DE-INDUSTRIALISATION, 'PREMATURE' DE-INDUSTRIALISATION AND THE DUTCH-DISEASE

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Abstract: Although the structure of employment has changed substantially over the long-term course of economic development, a drop of the scale and speed as the one that has taken place in manufacturing among industrialised and high middle–income countries in the last decades constitute an unprecedented phenomenon. In the analysis I distinguish between four sources of de-industrialisation, and develop a new concept of the 'Dutch-disease'. I also offer a new approach to the understanding of 'premature' de-industrialisation, a phenomenon that has characterised Latin America since the beginning of the neo-liberal economic and political reforms, and conclude that it contains important components of policy-induced 'uncreative destruction'. Finally, I discuss how rapid de-industrialisation has reopened an age-old debate in economic theory: is a unit value added in manufacturing equal to one in commodities, finance or services, especially in terms of its growth-enhancing properties?

Key-Words:**:** De-industrialisation; Dutch-Disease; Latin American.

DESINDUSTRIALIZAÇÃO, DESINDUSTRIALIZAÇÃO PREMATURA E DOENÇA HOLANDESA

Resumo: Embora a estrutura do emprego tenha mudado substancialmente no desenvolvimento econômico a longo prazo, a queda em termos de escala e de velocidade que tomou conta da esfera industrial nos países industrializados e com níveis de renda médio e alto nas últimas décadas constitui um fenômeno sem precedentes. Nessa análise eu estou distinguindo as quarto fontes de desindustrialização e desenvolvendo um conceito novo sobre doença holandesa. Eu também ofereço neste artigo um novo arcabouço teórico sobre "desindustrialização prematura", um fenômeno que tem caracterizado a América Latina desde que começaram as reformas econômicas e políticas de caráter neoliberal, concluindo que este fenômeno contém um componente importante de políticas induzidas de destruição não criativa. Finalmente, eu discuto como a desindustrialização tem reaparecido do antigo debate da teoria econômica, deixando a seguinte questão: é a unidade de valor acrescentada nas fábricas igual as das commodities, das finanças e dos serviços, especialmente em termos de aumento de suas propriedades?

Palavras-Chave: Desindustrialização; Doença holandesa; América Latina.

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1-INTRODUCTION

One of the most notable stylised facts of the last third of the 20th century is the rapid decline in manufacturing employment in industrialised countries (a drop of about 25 million jobs). Although the structure of employment has changed substantially over the long-term course of economic development, changes of the scale and speed during this period constitute an unprecedented phenomenon -- manufacturing employment in the European Union, for example, dropped by more than a third. Moreover, as manufacturing is an activity that some consider a crucial driver of outward shifts of the production frontier (e.g. in Post-Keynesian, Structuralist and Schumpeterian thought), it has been argued that de-industrialisation is likely to have significant negative long-term effects on growth and employment.

This concern was particularly pronounced in countries that experienced drastic de-industrialisation following the discovery of mineral resources -- a phenomenon that became known as the 'Dutch-Disease'. The key issue is the double-edged effect of a mineral discovery. On the one hand, it allows an expansion of expenditure, income and employment; but on the other, it could lead to contraction of the non-mineral traded sector. This phenomenon was first analysed in the 1950s regarding the mixed effects of sudden increases in the price of wool for the Australian economy.

OECD countries began de-industrialising in the late-1960s, while some high-income developing countries in East Asia entered this phase in the late 1980s. At about the same time some Latin American countries and South Africa also began to de-industrialise after radical economic reforms, despite their level of income per capita being far lower than other countries which began to de-industrialise earlier. This latter process has been labelled 'premature' de-industrialisation (Palma, 2005), and should not be confused with the so-called 'resource curse' hypothesis: the poor macroeconomic performance of many mineral-exporting economies.

TABLE 1: Manufacturing Employment (% of total)					
Region	**1960**	**1970**	**1980**	**1990**	**2003**
Sub-Saharan Africa	4.4	4.8	6.2	5.5	5.5
South Africa	11.3	12.8	**18.2**	**15.7**	**14.1**
Latin America	15.4	16.3	16.5	16.8	14.2
Southern Cone and Brazil	17.2	17.5	17.3	**17.9**	**13.1**
Middle East and North Africa.....	7.9	10.7	12.9	15.1	15.3
South Asia	8.7	9.2	10.7	13.0	13.9
East Asia (excluding China).....	10.0	10.4	15.8	16.6	14.9
NICs 1	14.6	19.2	27.5	**28.7**	**19.4**
China	10.9	11.5	10.3	13.5	12.3
Third World	10.2	10.8	11.5	13.6	12.5
OECD.....	26.5	**26.8**	**24.1**	**20.1**	**17.3**

Sources: Calculations using ILO Databank; and for Taiwan, The Republic of China Yearbook of Statistics. Averages are weighted by economically active population. **Southern Cone**=Argentina, Chile and Uruguay. **NICs1**=Korea, Taiwan, Singapore and Hong Kong.

