INFLATION IN DEVELOPING ASIA: PASS-THROUGH FROM GLOBAL FOOD AND OIL PRICE SHOCKS

EE 462 Development Macroeconomics

Semester 1/2020

Reference: Jongwanich, J. and Park, D. (2011). Inflation in developing Asia: Pass-through from global food and oil price shocks. *Asian-Pacific Economic Literature*, 79-92.

Summary (1)

- Motivations:
  - Rises in oil prices (since 2003) and in global food prices (since 2007)
  - Coincident with increases in developing Asia's inflation
    - Cost-push inflation?
  - Theoretically, global commodity shocks can transmitted to domestic consumer prices, but government subsidies and exchange rate movement can interfere this transmission. So, what explains inflation surge?

- Objective:
  - to examine empirically the extent of the pass-through of global food and oil prices to domestic consumer prices in 9 Asian countries

Summary (2)

- Methods:
  - Use VAR model to estimate the impact of global commodity price shocks on domestic price inflation (import, production, consumption)

- Main Findings:
  - The pass-through of global food and oil price shocks to domestic prices in developing Asia has been very limited.
  - The impact of global commodity prices on domestic inflation has been lessened by government policy and producer behavior.
- Implications:
  - The rise in the region's inflation during 2007-2008 is caused by "demand-pull" factors.

Sample and Data

- Sample:
  - 9 Asian countries: Malaysia, the Philippines, Singapore, Thailand, Vietnam, PRC, Korea, and India
  - Time period: 1996Q1 – 2008Q1, but year range may differ across countries

- Data:
  - Food, oil prices, CPI, PPI, exchange rates are from IFS.
  - GDP from CEIC database.
  - Country sources.

Figure 1
Consumer and producer prices inflation, 2000–08

What's the general pattern of CPI and PPI?

