



# Energy Cost Monitoring (ECM)

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

ECM\_JPN\_202206

June 30, 2022

(This report was prepared by Koji Nomura, Sho Inaba, and Mansaku Yoshida.)

## 1 Recent Estimates

### 1.1 Growth Rates

	Quarter-over-quarter growth rate			Month-over-month growth rate		
	2021Q3	2021Q4	2022Q1	March, 2022	April, 2022	May, 2022
a. RUEC (Real Unit Energy Cost) (=b-c=e-d)	9.4%	8.4%	10.5%	-1.1%	0.0%	2.1%
b. Real Energy Price (=b1-b2)	7.9%	7.0%	7.7%	2.3%	3.6%	0.6%
b1. Energy Price	7.6%	6.3%	7.9%	2.6%	2.7%	0.5%
b2. GDP Price	-0.3%	-0.6%	0.3%	0.3%	-0.9%	-0.1%
c. Energy Productivity (=c1-c2)	-1.5%	-1.4%	-2.8%	3.4%	3.6%	-1.5%
c1. Real GDP	-0.8%	1.0%	-0.1%	0.9%	0.3%	0.4%
c2. Energy Consumption	0.7%	2.4%	2.7%	-2.5%	-3.4%	1.9%
d. Nominal GDP (=b2+c1)	-1.1%	0.3%	0.2%	1.2%	-0.6%	0.2%
e. Energy Cost (=b1+c2)	8.4%	8.8%	10.6%	0.1%	-0.6%	2.3%

Unit: %. Note: Growth rates are defined as log differences. Notes: The most recent month is the forecasts, the previous month is the preliminary estimates, and the last two months or earlier are the final estimates. The aggregate volume indices of real GDP and energy consumption are measured using the Chained-Laspeyres index, based on the prices and volumes measured at 32 industries and 21 types of energy, respectively. The aggregate price indices of real GDP and energy consumption are defined implicitly.

