

December 13, 2006

The surge of exports from China has already had profound effects on many countries. It seems inevitable that the effects will increase over time. Taiwan, Japan and Mexico need to formulate strategies to deal with the emergence of China. Describe two conceptual frameworks, one with constant returns and the other with monopolistic competition and/or economies of scale that can be used to formulate policies for these three countries. Refer to relevant literature. Look at empirical literature and/or find data and facts on these countries. Make a list of policy options for the countries and for individuals.

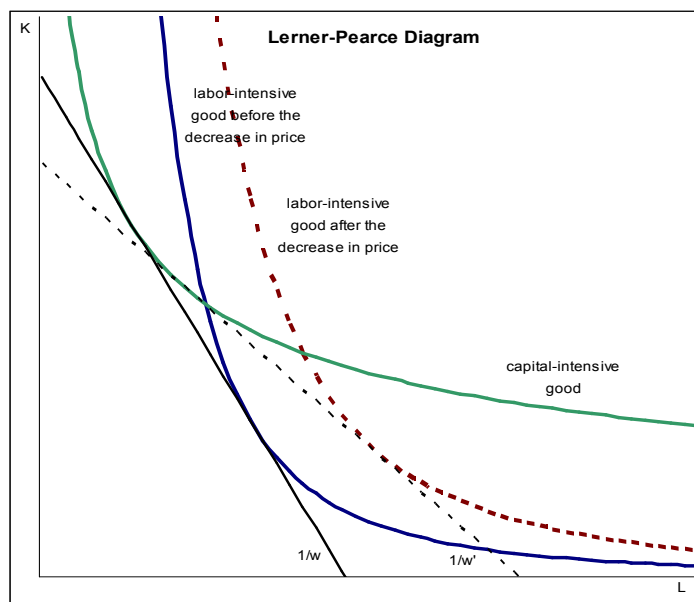
The surge of exports from China has been a result of the strategy of export-led growth, adopted by the Chinese government. The core of this strategy constitute the export subsidies, taking the form of preferential taxes to exporters in special economic zones, adopted in the early 1980s. They use the fact that China is a big country, to affect the world prices (terms of trade). This strategy also includes interventions in the foreign exchange market and the consequent build-up of international reserves, which results in the undervaluation of the Yuan, and is equivalent to an export subsidy - beneficial to importers of Chinese products, but welfare-reducing overall for both China and the rest of the world. The consequences of these policies have been quite different for competitors and for customers of the Chinese producers. The effect of this strategy on the world trade has been a decrease of world prices for most labor-intensive products.

Theory

First I am going to summarize the two conceptual frameworks useful for deriving the policy responses for different countries. Then I am going to formulate the general set of possible policy responses, useful for all countries. After that I am going to characterize the trade patterns of the countries of interest: Mexico, Japan and Taiwan, to figure out, which of the proposed policies are relevant for each of the countries.

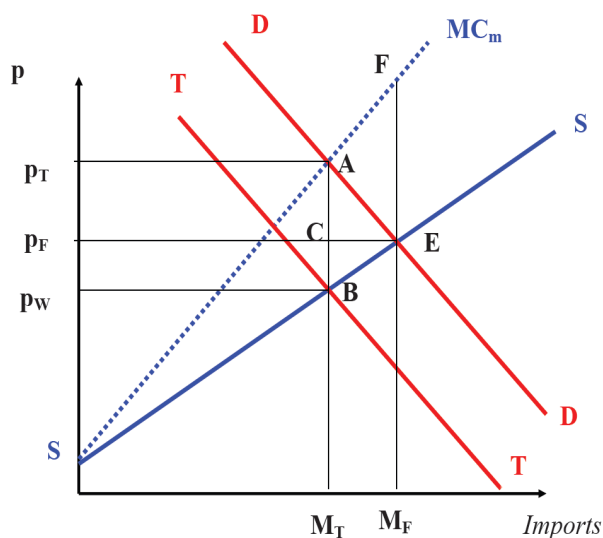
Framework 1: CRS economy.

