

EE460: Resilience and Dynamism of Thai Agriculture

Bhanupong

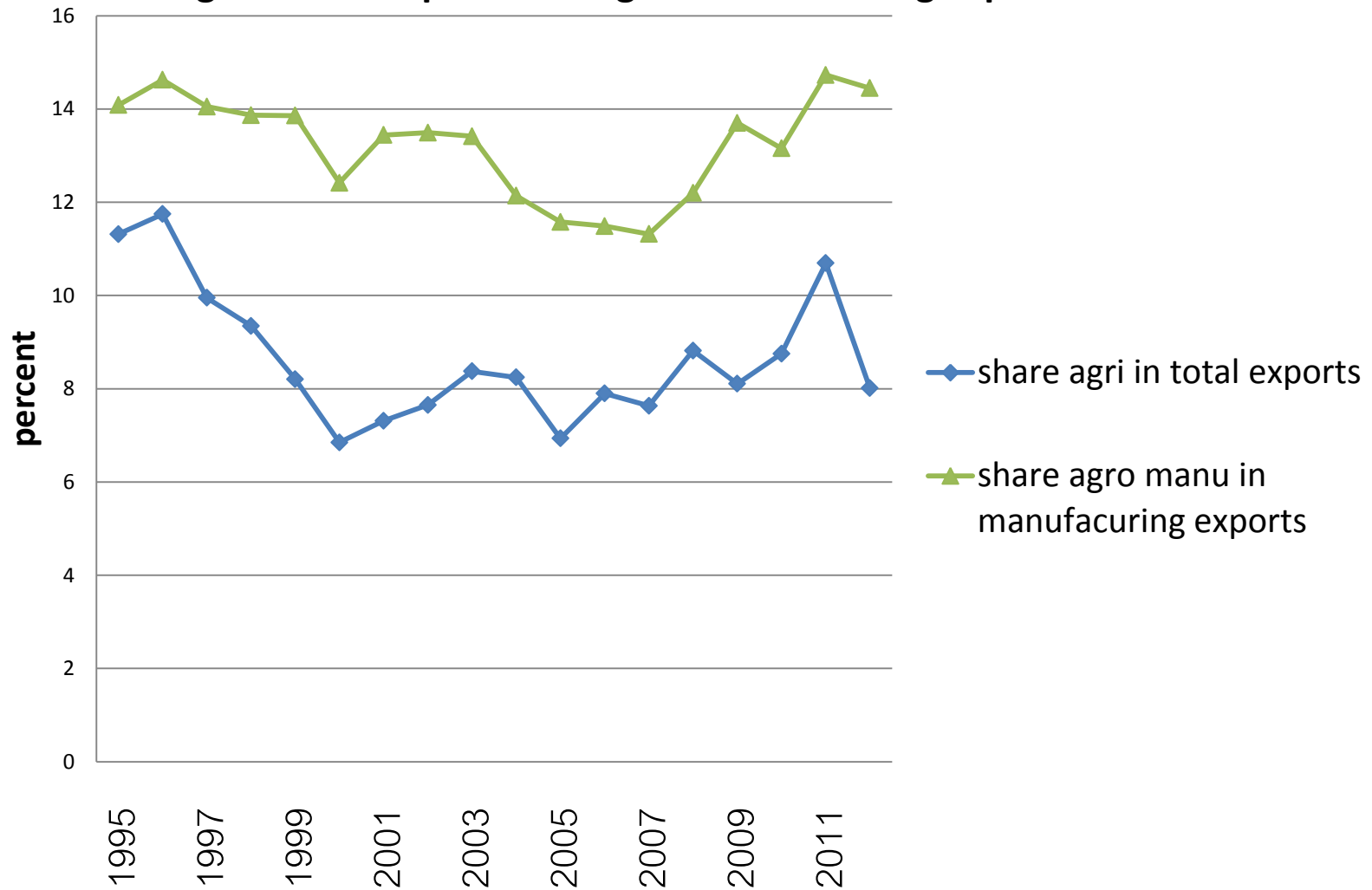
Lecture 11

Trend of agricultural exports
The rise and fall of commodities
Diversification and dynamism

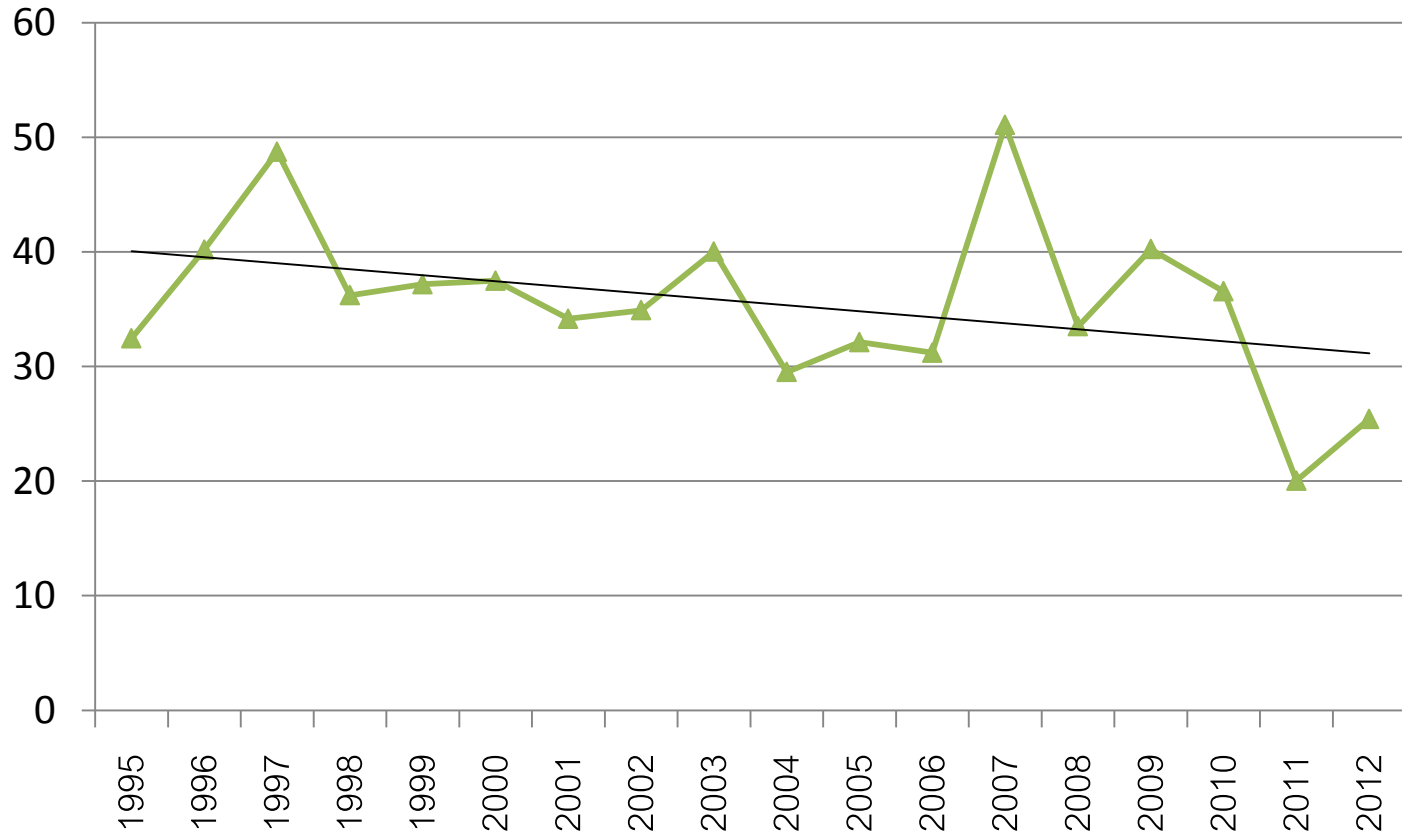
Main themes

- Agricultural exports
- Baumal-Bowen Hypothesis
- Comparative advantage of Thai agriculture
- Learning curve effect
- Export diversification

