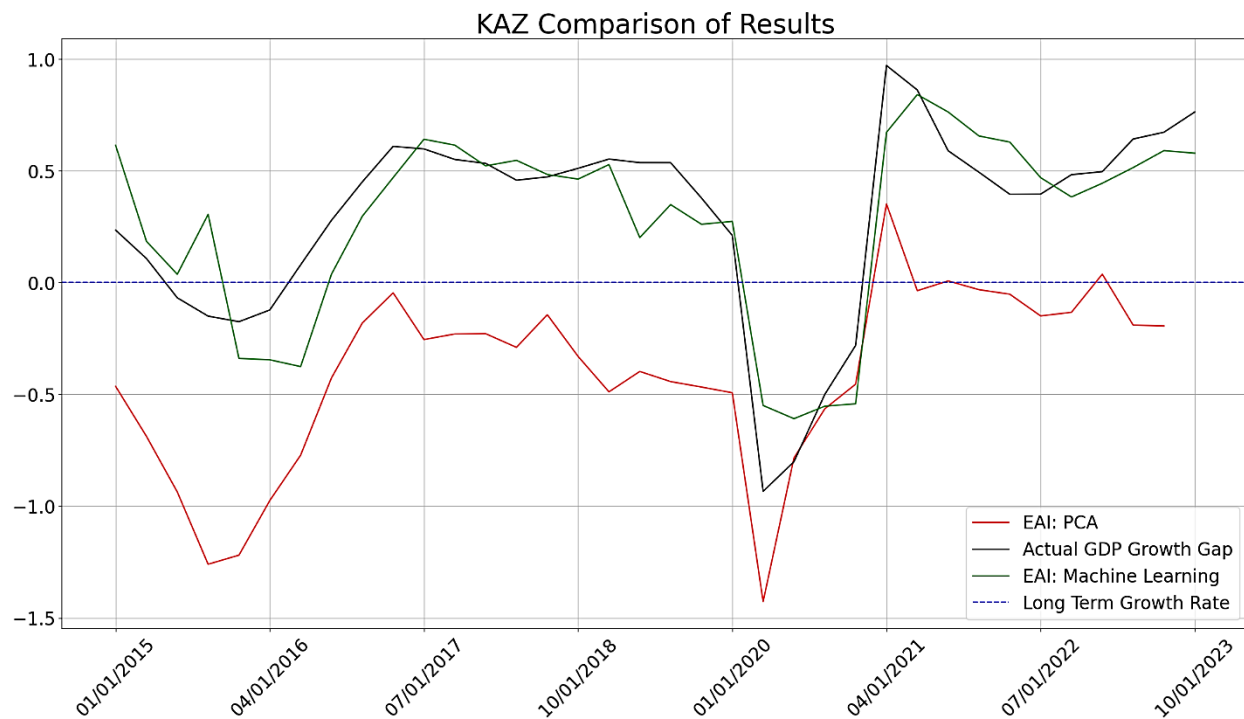
Source: Authors' estimates.

Figure C4: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for Indonesia
INO Comparison of Results



