



Energy Cost Monitoring (ECM)

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

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Koji Nomura, Sho Inaba, Mansaku Yoshida, and Kaoru Takano

1 Recent Estimates

1.1 Growth Rates

	Quarter-over-quarter growth rate			Month-over-month growth rate		
	2023Q4	2024Q1	2024Q2	May, 2024	June, 2024	July, 2024
a. RUEC (Real Unit Energy Cost) ($=b-c=e-d$)	-2.0%	1.0%	1.8%	2.2%	2.1%	2.0%
b. Real Energy Price ($=b1-b2$)	-0.8%	1.4%	2.2%	3.7%	1.6%	1.4%
b1. Energy Price	-0.2%	1.9%	3.3%	3.9%	1.8%	1.7%
b2. GDP Price	0.6%	0.5%	1.1%	0.2%	0.1%	0.2%
c. Energy Productivity ($=c1-c2$)	1.2%	0.3%	0.4%	1.4%	-0.5%	-0.6%
c1. Real GDP	0.0%	-0.7%	1.2%	1.2%	-1.8%	1.3%
c2. Energy Consumption	-1.2%	-1.1%	0.8%	-0.2%	-1.4%	1.9%
d. Nominal GDP ($=b2+c1$)	0.6%	-0.2%	2.3%	1.4%	-1.7%	1.5%
e. Energy Cost ($=b1+c2$)	-1.4%	0.8%	4.2%	3.7%	0.4%	3.6%

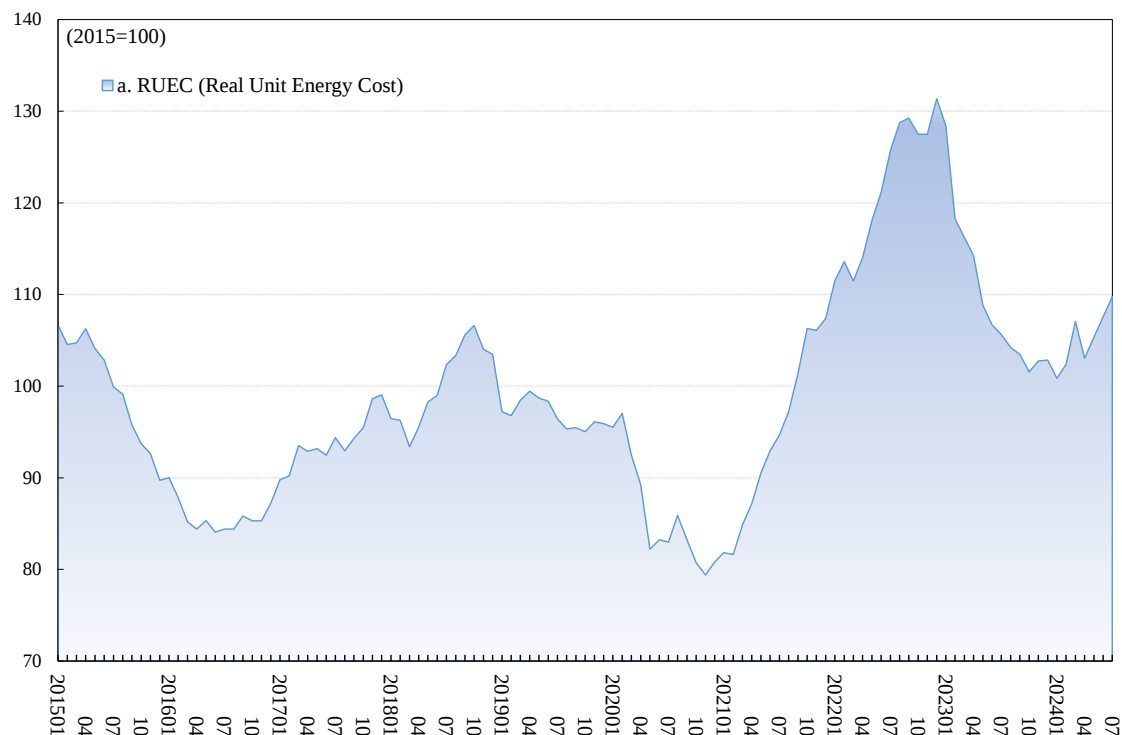
Unit: %. Notes: The most recent month is the forecasts, the previous month is the preliminary estimates, and the last two months or earlier are the final estimates. The aggregate volume indices of real GDP and energy consumption are measured using the translog index, based on the prices and volumes measured at 36 industries and 29 types of energy, respectively. The aggregate price indices of real GDP and energy consumption are defined implicitly.

