

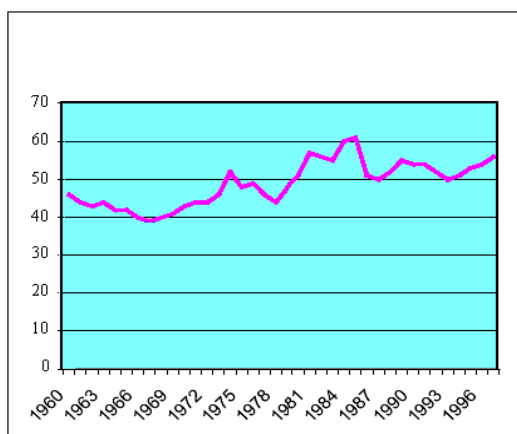
THE DUTCH DISEASE

The term Dutch Disease refers to the adverse effects on manufacturing of natural resource “discoveries”. Specifically, when a country experiences a resource boom due to a tradable resource discovery and/or to an increase in a resource price, it normally undergoes a real appreciation of its exchange rate and, as a result of rising wages, a relocation of some of the labour force to the resource sector. A real appreciation reduces the international competitiveness of other tradable sectors because resource-based exports crowd out commodity exports produced by those sectors (Krugman, 1987). The country faces the risk of a de-industrialization process¹. This phenomenon, known as the “Dutch Disease”, first drew attention in the late 1950s when natural gas discoveries in the Netherlands eventually hurt the competitiveness of the Dutch manufacturing sector.

Origins of the Dutch disease

In the late 1950s the appreciation of the Dutch currency (guilder), which followed the gas export boom, caused inflation which in turn, brought about reductions in competitiveness and profitability of the manufacturing and service sectors. As the following chart shows, the total Dutch exports crashed down relative to GDP during the 1960s. Shortly, the expansion of gas exports in the 1960s not only crowded out the other manufacturing exports, but also reduced markedly the total Dutch exports relative to GDP. This problem fortunately lasted shortly. From the late 1960s onwards, the Dutch exports of non-gas industries have increased sensibly. The fear of de-industrialization linked to the Dutch disease did not materialize in the Netherlands.

Dutch Exports of goods and services, 1960-97 (% of GDP)



Source: OECD Reports on Netherlands, various issues

¹ According to the Handbook of development economics the Dutch disease is defined as: “The deindustrialization of a nation's economy that occurs when the discovery of a natural resource raises the value of that nation's currency, making manufactured goods less competitive with other nations, increasing imports and decreasing exports.”

Thereafter, the Dutch Disease has been used to explain economic performance of countries facing similar conditions².

The core *Dutch Disease* model, attributed to Corden and Neary (1983), is modelled within the framework of a three-sector economy, namely a non-tradable sector (N), a manufacturing sector (M) and a resource sector (R). The model assumes that:

- labour is perfectly mobile among all the three sectors and makes sure that wages equalise across them;
- all goods are for final consumption;
- trade is always balanced as national output always equals expenditures; and
- commodity and factor prices are not distorted.

A resource boom affects the rest of the economy through two channels: the *resource movement effect* and the *spending effect*.

The resource movement effect. An increase in energy price raises the value of the marginal product of labour in the energy sector and pushes the equilibrium wage rate up, bringing about a movement of labour from both the manufacturing and non-tradable sectors to the energy sector. The result is a tightening of the other tradable sectors.

The spending effect. A boom in the natural resource sector, caused either by a rise in the world price of the resource or by a new deposit discovery, leads to increased income for the country which, in turn, brings about increased imports and domestic absorption for both tradables and non-tradables. Inasmuch as the prices of tradables are set internationally, this effect results in increasing prices (and wages) of non-tradables relative to tradables, i.e. a real appreciation of the exchange rate. In addition, it bids labour and capital out of the manufacturing sector.

Albeit the country experiences significant economic improvements in the short run due to a substantial upsurge in revenues from raw material exports, in the long run, it faces a risk to hold up its “*cultural, technical and intellectual development which only a strong, healthy manufacturing industry...can provide*” (Kaldor, 1981).

