

## **Dynamism of the Thai Agriculture**

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# **Dynamism of the Thai Agriculture\***

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## **Abstract**

This paper traces the development of Thailand's agricultural sector over the past four decades. Factors contributing to agricultural productivity changes are discussed. Productivity growth in agriculture lags behind manufacture, preventing a natural transfer of agricultural workers to the non-agricultural sector. The changing pattern of competitiveness of Thailand's agricultural exports is analyzed by focusing on their growth and world market shares. The results indicate that the Thai agricultural sector can still maintain competitiveness in some commodities. While traditional commodities may lose their importance in the future, new agricultural products would emerge. Exports of agricultural products have been diversified over the years, while their ability to compete in the world markets has been enhanced. Processed food industry would be the key to the future of Thailand's agriculture, but maintaining export competitiveness requires constant upgrading of food-safety standards. Agricultural growth alone cannot reduce rural poverty; it must be accompanied by growth in non-agriculture. Dynamism of the Thai agriculture and its survival depend primarily on continued productivity improvement

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## Endnotes

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<sup>1</sup> Agricultural export share declined from the average of 54.3 percent during the period 1979-1981 to 24 percent during the period 1989-91. By 2002, agricultural exports declined further to 12.2 percent of total exports.

<sup>2</sup> Siamwalla (1996) argued that agricultural technology in advance countries cannot be adopted by Thai farmers due to different physical and economic environment in Thailand. But technology in the Thai agriculture is neither backward nor static, because the government has spent adequate amount on agricultural research, while relying on the private sector to provide new technology.

<sup>3</sup> Basically the variance of growth depends on the sum of variances from output and price fluctuations.

<sup>4</sup> Values of imported machinery rather than number of machinery are employed due to the inaccurate statistics in recent years, although employment of agricultural machinery involves domestically produced machinery.

<sup>5</sup> According to Johnson (1991), American agriculture has a capital-labor ratio that is six times the ratio in manufacturing. In other words, agriculture in developed countries are more capital intensive than developing countries.

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<sup>6</sup> Thirtle et al. (2003, p.1970) reports that agricultural R&D expenditures was only 3.3 dollar per ha in Thailand, while Malaysia spent almost 15 dollar in 1995. The R&D investment produced the rate of return at 23 and 9 percent respectively in both countries.

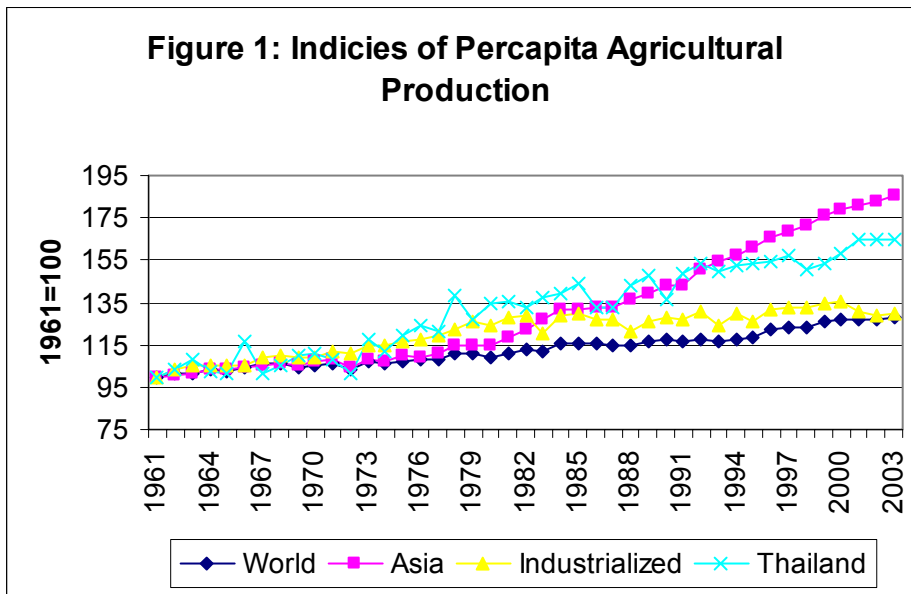
<sup>7</sup> The chicken industry suffered a severe blow by the avian flu virus and it cost the industry more than 80 billion baht in 2004.