TABLE 2: Manufacturing Value Added (% of GDP)					
Region	**1960**	**1970**	**1980**	**1990**	**2003**
Sub-Saharan Africa.....	15.3	17.8	17.4	14.9	13.8
South Africa	21.0	23.9	22.5	**25.5**	**18.1**
Latin America.....	28.1	26.8	28.2	25.0	16.7
Southern Cone and Brazil	32.2	29.8	**31.7**	**27.7**	**16.9**
Middle East and North Africa.....	10.9	12.2	10.1	15.6	14.2
South Asia.....	13.8	14.5	17.4	18.0	16.2
East Asia (excluding China).....	14.0	19.2	23.3	25.5	27.6
NICs 1	15.4	22.5	**27.1**	**26.5**	**24.9**
China.....	23.7	30.1	40.6	33.0	31.3
Third World.....	21.6	22.1	24.3	23.9	22.7
OECD.....	28.9	**28.3**	**24.5**	**22.1**	**17.3**

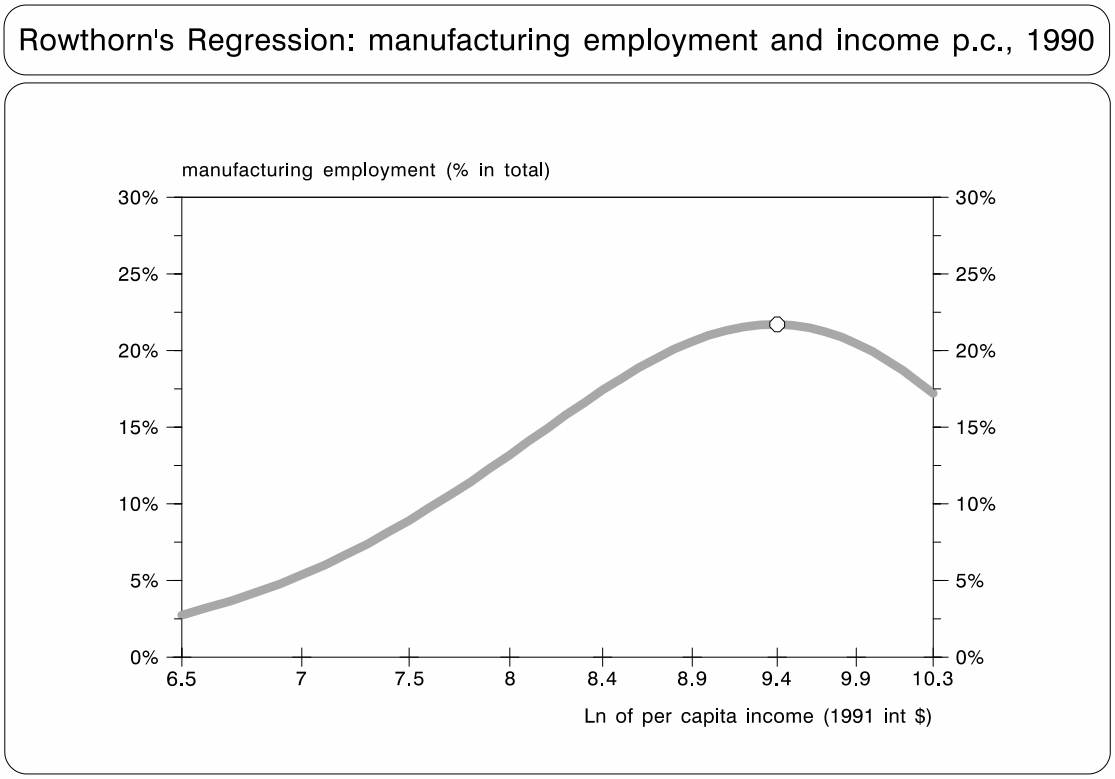
Source: Calculations using World Development Indicators (1984 and 2006). NICs-1 does not include Taiwan.

2– THE FOUR SOURCES OF DE-INDUSTRIALISATION

2.1- The first source: an 'inverted-U' relationship between manufacturing employment and income per capita

The most widely accepted concept of de-industrialisation emerges from an understanding of the relationship between manufacturing employment and income per capita as an 'inverted-U'. De-industrialisation is simply the drop in manufacturing employment occurring when countries reach a certain level of per capita income -- i.e., mature economies switching employment to specialised services as part of their 'normal' process of development. As such, de-industrialisation could well have positive long-term growth effects. According to Rowthorn (1994; using data for 1990), this drop begins at US$12,000.

Figure 1



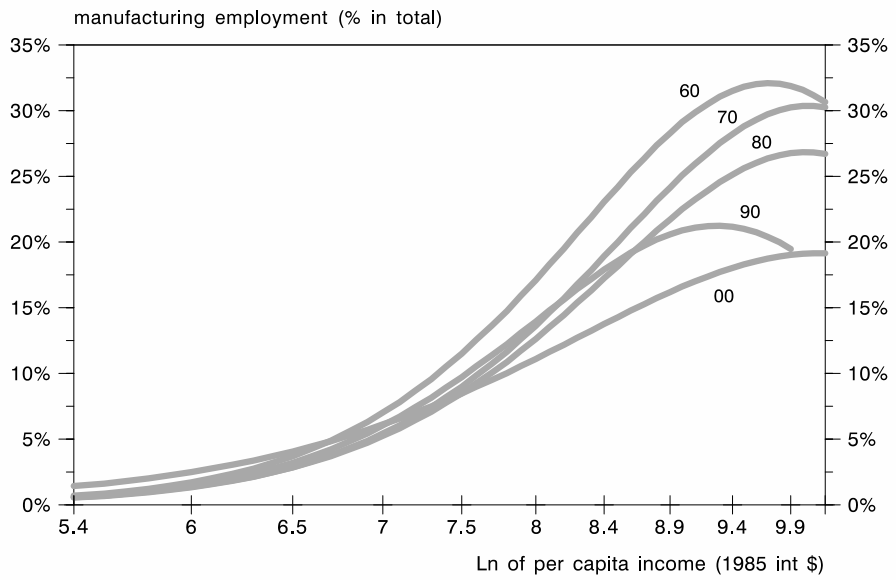
Although many other analyses confirm this hypothesis, Palma (2005) has suggested that de-industrialisation has been a more complex phenomenon. He argues that, in addition to the 'inverted-U', there are three further processes at work.