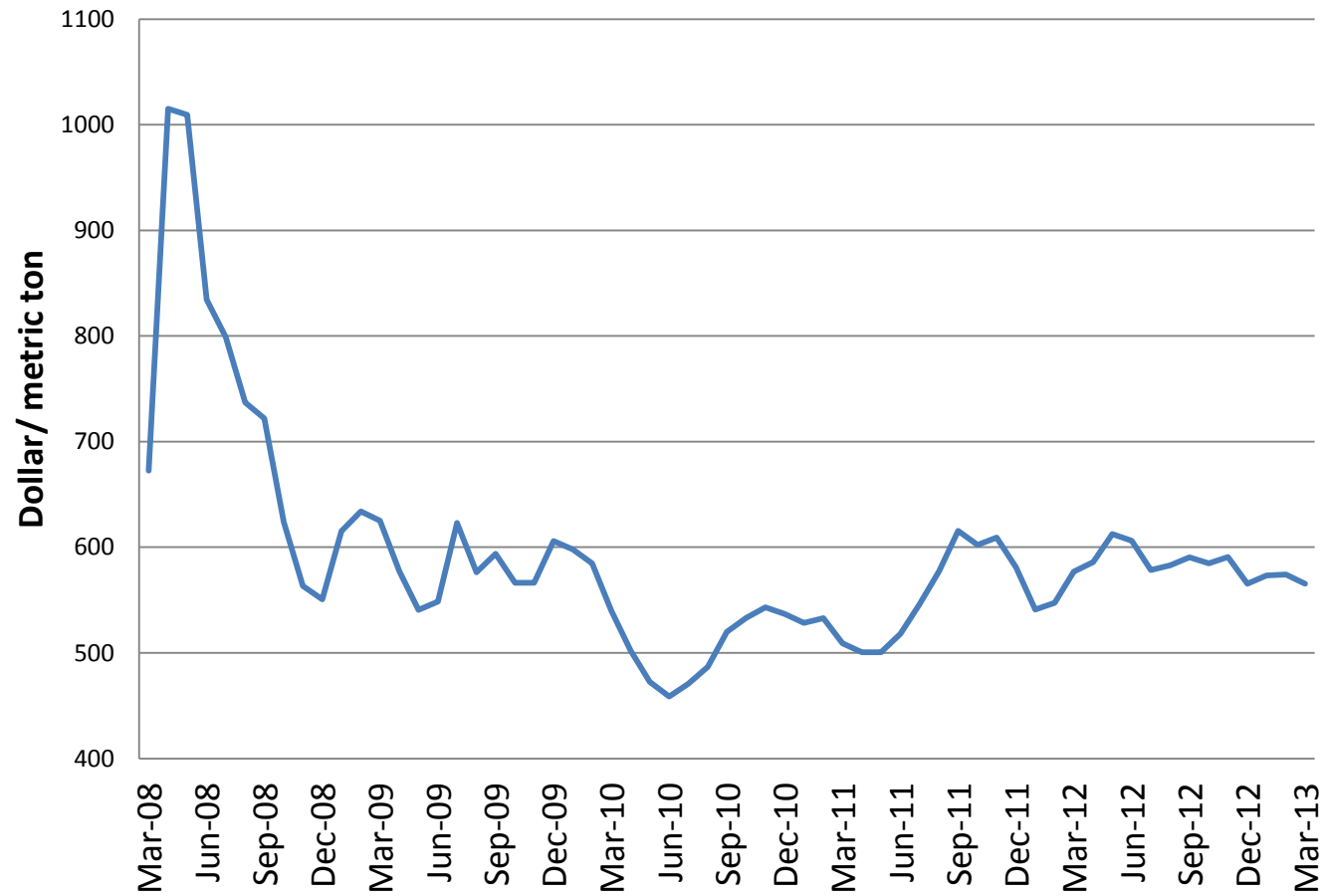
Agricultural exports and agro manufacturing exports