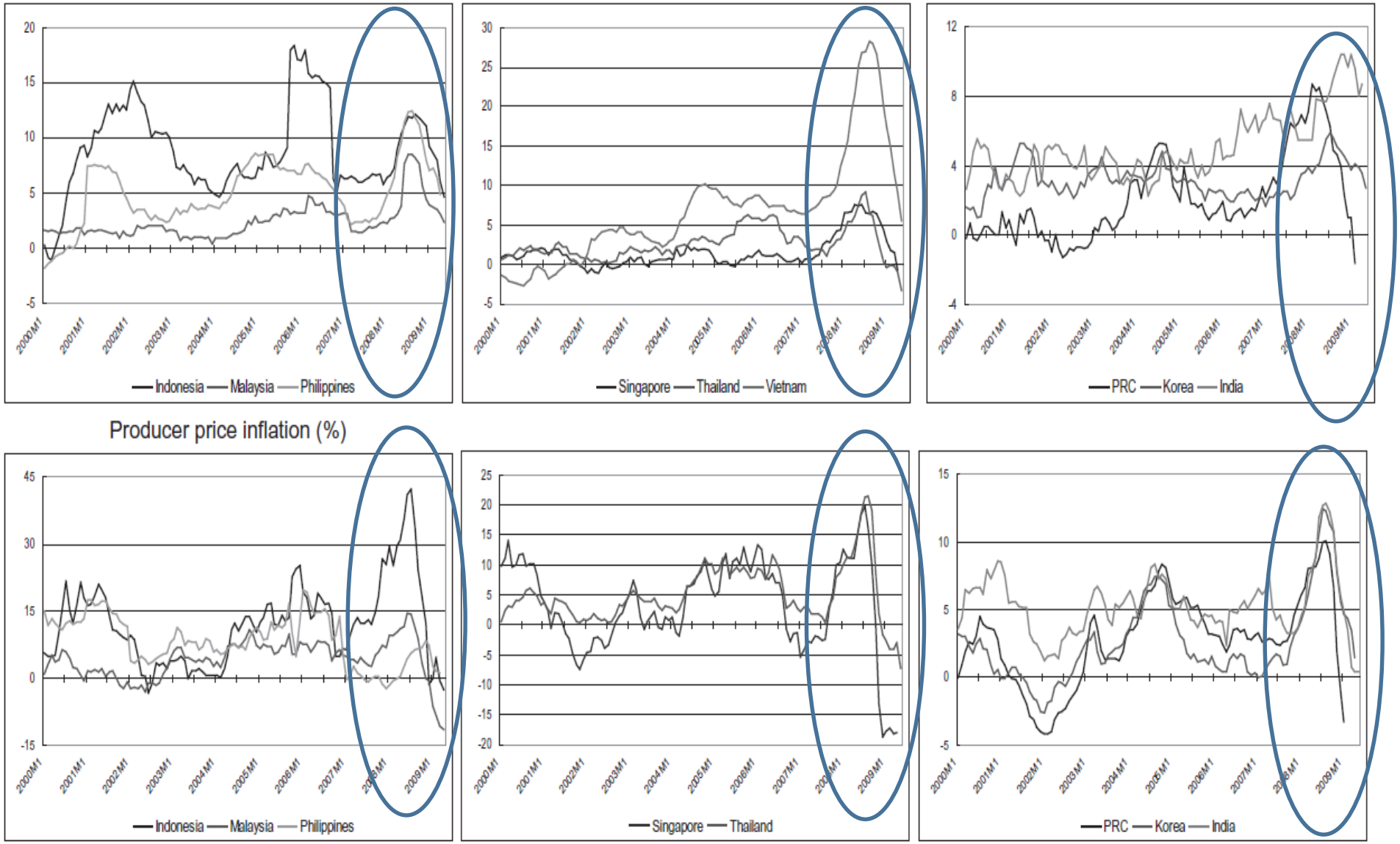
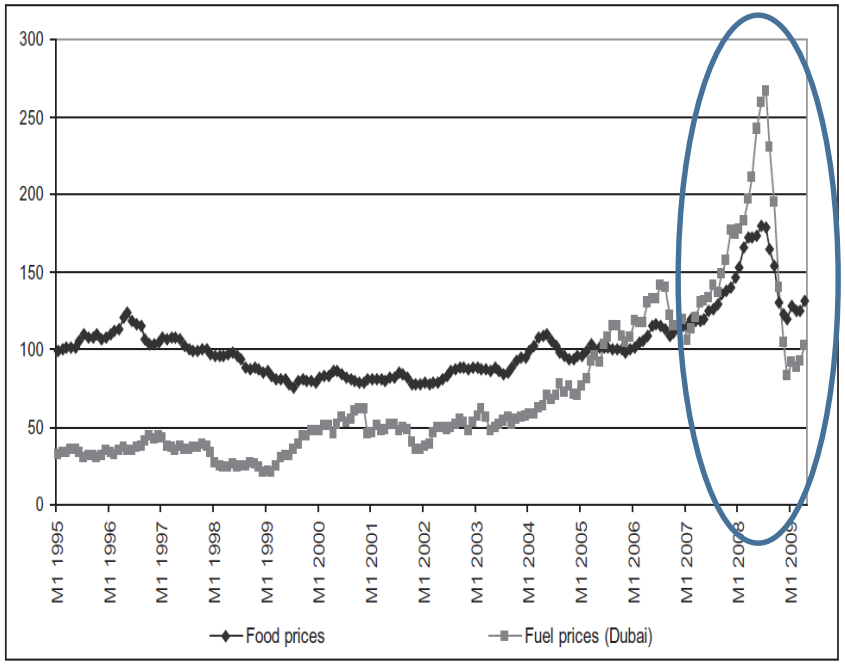
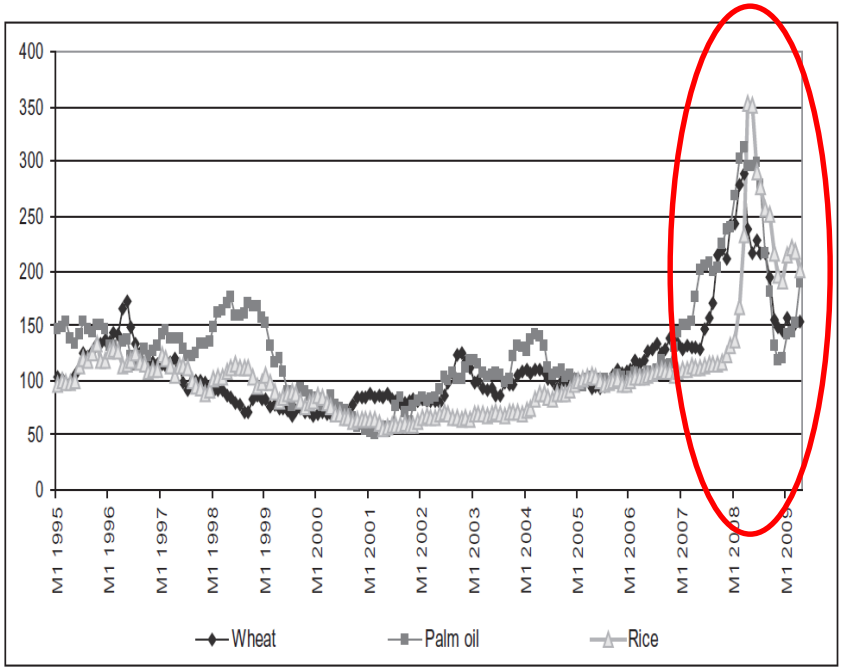