2.2.- The second source of de-industrialisation: a declining relationship over time between income per capita and manufacturing employment

One additional source of de-industrialisation has been the collapse of the 'inverted-U' relationship over time.

Figure 2

Second Source of De-industrialisation: a declining relationship, 1960-2000



Sources: Palma (2005, using ILO Databank and the 'Penn Tables'; this is the sources for all other graphs). The regressions are based on a sample of 105 countries. The range of the horizontal axis is the actual income-range of the sample for 2000. In all regressions in this and following graphs, all parameters are significant at the 1% level, and the adjusted R^2 are between 66% and 77%. All regressions pass the relevant diagnostic tests. Note that these regressions are simply a cross-sectional description of cross-country differences in manufacturing employment, categorised by income per capita; i.e. they should not be interpreted in a 'predicting' way, because there are a number of difficulties with a curve estimated from a single cross-section - especially regarding the homogeneity restrictions that are required to hold.

In essence, for high- and middle-income countries a declining level of manufacturing employment was associated with income per capita over time. In fact, the four better-known hypotheses originally developed to explain the 'inverted-U' relationship mentioned above are, in fact, more relevant to this 'second source' of de-industrialisation as until the mid-1980s no country had reached the level of income corresponding to the turning point of the respective curve.

These hypotheses are:

i)The fall in manufacturing employment is merely a statistical illusion caused primarily by the re-allocation of labour from manufacturing to services through contracting-out of activities such as cleaning, security, catering, and data processing.

ii)It results from a reduction in the income elasticity for manufactures;

iii)It is the consequence of higher productivity growth in manufacturing; and

iv)It is the result of a new international division of labour (including 'outsourcing'), which reduces manufacturing employment in industrialised countries, especially for non-skilled labour.

Although a detailed analysis of the rôle of each of these factors in de-industrialisation is outside the scope of this entry (see Rowthorn and Ramaswamy, 1999), it is important at least to add that the 1980s switch in 'policy regime' in OECD countries (broadly speaking, from post-war Keynesianism to demand-constraining monetarism) did also contribute to the huge 1980s drop in manufacturing employment. (For the 1980s debate on de-industrialisation, see Singh, 1987). The new technological revolution that emerged in the 1980s also played a major rôle (Pérez, 2002).

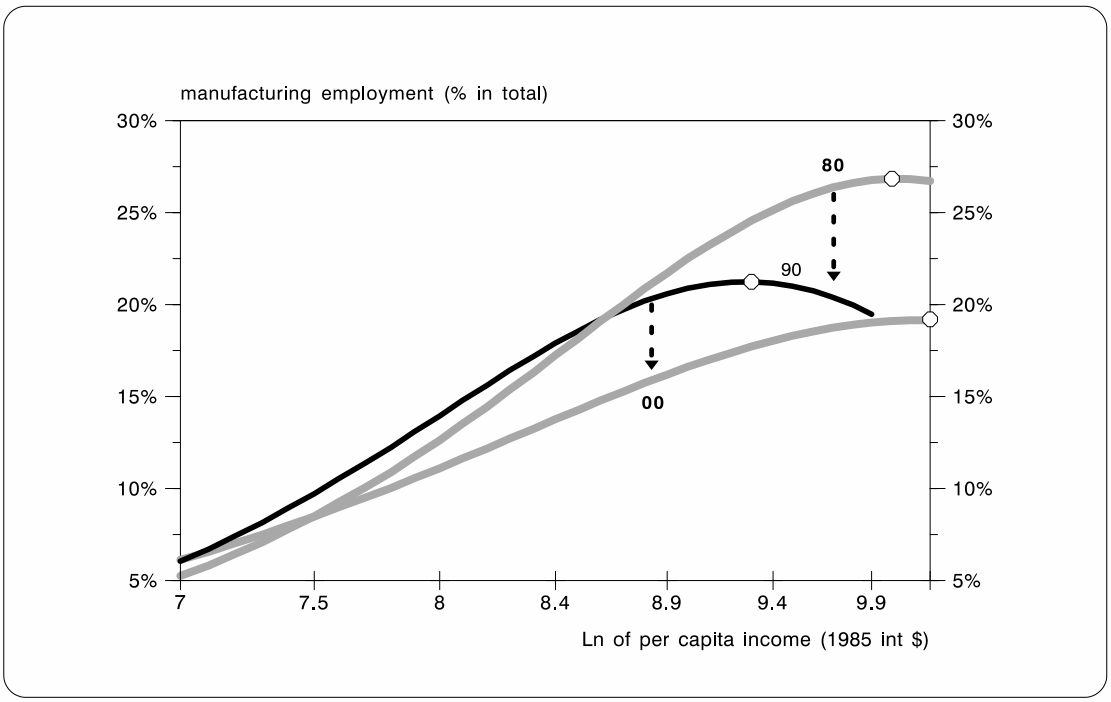
2.3.- The third source of de-industrialisation: changing income per capita corresponding to the turning-point of the regression

This additional source of de-industrialisation is also evident in Figure 2. This concerns the remarkable drop in the turning-point of the regressions during the 1980s, when it plummeted by half -- from approximately $21,000 in 1980, to just over $10,000 in 1990 (in 1985 international US$). If until 1980 no country had reached the turning point of the curve, in 1990 there were more than 30 countries above that critical point. (Rowthorn and Wells, 1987, had discussed the possibility of the lowering in time of the turning-point of their 'inverted-U' relationship). However, Figure 2 also shows that during the 1990s this process was reversed, and by 2000 again no country was beyond that critical point. This phenomenon

is crucial to the understanding of the changing dynamic of the interrelationship between these three sources of de-industrialisation. Basically, during the 1980s there was a remarkable degree of de-industrialisation in high-income countries, which began to spread to middle-income ones. During the 1990s, by contrast, de-industrialisation affected mainly middle-income countries.

