

Southeast Asian Economic Policy and Development (ECON 3009 / 3019 / 8049)

Week 9:
Agricultural development in Southeast Asia
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This lecture

1. Introduction, role of history + geography
2. Agriculture in rapid growth: broad features
3. Technological change in agriculture
4. Changing domestic and foreign demand
5. Agricultural policies, in particular towards rice
6. Agriculture and rural change
7. Current issues, challenges in near future

Lim, *Southeast Asia: The Long Road Ahead* (2004) ch.3-5

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Key factors in agr. development

- **History:**
 - Institutions, accumulated investment in crop-related infrastructure
- **Geography:**
 - Dispersion, need for transport facilities
 - Climate, topography, soil quality
 - Diversity in agricultural production systems
 - Diversity in population density
- **Stages of ec. development**



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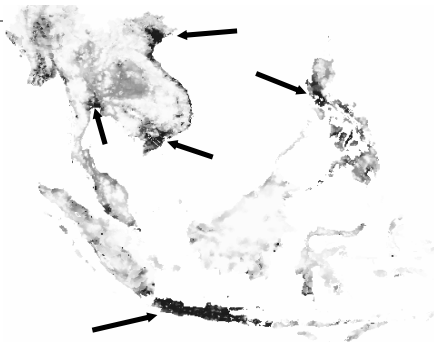
Population and density, 1965-2000

	Population (mln.)			Growth 1980-00	1995 Density	
	1965	1980	2000		Total	Nutrition
Indonesia	106	148	206	1.7%	93	1,258
- Java only	68	91	123	1.5%	813	1,659
Malaysia	9	14	24	2.7%	54	1,048
Philippines	32	48	78	2.5%	203	1,327
Thailand	31	47	62	1.5%	109	318
Burma	25	34	50	2.0%	62	437
Vietnam	35	54	78	1.9%	203	1,141
Japan	99	117	127	0.4%	328	2,999
South Korea	29	38	47	1.1%	435	2,197
Taiwan	13	18	22	1.2%	569	2,292

Nutritional density: population per km² of arable land (excluding permanent crops)

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Population density



<http://maps.unomaha.edu/Peterson/fundat/AllMaps.html>

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Small-scale farming dominates

- Most agricultural production by smallholders on very small farms, e.g.
 - Java + N.Vietnam av. < 0.5 hectare !!
 - Thailand: av. 2-3 hectares
- Large-scale production only if economies of scale in product processing → plantations, e.g. oil palm
- Farm agriculture: no specialisation
 - example next slide

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Annual income of farm households Indonesia, 1983/84

Main cash crop	% of all farm households		% shares in household income			Total household income (1000 Rp)
	households	crop	Main cash crop	Other agricult. products	Other income	
Rubber	3.5	43.0	21.2	35.7		975
Coffee	5.0	28.3	34.6	37.1		882
Copra	9.4	20.6	36.4	43.0		874
Tobacco	5.4	15.8	37.9	46.3		784
Sugar cane	1.8	25.2	26.7	48.0		1,107
Cloves	10.0	15.2	40.4	44.4		863
Pepper	0.4	45.4	22.1	32.5		1,098
Total	35.3	22.4	35.6	42.0		826

Note: Total disregards double counting.

Source: Calculated from *Sensus Pertanian 1983 Seri B and Seri F5*.

2. Agriculture in rapid growth

- Fundamental reasons for fall share agriculture in
 - demand: Engel's law
 - employment:
 - scale economies in non-agriculture →
 - labour 'pulled' from agriculture →
 - marginal productivity of labour = wages ↑ →
 - necessary for agric. labour productivity ↑
- But structural change in employment lags behind that in output

Agriculture in employment and GDP, 1965-2000

	1965	1980	2000
A. Employment in agriculture (million)			
Indonesia	25	35	43
Malaysia	2	2	2
Philippines	5	10	10
Thailand	11	17	16
Burma	7	13	18
Vietnam	15	19	24
B. % agriculture in total employment			
Indonesia	70	58	48
Malaysia	54	41	18
Philippines	59	52	37
Thailand	82	71	49
Burma	68	76	63
Vietnam	82	73	66
C. % agriculture in GDP			
Indonesia	52	22	17
Malaysia	39	23	9
Philippines	31	26	16
Thailand	36	22	10
Burma	40	47	57
Vietnam	30	40	25

Source: FAOSTAT, national accounts.