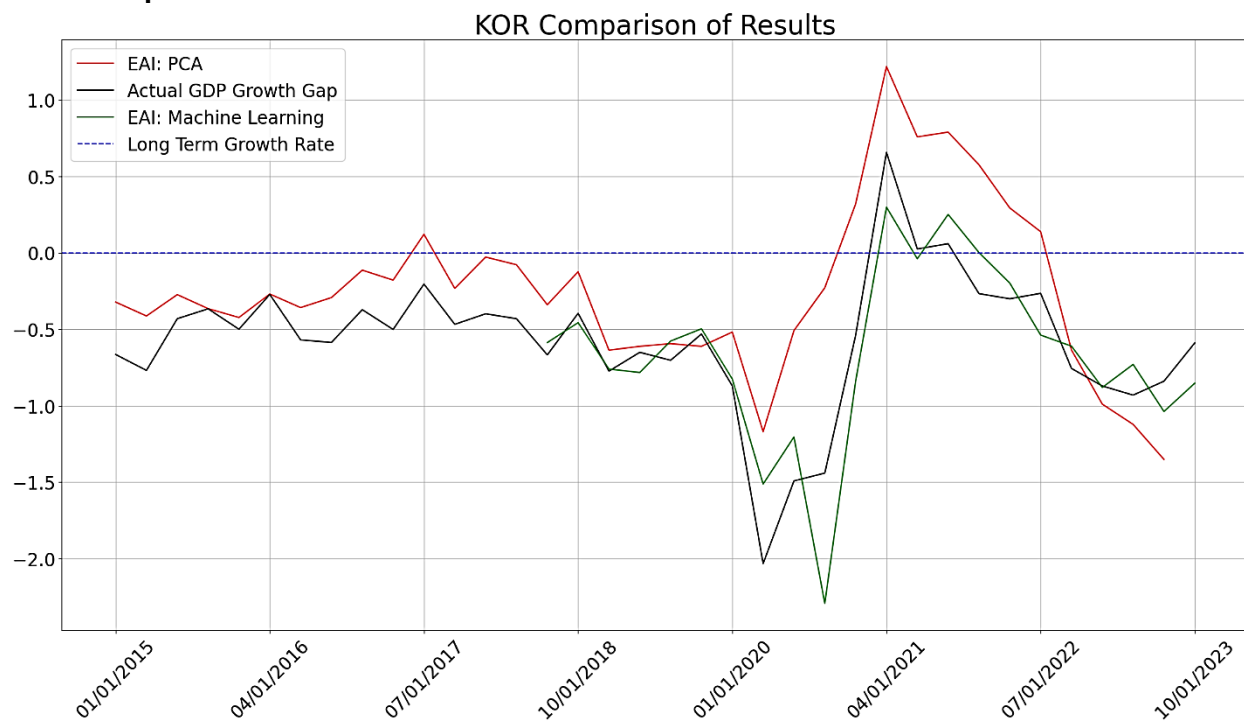
Source: Authors' estimates.

Figure C5: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for Kazakhstan



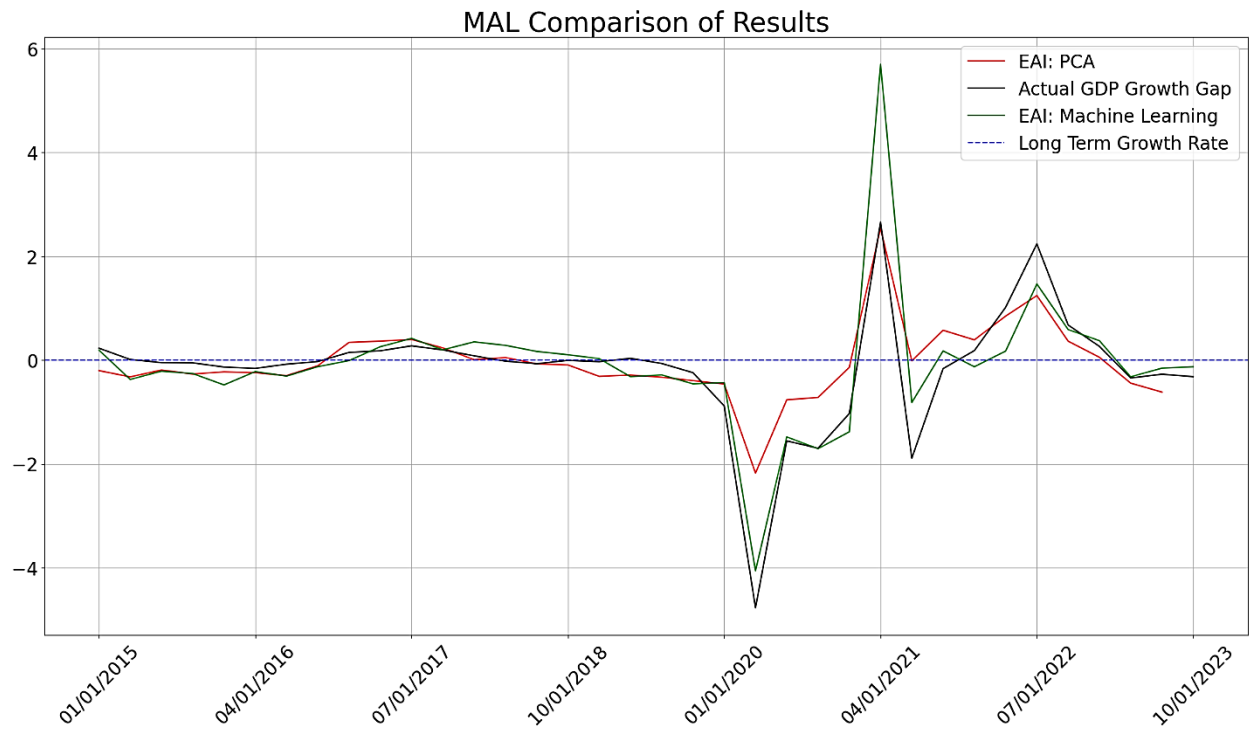
Source: Authors' estimates.