Figure 3

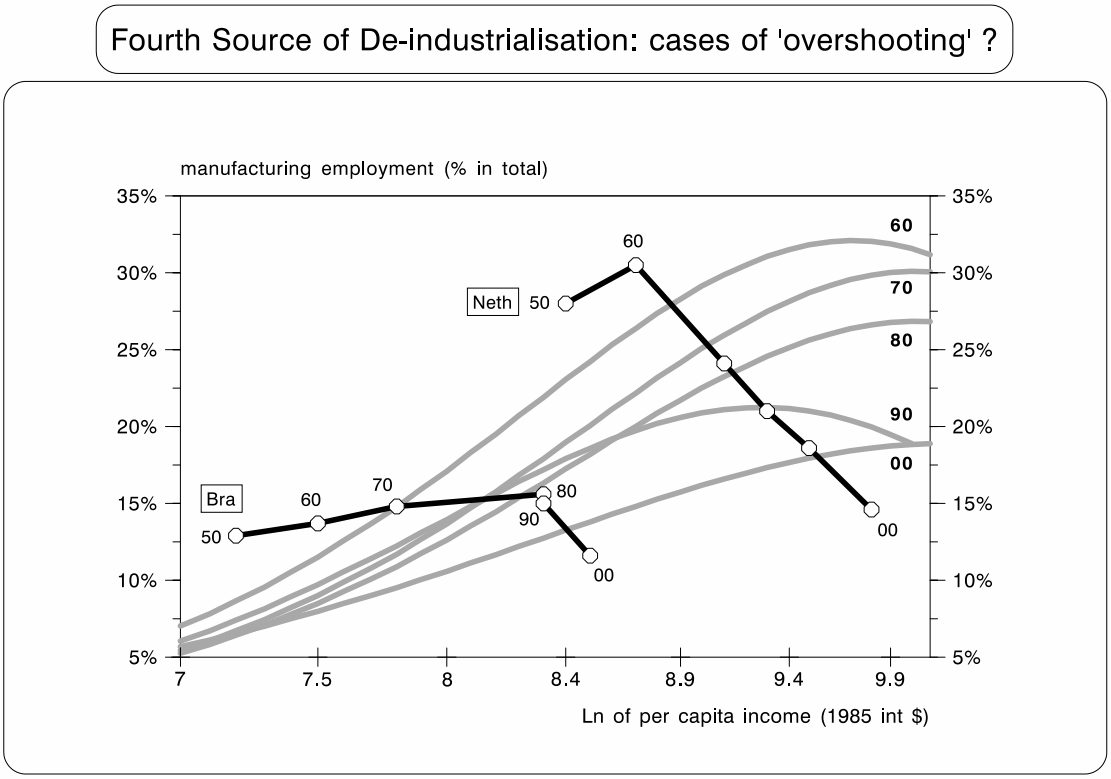
The Changing Nature of De-industrialisation between the 1980s and 1990s



2.4.- The fourth source of de-industrialisation: the Dutch-Disease

Finally, in several countries we can observe a further degree of de-industrialisation. These countries experienced a fall in their manufacturing employment that was clearly greater than would have been expected given the three sources of de-industrialisation discussed above.

Figure 4



●**Neth**=The Netherlands; and **Bra**=Brazil.

Rather than simple cases of 'overshooting', Palma (2005) identifies this phenomenon with a specific conceptualisation of the Dutch-Disease: in countries that have a export-surge of commodity or services, or a major shift in economic policy, a unique *additional* degree of de-industrialisation is typical (additional to the three de-industrialisation forces already discussed, that is).

Originally, Dutch-Disease had a narrow meaning -- the appreciation of the real exchange rate resulting from a boom in commodity exports. (For an analysis of the macro-processes at work, see Corden and Neary, 1982, and Ros, 2000). In other cases, mostly neo-classical models, it simply referred to the adverse terms of trade effect for tradables following a sudden shift in its production frontier. However, with time the meaning has widened to include all possible negative macro-economic effects associated with the "resource curse" hypothesis; for Woolcock et.al. (2001), for example, resource-rich countries are not very good at accumulating social capital. (For a critical analysis of the "resource curse" hypothesis, see DiJohn, 2007).