Rice share in total agricultural exports

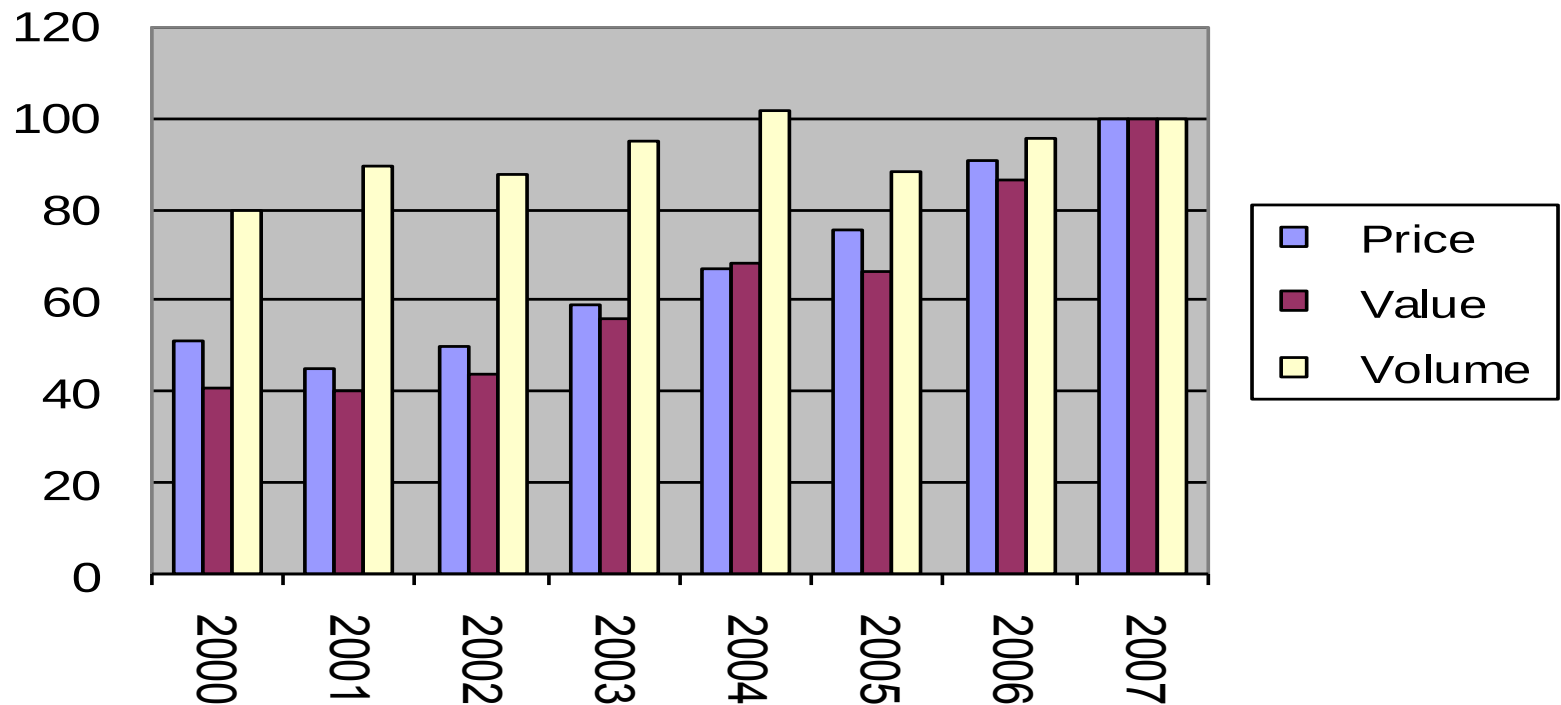


Export Price of Rice



$$\text{Value(income)} = \text{Price} * \text{Volume}$$

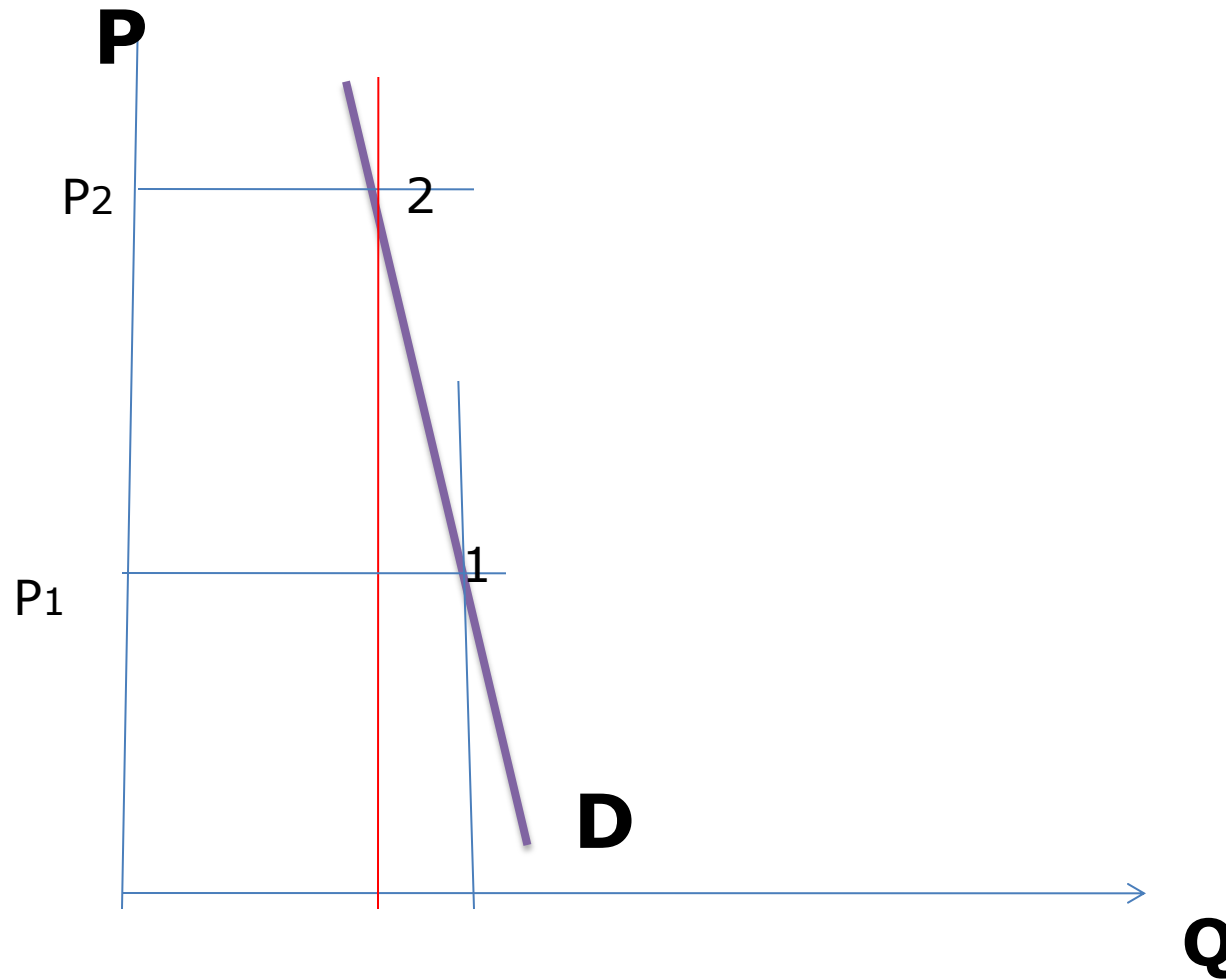
Agricultural Export indexes (USD)



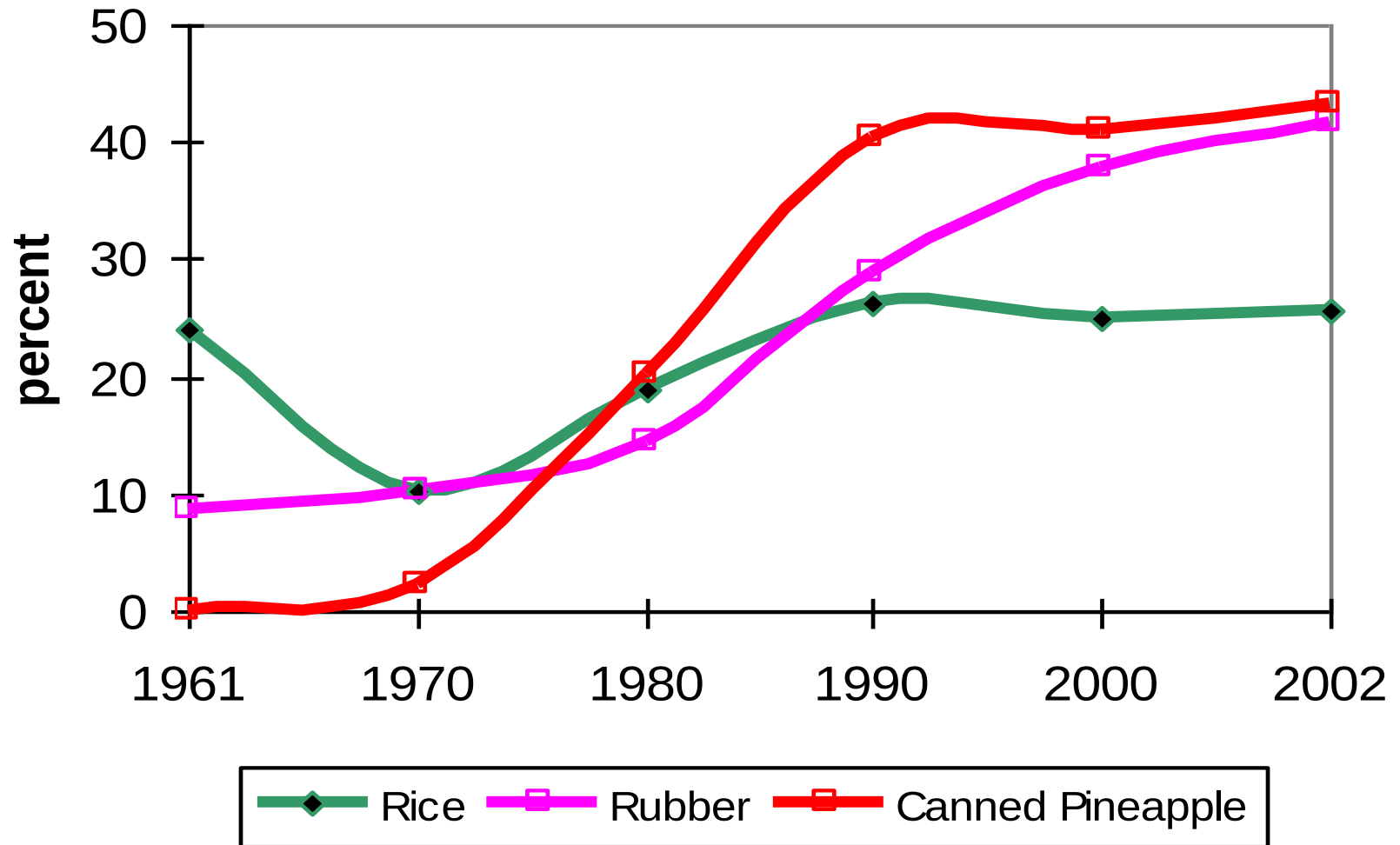
Inelastic demand

- The value index tracks more closely the price rather than the quantity index.
- Exports values are largely determined by price movements rather than volatile quantity.
- Positive correlation between total revenue and prices.
- Can Thai exporters set their own prices?