Figure C6: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for the Republic of Korea



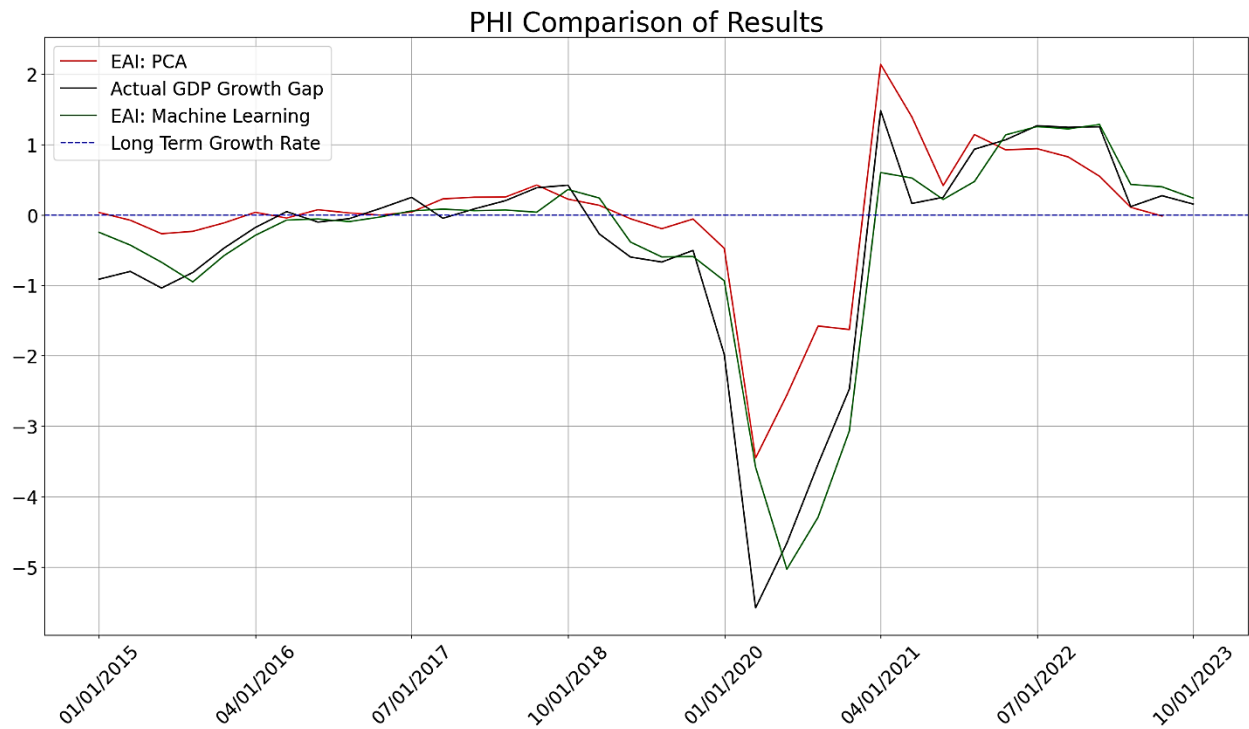
Source: Authors' estimates.