Growth agricultural production

- Growth was largely driven by food production
- 1965-85: Green Revolution in rice production
 - Mal, Ind, Phil mainly
- 1985-2005
 - growth slow-down in Phil + Thai
- Since 1980s: growth due to rapid diversification of agr. output in Mal + Thai,
- Phil + Ind, Viet + Burma lagging in diversification output away from staples foods

Growth of agricultural output, 1965-2005 (% per year)

	Total agric. product.	Food production	Food product. per capita
Indonesia	3.7	3.8	1.9
Malaysia	4.7	3.3	3.1
Philippines	2.9	2.9	0.5
Thailand	3.0	2.9	1.0
Burma	3.2	3.3	1.4
Vietnam	4.0	3.9	1.9

Per capita food supply (Kcal / day)

	1965/67	1980/82	2000/02
A. Total			
Thailand	2,103	2,220	2,453
Malaysia	2,403	2,722	2,891
Indonesia	1,754	2,253	2,912
Philippines	1,794	2,237	2,375
Burma	1,907	2,391	2,879
Vietnam	2,086	2,176	2,533
B. Animal products only			
Thailand	198	202	295
Malaysia	267	400	516
Indonesia	52	73	124
Philippines	226	249	359
Burma	96	106	136
Vietnam	151	128	287

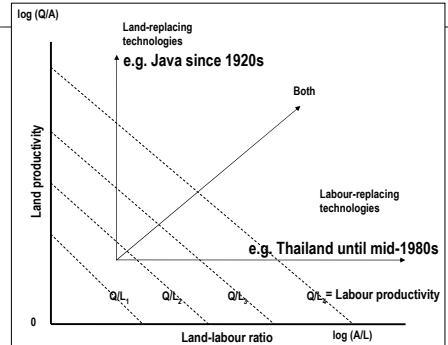
Source: FAOSTAT

3. Technological change

- Productivity growth = increase labour productivity
- Impact of technological change in production on labour productivity: $Q/L = A/L \times Q/A$
- Land / worker (A/L) ↑ by:
 - consolidation farms
 - adoption labour-replacing technologies (only M)
 - extension of farms on marginal land: Th
- Output / hectare (Q/A) ↑ by:
 - multiple cropping (irrigation)
 - higher yields (fertiliser, HYVs)
 - diversification to high-value added products

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Paths of productivity change



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Direction and pace technological change

- **Direction** of technological change to increase labour productivity:
 - determined by relative factor prices
- **Pace** of technological change to increase labour productivity:
 - depends largely on increase of opportunity cost of (unskilled) labour

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Labour productivity in agriculture (2000 PPP\$), 1970-2005

	1970	1990	2005
Indonesia	313	494	479
Malaysia	948	2,426	3,214
Philippines	538	714	625
Thailand	435	578	647
Burma	279	322	310
Vietnam	242	328	312
Japan	1,271	3,249	6,862
Australia	24,232	32,503	37,043

Source: FAOStat

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4. Changing demand

- Except Mal: Most output for domestic consumption = food products
- Growing domestic demand, 3 factors driving change:
 1. Population growth
 2. 'Engel-effect': income ↑ → income elasticity of demand for staples ↓
 3. Shift towards products with high income elasticity and/or higher price per Kcal:
 - wheat, meat, dairy, poultry, seafood, fruits, vegetables, processed foods

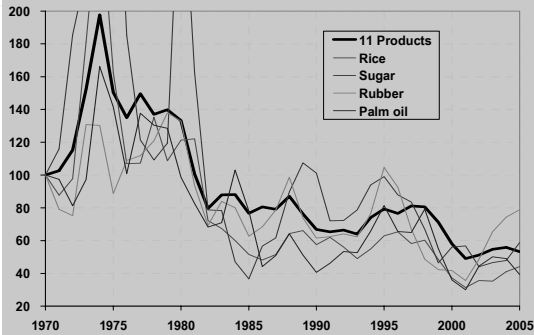
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Role foreign demand