Nature of agricultural products markets



Shares of Thai Exports in the World



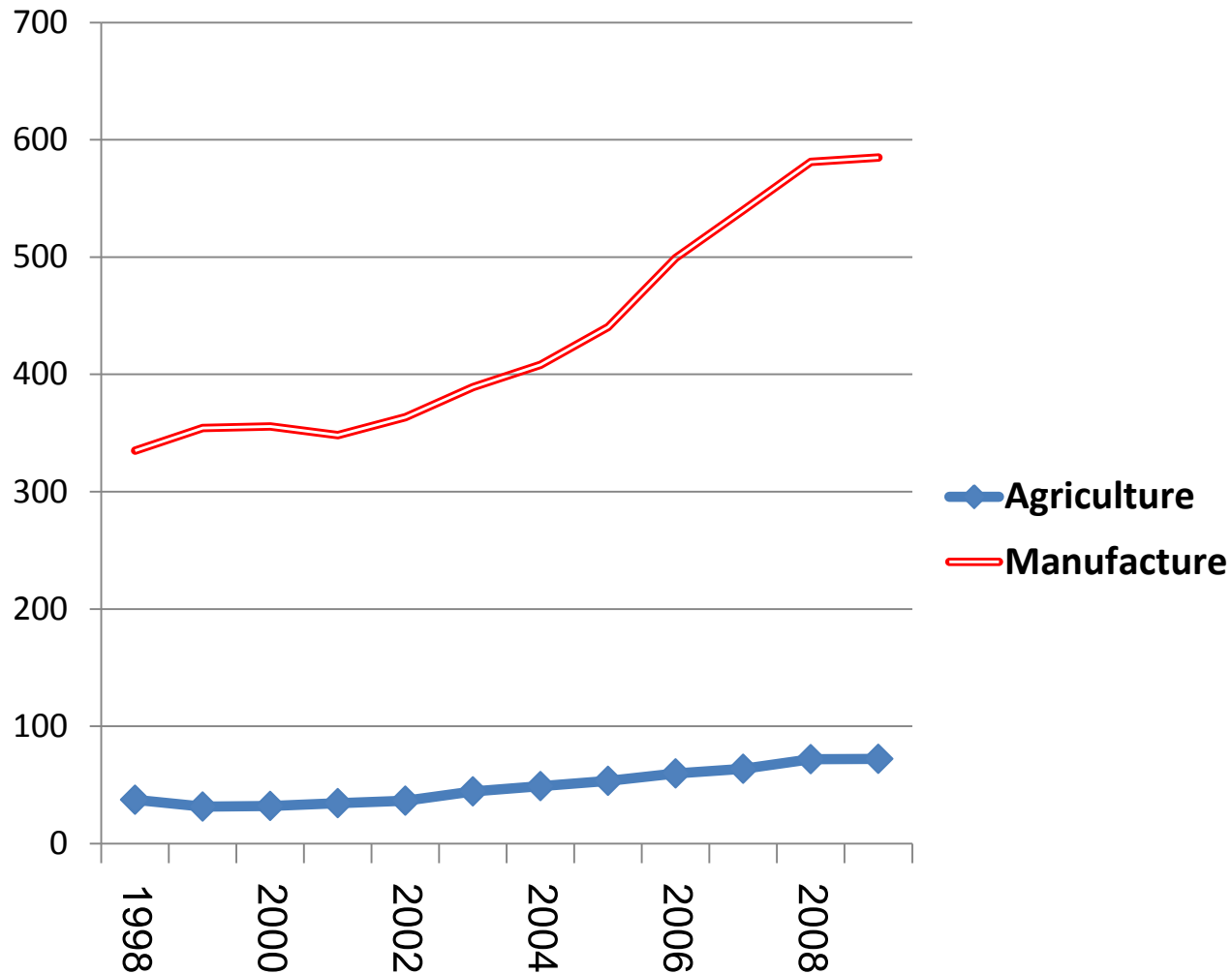
Baumal-Bowen Hypothesis

- **In the rising productivity sector, output per man-hour increases more rapidly than the money wage rate.**
- **The labor cost per unit of output in the progressing sector must fall.**
- **The faster the pace of technological advance, the greater will be the rate of increase in the overall wage rate.**
- **Labor is free to move between the two sectors, the overall real wage must rise, according to the average rate of change of productivity.**

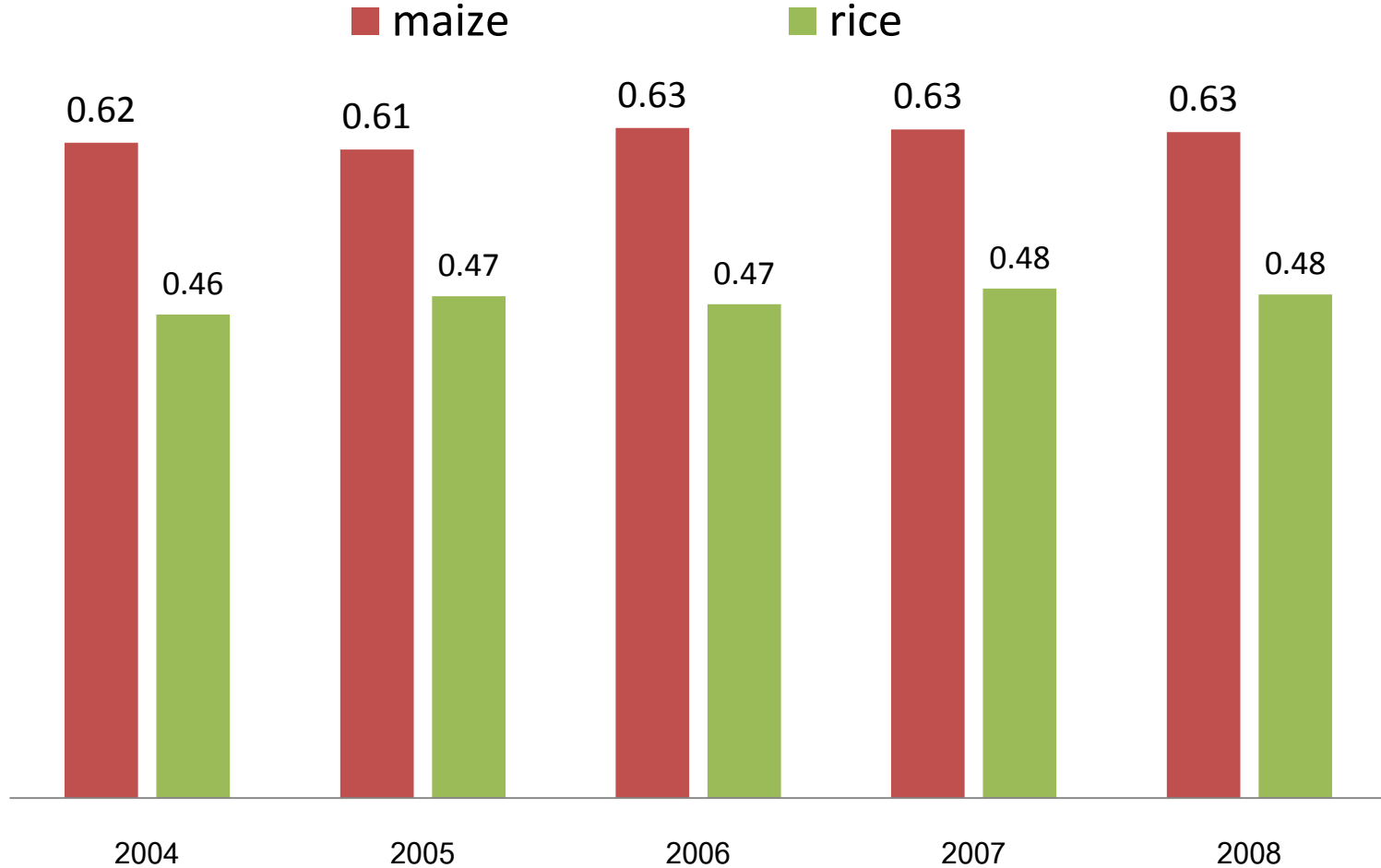
Baumal-Bowen Hypothesis

- **To join the rank of rising productivity industries, the agricultural sector would have to learn to increase output per man and to continue to do so into the indefinite future.**
- **The rising productivity and wage rates in the urban areas put upward pressure on the costs in sectors that lag behind in productivity improvement.**
- **Live performing arts belong to a stable productivity sector of the economy.**

Average product of labor



Output per land (ton/rai)



Who is most likely to lose competitiveness?