<sup>8</sup> There are six million people involving in the rubber industry with 13.5 million rai of land. Thailand is the world's largest producer of natural rubber, who exports value ranked fourth among the country's exports in 2004.

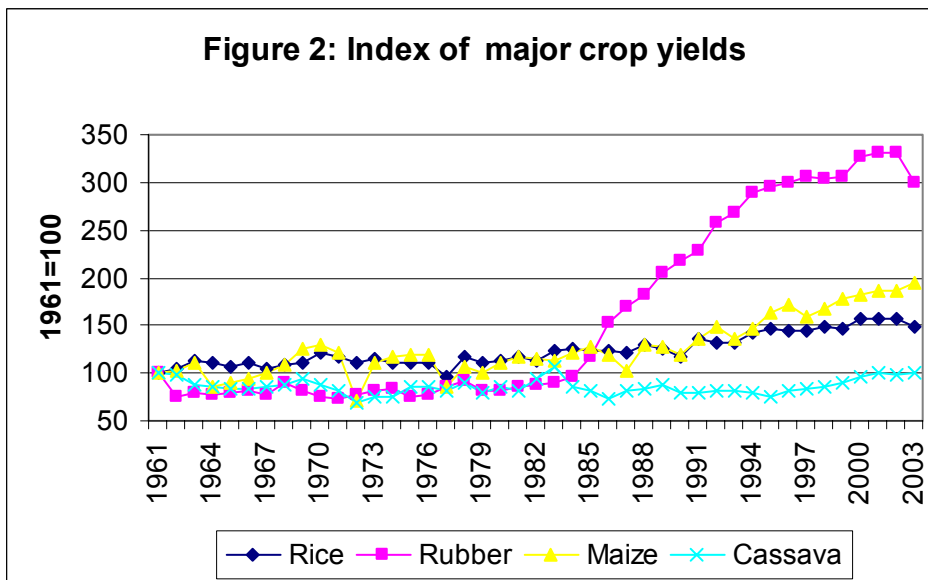
<sup>9</sup> See the background of the hypothesis in Nidhipbaha and Chamchan (2005).

<sup>10</sup> Fan et al. (2003) also found the evidence supporting the hypothesis that agricultural research has significant impact on reducing urban poverty, because the increased food production lowers food prices which benefit the urban poor because they spend more than 60% of their income on food.

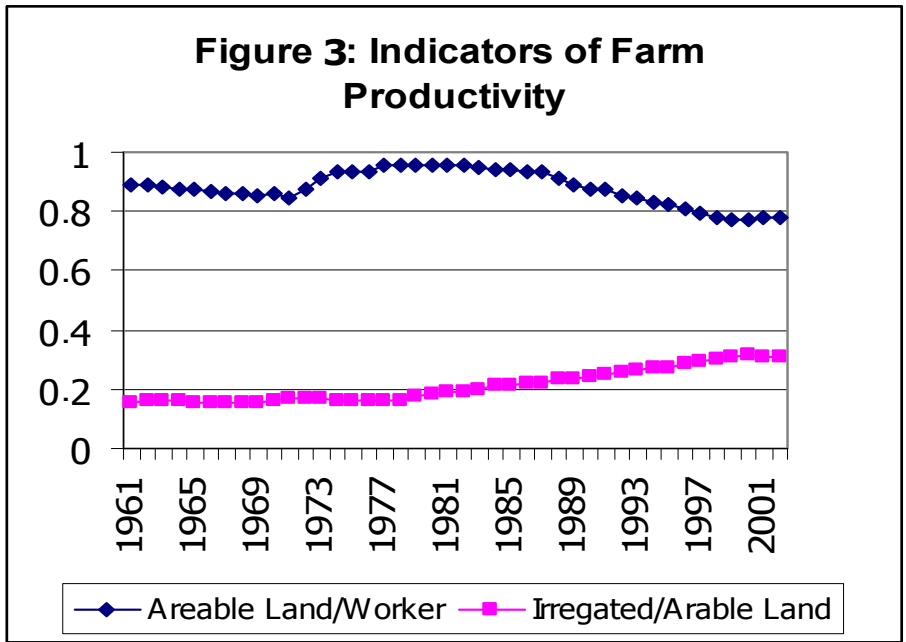
<sup>11</sup> Raising agricultural productivity is one of the government's strategies to reduce rural poverty. It should be noted that both rural and urban poverty can be reduced by enhancing agricultural productivity.