Figure 2
Food and fuel prices (2000 = 100), 1995:M1–2009:M4

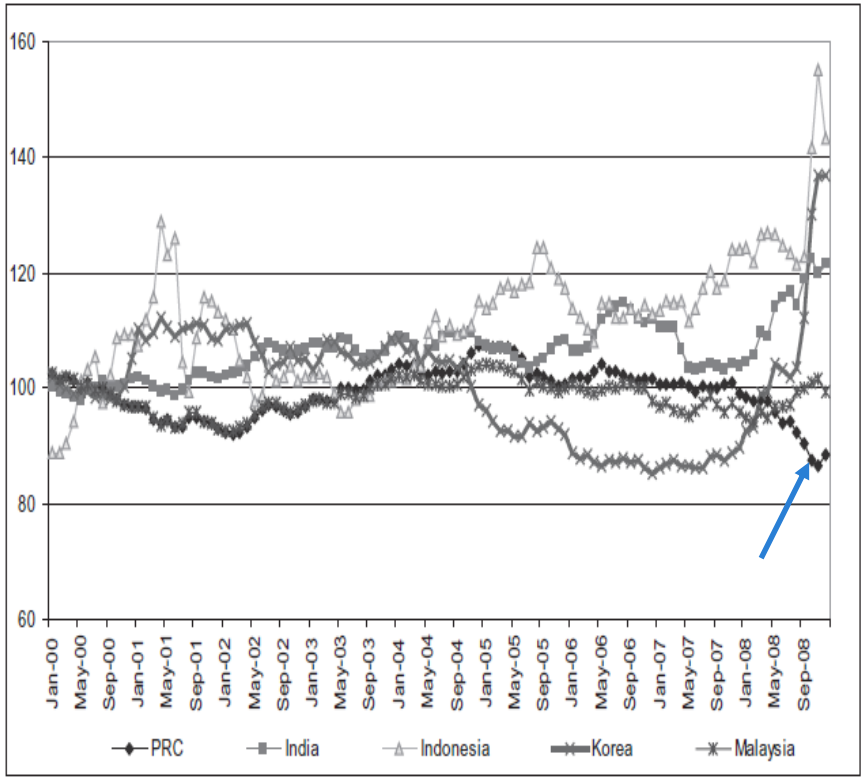


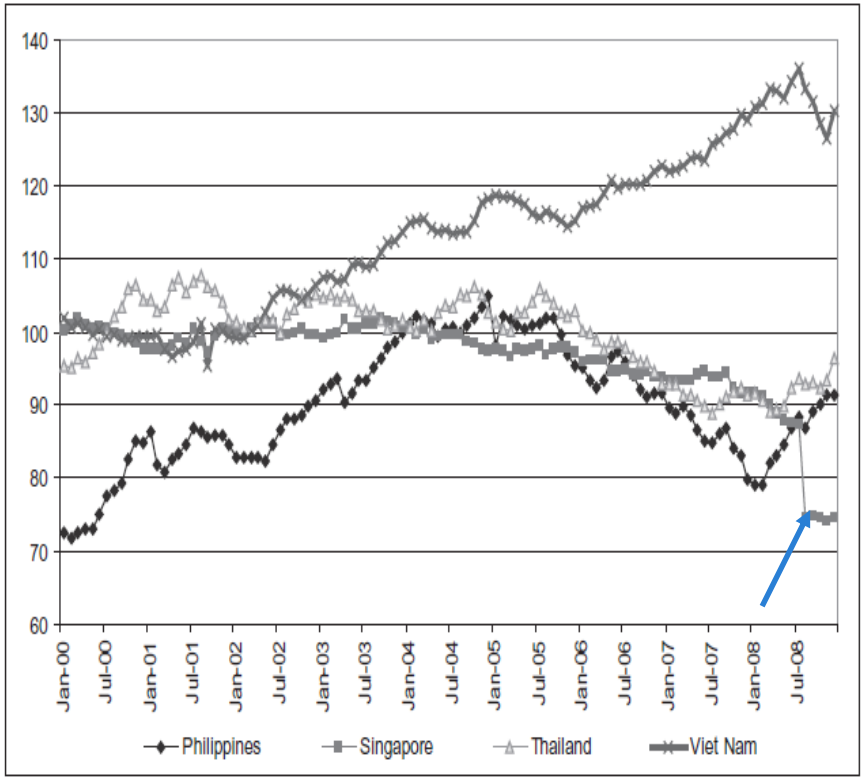


Source: International Monetary Fund, International Financial Statistics online database.

- Are the trends for food prices and fuel prices different? How?
- What caused rises in food prices?