Resilient rice and rubber

- The world market share of Thai rice suffered from a decline from 24 percent in 1961 to only 10 percent in 1970.
- But its *resilience* was demonstrated by the recovery of the *market share*: rising from 19 percent in 1980 to 26 percent in 2000.
- Rubber gained a significant market share from 8.6 percent in 1961 to 38 percent in 2000.

Shares in the world market of non-traditional exports

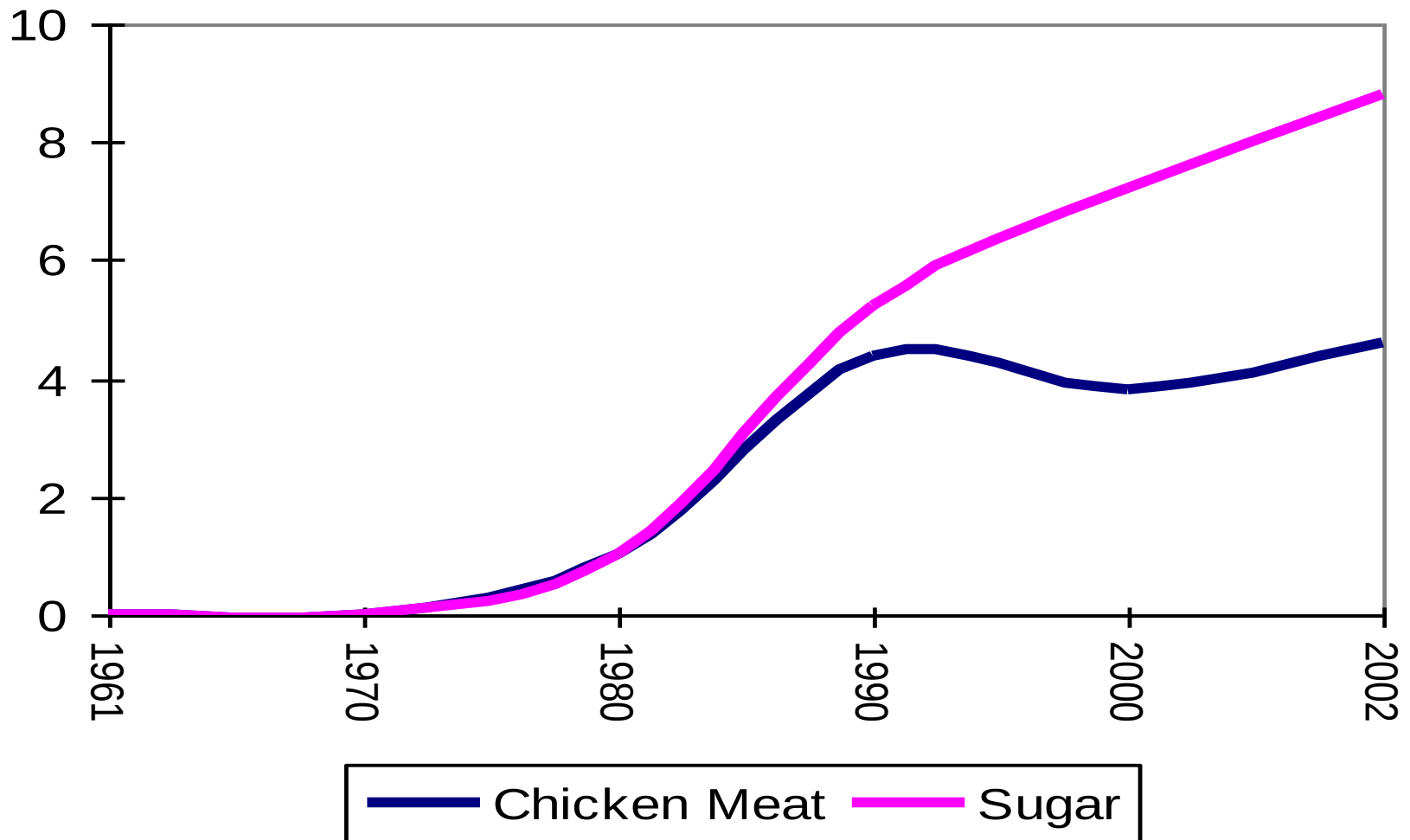


Table 1: World Markets and Thailand's Exports Growth Rates

	1961-1980		1981-2003	
	World	Thailand	World	Thailand
Rice	9	8.6	3.8	3.2
Rubber	7.5	10.2	1.8	6.3
Chicken Meat*	13.7	80	8.6	12
Sugar	12.1	45.7	-0.22	5.1
Canned Pineapple**	9.4	49.7	2.4	4.8
Cassava Dry	31.4	42.2	-5.9	-5.5
Maize	15.4	13.8	0.34	-15.5
Jute-fibers***	-1.8	-3.3	-3.8	-4

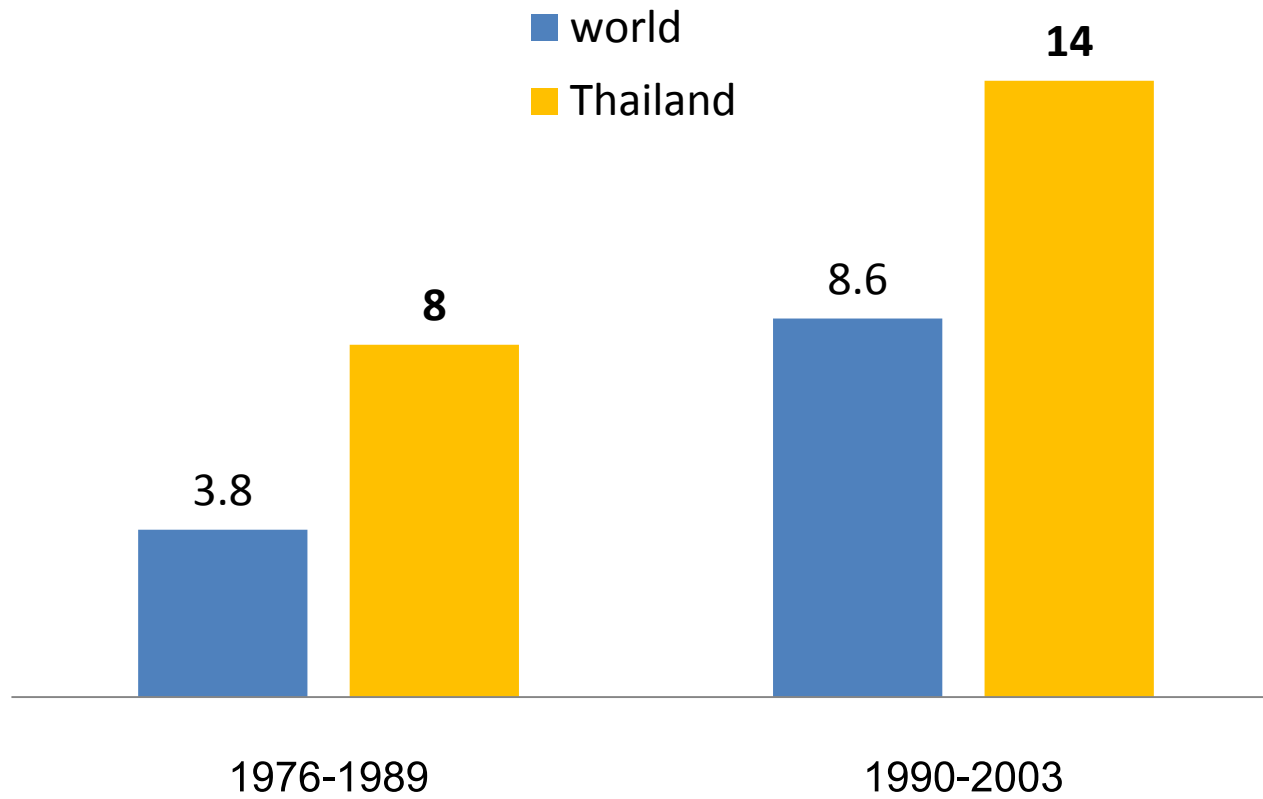
$$\eta = \frac{\partial \ln X}{\partial \ln Y} < 0$$