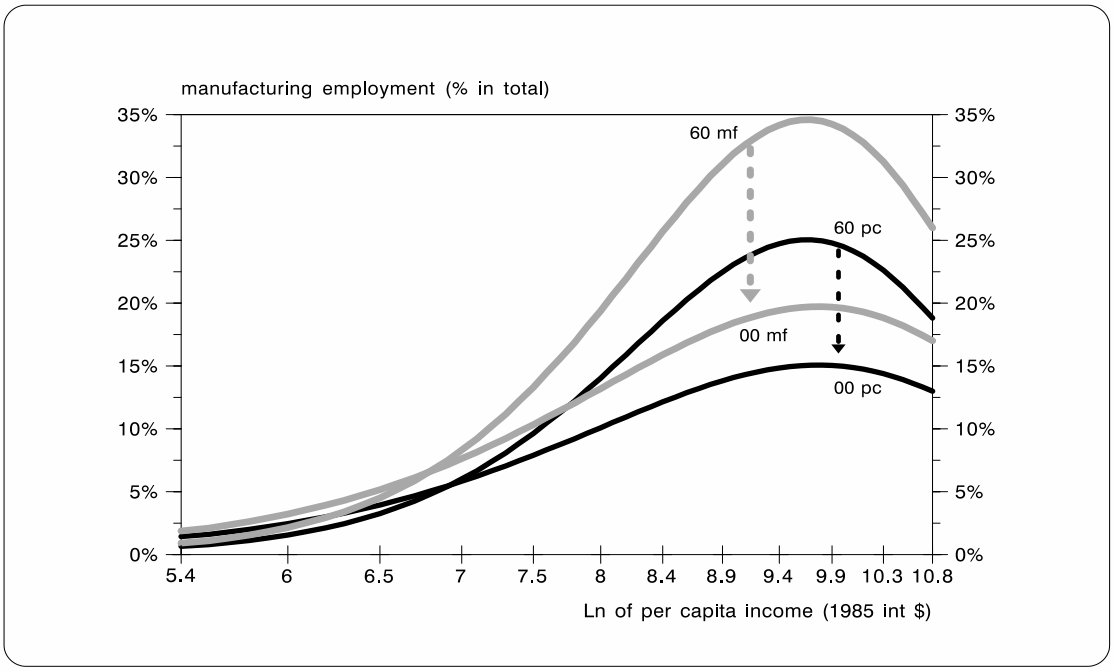
The origins of this "disease" lies in the fact that the relationship between manufacturing employment and per capita income tends to differ between countries able to generate a trade surplus in manufacturing and those that do not. Note that the 'trade-surplus-in-manufacturing' group includes economies that find themselves in this position out of *necessity* as well as others due to *growth policy*. In the first case, given resource endowments force some countries to aim for a manufacturing surplus to finance inevitable trade deficits in commodities and/or services (e.g. Japan and India). In the second, some resource-rich countries still try to implement a growth policy based on a strong 'industrialisation agenda' (e.g. Finland, Malaysia and Vietnam).

Figure 5 shows the long-term changes between manufacturing employment and income per capita in the 'trade-surplus-in-manufacturing' (mf) and 'trade-surplus-in-primary-commodity-or-services' (pc) groups of countries.

Although the 'pc' countries tend to reach a lower level of industrialisation at any given point in time, the 'pc-effect' *per se* has not led to a higher degree of de-industrialisation. In fact, taking the highest point of the curves, in these four decades the share of manufacturing employment in both 'mf' and 'pc' countries dropped by about half.

Figure 5

Changes in Manufacturing Employment and Income p.c., 1960 to 2000

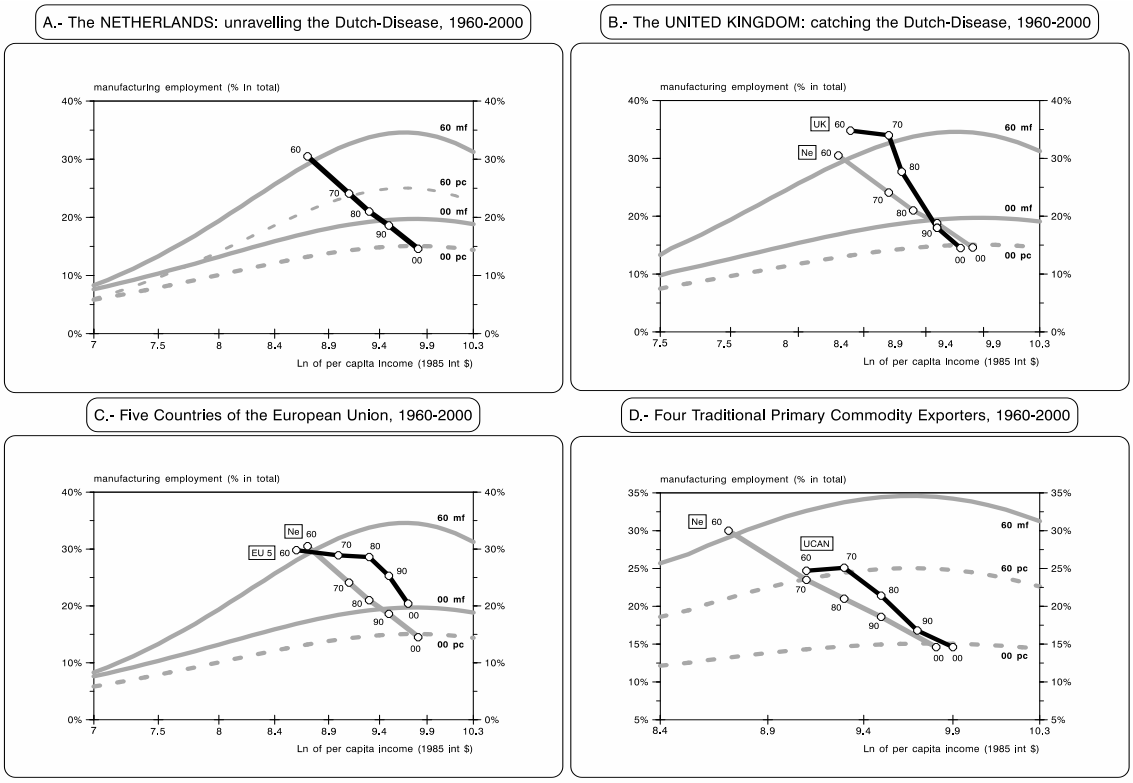


●An intercept dummy differentiates the two groups of countries.