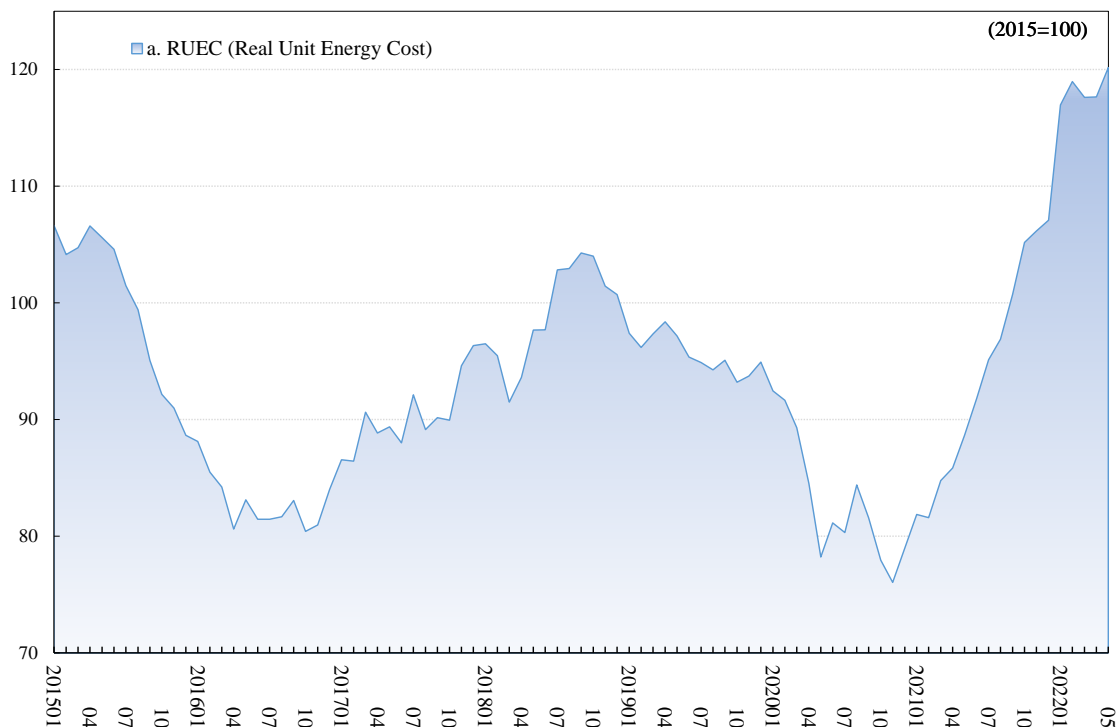
### 1.2 Indices

	Quarterly index			Monthly index		
	2021Q3	2021Q4	2022Q1	March, 2022	April, 2022	May, 2022
a. RUEC (Real Unit Energy Cost) (=b/c=e/d)	97.6	106.1	117.8	117.6	117.6	120.2
b. Real Energy Price (=b1/b2)	107.3	115.1	124.2	127.6	132.3	133.1
b1. Energy Price	108.4	115.5	125.0	128.7	132.3	132.9
b2. GDP Price	101.0	100.3	100.6	100.9	100.0	99.8
c. Energy Productivity (=c1/c2)	109.9	108.3	105.3	108.4	112.4	110.7
c1. Real GDP	99.3	100.3	100.1	100.3	100.6	101.0
c2. Energy Consumption	90.3	92.5	95.0	92.5	89.5	91.2
d. Nominal GDP (=b2*c1)	100.2	100.6	100.7	101.2	100.6	100.8
e. Energy Cost (=b1*c2)	97.8	106.8	118.7	119.1	118.3	121.1

Unit: 2015 average=100.