- Commodities with low income elasticity of demand like jute **disappeared** completely in the period 1981-2003.
- Maize was a commodity boom in the period 1961-1980, Thailand's exports of maize also grew by 13.8 percent.
- Its world growth rate declined to 0.34 percent in the period 1981-2003, when Thailand's exports of maize also declined sharply by 15 percent.
- Cassava also turned from rising stars in the period 1961-1980 into retreat in the second period.
- Thailand's exports of cassava also adjusted accordingly to the negative price incentives and the world market retreat.

Nothing remains unchanged

- Canned pineapple exports of Thailand also adjusted its position from **rising stars** into **falling stars** in the second period.
- The top five agricultural exports commodities followed the same pattern of other successful commodities.
- In the future some of these top products would soon be disappearing and they would be replaced by newly emerging agricultural commodities.
- ***This is the element of dynamism and resilience of Thai agriculture.***

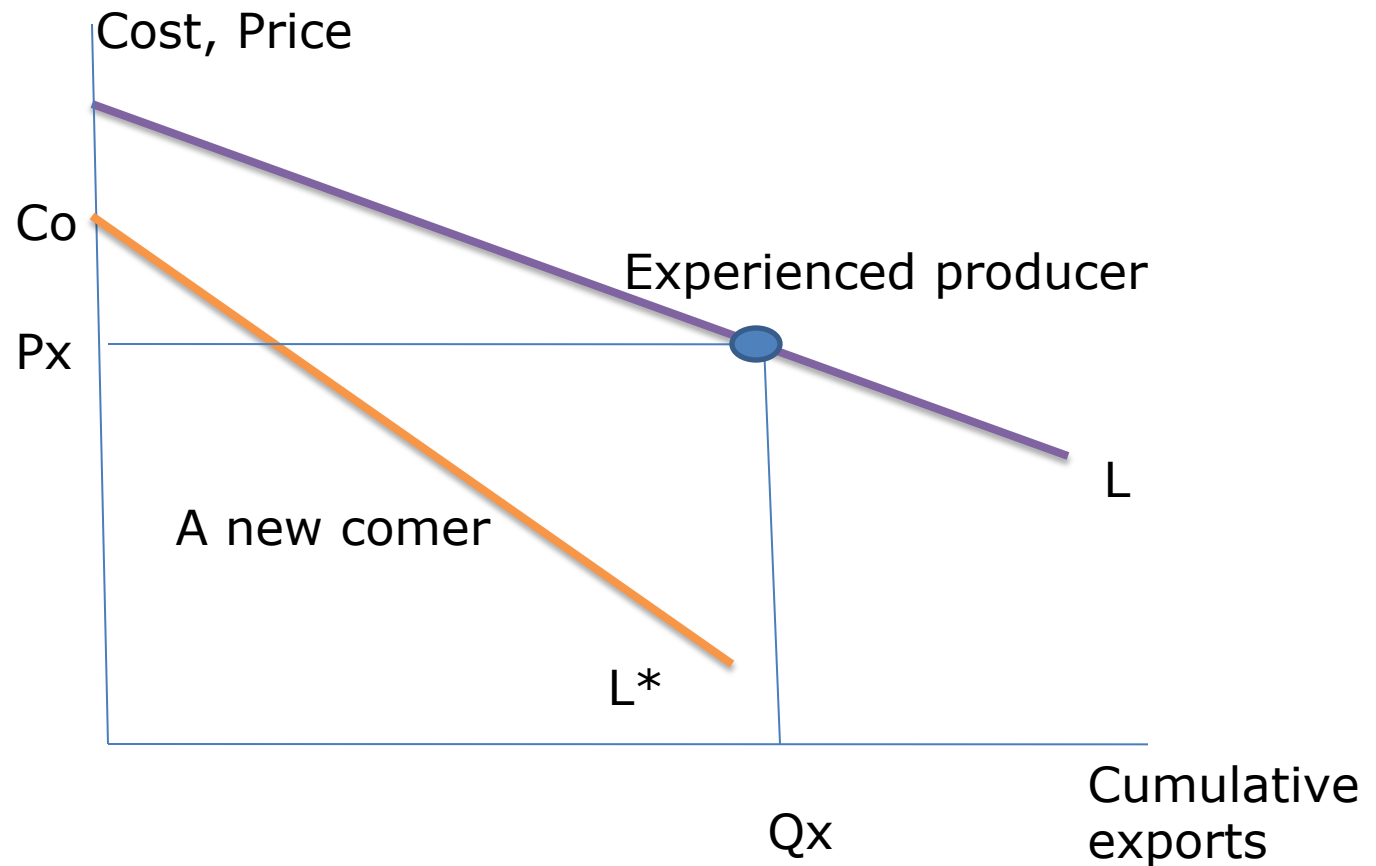
Fresh vegetable exports (% growth)