Figure C7: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for Malaysia



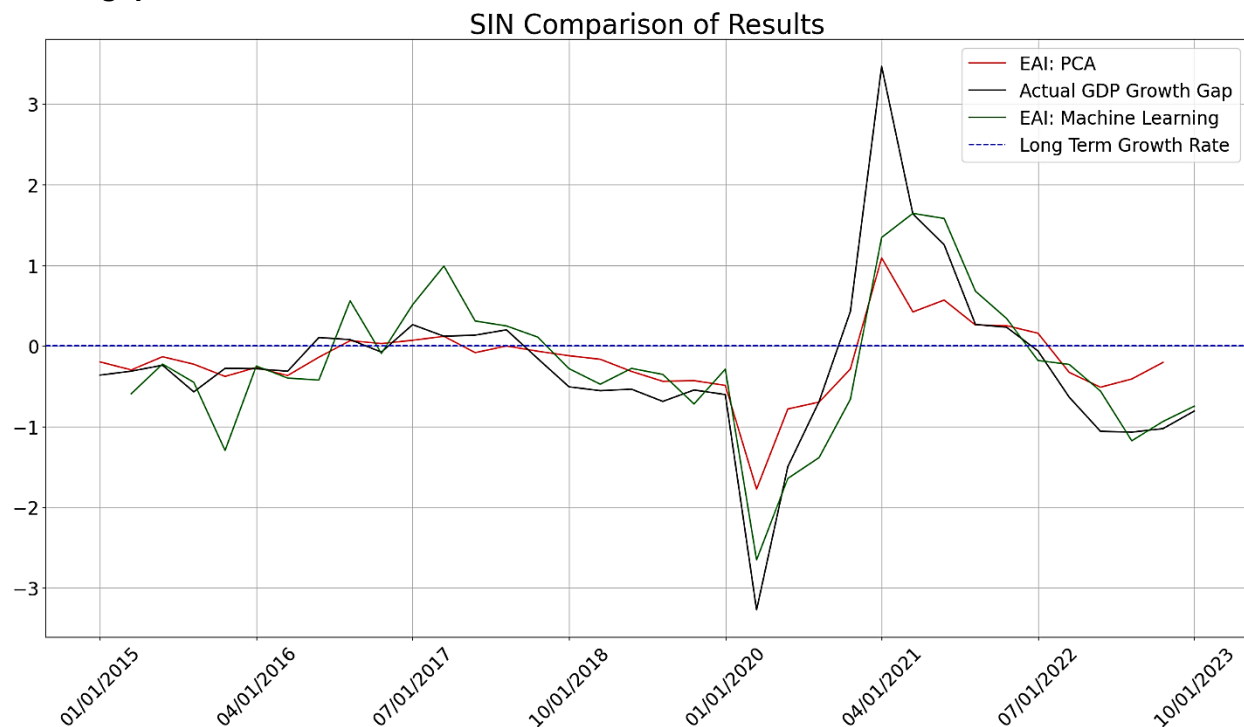
Source: Authors' estimates.

Figure C8: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for the Philippines