1.2 Indices

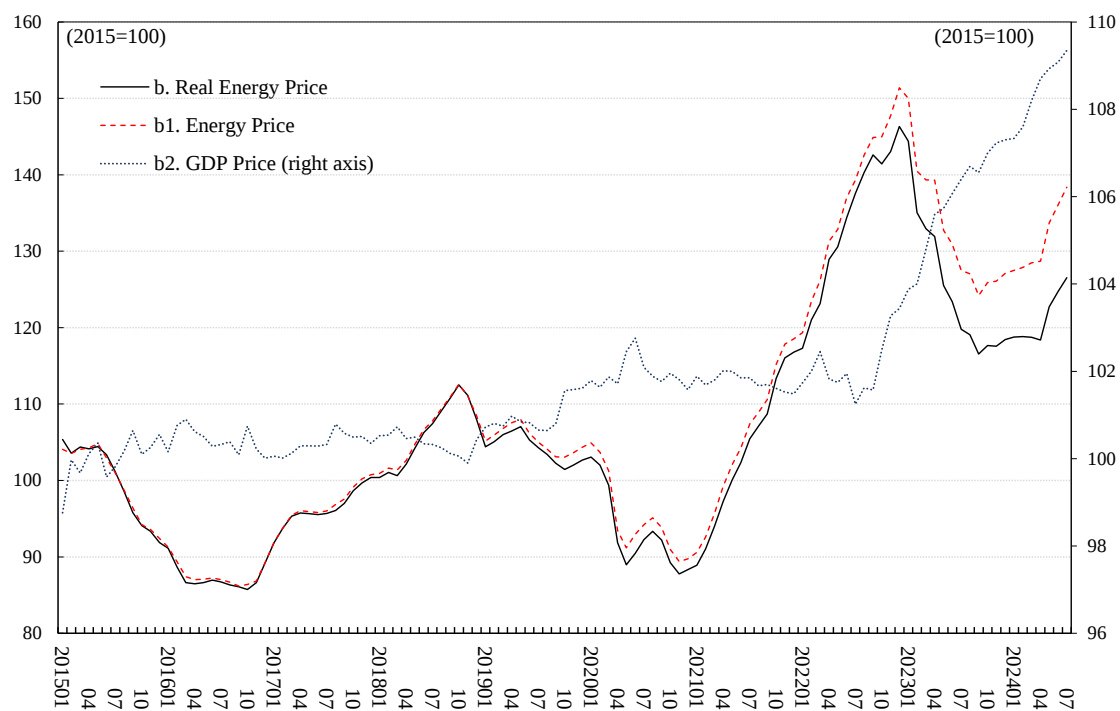
	Quarterly index			Monthly index		
	2023Q4	2024Q1	2024Q2	May, 2024	June, 2024	July, 2024
a. RUEC (Real Unit Energy Cost) ($=b/c=e/d$)	102.4	103.4	105.3	105.3	107.6	109.7
b. Real Energy Price ($=b1/b2$)	121.2	122.8	125.5	122.7	124.7	126.5
b1. Energy Price	129.9	132.3	136.7	133.7	136.1	138.4
b2. GDP Price	107.2	107.7	108.9	108.9	109.1	109.3
c. Energy Productivity ($=c1/c2$)	118.3	118.7	119.2	116.5	115.9	115.2
c1. Real GDP	103.8	103.1	104.3	105.3	103.4	104.7
c2. Energy Consumption	87.7	86.8	87.5	90.5	89.2	90.9
d. Nominal GDP ($=b2*c1$)	111.3	111.0	113.6	114.8	112.8	114.5
e. Energy Cost ($=b1*c2$)	114.0	114.9	119.6	120.9	121.3	125.7

Unit: 2015 average=100.