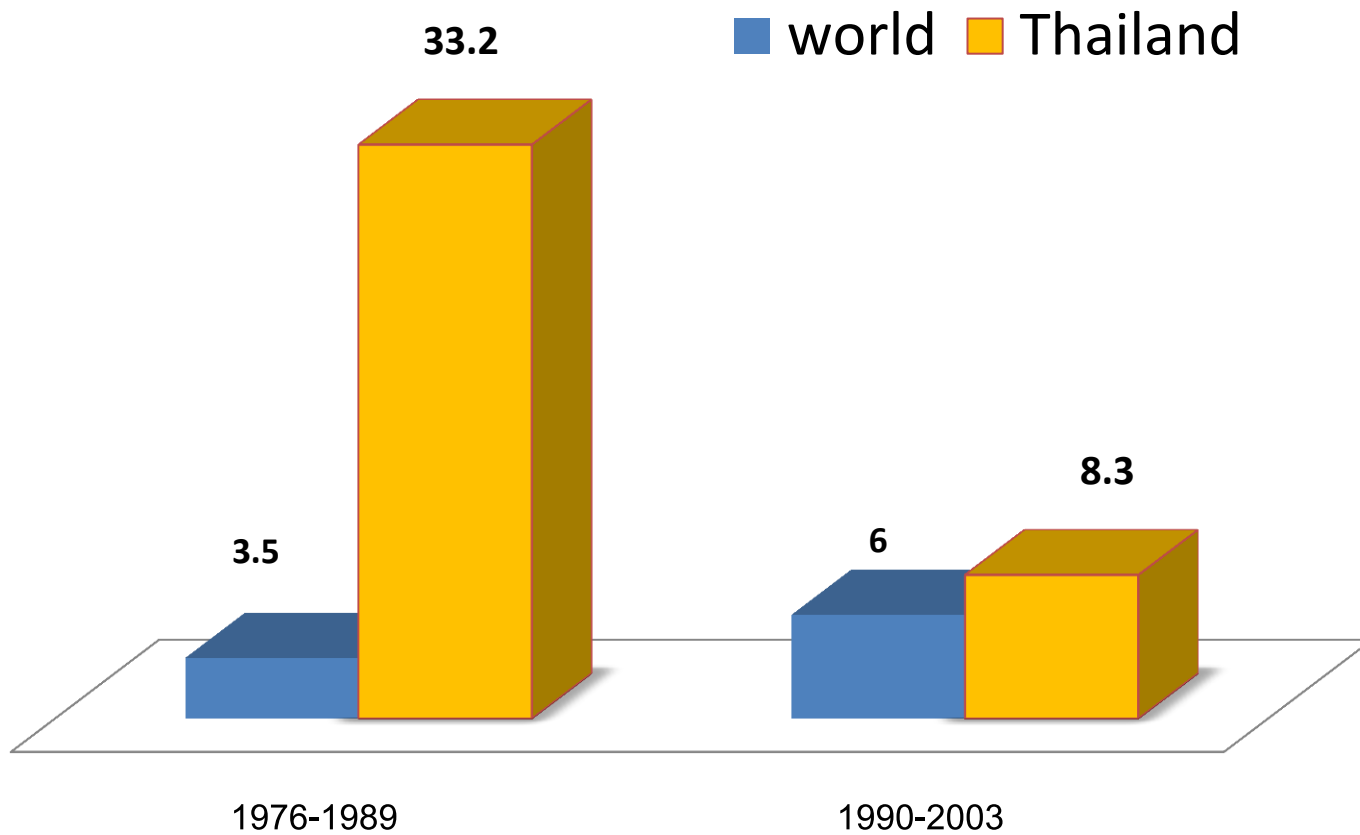
The learning curve

- The learning curve shows that unit cost is lower, the greater the cumulative output of a country's industry to date.
- A country that has extensive experience in an industry (e.g. rice production) may have lower unit cost than other countries with little or no experience, even if the second country's learning curve (L^*) is lower, for example, because of lower wage.

Learning by exporting: Give it time



**Frozen vegetable exports
(% growth)
Low-base effect**



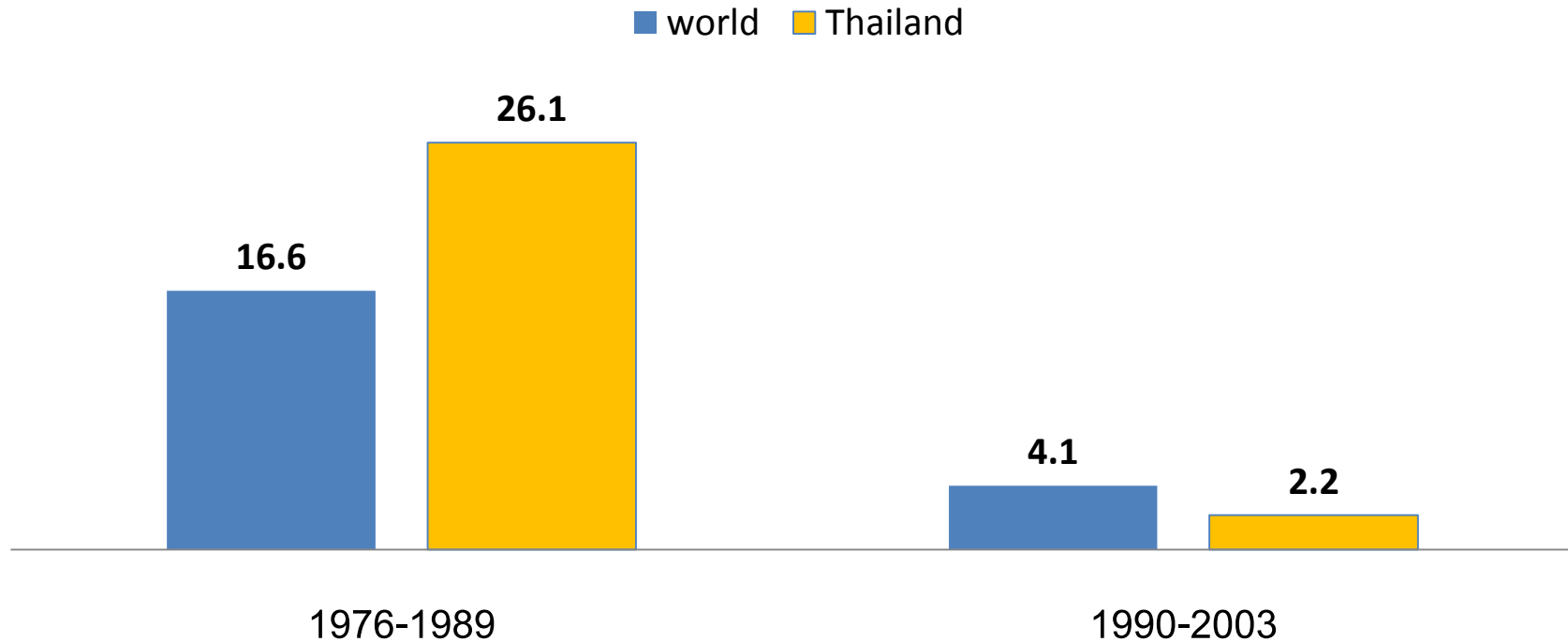
New products

- Vegetable and fruit exports are chosen to illustrate the flexibility of the agricultural export sector.
- When the world market expanded during the period 1976-1989, the Thai industry responded at high growth rates in both value and quantity terms.

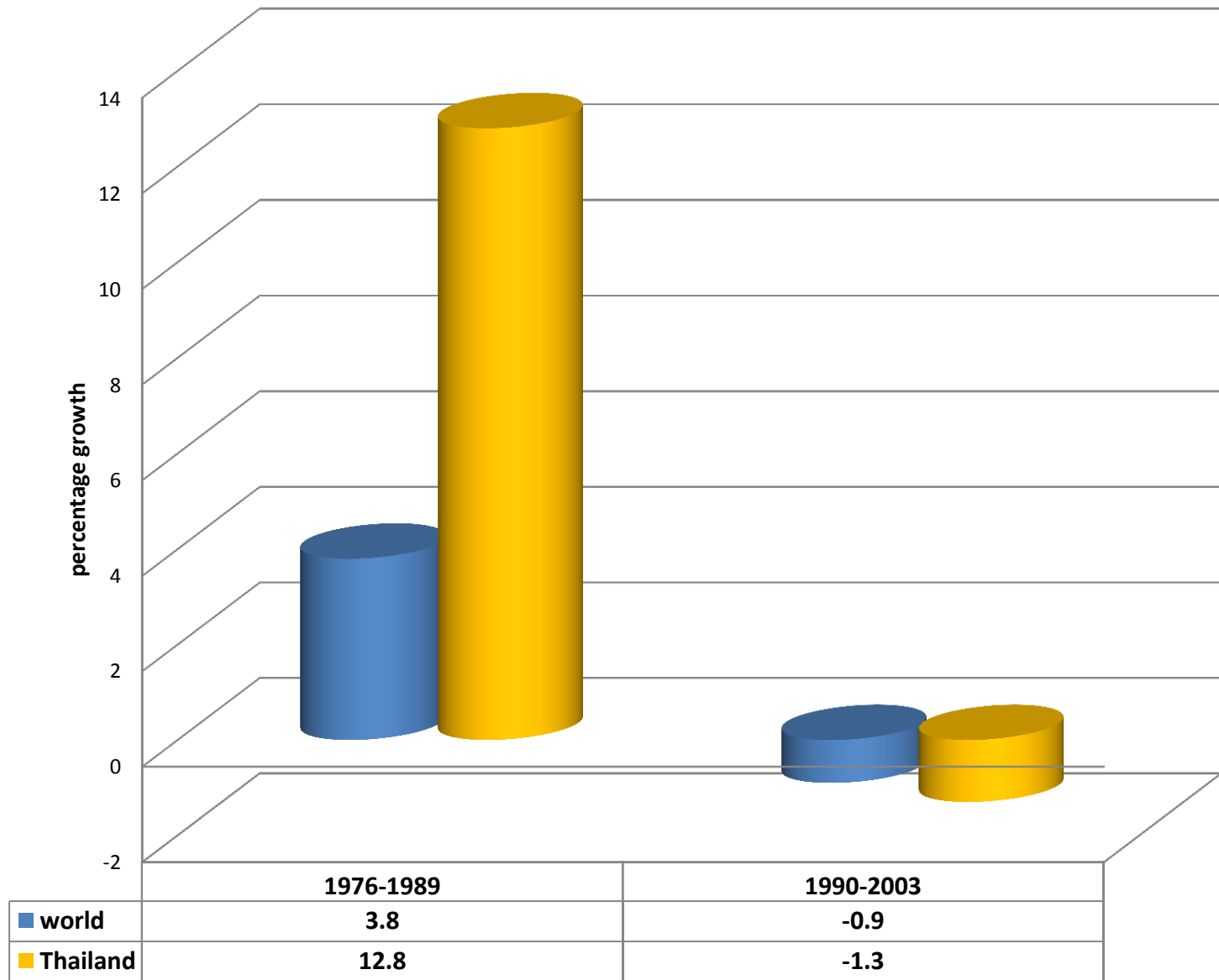
Learning by exporting

- Starting from low bases, growth rates in the first period would always be greater than after the commodities have firmly established their positions and exported in large volumes.
- Thus in the second period between 1990 and 2003, the growth rates slowed down appreciably from the first period.