With this introduction, it is now possible to explain properly the concept of Dutch-Disease. There is a group of countries - both industrialised and developing - that exhibit a specific *additional* degree of de-industrialisation. The Netherlands rightly gives its name to this phenomenon.

From this perspective, what happened in the Netherlands was a discovery of a natural resource (gas) leading manufacturing employment to switch from an 'mf' structure to a 'pc' one. When this occurs, as figure 6.A shows, the country experiencing this "disease" moves along *two* different paths of de-industrialisation. The first path consists of the three processes of de-industrialisation discussed above (from '60-mf' to '00-mf'). The second corresponds to a further component of de-industrialisation resulting from the change in the reference group (from 'mf' to 'pc'). In this context, the Dutch-Disease should only be regarded as the *extra* level of de-industrialisation associated with the latter movement. In the case of the Netherlands, then, it is the (five percentage points) difference between manufacturing employment falling from 30.5% of the total in 1960 to 19.6% in 2000 (hypothetical 'mf', non-Dutch-Disease scenario), or to 14.6% (actual Dutch-Disease situation).

Figure 6



●**Ne**=The Netherlands; **EU5**=Germany, France, Italy, Belgium and Austria; and **UCAN**=United States, Canada, Australia and New Zealand.

Dutch-Disease is thus clearly not a phenomenon limited to the Netherlands or to the discovery of mineral resources; it has also occurred in other countries and for other reasons. One case is the United Kingdom, which had a boom in oil and financial-services exports (see figure 6.B); as a result of this (and of Mrs. Thatcher) the trade balance in manufacturing switched from a surplus equivalent to 4% of GDP (late 1970s) to a deficit of 4% (mid-2000s). Figure 6.C shows that, by contrast, the share of manufacturing employment in other EU countries fell only according to the changes in the 'mf' scenario. In turn, Figure 6.D shows that, although four other industrialised countries (major commodity exporters throughout the period) also found themselves in the 'pc' category in 2000, they did not suffer from the Dutch-Disease simply because they already were in the 'pc' category from the start. Consequently, although both the 'EU-5' and the 'UCAN' countries experienced a *similar* drop in the share of manufacturing employment (9.7 and 10.5 percentage points, respectively), neither switched from one reference group to another.

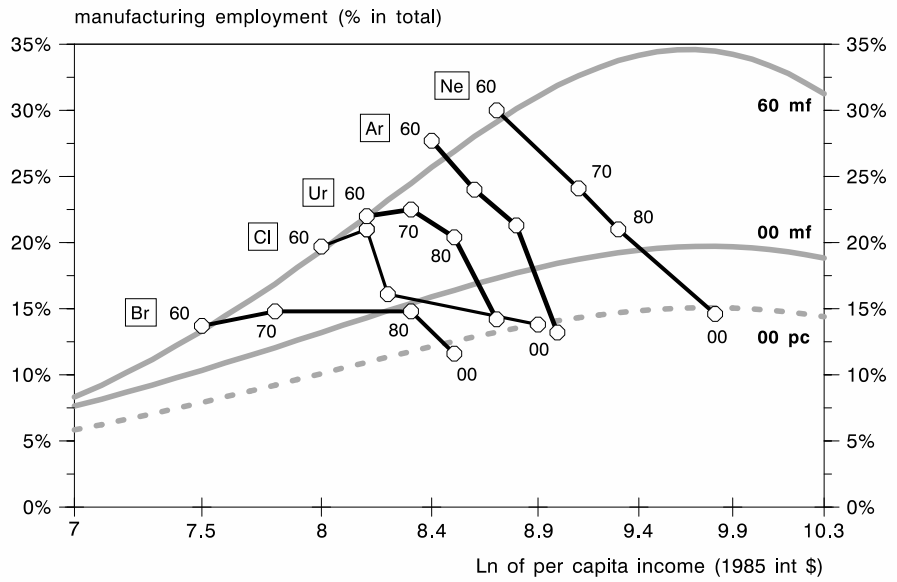
The phenomenon of the Dutch-Disease also occurred in countries that developed flourishing service-exporting sectors, such as tourism (e.g., Greece, Cyprus and Malta) and financial services (e.g., Switzerland, Luxembourg and Hong Kong); see Palma (2005). (Surges in remittances from workers living abroad have had a similar effect).

Finally, this "disease" was also experienced after 1980s in some Latin American countries (and South Africa) where state-led import-substituting industrialisation (ISI) had achieved industrialisation levels characteristic of the 'mf' group (despite the fact that these countries generated trade surpluses in commodities). In this case, radical change of the economic policy regime (from ISI to comprehensive trade and financial liberalisation) resulted in Dutch-Disease; i.e., the transformation of their employment structure from a policy-induced 'mf' to a more 'Ricardian' resource-rich 'pc'. This transformation took place mainly due to large and sudden changes in relative prices (primarily the result of lower tariffs reducing the prices of tradables and surges of capital inflows overvaluing exchange rates), some increases in productivity (resulting from easier access to imported capital equipment), and the end of institutional support for manufacturing.

Brazil and the three Southern Cone countries experienced the greatest de-industrialisation following their economic reforms, while also being among the countries of the region that had previously industrialised the most and that had subsequently implemented the most drastic reforms.