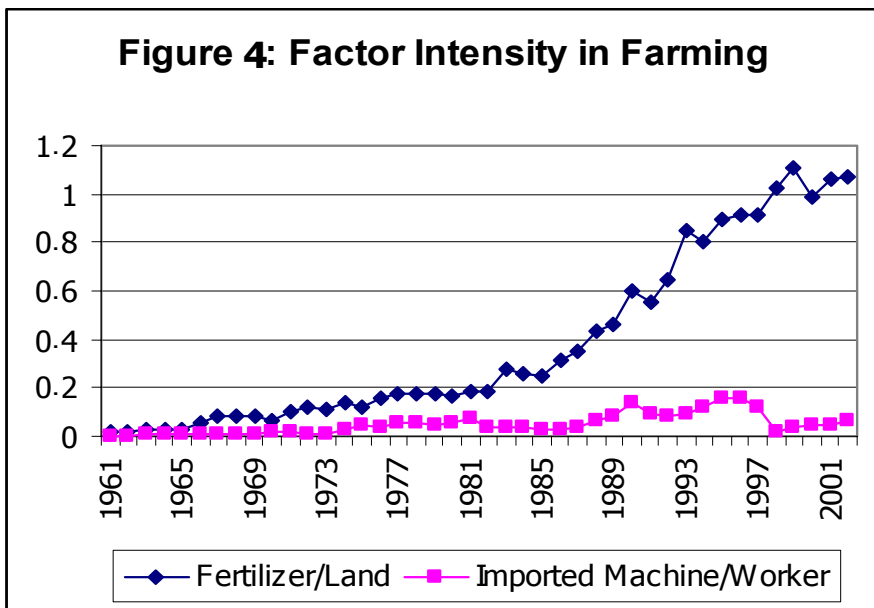
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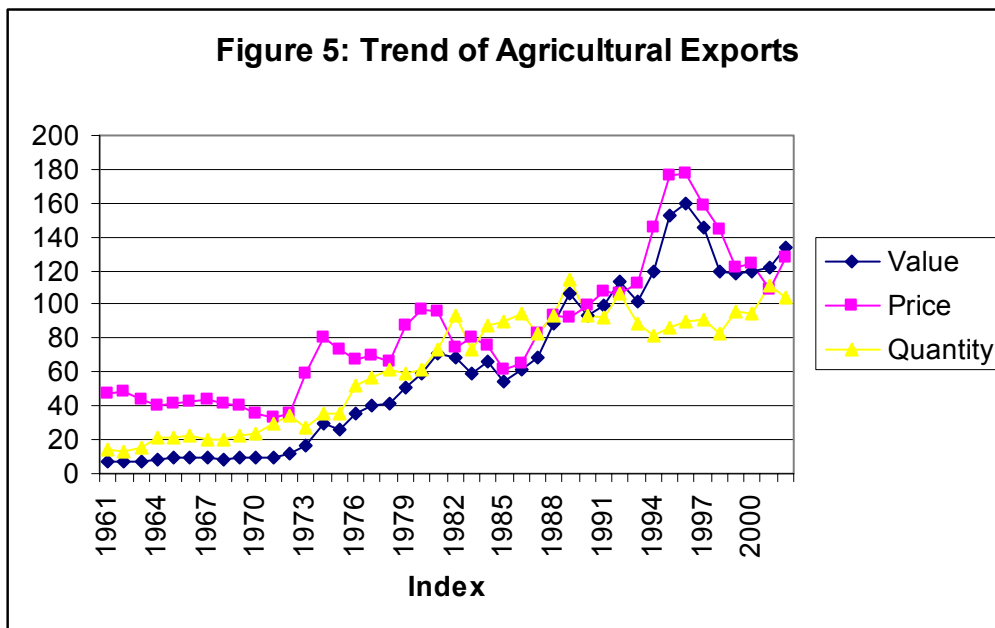