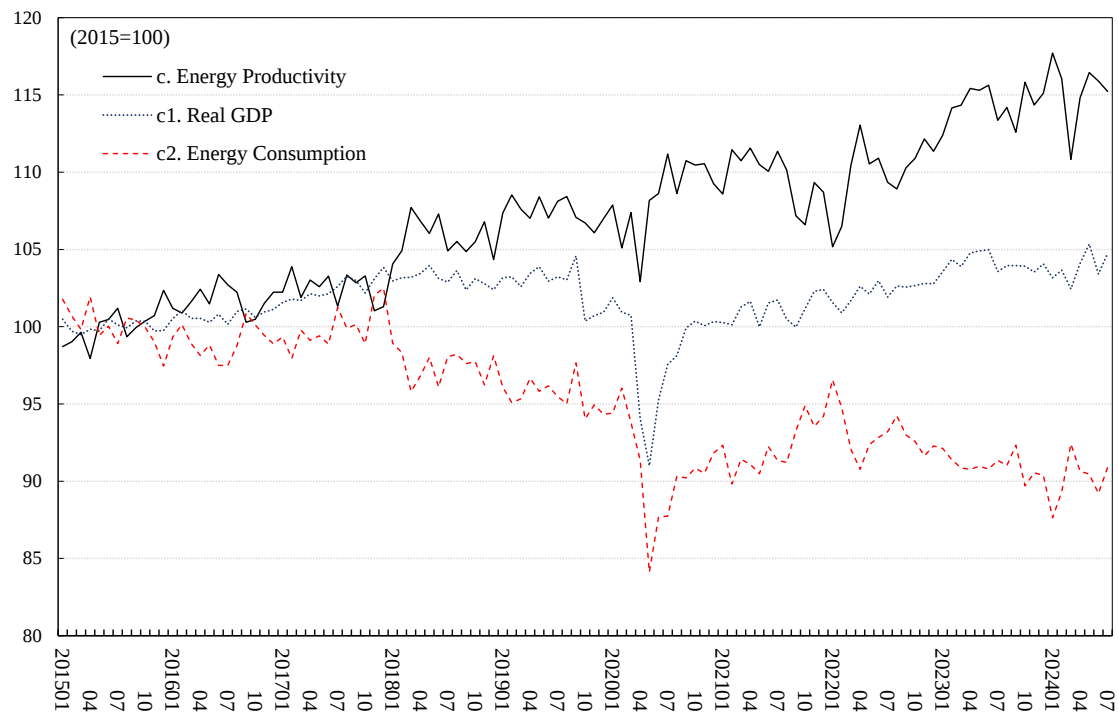
2 Monthly RUEC (Real Unit Energy Cost)