The first framework is a simple Heckscher-Ohlin model with two goods (industries) and two factors. The two factors are labor and capital, good one is more capital intensive, good two is more labor-intensive. We shall use a Learner-Pearce diagram to describe the consequences of the Chinese policy and to derive the policy responses of the other countries. China is labor-abundant, so, when it imposes the export subsidy described above, the price of the labor-intensive good goes down, other things being equal. In the diagram, faced by the rest of the world, the unit-value isoquant of the labor-intensive good will shift up as a consequence of the increase in the world price for the good in the absence of any technological improvements (we could alternatively assume a technological improvement in China only, which is not exactly in line with the Heckscher-Ohlin model).



As a result of the decrease in the world price of the labor-intensive good, the wages in all the countries, that also produce this good, are going to fall due to increased competition with Chinese firms. The purpose of the policy response is to deal with this decline in wages (I shall think of capital as being owned by a small group of people worldwide, so that all the interesting welfare consequences come from wages).

If the country under consideration is big enough, it can affect the world prices, so it can impose a tariff in order to correct the terms of trade. The picture below describes the idea. DD is the excess demand curve for the imported good. SS is the supply curve for the big country. It is also the the marginal cost for the foreign country, exporting the good to the home country, and it is the average cost paid by the home country. MC is the marginal cost when buying the imported good.



Point E is the equilibrium under free trade, and p_F is the corresponding price. At this point the price paid for the imported good is below the marginal cost, so M_F it is not an efficient amount of import. The efficient amount of import is M_T , which equalizes the marginal cost and the demand price. Imposing a tariff can help the home country achieve the efficient outcome. The optimal tariff

is equal to $p_T - p_W$. The welfare gain from this action is equal to the area of the triangle AFE. Because of the country's ability to affect world prices, the tariff is welfare-improving for the home country by means of changing the terms of trade. This is the so-called terms-of-trade argument in support of protectionism.

A big country competing with Chinese imports of the labor-intensive good should impose a correcting tariff, or if it is banned by some free-trade agreement (WTO for instance), use antidumping procedures to impose duties, which is equivalent to imposing a tariff. Another way is to manage free-trade agreements in such a way, that to enter all agreements, where China is present, and build up others, which exclude China.

If the country under consideration is small, it cannot affect the world prices. Then the only thing it can do in the HO framework, is affect its endowment of capital and labor. If a country manages to specialize in the capital intensive good, it won't be affected by the Chinese export-promoting policy. In order to achieve that, the country needs to accumulate capital. This could be either physical capital, in which case the government should promote FDI, or it can be human capital, in which case there is need for government policies to promote education. Individual activity can also help a lot in building up human capital and reducing fertility (which is equivalent to reducing the labor force and makes the country relatively more capital-abundant).

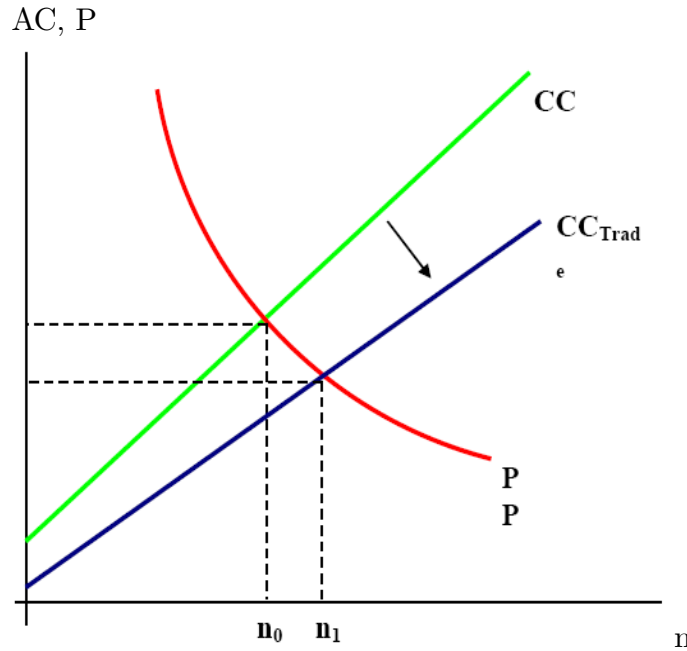
To sum up, the main responses for both the government and individuals are:

1. Build up capital, become more capital-abundant.
2. Take advantage of geography, use high transport costs.
3. Educate people - build up human capital.
4. Reduce fertility.
5. Exploit the terms of trade argument - use antidumping procedures to impose duties.
6. Enter all free-trade agreements, where your competitor (China) is present.
7. Build your own free-trade agreements, which exclude your competitor.