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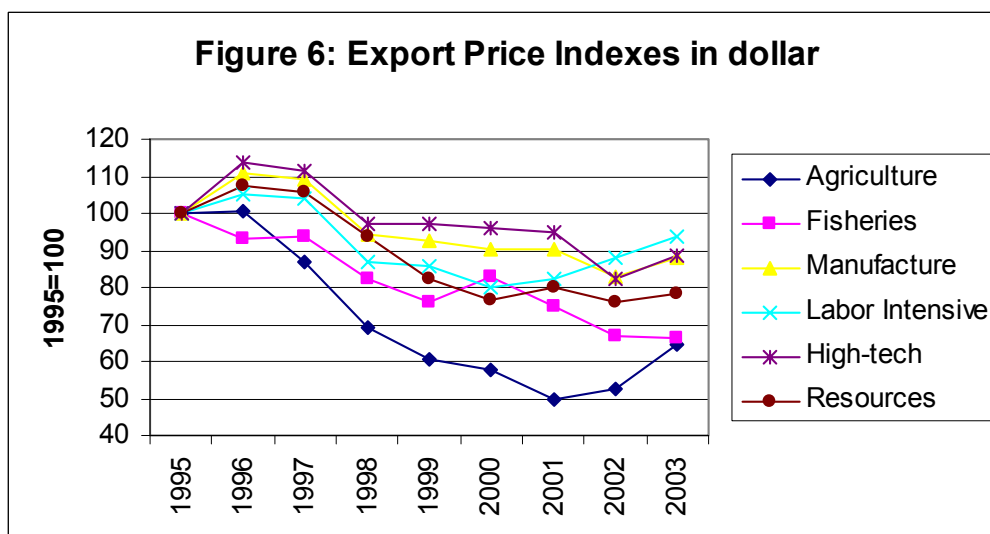


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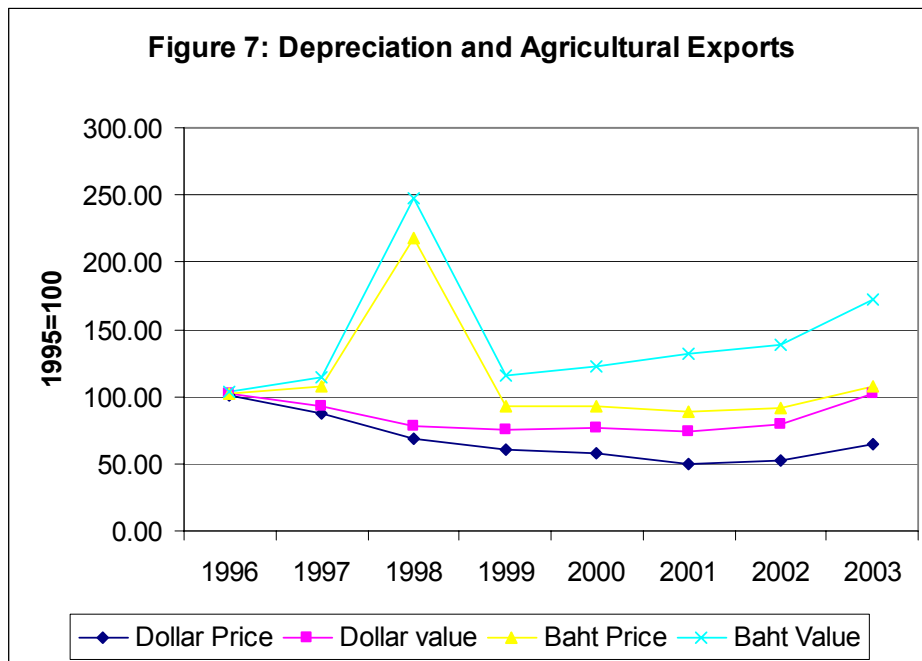