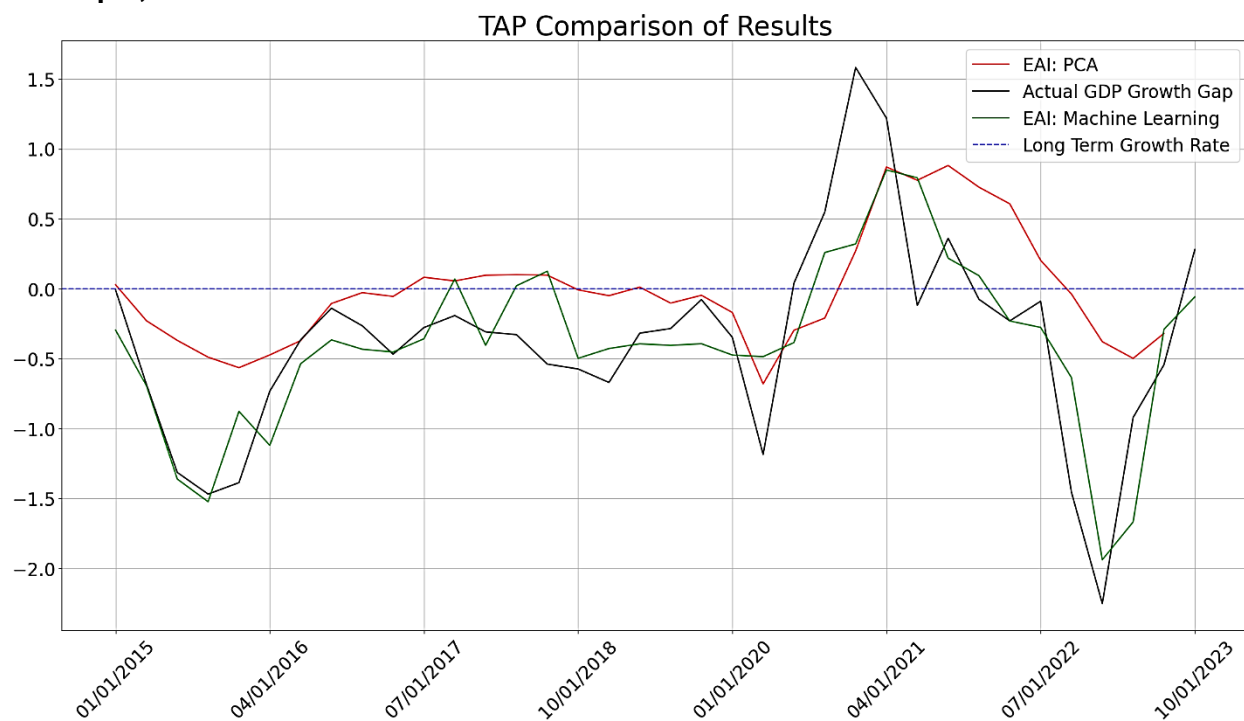
Source: Authors' estimates.

Figure C9: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for Singapore



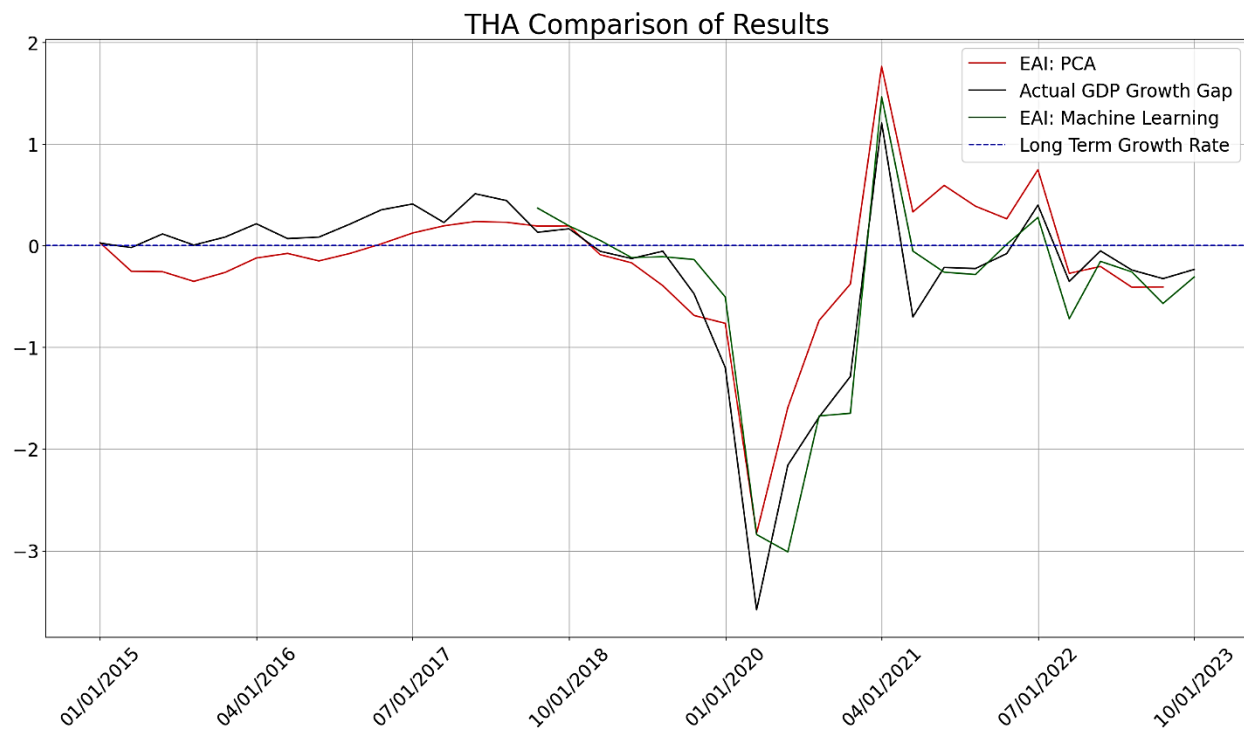
Source: Authors' estimates.