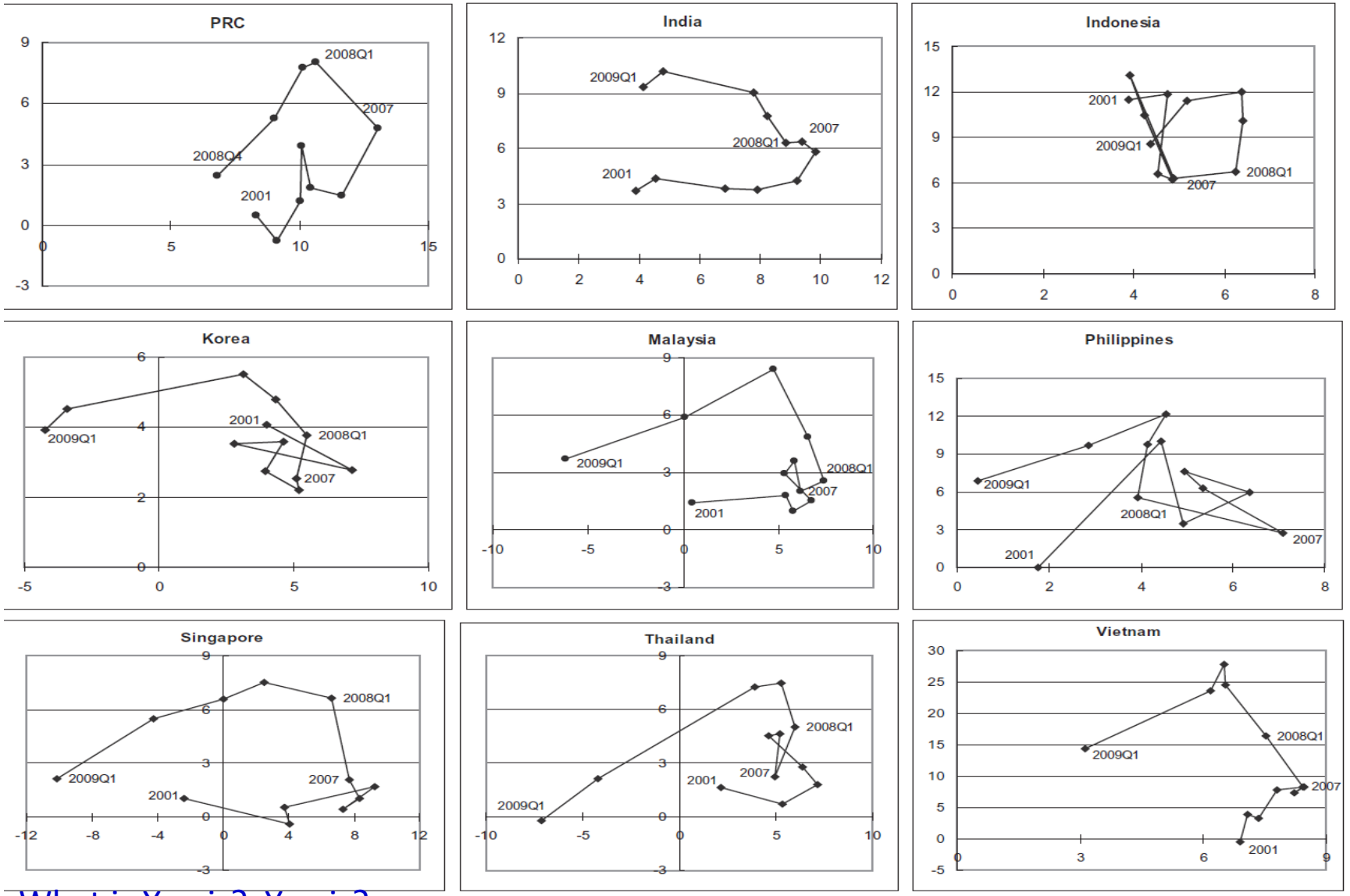
Figure 3
Nominal effective exchange rates, 2000–08





- What is NEER?
  - NEER is the weighted average rate at which one country's currency can be exchanged for a group of multiple foreign currencies.
  - Higher NEER means exchange rate depreciation.
- What is the general trend of the region's currencies? Which countries' currencies appreciate in 2008?
- What is the effect of depreciating currency on the producer and consumer prices?

Figure 4
Inflation and growth in developing Asia, 2001–09Q1



What is X-axis? Y-axis?

Which countries have negative growth?

What's general relationship between growth and inflation?