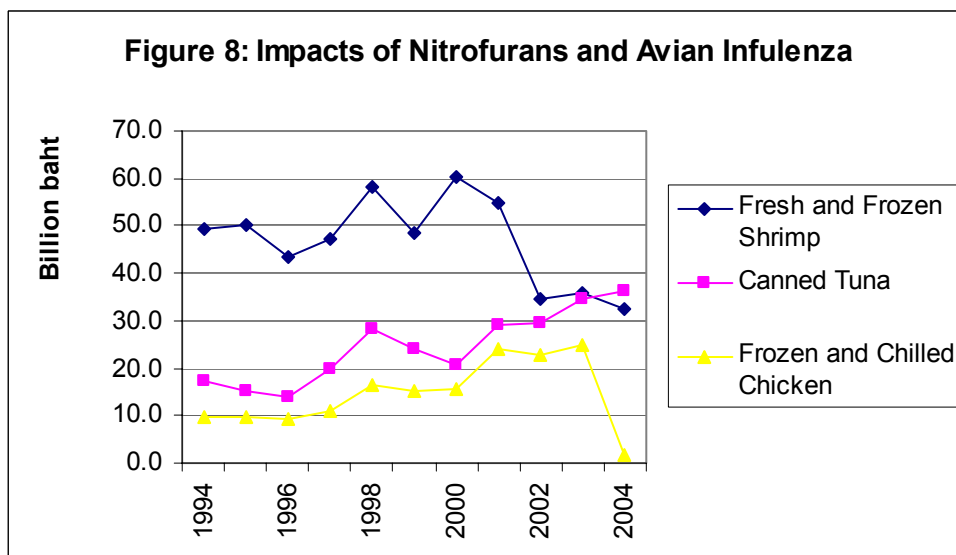
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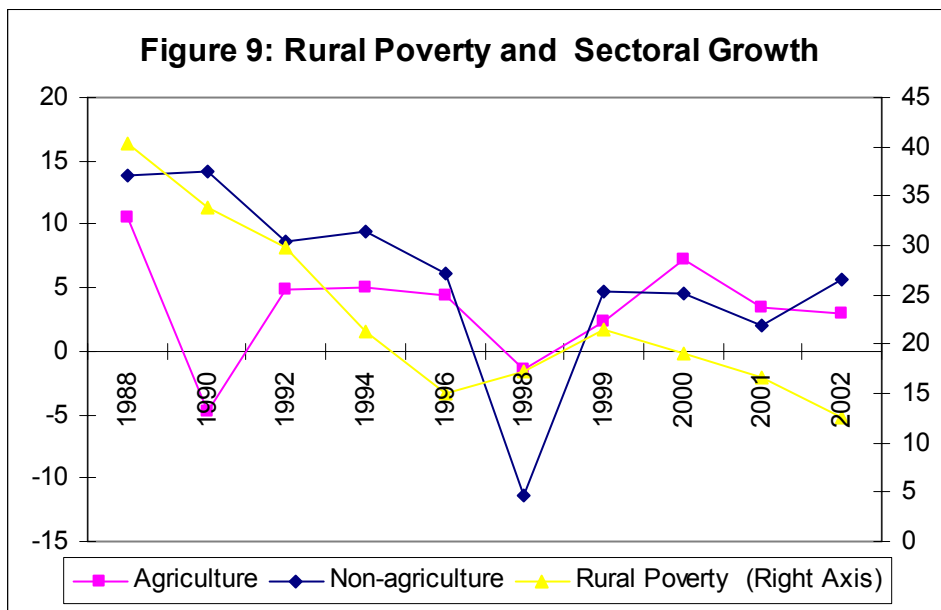
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