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Infant Industry Promotion in Historical Perspective – A Rope to Hang Oneself or a Ladder to Climb With?

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1. Introduction: Prebisch as an Unwitting Executioner?

In the "official history of capitalism" that informs the Neo-Liberal theorists and policy-makers, development failures of today's developing countries are seen as owing more than anything else to the "wrong" theories that had prevailed between the end of the Second World War and the early 1980s (e.g., see Sachs & Warner, 1995; Bhagwati, 1985 and 1998; Bhagwati & Hirsch (eds.), 1998).

According to this story, global capitalism started to emerge with the spread of following the triumph of free-trade, *laissez-faire* Britain over the mercantilist, *dirigiste* economies of Continental Europe since the 18th century. The spread of free trade was also greatly helped by the works of its Classical economists such as Adam Smith and David Ricardo, who theoretically proved the superiority of *laissez faire* policy, especially free trade. The (Old) Liberal world order was perfected around 1870 under British hegemony, and, it is argued, a period of unprecedented prosperity followed.

Unfortunately, according to this story, things started to go wrong with the First World War. In response to the ensuing instability of the world economic and political system, countries started to erect trade barriers again. In 1930, the US also abandoned free trade and enacted the infamous Smoot-Hawley tariff, which Bhagwati describes as "the most visible and dramatic act of anti-trade folly" (p. 22, f.n. 10). Countries like Germany and Japan erected high trade barriers and also started creating powerful cartels, which were closely linked with fascism and their external aggression in the following decades. The world free trade system finally ended in 1932, when Britain, the hitherto champion of free trade, succumbed to the temptation and re-introduced tariffs. The resulting contraction and instability in the world economy and then finally the Second World War destroyed the last remnants of the first Liberal world order.

After the Second World War, the story goes, some significant progress in trade liberalisation was made through the early GATT (General Agreement on Trade and Tariffs) talks. However, *dirigiste* approaches to economic management dominated the policy-making scene until the 1970s in the developed world, and until the early 1980s in the developing world. According to Sachs & Warner (1995), "wrong" theories that misinformed their governments played a critical role in setting these countries onto the "wrong" path of state-led industrialisation (pp. 11-21).

The "wrong" theories the Neo-Liberals talk about are, of course, those advanced by early development economists like Rosenstein-Rodan (1943), Alexander Gerschenkron (1962), Albert Hirschman (1958), and Raúl Prebisch (1971). These theories, according to the Neo-Liberal commentators, generated undue export pessimism, encouraged costly infant industry protection, and advocated mistaken state direction of the developmental efforts – all with disastrous consequences. Prebisch occupies a particularly prominent place in this story, because he was, as the Executive Secretary of the ECLA and the first Secretary General of the UNCTAD, the person who played the key role in legitimasing the implementation of the "wrong" theories at the international policy level.

Although they do not openly name Prebisch, Sachs & Warner (1995) paints a very negative picture of his role in the postwar economic history of developing countries. They are worth citing at length in this context:

> "Export pessimism combined with the idea of the big push to produce the highly influential view that open trade would condemn developing countries to long-term subservience in the international system as raw materials exporters and manufactured goods importers. Comparative

> advantage, it was argued by the Economic Commission of [*sic*] Latin America (ECLA) and others, was driven by short-term considerations that would prevent raw materials exporting nations from ever building up an industrial base. The protection of infant industries was therefore vital if the developing countries were to escape from their overdependence on raw materials production. These views spread within the United Nations system (to regional offices of the United Nations Economic Commission), and were adopted largely by the United Nations Conference on Trade and Development (UNCTAD). In 1964 they found international legal sanction in a new part IV of the General Agreement on Tariffs and Trade (GATT), which established that developing countries should enjoy the right to asymmetric trade policies. While the developed countries should open their markets, the developing countries could continue to protect their own markets. Of course, this "right" *was the proverbial rope on which to hang one's own economy*! [italics added]" (p. 17).

So according to Sachs and Warner, Prebisch was the unwitting chief executioner of the developing countries who handed them out, through the ECLA and the UNCTAD, the ropes to hang themselves in the form of the infant industry argument!

Our host, Jose Antonio Ocampo, in his recent paper that provides the intellectual blueprint for the conference, has pointed out that the "wrong" policies of the early postwar years based on these "wrong" theories were in fact able to generate much better growth performance in the developing world than what the Neo-Liberal

policies have managed during the last two decades (Ocampo, 2001; also see Chang, forthcoming, ch. 4). In particular, he points out that “the longest-lasting episodes of rapid growth (e.g., the east Asian or, more recently, the Chinese and Indian “miracles” or, in the past, the periods of rapid growth in Brazil and Mexico) do not coincide with phases of extensive liberalisation” (p. 13).