Framework 2: IRS economy, monopolistic competition.

The second framework is based on the work by Krugman (1981), which describes intra-industry trade using monopolistic competition in the fashion of Dixit and Stiglitz. Increasing returns are modeled by means of a fixed cost: $C = F + cQ$. Then average costs $AC = F/Q + c$ decreases, when output increases. The model looks at two countries, in which firms produce different varieties of the same product, and assumes that each firm in the industry takes actions and prices of others as given. If demand for the production of each firm is defined as: $Q = S \left[\frac{1}{n} - b(P - P_{av}) \right]$, where S is the size of the market, n is the number of firms, and P_{av} is the average price of the rest of the firms, then there is a symmetric equilibrium, in which all firms produce the same amount and set the same price. Using the zero-profit condition, and that the optimal choice implies marginal revenue equal marginal cost, we can derive that $P = nF/S - c$ (represented by CC in the graph), and $P = c + 1/(bn)$ (represented by PP in the graph). Then the equilibrium is the intersection of the two curves. If the number of firms is below the equilibrium amount, then average costs are below the price, hence new firms will enter the industry. If the number of firms is above the equilibrium amount, then average costs are above the price, so some firms will go bankrupt. Introduction of

trade in the final good of this industry will increase the size of the market S , which shifts the CC curve down.



The price of the good will go down resulting in a surge in the real wage, benefiting consumers in both countries. This is the first obvious gain from trade, which couldn't have happened in the Heckscher-Ohlin framework. The second source of gains from trade is the fact that in equilibrium the total number of product varieties increases, though the number of varieties produced in each country decreases. Therefore, opening to trade between countries leads to specialization of the countries each in its own varieties, and expansion of each variety taking advantage of the increasing returns to scale.