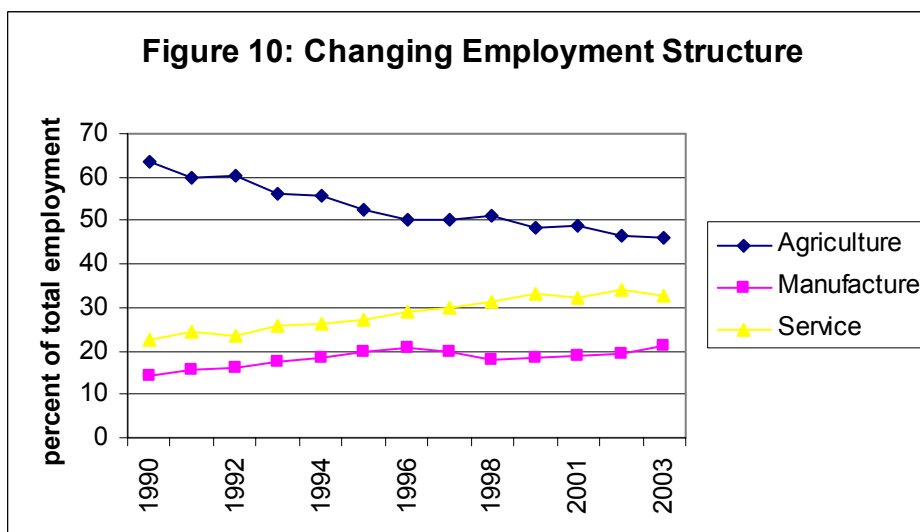
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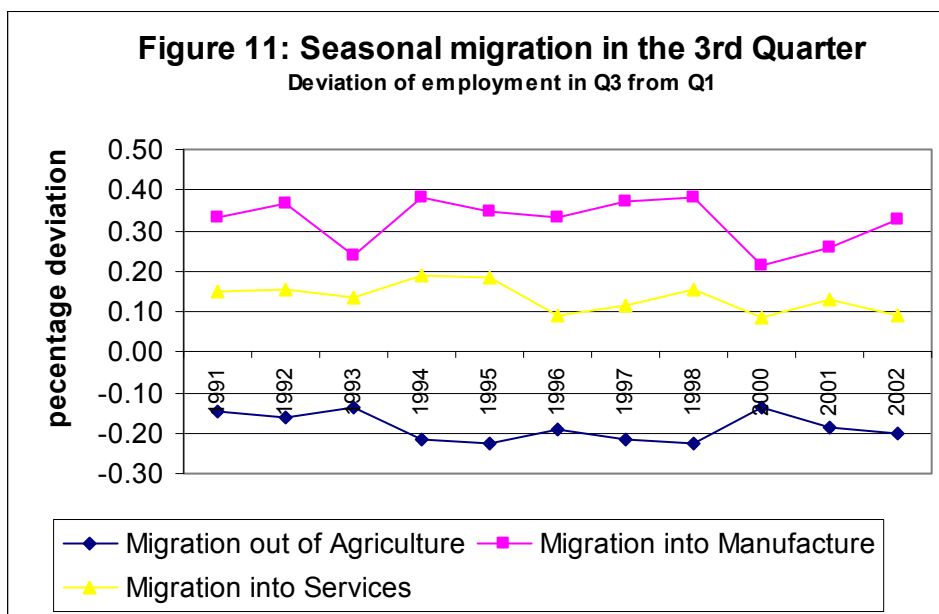
Source: Department of Agriculture, Department of Fisheries