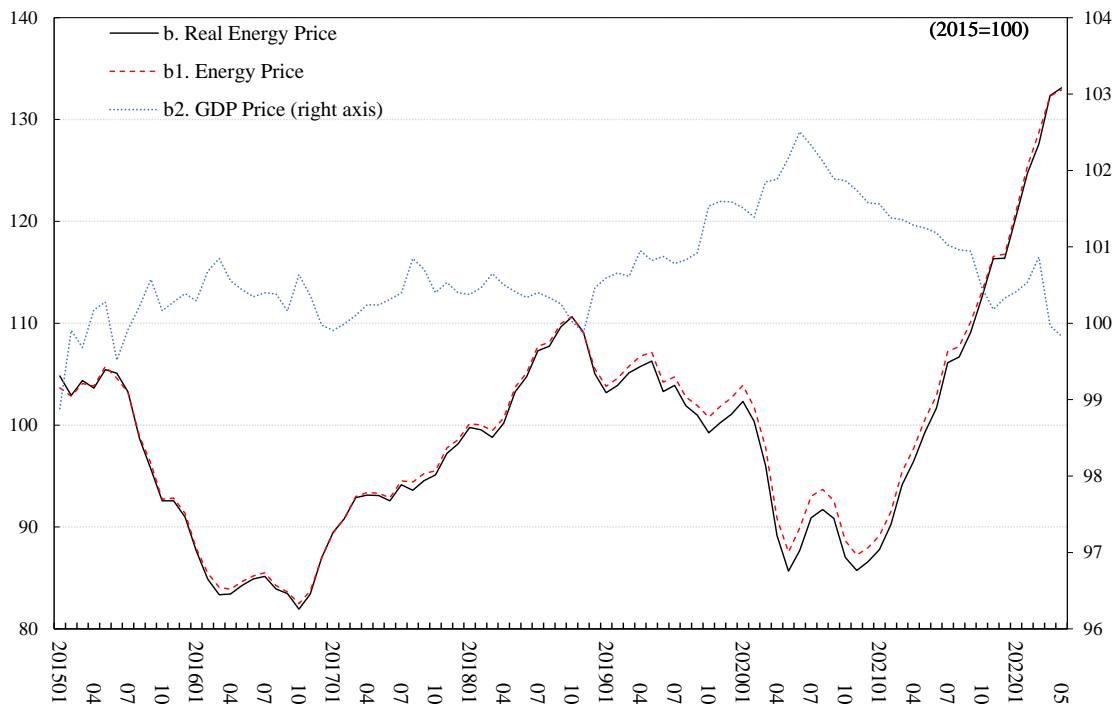
2 Time-series Estimates

2.1 Monthly RUEC (Real Unit Energy Cost)



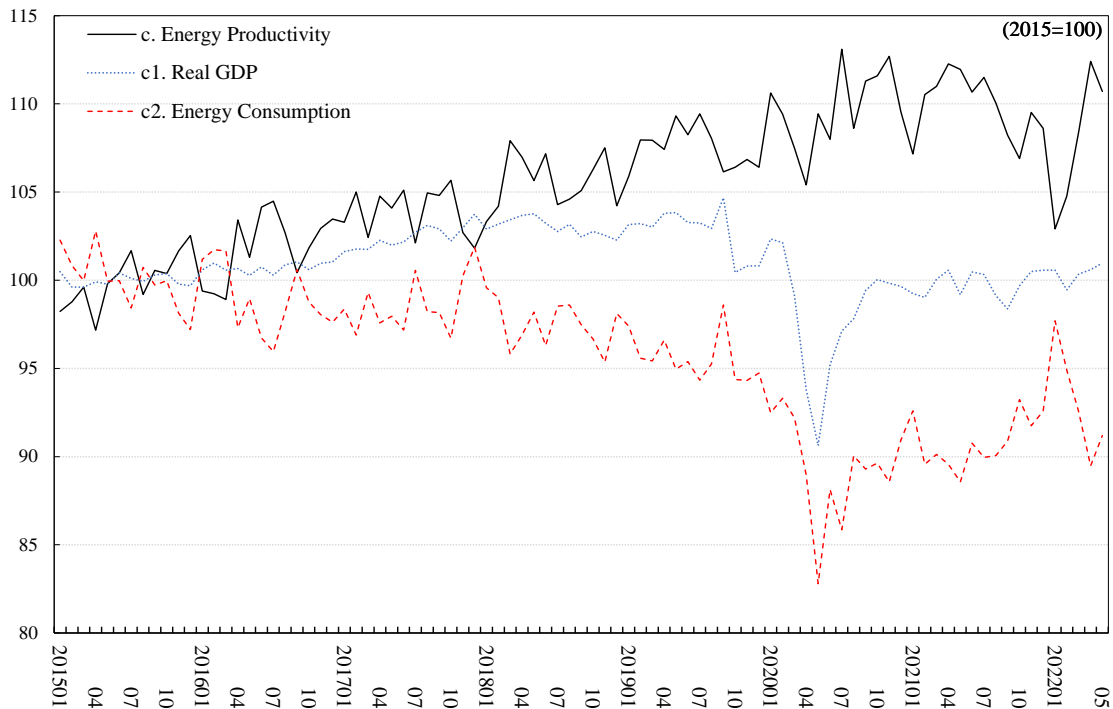
Unit: 2015 average=100. Note: Observation period is from January 2015 to May 2022.

2.2 Monthly Real Energy Price



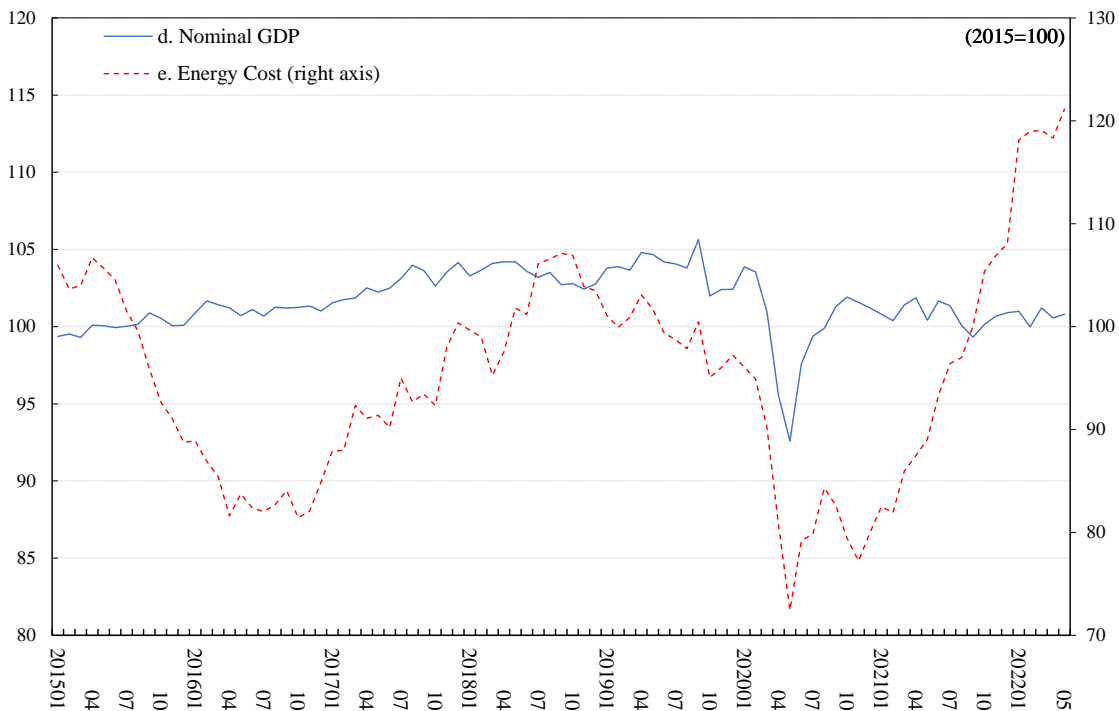
Unit: 2015 average=100. Note: Observation period is from January 2015 to May 2022.