Figure C10: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for Taipei,China



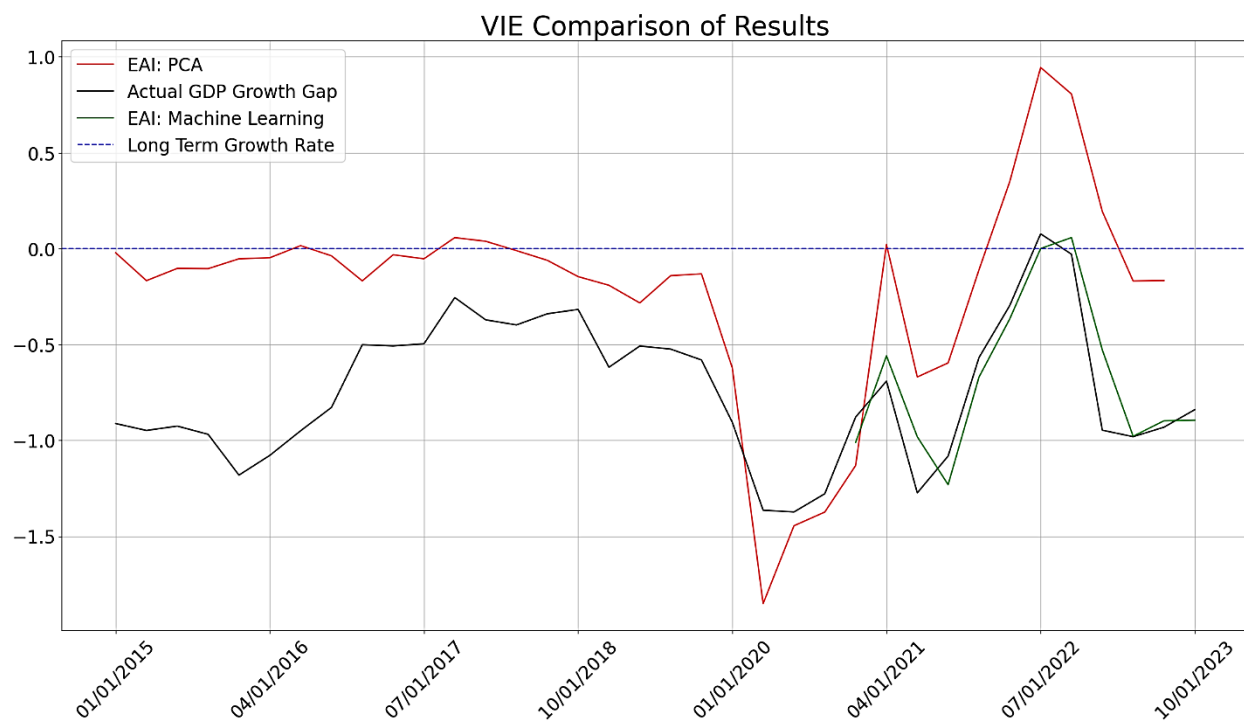
Source: Authors' estimates.

Figure C11: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for Thailand



Source: Authors' estimates.

Figure C12: Comparison Chart for EAI (PCA and ML) vs Actual GDP Growth Gap for Viet Nam



Source: Authors' estimates.