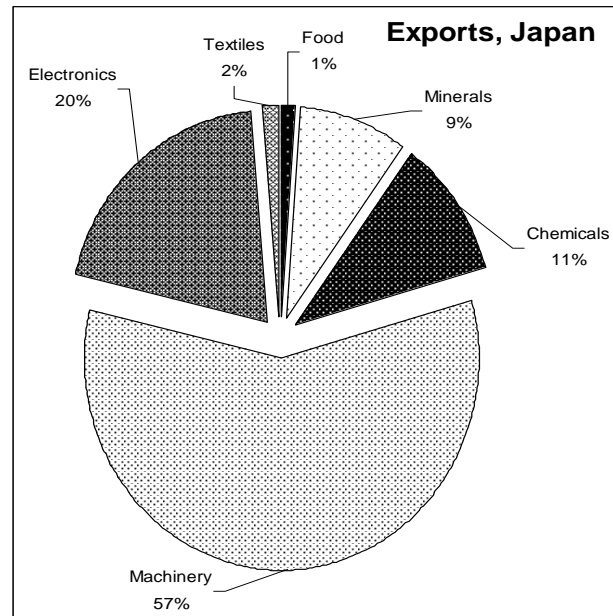
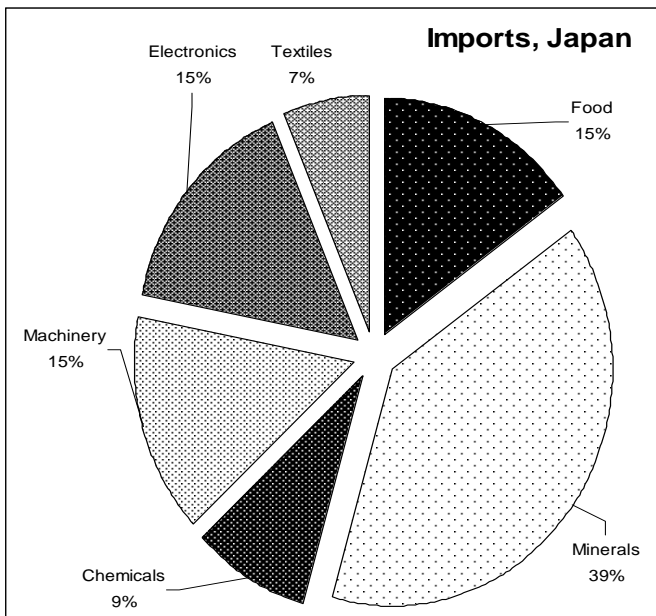
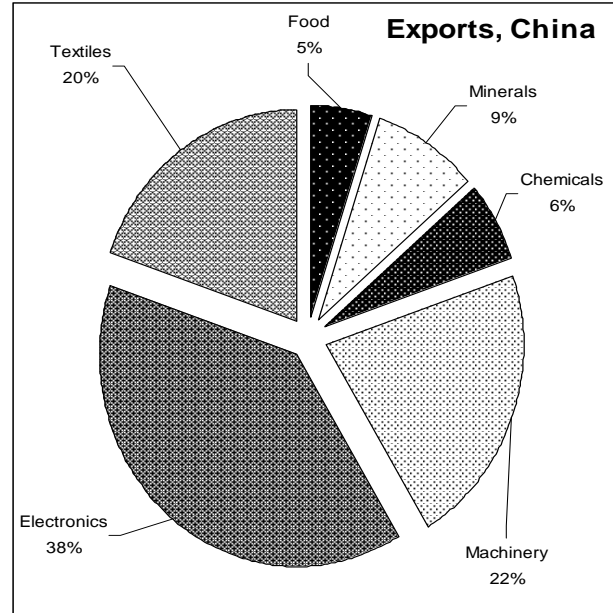
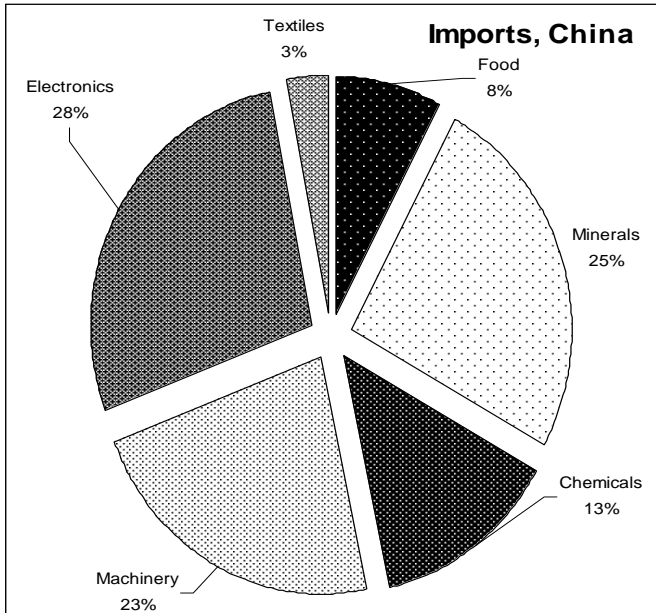
A paper by Chakraborty (2001) describes how this framework can be applied to studying trade in intermediate goods. It shows that endowments play a crucial role in determining trade across stages of production. Factor intensity data suggests that intermediate manufacturers are on average significantly more capital-intensive than final goods. Capital intensity in turn suggests large economies of scale if the production was split into two stages, one of which is capital-intensive, and the other - labor-intensive. It follows that the relatively capital-rich country will produce and export specialized intermediate inputs to the labor-rich country and then import back final goods. The Krugman framework suggests that this division of production into subtasks between countries leads to large welfare gains. It also follows, that a policy of cooperating with the competitor, by increasing international specialization at the intra-product level, can be the answer to the surge of exports to China. Since China is relatively more labor-abundant than any other country under consideration, it is always beneficial for other countries to specialize in the production of intermediate goods, and let the Chinese assemble the final goods