VAR Model

$$\pi^{oil} = E_{t-1}(\pi_t^{oil}) + \varepsilon_t^{oil} \quad (1.1)$$

$$\pi^{food} = E_{t-1}(\pi_t^{food}) + d_1\varepsilon_t^{oil} + \varepsilon_t^{food} \quad (1.2)$$

$$y_t = E_{t-1}(y_t) + b_1\varepsilon_t^{oil} + b_2\varepsilon_t^{food} + \varepsilon_t^{y} \quad (1.3)$$

$$\Delta e_t = E_{t-1}(\Delta e_t) + c_1\varepsilon_t^{oil} + c_2\varepsilon_t^{food} + c_3\varepsilon_t^{y} + \varepsilon_t^{\Delta e} \quad (1.4)$$

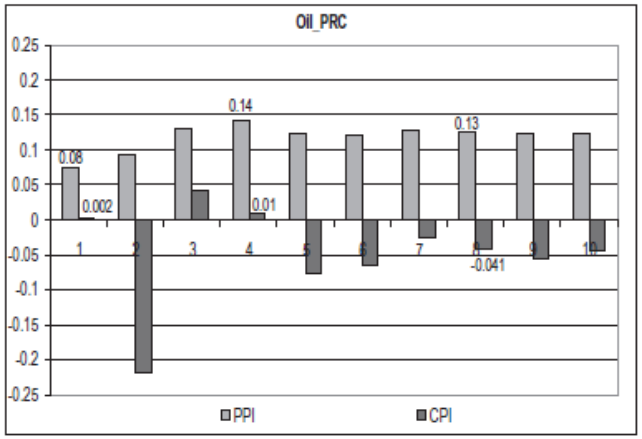
$$\pi_t^{im} = E_{t-1}(\pi_t^{im}) + d_1\varepsilon_t^{oil} + d_2\varepsilon_t^{food} + d_3\varepsilon_t^{y} + d_4\varepsilon_t^{\Delta e} + \varepsilon_t^{im} \quad (1.5)$$

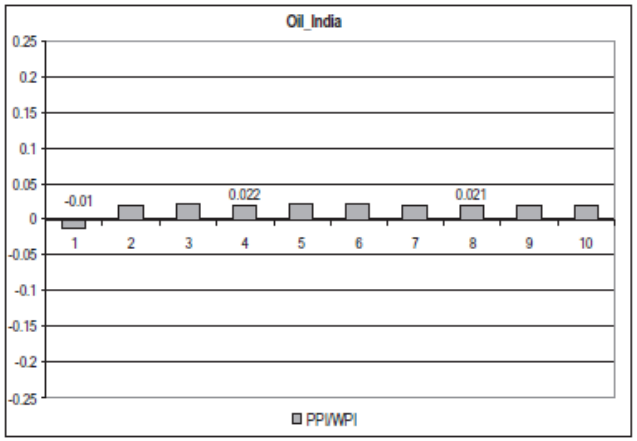
$$\pi_t^{p} = E_{t-1}(\pi_t^{p}) + e_1\varepsilon_t^{oil} + e_2\varepsilon_t^{food} + e_3\varepsilon_t^{y} + e_4\varepsilon_t^{\Delta e} + e_5\varepsilon_t^{im} + \varepsilon_t^{p} \quad (1.6)$$

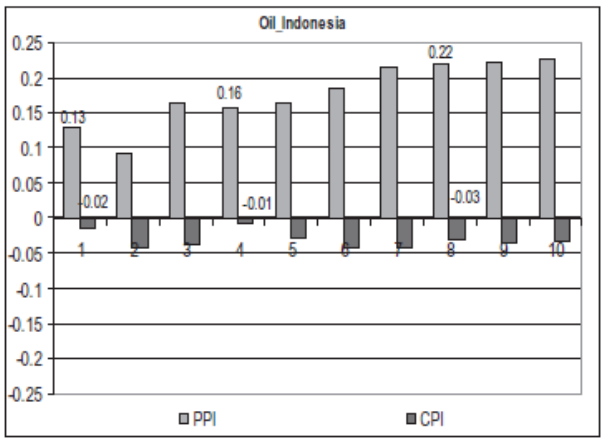
$$\pi_t^{c} = E_{t-1}(\pi_t^{c}) + f_1\varepsilon_t^{oil} + f_2\varepsilon_t^{food} + f_3\varepsilon_t^{y} + f_4\varepsilon_t^{\Delta e} + f_5\varepsilon_t^{im} + f_6\varepsilon_t^{p} + \varepsilon_t^{c} \quad (1.7)$$