- Except Malaysia, foreign demand is secondary
 - but that differs per commodity!
 - all countries long-time net export producers
- Problems of foreign competition:
 - falling terms-of-trade commodities
 - fluctuations commodity prices (next slide)
- Some solutions:
 - increasing productivity → rubber in Indonesia
 - export diversification away from traditional produce
 - shielding producers from world markets

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Agricultural commodity prices, 1970-2005 (1970=100) (deflated with USA manufactured export price index)



5. Agricultural policies, rice (1)

- 1950s and 1960s, pessimism agricultural exports
 - agricultural export tax ↑
 - cut out middlemen → marketing boards with monopolies
 - concerns about food supply → self-sufficiency goals (Ind, Mal, Phil)
- 1960s and 1970s, focus on increasing rice production: Green Revolution
 - input subsidies: HYVs, fertiliser, irrigation
 - price support + reduction price cycles
 - public rural transport infrastructure

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Agricultural policies, rice (2)

- 1970s and 1980s: rice prominent, but policy instruments + goals diversified, e.g.:
 - food self-sufficiency or food security
 - low and affordable consumer food prices
 - poverty alleviation
 - rural development
 - reduce rural-urban income disparity
 - foreign exchange earnings from export (Th)
 - foreign exchange savings from import substitution (M, Ind, Ph)

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Impact of the Green Revolution in rice agriculture, 1960-2000

	1960	1980	2000
A. Fertiliser consumption (kg. nutrients/arable hectare)			
Indonesia	2	45	74
Malaysia	11	94	156
Philippines	15	35	69
Thailand	2	15	81
Burma	1	10	20
Vietnam	4	24	279
Japan	291	333	301
B. Share harvested rice area planted with HYVs (%)			
Indonesia	-	60	81
Malaysia	-	64	-
Philippines	-	77	94
Thailand	-	10	17
Burma	-	34	61
Vietnam	-	35	86

Sources: FAOSTAT; IRRI.

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Agricultural policies, rice (3)

- 1980s and 1990s:
 - diversification of production → difficult diversification policies
- Policy intervention in product and factor markets created distortions:
 - agr. output: only Mal + Viet higher output prices than world level (due to rice)
 - current inputs: net subsidies
 - levels of effective protection in ASEAN low compared to S.Korea, Japan, EU, USA

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6. Rural change: GR controversies

1. 'Only large farmers benefit from GR technology'
 - enhances rural income disparity
 - small farmers have to sell land to landlords
 2. 'Only large farmers can mechanise'
 - rural dwellers lose jobs or have to accept lower pay
 - increasing rural dichotomy: haves vs. have-nots
- In hindsight little evidence:
 - a. small farmers also gained access to GR technology
 - b. mechanisation of field work negligible, but mechanisation in processing extensive


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Rural change: more important issues

- GR helped off-set rise in rural-urban income gap
 - but not enough →
 - increase off-farm income in rural hh. income
- GR enhanced income gap between rice and non-rice producers
- Rural depopulation:
 - young females to urban factories, young males in construction
 - ageing rural population in agriculture


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7. Issues 1990s + near future (1)

- Total demand for rice continues to increase, how sustain momentum of GR?
- AFTA: opportunities for protection / support ↓
- Governments to assist diversification of agricultural production
 - how and in what direction (products, technologies) to diversify policies?
- Governments t assist value-adding in agricultural production
 - how and in what direction to stimulate agro-industry?

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Issues 1990s + near future (2)

- Policy changes have to be developed in the context of
 - domestic pressure special interest groups for support + protection → follow Japan, Korea, Taiwan?
 - growing foreign+domestic pressure to deregulate
 - concerns about the environment at home and abroad
- 1997-98 crisis did not affect agriculture as much due to lower import dependence
 - some sections boosted exports as currency undervalued
 - indirect consequences of reduced domestic demand
 - but rural areas less affected than urban

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