Figure 7

ARGENTINA, BRAZIL, CHILE & URUGUAY: Catching the Dutch-Disease, 1960-2000



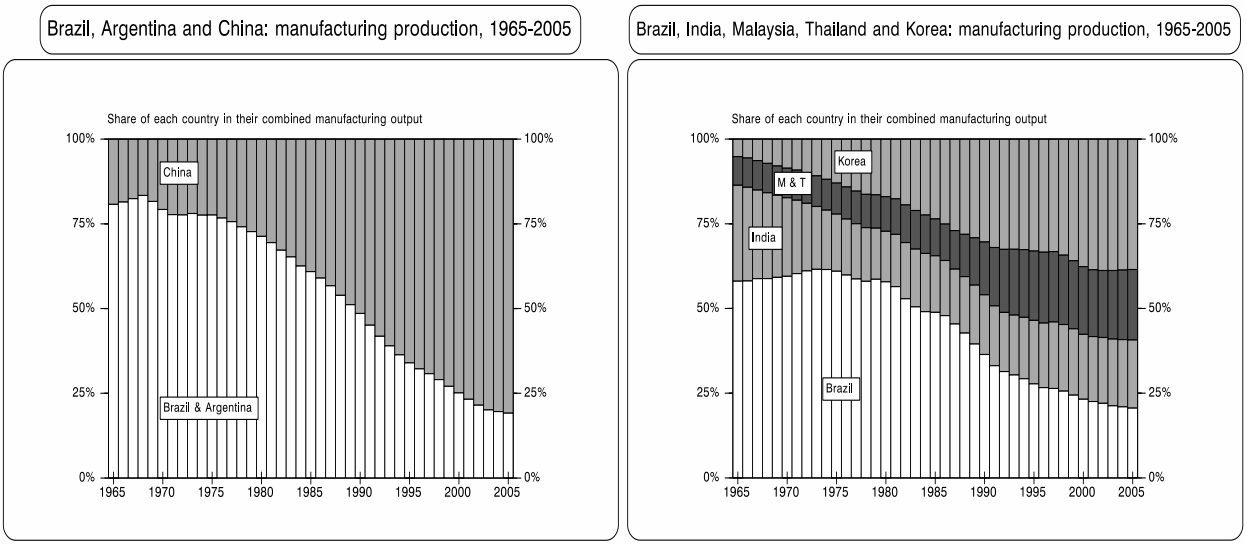
●**Ar**=Argentina; **Br**=Brazil; **Cl**=Chile; **Ur**=Uruguay; and **Ne**=The Netherlands. The year 1990 has been omitted not to 'congest' the graph. South Africa's share of manufacturing employment also fell from a 'mf' level in 1980 to close to a 'pc' one in 2000.

These four Latin American countries began this period -- as did the Netherlands -- with a level of manufacturing employment typical of countries aiming at a trade surplus in manufacturing ('60-mf'), even though these resulted from different causes. The case of the Netherlands is due to its (pre natural gas) resource endowments, whereas in the four Latin American countries their position was the result of a 'structuralist' industrialisation agenda. And if both reached 2000 with levels of manufacturing employment typical of the 'pc' group, this was once again for different reasons: in the Netherlands, the discovery of a commodity at a 'mature' stage of industrialisation was decisive, whereas in Latin America the sharp reversal of the ISI policies was responsible. Note that in the latter the 'extra' degree of de-industrialisation ('mf' to 'pc') took place over and above the already mentioned huge collapse of the 'mf' path for middle-income countries during the 1990s (Figure 3).

From this perspective, the key difference between 'premature de-industrialisers' in Latin America and developing Asia in terms of the implementation of economic reforms is that in the former these seem to have obstructed their transition towards a more mature -- i.e., self-sustaining -- form of industrialisation. (For the concept of 'self-sustaining

industrialisation', see Kaldor, 1967). Resource-poor *and* resource-rich Developing Asia, instead, succeeded in combining these reforms with a dynamic 'mf' path.

Figure 8



●**M&T**=Malaysia and Thailand. 3-year moving averages. The relative decline of South Africa's manufacturing sector is even greater than Brazil's (though not as extreme as Argentina's).

Source: WDI (2006; manufacturing output measured in US$ 2000).

Maybe Latin America is in desperate need of a touch of the so-called 'East Asian Confucianism'; i.e., once a new development path has been chosen, a significant degree of pragmatism, self-confidence, a progressive capitalist élite, and an avant-garde political leadership can be of great assistance in policy-making success.

In sum, the Dutch-Disease should not be seen as simple 'overshooting' of de-industrialisation, but as a specific type of 'excess' de-industrialisation. In general, this has taken place for one of three different reasons: the discovery of natural resources (e.g., the Netherlands); the development of export-service activities, mainly tourism and finance (e.g. Greece in the former, and Hong Kong in the latter); and finally, changes in economic policy (e.g. Brazil and South Africa).

All the above types of de-industrialisation should also be distinguished from those of the late-1980s and 1990s in many Sub-Saharan economies and countries of the former Soviet Union and Eastern Europe, which experienced a process of de-industrialisation associated with a fall in income per capita that was associated with a reduction in manufacturing employment backwards: a case of "reverse" de-industrialisation.