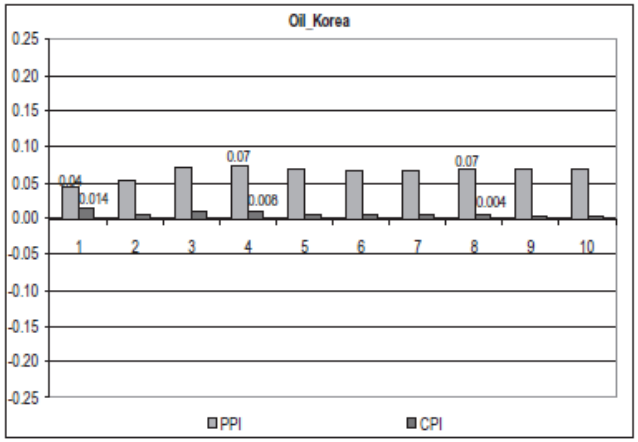
Figure 5

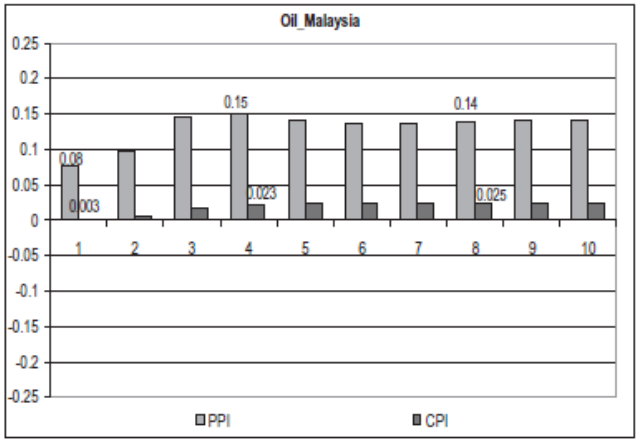
The cumulative coefficients of oil price pass-through (unit: per cent)

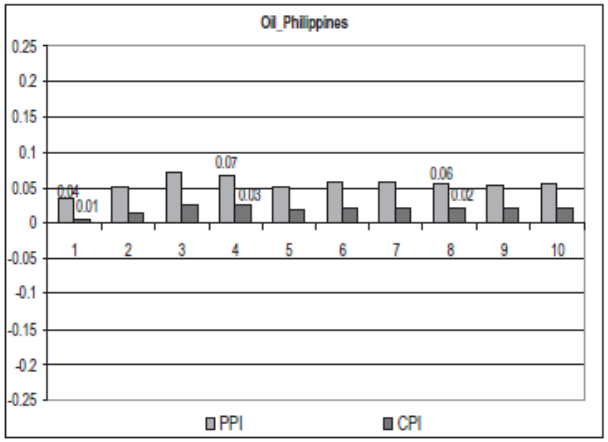


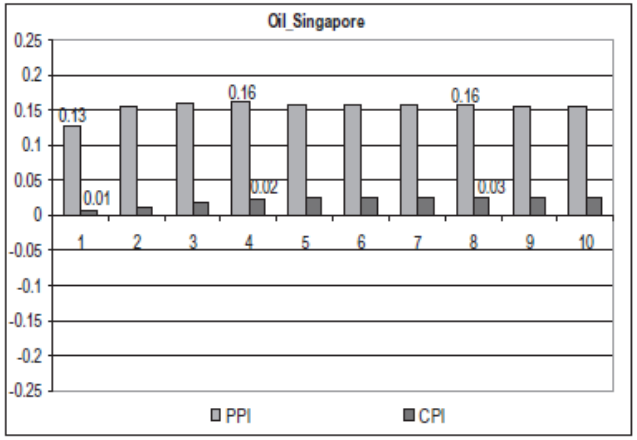


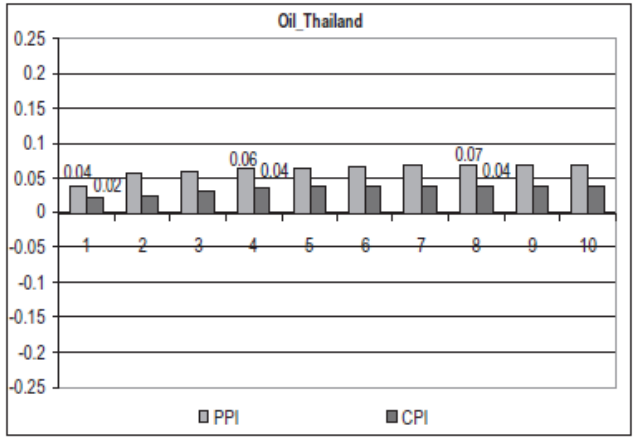












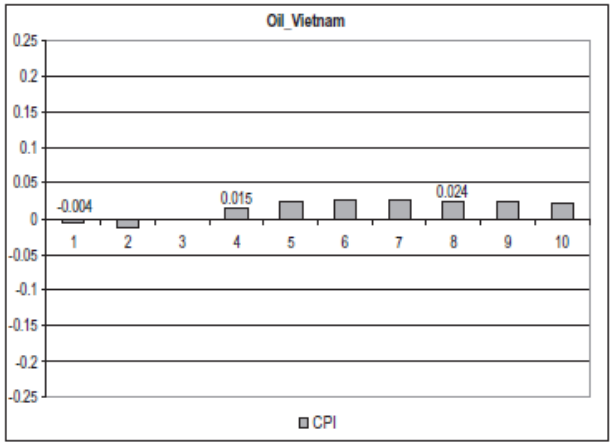


Table 1
Oil dependency and energy efficiency for selected countries, 1995, 2003, and 2005