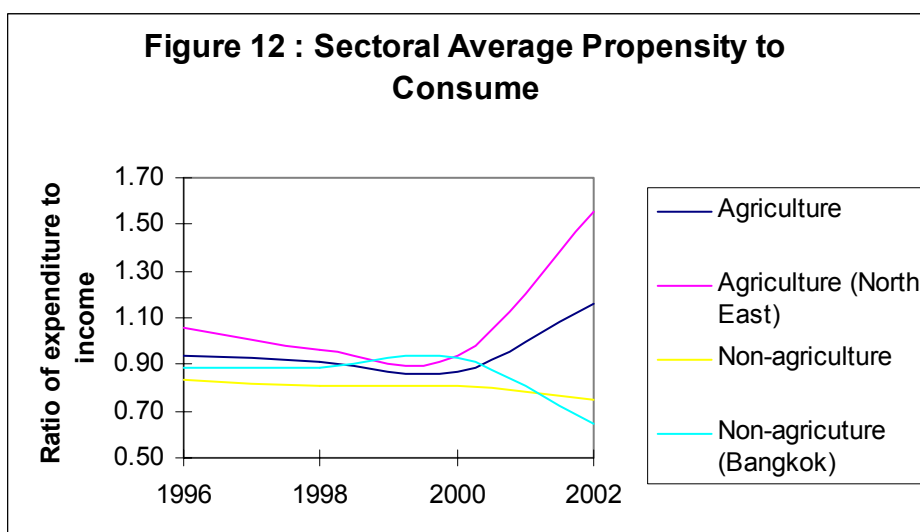
Source: ADB



Source: ADB



Source: National Statistical Office



Source: National Statistical Office

<b>Table 1: Factor Intensity in Agriculture (percentage change)</b>				
	<b>1961-72</b>	<b>1973-85</b>	<b>1986-2002</b>	<b>1961-2002</b>
Arable Land/Worker	0.98	1.04	0.83	0.87
Fertilizer/Land	7.07	2.35	3.40	62.32
Irrigated/Arable Land	1.07	1.31	1.42	2.00
Imported Machine/Worker	2.59	2.29	2.76	16.30

Source: calculation made from FAOSTAT

<b>Table 2: Average Labor Productivity: Agriculture vs Manufacture</b>								
	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Agriculture	12.9	13.4	16.3	18.6	19.3	20.8	20.9	22.7
Manufacture	129.8	172.7	219.0	235.1	229.0	233.9	235.0	257.2
Relative Productivity	10.10	12.92	13.40	12.66	11.90	11.24	11.24	11.34

Source: Calculations based on value added per worker, ADB Key Indicators

<b>Table 3: Public spending on agricultural sector</b>						
	<b>1995</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Ratio to Total Spending	0.10	0.07	0.08	0.08	0.08	0.07
Ratio to GDP	0.17	0.14	0.15	0.16	0.15	0.12
Agricultural output share in GDP	0.10	0.09	0.09	0.09	0.09	0.10
Spending Bias	1.08	0.80	0.89	0.91	0.84	0.71

Source: ADB Key Indicators

**Table 4 Top 5 Agricultural Commodities by rank (value shares in total Thailand's agricultural exports)**

<b>2002</b>		<b>2000</b>		<b>1990</b>	
Items	Share	Items	Share	Items	Share
Rubber Natural Dry	17.3	Milled Paddy Rice	20.3	Milled Paddy Rice	18.5
Milled Paddy Rice	17.1	Rubber Natural Dry	17.7	Rubber Natural Dry	16.2
Chicken Meat	6.5	Chicken Meat	5.4	Cassava Dried	14.7
Meat Canned chicken	5.2	Meat Canned Chicken	4.6	Sugar(centrifugal, Raw)	9
Sugar refined	4.6	Sugar(centrifugal, Raw)	4.6	Chicken Meat	5.5
<b>Total share</b>	<b>50.7</b>		<b>52.6</b>		<b>63.9</b>
<b>1980</b>		<b>1970</b>		<b>1961</b>	
Items	Share	Items	Share	Items	Share
Milled Paddy Rice	28.1	Milled Paddy Rice	24.3	Milled Paddy Rice	42.7
Cassava Dried	19.8	Rubber Natural Dry	21.7	Rubber Natural Dry	25.7
Rubber Natural Dry	18.1	Maize	18	Jute	7.5
Maize	10.5	Cassava Dried	9.8	Maize	7.3
Sugar(centrifugal, Raw)	4.3	Jute	6.9	Cassava Flour	5.2
<b>Total Share</b>	<b>80.8</b>		<b>80.7</b>		<b>88.4</b>