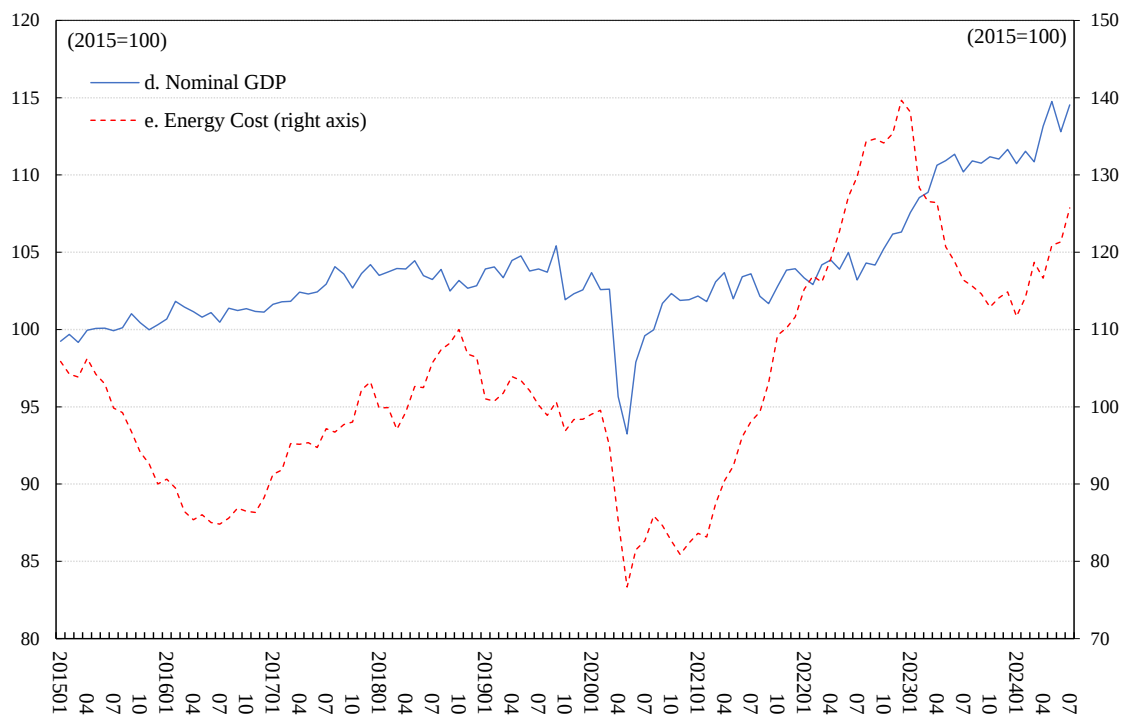
3 Monthly Real Energy Price



4 Monthly Real GDP and Energy Productivity



5 Monthly Nominal GDP and Energy Cost



6 Data Table

	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		c1. Real GDP	c2. Energy Consumption				
2015	100.0 (.073)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
2016	85.8 (.063)	87.6	88.0	100.4	102.1	100.7	98.7	101.1	86.8	
2017	93.9 (.069)	96.5	96.9	100.3	102.8	102.4	99.7	102.8	96.5	
2018	100.4 (.073)	106.3	106.7	100.3	105.9	103.1	97.3	103.4	103.8	
2019	97.0 (.071)	104.4	105.5	101.0	107.7	102.7	95.3	103.7	100.5	
2020	86.1 (.063)	95.0	96.8	101.9	110.3	98.3	89.2	100.3	86.3	
2021	94.4 (.069)	104.9	106.7	101.8	111.1	101.1	90.9	102.8	97.1	
2022	121.7 (.089)	137.1	140.0	102.1	112.6	102.3	90.8	104.4	127.1	
2023	109.4 (.080)	128.3	136.0	105.9	117.4	104.1	88.7	110.3	120.6	
2020	Q1	95.0 (.069)	102.0	103.8	101.8	107.3	101.2	94.3	103.0	97.8
	Q2	84.9 (.062)	92.6	94.8	102.3	109.0	93.4	85.7	95.6	81.2
	Q3	84.0 (.061)	95.2	97.0	101.9	113.3	98.5	87.0	100.4	84.4
	Q4	80.3 (.059)	89.8	91.4	101.8	111.8	100.3	89.6	102.0	82.0
2021	Q1	82.8 (.061)	92.8	94.5	101.8	112.1	100.6	89.7	102.4	84.7
	Q2	90.2 (.066)	101.1	103.1	102.0	112.0	101.1	90.2	103.0	92.9
	Q3	97.7 (.071)	108.2	110.1	101.7	110.6	100.7	91.0	102.5	100.2
	Q4	106.6 (.078)	117.2	119.0	101.5	109.9	102.0	92.8	103.5	110.4
2022	Q1	112.2 (.082)	123.4	125.9	102.1	109.9	101.4	92.2	103.5	116.1
	Q2	117.7 (.086)	134.3	136.8	101.8	114.0	102.6	90.0	104.5	123.0
	Q3	127.9 (.094)	143.9	146.0	101.5	112.4	102.4	91.1	103.9	132.9
	Q4	128.8 (.094)	147.0	151.6	103.1	114.1	102.8	90.0	105.9	136.4
2023	Q1	120.9 (.088)	140.4	146.3	104.2	116.0	103.9	89.6	108.3	131.0
	Q2	109.9 (.080)	129.8	137.4	105.8	118.1	104.9	88.8	111.0	122.0
	Q3	104.4 (.076)	122.2	130.2	106.5	116.9	103.8	88.8	110.6	115.6
	Q4	102.4 (.075)	121.2	129.9	107.2	118.3	103.8	87.7	111.3	114.0
2024	Q1	103.4 (.076)	122.8	132.3	107.7	118.7	103.1	86.8	111.0	114.9
	Q2	105.3 (.077)	125.5	136.7	108.9	119.2	104.3	87.5	113.6	119.6
2020	01	95.5 (.070)	103.1	104.9	101.8	107.9	101.9	94.4	103.7	99.0
	02	97.0 (.071)	102.0	103.7	101.6	105.1	100.9	96.0	102.6	99.6
	03	92.5 (.068)	99.4	101.2	101.9	107.4	100.7	93.8	102.6	94.9
	04	89.2 (.065)	91.9	93.5	101.7	102.9	94.1	91.4	95.7	85.4
	05	82.2 (.060)	89.0	91.2	102.5	108.2	91.0	84.1	93.2	76.7
	06	83.2 (.061)	90.5	93.0	102.8	108.6	95.3	87.7	97.9	81.5
	07	83.0 (.061)	92.3	94.2	102.1	111.2	97.5	87.7	99.6	82.6
	08	85.9 (.063)	93.3	95.1	101.9	108.6	98.1	90.3	100.0	85.9
	09	83.2 (.061)	92.2	93.9	101.8	110.7	99.9	90.2	101.7	84.6
	10	80.7 (.059)	89.2	91.0	102.0	110.5	100.4	90.8	102.3	82.6
	11	79.4 (.058)	87.8	89.4	101.8	110.5	100.1	90.5	101.9	80.9
	12	80.8 (.059)	88.3	89.7	101.6	109.3	100.3	91.8	101.9	82.4
2021	01	81.8 (.060)	88.9	90.6	101.9	108.6	100.3	92.3	102.2	83.6