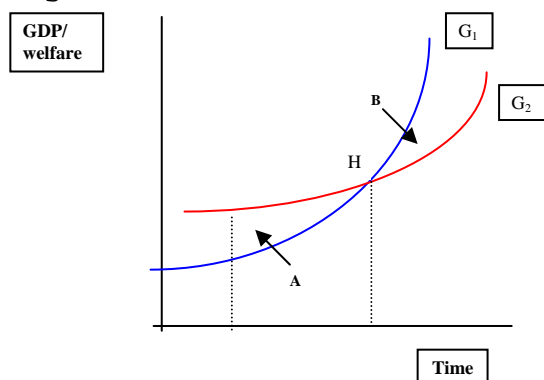
In trade models, countries should specialise in industries in which have a comparative advantage,

² Mineral and agricultural booms in Latin America during colonial and republican times have been examined in DD terms (Prebisch, 1963), as well as cases of Sub-Saharan economies (Gelb, 1988; Wheller, 1984). Also the gold discoveries in Australia during the 19th century were approached in DD terms (Forsyth, 1985). See W. Max Corden (1984), T. Gylfason (2001) for a number of further examples.

so theoretically, a country rich in natural resources would be better off specializing in the extraction of natural resources. In reality, however, the shift away from manufacturing can be detrimental. If the natural resources begin to run out or if there is a downturn in prices, competitive manufacturing industries do not return as quickly or as easily as they left. This is because manufacturing is based on 'learning-by-doing' processes, long periods of inactivity create a comparative disadvantage in the sector. Thus, when the country cannot longer rely on natural

resources, the manufacturing sector is not more able to compete internationally and cannot replace the resource sector in leading the economy. Hence, the long term effect may be to erode the country's competitive position in manufacturing from which it may be difficult to recover. Put differently, a country has to trade off the short-run advantages of owning natural resources against the costs of permanently lagging behind in terms of economic development. This idea is illustrated in figure 1.

Fig. 1 The Dutch Disease Effect.



The magnitude of benefits and losses in utility, in present value terms, to be on a growth path G_2 vs. G_1 depends on various factors, such as price shock and other disturbances such as domestic policies. For a given size of A and B , the net present value is influenced by the discount rate. The bigger this rate is, the more relevant are the augmented oil gains (A is wider) and less valuable is the future divide between the welfare along the two patterns of growth G_1 and G_2 .

A further effect of the Dutch Disease is the reduction in investments, in fact volatility in the price of natural resources, and thus the real exchange rate may prevent more investment from firms, since they will not invest if they are not sure what the future economic conditions will be. There are also many other harmful effects often associated with Dutch disease, such as corruption and protectionist policies for affected lagging sector industries.

There are two basic ways to reduce the threat of Dutch disease: by slowing the appreciation of the real exchange rate and by boosting the competitiveness of the manufacturing sector.

One approach is to sterilise the boom revenues, that is, not to bring all the revenues in to the country all at once, and to save some of the revenues abroad in special funds and bring them in slowly. Sterilisation will reduce the spending effect. Another benefit of letting the revenues into the country slowly, is that it can give a country a stable revenue stream, rather than not knowing how much revenues it will have from year to year. Also, by saving the boom revenues, a country is

saving some of the revenues for future generations. Especially in developing countries, this can be politically difficult as there is often pressure to spend the boom revenues immediately to alleviate poverty, but this ignores broader macroeconomic implications. Examples of these sovereign wealth funds include the Government Pension Fund in Norway, the Stabilization Fund of the Russian Federation or the State Oil Fund of Azerbaijan or the Future Generations Fund of the State of Kuwait established in 1976. Another strategy for avoiding real exchange rate appreciation is to increase saving in the economy in order to reduce large capital inflows which are able to cause an appreciation of the real exchange rate. This can be done if the country runs a budget surplus. A country can encourage individuals and firms to save more by reducing income and profit taxes. By increasing saving, a country can reduce the need for loans to finance government deficits and foreign direct investment.

Investing in education and infrastructure are able to increase the competitiveness of the manufacturing sector. An alternative is that a government can resort to protectionism, that is, increase subsidies or tariffs. However, this is a dangerous strategy and could worsen the effects of Dutch Disease, as large inflows of foreign capital are usually provided by the export sector and bought up by the import sector. Imposing tariffs on imported goods will artificially reduce that sector's demand for foreign currency, leading to further appreciation of the real exchange rate.