### 2.3 Monthly Real GDP and Energy Productivity



Unit: 2015 average=100. Note: Observation period is from January 2015 to May 2022.

### 2.4 Monthly Nominal GDP and Energy Cost



Unit: 2015 average=100. Note: Observation period is from January 2015 to May 2022.

## 3 Time-series Data

	a. RUEC (Real Unit Energy Cost)							d. Nominal GDP	e. Energy Cost
	b. Real Energy Price			c. Energy Productivity					
			b1. Energy Price	b2. GDP Price		cl. Real GDP	c2. Energy Consumption		
2015	100.0 (.063)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2016	82.9 (.052)	84.4	84.8	100.4	101.8	100.7	98.9	101.1	83.8
2017	90.2 (.057)	93.7	94.1	100.3	103.9	102.4	98.6	102.8	92.7
2018	99.0 (.062)	104.6	105.0	100.3	105.6	103.0	97.5	103.4	102.4
2019	95.7 (.060)	102.9	103.9	101.0	107.5	102.8	95.6	103.8	99.3
2020	83.1 (.052)	91.3	93.0	101.9	109.8	98.1	89.3	99.9	83.1
2021	93.8 (.059)	103.0	104.1	101.0	109.9	99.8	90.8	100.8	94.5
2020 Q1	91.2 (.057)	99.6	101.2	101.6	109.2	101.2	92.7	102.8	93.7
Q2	81.3 (.051)	87.6	89.5	102.2	107.6	93.2	86.6	95.2	77.5
Q3	82.1 (.052)	91.2	93.1	102.1	111.0	98.1	88.4	100.2	82.3
Q4	77.7 (.049)	86.5	88.0	101.7	111.3	99.8	89.7	101.6	78.9
2021 Q1	82.7 (.052)	90.7	92.0	101.4	109.6	99.4	90.8	100.9	83.5
Q2	88.8 (.056)	99.2	100.4	101.2	111.6	100.1	89.6	101.3	89.9
Q3	97.6 (.061)	107.3	108.4	101.0	109.9	99.3	90.3	100.2	97.8
Q4	106.1 (.067)	115.1	115.5	100.3	108.3	100.3	92.5	100.6	106.8
2022 Q1	117.8 (.074)	124.2	125.0	100.6	105.3	100.1	95.0	100.7	118.7
2018 01	96.5 (.061)	99.8	100.2	100.4	103.3	102.9	99.6	103.3	99.7
02	95.5 (.060)	99.5	100.0	100.5	104.2	103.2	99.0	103.7	99.0
03	91.5 (.057)	98.8	99.5	100.6	107.9	103.4	95.8	104.1	95.3
04	93.6 (.059)	100.2	100.7	100.5	107.0	103.7	96.9	104.2	97.6
05	97.7 (.061)	103.3	103.7	100.4	105.7	103.8	98.2	104.2	101.8
06	97.7 (.061)	104.8	105.1	100.3	107.2	103.2	96.3	103.6	101.2
07	102.8 (.065)	107.3	107.7	100.4	104.3	102.8	98.5	103.2	106.1
08	102.9 (.065)	107.8	108.1	100.3	104.6	103.2	98.6	103.5	106.6
09	104.3 (.065)	109.6	109.9	100.3	105.1	102.5	97.5	102.7	107.1
10	104.0 (.065)	110.6	110.7	100.0	106.3	102.8	96.7	102.8	106.9
11	101.4 (.064)	109.1	109.0	99.9	107.5	102.5	95.4	102.4	103.9
12	100.7 (.063)	105.0	105.5	100.5	104.2	102.3	98.1	102.8	103.5
2019 01	97.4 (.061)	103.2	103.8	100.6	105.9	103.2	97.4	103.8	101.1
02	96.2 (.060)	103.9	104.6	100.7	108.0	103.2	95.6	103.9	99.9
03	97.3 (.061)	105.1	105.8	100.6	107.9	103.0	95.4	103.6	100.9