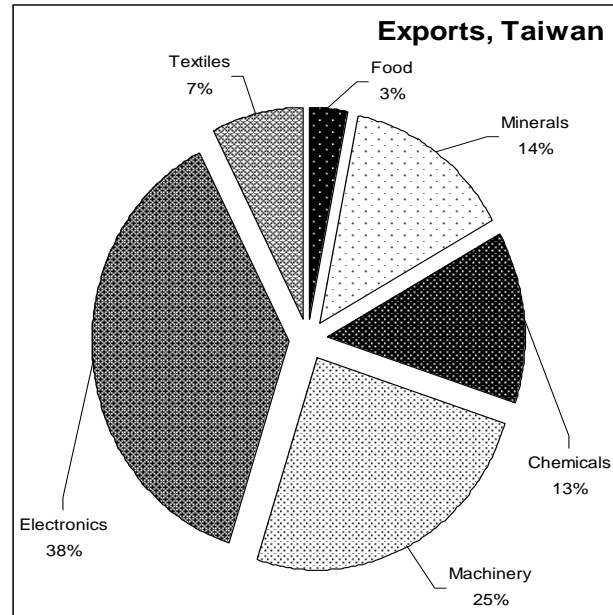
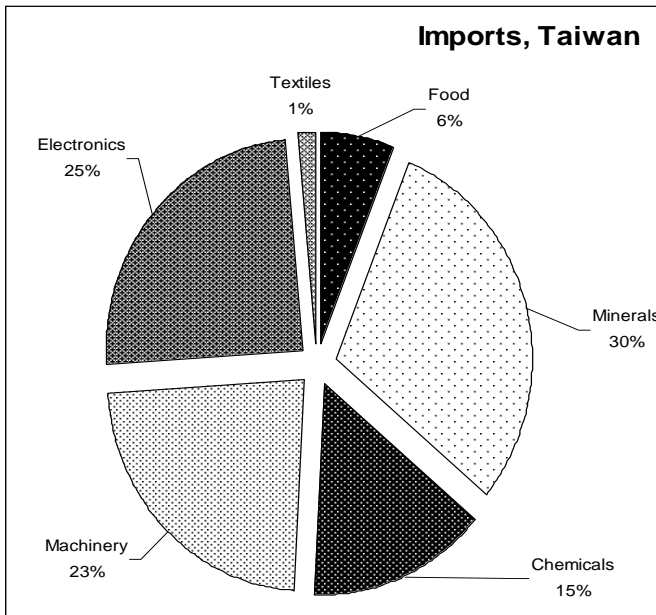
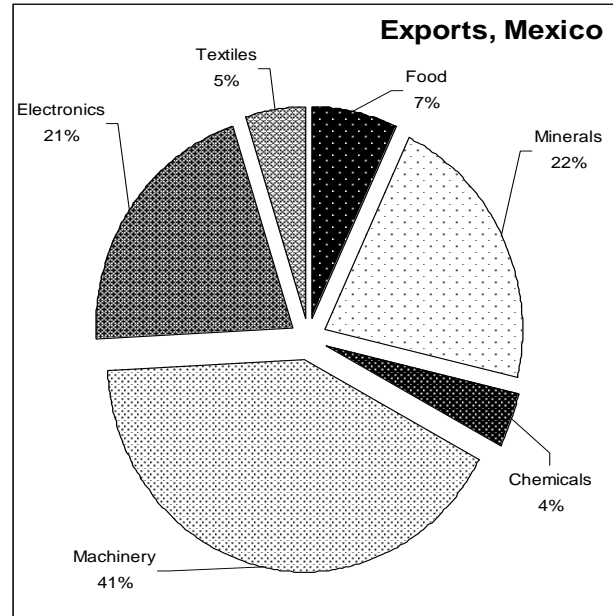
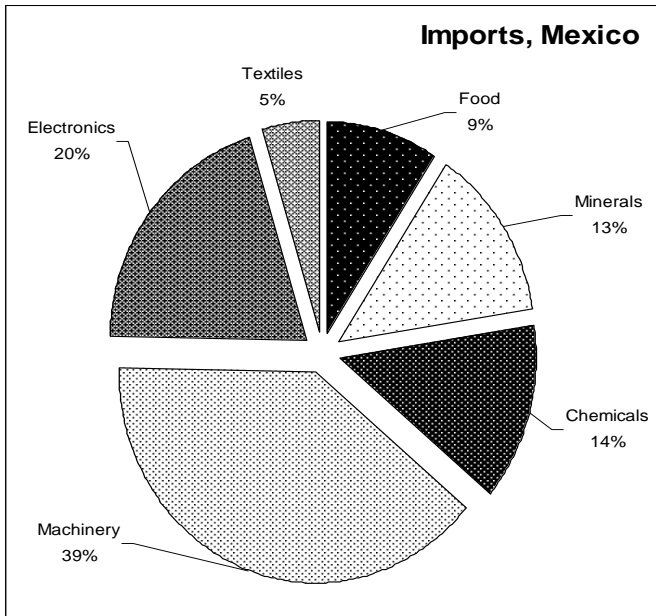
To sum up, the main responses in this framework are:

1. Split production into sub-tasks, use increasing returns to cooperate with your competitor
2. Increase factor mobility to increase returns
3. Make your competitor dependent on you, by protecting your intellectual property (which is part of the capital stock)

Data

The following graphs describe the trade patterns - exports and imports by sectors - of China and the countries under consideration: Japan, Mexico and Taiwan (Chinese Taipei). Data comes from the WTO statistics website and corresponds to year 2005.





We can see from the graphs, that China exports mostly textiles electronics and machinery. A closer look at the data and the reports reveals that a large part of those electronic devices and machinery is assembled from parts, imported from Japan mainly as well as some other Asian countries. China also imports a lot of raw materials.

Japan imports raw materials, food and textiles, as well as some final products in electronics and machinery. It exports a lot of machinery and electronic parts, especially to China. We can infer from this data that Japan is relatively capital-abundant and cooperates a lot with China.

Mexico is very labor-abundant, it is a net exporter of oil and a net importer of chemicals and food. Mexico re-exports a lot of electronics and machinery. This country also imports textiles and exports clothing produced using those. Mexico probably suffers most from competition with China, because it is also labor abundant, and it also uses its labor force in the production of clothing and in the assembly of different electrical appliances and machinery.

Taiwan is a net importer of minerals, chemicals and food, and a net exporter of textiles and electronic devices such as LCDs and other semiconductor-related products. Taiwan is very much like Japan, producing intermediate products, which are later used in the production of final products in China. However, unlike Japan, Taiwan competes with China in textiles.

Recommendations for countries

First of all, the countries could cooperate to fight the main cause of the problems: the undervalued Yuan and the preferential taxes, working as export subsidies, which are banned by WTO.

Mexico

Based on the first framework, Mexico needs to build up capital. One possibility is to reduce fertility; the other is to educate people - to build-up human capital. To achieve either, both the government and the individuals should make effort. Another way is to use the geographical advantage and to specialize in something labor-intensive, which is hard to transport. Furniture, electrical appliances, construction, repair and services, all sorts of customization would work. From the point of view of the second framework, maybe, it's possible to cooperate with China in textiles, to use increasing returns, if there are any in this sector.

Japan

Based on the Heckscher-Ohlin model, Japan is almost fully specialized in the capital-intensive good and doesn't feel any competition from China. To make the specialization complete, Japan could probably replace agriculture by more manufacturing, but this possibility has its cons in reducing the number of varieties of food, which could be crucial for domestic consumers. In the second framework, Japan should increase cooperation with China, produce more capital-intensive intermediate goods and let the Chinese assemble them. This process started not so long ago, and it will be broadening in the future.

Taiwan

In the CRS framework Taiwan feels some competition from China in textiles. Taiwan won't be able to affect world prices, so it should probably reallocate all the resources used in this sector, into the manufacturing sector. However, on total, Taiwan is already highly specialized, so the competition with Chinese products is definitely not a disaster.

In the IRS framework Taiwan should cooperate more with China, produce capital-intensive intermediate goods and let the Chinese assemble the final products. The most reasonable way is to increase capital and labor mobility with China. Taiwan has a big political problem, which prevents it from a fast merger, which would improve cooperation a lot. However, Taiwan could use this political problem to protect its intellectual property from copying as a condition for the merger. This would guarantee future relative capital abundance, and guarantee welfare gains from increased returns.