	Oil self-sufficiency			Intensity of oil use (%)			Energy efficiency		
Region/country	1995	2003	2005	1995	2003	2005	1995	2003	2005
United States	–0.6	–0.7	–0.8	37.8	39.5	40.1	12.4	9.0	8.1
Euro Zone	–0.6	–0.6	–0.6	43.5	41.3	40.8	6.9	6.2	5.3
Japan	–1.0	–1.0	–1.0	55.7	49.8	48.2	3.9	5.2	5.0
East Asia* excluding Japan	–0.1	–0.4	–0.5	26.0	24.3	23.7	47.9	30.9	29.9
China	–0.1	–0.4	–0.5	20.1	22.6	20.5	47.9	30.9	29.9
Hong Kong, China	–1.0	–1.0	–1.0	62.7	61.4	60.2	4.4	6.0	5.8
Korea	–1.0	–1.0	–1.0	66.0	51.6	48.6	12.3	14.3	11.7
Taipei,China	–1.0	–1.0	–1.0	54.5	46.2	45.0	10.5	13.8	12.6
Southeast Asia*	0.0	–0.2	–0.3	57.7	49.0	47.8	15.1	20.7	18.4
Indonesia	0.9	0.0	–0.2	51.8	50.4	48.9	16.1	20.0	18.7
Malaysia	0.7	0.5	0.3	56.4	39.9	39.7	16.5	23.3	18.6
Philippines	–1.0	–1.0	–0.9	72.1	54.4	52.5	13.0	15.8	13.5
Singapore	–1.0	–1.0	–1.0	95.3	88.3	87.9	14.1	18.2	17.3
Thailand	–0.9	–0.8	–0.8	67.2	53.2	52.8	12.6	22.6	20.6
Viet Nam	0.8	0.6	0.5	9.4	13.8	14.6	24.5	24.7	23.1
South Asia*	–0.6	–0.7	–0.8	30.6	34.5	31.5	28.8	22.4	19.2
India	–0.6	–0.7	–0.7	28.7	33.7	30.8	32.1	23.7	20.1
Sri Lanka	–1.0	–1.0	–1.0	68.9	81.9	82.6	11.2	11.0	9.0
Pacific*	2.5	0.2	2.1	77.0	80.5	81.6	10.3	15.8	11.7
Central Asia*	0.0	1.5	1.8	28.7	20.8	19.8	118.6	99.4	67.2
World	–0.1	–0.1	–0.1	39.0	37.7	36.6	12.3	11.5	10.3

* The classifications of the different sub-regions of Asia follow the Asian Development Bank (ADB) classifications. Please refer to www.adb.org for more details.

Note: The oil self-sufficiency index is oil production less consumption divided by consumption; a positive number indicates some degree of self-sufficiency. If there is no domestic oil production the index is equal to –1. Intensity of oil use in energy consumption is petroleum consumption divided by total energy consumption. Energy intensity of GDP is total energy

Empirical Results:

Pass-through of the global oil price shock to domestic inflation

- The pass-through of oil prices to producer prices tends to be higher in oil-exporting countries than in oil-importing countries.
- The pass-through coefficients tend to be lower for consumer prices than for producer prices, because the impact of crude oil price increases on domestic prices is diluted along the distribution chain.
- The degree of oil price pass-through to consumer prices is higher for countries with limited fuel subsidies (i.e. Malaysia and Indonesia).

Figure 6
The cumulative coefficients of food price pass-through (unit: per cent)