	02	81.6 (.060)	91.0	92.6	101.7	111.5	100.1	89.8	101.8	83.1
	03	84.8 (.062)	94.0	95.7	101.8	110.7	101.3	91.4	103.1	87.5
	04	87.2 (.064)	97.3	99.2	102.0	111.6	101.6	91.1	103.7	90.4
	05	90.5 (.066)	100.1	102.1	102.0	110.5	100.0	90.5	102.0	92.3
	06	92.9 (.068)	102.3	104.2	101.8	110.1	101.5	92.2	103.4	96.1
	07	94.6 (.069)	105.4	107.4	101.9	111.4	101.7	91.3	103.6	98.1
	08	97.2 (.071)	107.1	108.9	101.7	110.1	100.5	91.2	102.2	99.3
	09	101.4 (.074)	108.7	110.6	101.7	107.2	100.0	93.3	101.7	103.1
	10	106.3 (.078)	113.3	115.2	101.6	106.6	101.2	94.9	102.8	109.3
	11	106.1 (.078)	116.0	117.8	101.5	109.3	102.3	93.5	103.8	110.2
	12	107.4 (.079)	116.8	118.5	101.5	108.7	102.4	94.2	103.9	111.6
2022	01	111.5 (.082)	117.3	119.3	101.7	105.2	101.6	96.6	103.3	115.2
	02	113.6 (.083)	121.0	123.4	102.0	106.5	100.9	94.7	102.9	116.9
	03	111.4 (.081)	123.2	126.2	102.4	110.5	101.7	92.1	104.2	116.1
	04	114.0 (.083)	128.9	131.3	101.8	113.0	102.6	90.8	104.5	119.1
	05	118.1 (.086)	130.6	132.9	101.7	110.5	102.1	92.4	103.9	122.7
	06	121.1 (.089)	134.4	137.0	102.0	110.9	103.0	92.8	105.0	127.2
	07	125.7 (.092)	137.6	139.3	101.2	109.3	101.9	93.2	103.2	129.8
	08	128.7 (.094)	140.3	142.6	101.6	108.9	102.6	94.2	104.3	134.3
	09	129.3 (.095)	142.6	144.9	101.6	110.3	102.6	93.0	104.2	134.7
	10	127.5 (.093)	141.4	145.0	102.5	110.9	102.7	92.6	105.2	134.2
	11	127.5 (.093)	143.0	147.7	103.3	112.2	102.8	91.7	106.2	135.4
	12	131.4 (.096)	146.3	151.4	103.4	111.4	102.8	92.3	106.3	139.7
2023	01	128.4 (.094)	144.4	150.0	103.9	112.4	103.5	92.1	107.6	138.1
	02	118.2 (.086)	135.0	140.5	104.0	114.2	104.4	91.4	108.5	128.3
	03	116.2 (.085)	132.9	139.3	104.8	114.3	103.9	90.9	108.9	126.6
	04	114.2 (.084)	131.9	139.3	105.6	115.4	104.8	90.8	110.6	126.4
	05	108.8 (.080)	125.5	132.7	105.7	115.3	104.9	91.0	110.9	120.7
	06	106.7 (.078)	123.4	130.9	106.1	115.6	105.0	90.8	111.3	118.8
	07	105.6 (.077)	119.8	127.5	106.4	113.4	103.6	91.3	110.2	116.4
	08	104.2 (.076)	119.1	127.0	106.7	114.2	104.0	91.0	110.9	115.6
	09	103.5 (.076)	116.6	124.2	106.6	112.6	104.0	92.3	110.8	114.6
	10	101.5 (.074)	117.7	125.9	107.0	115.8	103.9	89.7	111.2	112.9
	11	102.8 (.075)	117.6	126.1	107.2	114.4	103.5	90.5	111.0	114.1
	12	102.9 (.075)	118.4	127.1	107.3	115.1	104.1	90.4	111.7	114.9
2024	01	100.8 (.074)	118.8	127.5	107.3	117.7	103.2	87.6	110.7	111.7
	02	102.4 (.075)	118.8	127.9	107.6	116.0	103.7	89.3	111.5	114.2
	03	107.1 (.078)	118.7	128.5	108.2	110.8	102.4	92.4	110.8	118.7
	04	103.1 (.075)	118.4	128.7	108.7	114.8	104.1	90.7	113.2	116.6
	05	105.3 (.077)	122.7	133.7	108.9	116.5	105.3	90.5	114.8	120.9
	06	107.6 (.079)	124.7	136.1	109.1	115.9	103.4	89.2	112.8	121.3
	07	109.7 (.080)	126.5	138.4	109.3	115.2	104.7	90.9	114.5	125.7

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