04	98.4 (.062)	105.7	106.8	101.0	107.4	103.8	96.6	104.8	103.1
05	97.2 (.061)	106.3	107.2	100.8	109.3	103.8	95.0	104.7	101.7
06	95.4 (.060)	103.3	104.2	100.9	108.3	103.3	95.4	104.2	99.4
07	94.9 (.060)	103.9	104.7	100.8	109.4	103.3	94.3	104.1	98.8
08	94.3 (.059)	101.9	102.8	100.8	108.0	102.9	95.3	103.8	97.9
09	95.1 (.060)	101.0	101.9	100.9	106.1	104.7	98.6	105.6	100.5
10	93.2 (.059)	99.2	100.8	101.5	106.4	100.4	94.4	102.0	95.1
11	93.7 (.059)	100.2	101.8	101.6	106.8	100.8	94.3	102.4	96.0
12	94.9 (.060)	101.1	102.7	101.6	106.4	100.8	94.7	102.4	97.2
2020 01	92.5 (.058)	102.3	103.9	101.5	110.6	102.3	92.5	103.9	96.1
02	91.7 (.058)	100.4	101.8	101.4	109.4	102.1	93.3	103.6	94.9
03	89.3 (.056)	96.0	97.8	101.9	107.5	99.1	92.2	100.9	90.2
04	84.5 (.053)	89.2	90.8	101.9	105.4	93.8	89.0	95.6	80.8
05	78.2 (.049)	85.7	87.5	102.2	109.4	90.6	82.8	92.6	72.4
06	81.1 (.051)	87.7	89.9	102.5	108.0	95.2	88.1	97.6	79.2
07	80.3 (.050)	90.9	93.0	102.3	113.1	97.1	85.9	99.4	79.8
08	84.4 (.053)	91.7	93.7	102.1	108.6	97.8	90.0	99.9	84.3
09	81.6 (.051)	90.8	92.6	101.9	111.3	99.4	89.3	101.3	82.6
10	77.9 (.049)	87.0	88.7	101.9	111.6	100.0	89.6	101.9	79.4
11	76.0 (.048)	85.7	87.3	101.7	112.7	99.8	88.6	101.6	77.2
12	79.0 (.050)	86.6	88.0	101.6	109.5	99.6	90.9	101.2	80.0
2021 01	81.9 (.051)	87.8	89.2	101.6	107.2	99.2	92.6	100.8	82.5
02	81.6 (.051)	90.2	91.5	101.4	110.5	99.0	89.6	100.4	81.9
03	84.8 (.053)	94.1	95.4	101.4	111.0	100.1	90.1	101.4	86.0
04	85.8 (.054)	96.4	97.7	101.3	112.3	100.6	89.6	101.9	87.5
05	88.7 (.056)	99.3	100.6	101.2	112.0	99.2	88.6	100.4	89.0
06	91.8 (.058)	101.7	102.9	101.2	110.7	100.5	90.8	101.7	93.3
07	95.1 (.060)	106.1	107.2	101.0	111.5	100.3	90.0	101.4	96.4
08	96.9 (.061)	106.7	107.7	101.0	110.1	99.1	90.1	100.1	97.0
09	100.7 (.063)	109.1	110.1	100.9	108.2	98.4	90.9	99.3	100.0
10	105.2 (.066)	112.5	113.1	100.5	106.9	99.7	93.2	100.2	105.4
11	106.2 (.067)	116.3	116.6	100.2	109.5	100.5	91.7	100.7	106.9
12	107.1 (.067)	116.4	116.8	100.3	108.6	100.6	92.6	100.9	108.1
2022 01	117.0 (.073)	120.5	121.0	100.4	102.9	100.6	97.7	101.0	118.1
02	119.0 (.075)	124.7	125.4	100.5	104.8	99.5	94.9	100.0	119.0
03	117.6 (.074)	127.6	128.7	100.9	108.4	100.3	92.5	101.2	119.1
04	117.6 (.074)	132.3	132.3	100.0	112.4	100.6	89.5	100.6	118.3
05	120.2 (.075)	133.1	132.9	99.8	110.7	101.0	91.2	100.8	121.1

Unit: 2015 average=100. Note: The numbers in parentheses are the ratio of final energy consumption cost to GDP at current prices.