Source: Calculated from FAOSTAT

**Table 5: Thailand's agricultural export shares in world markets**

	<b>1961</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>	<b>2002</b>
Rice	24	10.1	19	26.2	25.1	25.8
Rubber	8.6	10.4	14.5	28.8	37.9	41.8
Chicken Meat	0	0	1	4.4	3.8	4.6
Sugar	0	0	1	5.2	7.2	8.8
Canned Pineapple	0	2.2	20.2	40.4	41.1	43.4

Source: FAOSTAT

**Table 6: World Markets and Thailand's Export (Growth Rates)**

	1961-1980		1981-2003		1961-2003	
	World	Thailand	World	Thailand	World	Thailand
Rice	9	8.6	3.8	3.2	5.8	7.1
Rubber	7.5	10.2	1.8	6.3	4.3	8.7
Chicken Meat*	13.7	80	8.6	12	10.6	16.8
Sugar	12.1	45.7	-0.22	5.1	4.8	19.2
Canned Pineapple**	9.4	49.7	2.4	4.8	5.3	15.2
Cassava Dry	31.4	42.2	-5.9	-5.5	10.4	12.3
Maize	15.4	13.8	0.34	-15.5	5.9	-2.7
Jute-fibers***	-1.8	-3.3	-3.8	-4	-2.8	-2.6

Source: FAOSTAT

Notes: \*beginning 1976

\*\*beginning 1968

\*\*\*ending 1999

**Table 7 Vegetables and fruit exports (percentage growth rate)**

	World				Thailand			
	1976-1989		1990-2003		1976-1989		1990-2003	
	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
Fresh Vegetable	3.8	3.7	8.6	3.6	8	-2.8	14	18.1
Prepared Vegetables	5.5	7.2	11	8.8	21.2	8.4	2.42	0.9
Frozen Vegetables	3.5	5	6.9	5.4	33.2	25.9	8.3	3.6
Vegetables in Vinegar	3.2	3.6	2.9	1.6	42.1	36.7	-4.4	-4.9
Fruit Preparedness	4.4	2	3.2	3.9	27	19.9	5.4	6.7
Pineapple	12.6	6.3	7.6	11.6	na	na	20.9	22.7
Pineapple juice	16.8	9.8	4.1	1.6	26.1	22.3	2.2*	0*
Canned Pineapple	3.8	2.6	-0.4	0.6	12.8	12.1	-1.3	-0.7

Note: \* shift to concentrate juice

Source: FAOSTAT

**Table 8: Narrowing Income Gaps: Non-agriculture and Agriculture**

	1996		1998		2000		2002	
	N/A	B/A	N/A	B/A	N/A	B/A	N/A	B/A
<b>Overall</b>	2.39	4.6	2.24	4.08	2.39	4.59	2.29	4.28
<b>Bangkok</b>	1.94	1.94	1.36	1.36	2.14	2.14	1.68	1.68
<b>Central</b>	1.77	7.55	1.64	3.16	1.65	3.11	1.65	3.22
<b>North</b>	2.29	5.29	2.18	4.67	2.38	5.97	2.18	5.47
<b>North East</b>	3.13	8.03	2.95	7.2	2.92	8.12	2.82	7.38
<b>South</b>	1.71	4.03	1.68	3.77	1.72	3.92	1.87	4.03

Note: N/A = Monthly income ratio of non-agriculture to agriculture

B/A = Ratio of monthly non-agricultural income in Bangkok to agricultural incomes

Source: National Statistical Office