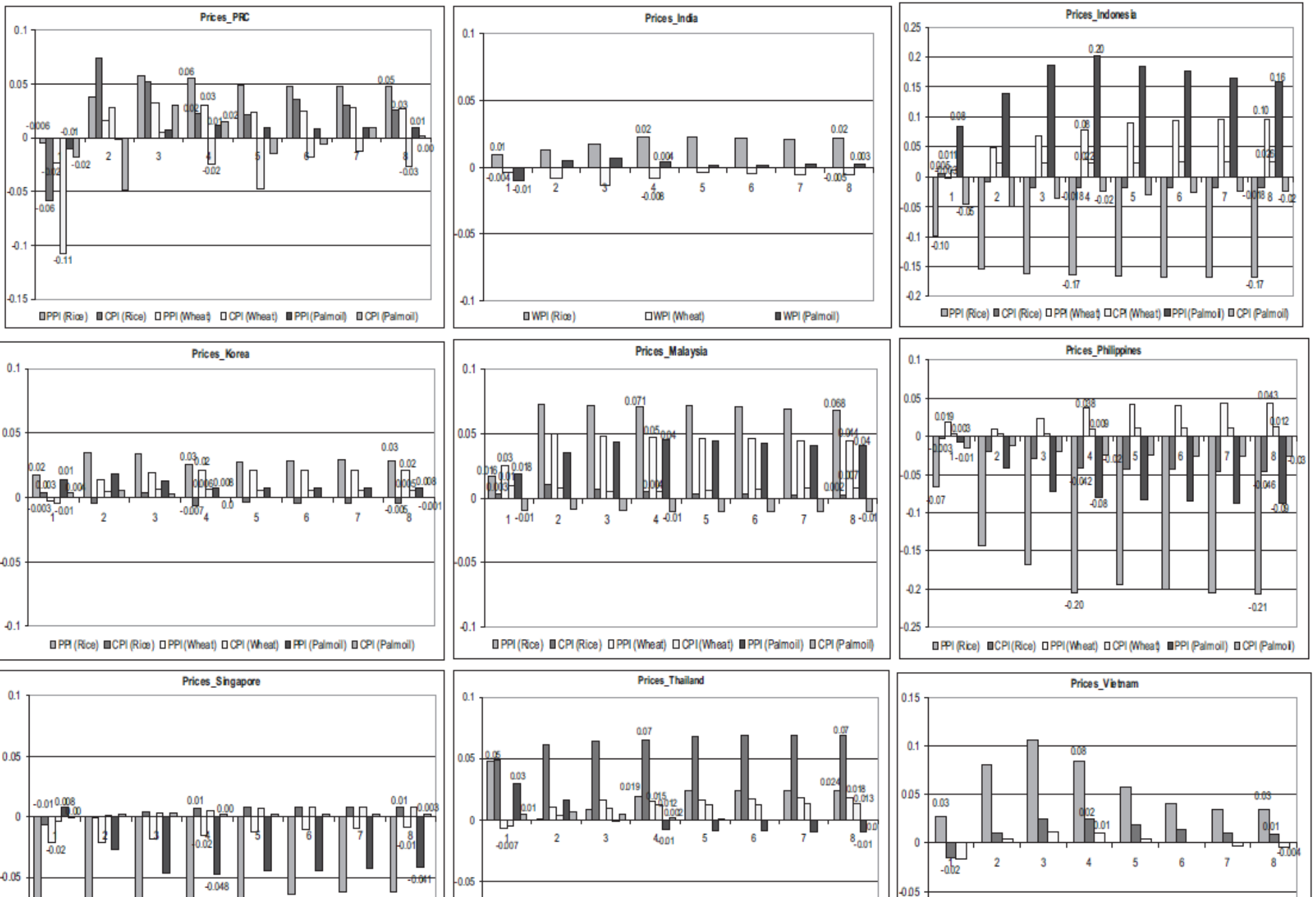


Table 2
Per capita consumption of key agriculture products for selected countries, 1995–2003

	Wheat			Rice			Palm oil		
Region/country	1995	2000	2003	1995	2000	2003	1995	2000	2003
People's Republic of China	79.3	74.1	61.4	91.3	87.6	78.5	1.1	1.0	1.5
India	63.6	57.2	63.6	80.7	74.7	71.1	0.8	3.1	3.4
Indonesia	21.3	19.4	17.3	146.5	148.9	141.1	7.1	7.7	7.9
Korea	48.7	52.9	48.4	95.3	87.8	77.7	1.2	1.9	2.7
Malaysia	65.6	35.6	65.6	86.8	86.1	70.8	7.5	6.1	6.2
Philippines	31.5	27.0	29.7	94.3	106.4	110.6	0.8	1.6	1.0
Singapore	..	..	..	..	..	..	..	..	..
Thailand	9.2	10.5	11.5	105.6	106.3	104.4	2.5	2.7	2.6
Vietnam	6.0	8.1	10.1	163.0	169.6	169.1	0.0	0.0	0.0
Asia	69.2	66.4	63.5	87.1	84.3	79.4	1.7	2.3	2.7
Latin America	51.5	49.0	52.5	22.8	26.2	26.0	1.5	1.6	1.9
Developing countries	62.3	60.2	58.6	71.4	69.4	65.7	1.9	2.3	2.7
World	71.0	68.4	67.0	57.6	56.8	54.2	1.6	2.0	2.2

Source: Food and Agriculture Organization of the United Nations, available at http://faostat.fao.org/site/502/DesktopDefault.aspx?PageID=502

Empirical Results:

Pass-through of the global food price shocks to domestic inflation

- The pass-through to producer prices is higher in food-exporting countries (e.g. Thailand as rice exporter) than in food-importing countries (e.g. Indonesia, the Philippines, Singapore).
- Palm oil pass-through coefficients tend to reflect the low share of vegetable oils in the consumption basket, and the pass-through coefficients to consumers prices for palm oil tend to be lower than for rice or wheat.
- Food subsidies limit the degree of pass-through to consumer prices in many countries (e.g. the Philippines and Indonesia).