Pineapple juice exports (% growth) Low-base effect



Canned pineapple exports



Snapshots from the past

- The changing pattern of Thailand's agricultural exports in the last four decades is shown by snapshots of top five agricultural commodities.
- Shares of rice and natural rubber in total agricultural exports have been declining gradually as new products have emerged and old products have faded away.
- Jute, maize, and cassava are no longer the principal agricultural commodities as there have little productivity improvement.

Principal Agricultural Exports: 1961

(percent of total Agricultural exports)

	Share
Milled Paddy Rice	42.7
Rubber Natural	
Dry	25.7
Jute	7.5
Maize	7.3
Cassava Flour	5.2
Total of top five:	88.4

High Concentration

- Back in 1961, milled paddy rice and natural rubber were main export products.
- Jute, maize, and cassava flour were other items on the top five items accounting for 88.4 percent of total agricultural exports.

Principal Agricultural Exports: 1970

(percent of total Agricultural exports)

	Share
Milled Paddy Rice	24.3
Rubber Natural	21.7
Maize	18
Cassava Dried	9.8
Jute	6.9
Total Share	80.7

Principal Agricultural Exports: 1980

(percent of total Agricultural exports)

	Share
Milled Paddy Rice	28.1
Cassava	19.8
Rubber Natural	18.1
Maize	10.5
Sugar (Raw)	4.3
Total top five:	80.8

Principal Agricultural Exports: 1990

(percent of total Agricultural exports)

	Share
Milled Paddy Rice	18.5
Rubber Natural Dry	16.2
Cassava Dried	14.7
Sugar (centrifugal raw)	9
Chicken Meat	5.5
Total sum of top five:	63.9

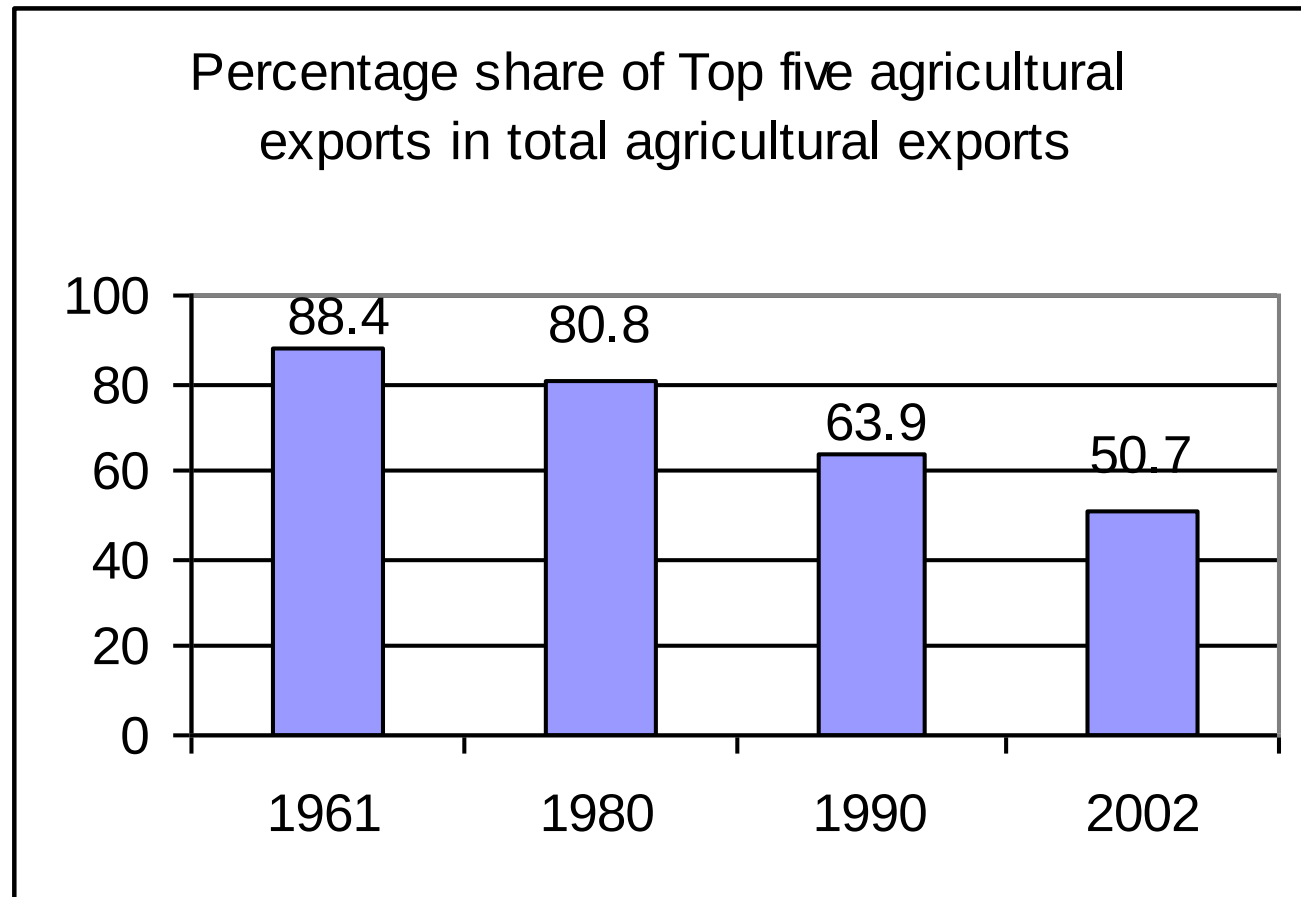
Principal Agricultural Exports: 2002

(percent of total Agricultural exports)

Items	Share
Rubber Natural Dry	17.3
Milled Paddy Rice	17.1
Chicken Meat	6.5
Meat Canned chicken	5.2
Sugar refined	4.6
Total share	50.7

Diversification of agricultural exports

Bonus question: share of the top- five agricultural exports in 2012?



Top agricultural exports in 2011

	Share of Thai exports	Share of world exports	Share of top 3 export markets	Balassa index
Rubber	9.64	9.65	54.5	7.1
Meat	3.2	16.2	60.6	13.2
Cereals	2.9	5.9	26.6	4.7
Fish, Crustaceans	1.33	3.18	62.1	3.1
Vegetable, fruit, nut	0.92	3.78	43.3	3.0

Conclusion

- Being resilient requires flexibility.
- Minimizing export instability can be done through product and market diversification.
- Like doing the right thing and doing the thing right, what and where you export matter.
- Dynamisms is demonstrated by creating new products to suit changing demand pattern.

Questions

- What would be the pattern of Thai agricultural exports in 2020? Would rice and rubber still be the principal agricultural exports?
- How is *Baumol-Bowen* cost disease related to the performance of Thai agriculture?
- How long can Thailand maintain its export market shares in rice and rubber?