Finally, Finland, Sweden, Denmark, Malaysia, Vietnam and, to a lesser extent, other Southeast Asian resource-rich countries (such as Thailand and Indonesia) prove that there is no such thing as an unavoidable "curse of natural resources". Countries with high potential for developing commodities and export-services activities have sufficient degrees of policy-freedom to follow ambitious and successful 'industrialisation agendas' (not least of the commodities themselves, as in the Nordic case and Malaysia). Also, economic policies exist to avoid the Dutch-Disease in commodity- and export-services-booming economies (see Pesaran, 1984 and Palma, 2000). However, as the Latin American experience in particular shows, it seems that as globalisation progresses, there are fewer and fewer countries willing to take advantage of such degrees of policy-freedom. This is not only because forces in the new international institutional and financial order are rapidly trying to reduce these degrees of policy-freedom, but also because of domestic changes in economic ideologies and the structure of property rights.

However, whether a process of structural change that includes 'premature' de-industrialisation can deliver rapid and *sustainable* economic growth is another matter altogether; so is the issue of whether the current 'premature' de-industrialisation occurring in Latin America and South Africa contains important components of policy-induced 'uncreative destruction'.

3.- DE-INDUSTRIALISATION -- DOES IT MATTER ?

Rapid de-industrialisation has reopened an age-old debate in economic theory: is a unit value added in manufacturing equal to one in commodities or services, especially in terms of its growth-enhancing properties?

Although a detailed discussion of this debate is beyond the scope of this entry, from the perspective of de-industrialisation one can classify growth theories into three camps (in doing this, of course, one has to acknowledge the necessary degree of simplification which every classification of intellectual tendencies entails). This requires a distinction between two concepts: 'activity' and 'sector'. Examples of the former are R&D and education; and of the latter manufacturing. The first camp includes those (mainly neo-classical models) that treat growth as both 'sector-*indifferent*' and 'activity-*indifferent*'. Examples are Solow-type models (both traditional and "augmented" ones), and the branch of 'endogenous' theories that

associates growth with increasing returns which are activity-indifferent. Examples are early "AK" models and more recent ones in which changes in the rate of growth are the result of the cumulative effect of market imperfections arising in the process of technical change. However, these imperfections, and the associated increasing returns, are somehow seen as stemming directly from within the production function (rather than being based on the use of R&D or the production of human capital).

The second camp still regards growth as 'sector-indifferent', but models it as 'activity-*specific'* (e.g., Romer's work and neo-Schumpeterian models). In these models, increasing returns, though generated by research-intensive activities, are explicitly not associated with manufacturing activities as such, or with investment in manufacturing, nor do they allow for specific effects from manufacturing on R&D activities (except for the fact that investment in *any* sector could be 'complementary' to R&D through its effect on the profitability of research; see Aghion and Howitt, 1998). Therefore, in these models there is no room for Kaldorian-style effects concerning investment embedding or embodying technical change.

Finally, in the third camp are those (mainly Post-Keynesian, Schumpeterian and Structuralist theories) that argue that growth is both 'sector-*specific'* and 'activity-*specific'* (but the latter only in the sense that it is specific to the nature of the sector involved). For instance, the approaches to growth found in Hirschman, Kaldor, Kalecki, Prebisch, Thirlwall, and (arguably) Schumpeter follow this line of argument. What is common to these 'sector-specific' growth theories is that the pattern and the dynamic of growth are crucially dependent on the activities being developed. In particular, there are specific capital accumulation effects on growth stemming from manufacturing. The crucial difference between this camp and the previous two is that issues such as technological change, externalities, synergies, balance-of-payments sustainability, and the capacity of developing countries to 'catch up', are directly linked to the size, strength and depth of the manufacturing sector.

Therefore, in terms of the possible growth-consequences of de-industrialisation, the first 'growth-camp' does not regard de-industrialisation as a particularly relevant growth-issue *per se*. Even when it becomes a major growth or employment issue, this is only due to market imperfections; for example, Sachs and Warner (1997) argue that if neo-classical competitive conditions prevail a declining manufacturing sector implies no hindrance to growth or full employment. Furthermore, for these growth theories, even if the discovery of natural gas did produce some structural changes in output and employment in the Dutch economy, labelling these transformations a "disease" would be a misleading dramatisation. Also, from this

perspective, if 'premature' de-industrialisation in resource-rich countries consists of the transformation of employment structures from an artificially policy-induced 'mf' to a more Ricardian 'pc' path, that can hardly be bad for growth!

From the point of view of the second camp, de-industrialisation in 'mature' economies may or may not have an impact on growth *per se*; it would all depend on its specific form. For instance, it could actually result in a stimulus for growth if the "upward" de-industrialisation in mature economies is associated with the reallocation of resources within manufacturing into more R&D-intensive products. However, in the case of 'premature' de-industrialisation in middle-income countries it is more difficult to argue from this approach that such a phenomenon could really be positive for long-term growth.

Finally, although finding it difficult to accommodate the concept of normal (or "upward") de-industrialisation in mature economies, the third approach to economic growth understands de-industrialisation and the Dutch-Disease as clearly negative for long-term growth and employment -- especially if it involves 'premature' de-industrialisation in developing countries. The same is true of the current narrowing-down of the policy-space to fight them. For example, an interpretation of the industrialised countries' remarkable slowdown in productivity growth since the mid-1970s from this perspective would be that this could well be the result of 'wrong' policies (e.g., monetarism) and 'wrong' structural change (e.g., "financialisation") excessively intensifying de-industrialisation in the 1980s. ("Financialisation" is the rise in size and dominance of the financial sector relative to the non-financial sector, as well as the diversification towards financial activities in non-financial corporations). And one interpretation of the remarkably poor growth performance of most Latin American economies and South Africa since economic reform, especially Brazil, would be that this is the likely (almost inevitable?) consequence of 'premature' de-industrialisation -- affecting not just the speed of their economic growth, but (crucially) its sustainability.

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