This is a very powerful critic of the arguments like the one advanced by Sachs & Warner, and I have little to add to it. In this paper, I try a different tack to “rehabilitate” Prebisch (and his intellectual comrades). In this paper, using historical evidence, I show that the Neo-Liberal critic of infant industry promotion is undermined also by the history of the developed countries themselves, given that almost all of them had used infant industry promotion in order to achieve development.

2. An Unconventional History of Capitalism: How the Developed Countries *Really* Got Rich

In this section, I examine the experiences of a range of now-developed countries (NDCs) – Britain, the USA, Germany, France, Sweden, Belgium, the Netherlands, Switzerland, Japan, Korea, and Taiwan – when they were catching-up economies and see what kinds of industrial, trade, and technology (ITT) policies they had used at the time. I show that in most of these countries, the policies that were used are actually almost the opposite of what the Neo-Liberal orthodoxy says they had uses and the currently developing countries should also use.

2.2.1. Britain

As the intellectual fountain of the modern *laissez faire* doctrines and as the only country that can claim to have practiced a total free trade at least at one point, Britain is widely regarded as having developed without significant state intervention. However, this cannot be further from the truth.

Britain entered its post-feudal age (13^{th}-14^{th} centuries) as a relatively backward economy. It relied on exports of raw wool and, to a lesser extent, of low-value-added wool cloth to the then more advanced Low Countries (Ramsay, 1982, p. 59; Davies, 1999, p. 348). Edward III (1312-1377) is believed to have been the first King who deliberately tried to develop local wool cloth manufacturing. He only wore English cloth to set an example[1], brought in the Flemish weavers, centralised trade in

[1] This is reminiscent of the policies used by Japan and Korea during the postwar period to control "luxury consumption", especially concerning imported luxury goods. On this, see Chang (1997). It is also said that George Washington insisted on wearing the then lower-quality American clothes rather than the then superior British one at his inauguration ceremony.

raw wool, and banned the import of woollen cloth (Davies, 1999, p. 349; also see Davis, 1966, p. 281).

Further impetus for the development of the wollen textile industry came with the infant industry promotion policy of the Tudor monarchs. The famous 18th century merchant, politician, and the author of the novel, *Robinson Crusoe*, Daniel Defoe, describes this policy in his now-almost-forgotten book, *A Plan of the English Commerce* (1728). In this book, he describes in some detail how the Tudor monarchs, especially Henry VII (1485 – 1509) and Elizabeth I (1533 – 1603), transformed England from a raw-wool exporter into the most formidable woollen manufacturing nation in the world (pp. 81-101).

According to Defoe, Henry VII put in place the schemes to promote British woollen manufacturing (from 1489), which included: sending royal missions to identify locations suited to wool manufacturing; poaching skilled workers from the Low Countries; increasing duties on the export of raw wool; and even temporarily banning the export of raw wool (Ramsay, 1982, provides further details). According to Defoe (pp. 97-8), by the time of Elizabeth I (1587), Britain had become so confident about its woollen textile industry's international competitiveness that it totally banned raw wool export.

It is difficult to establish the relative importance of the above-mentioned policies in explaining the British success in woollen manufacturing. However, it seems clear that, without the infant industry promotion strategy put in place by Henry VII and further pursued by his successors, it would have been very difficult, if not necessarily impossible, for Britain to make this initial success in industrialisation. And without this key industry, which accounted for at least half of its export revenue during the 18th century, its Industrial Revolution may have been next to impossible.

The most important even in Britain's industrial development, however, was the 1721 reform of the mercantile law introduced by Robert Walpole, the first British Prime Minister, during the reign of George I (1660-1727). Prior to this, the British government's policies were in general aimed at capturing trade and generating government revenue. Even the promotion of woollen manufacturing was partly motivated by the desire to generate more government revenue. In contrast, the policies introduced after 1721 were deliberately aimed at promoting manufacturing industries. Introducing the new law, Walpole stated, through the King's address to the Parliament: "it is evident that nothing so much contributes to promote the public well-being as the exportation of manufactured goods and the importation of foreign raw material" (as cited in List, 1885, p. 40).

The 1721 legislation, and the supplementary policy changes subsequently made, included the following measures (for details, see Brisco, 1907, pp. 131-3, p. 148-55, pp. 169-71; McCusker, 1996, p. 358; Davis, 1966, pp. 313-4). First of all, import duties on raw materials used for manufactures were lowered, or even altogether dropped. Second, duty drawbacks on imported raw materials for exported manufactures were increased. Third, export duties on most manufactures were abolished. Fourth, duties on imported foreign manufactured goods were raised. Fifth, export subsidies (then called "bounties") were extended to new export items like silk products and gunpowder, while the existing export subsidies to sailcloth and refined sugar were increased. Sixth, regulation was introduced to control the quality of manufactured products, especially textile products, so that unscrupulous manufacturers would not damage the reputation of British products in foreign markets. What is very interesting to note here is that the policies introduced by the

1721 reform, such as duty drawbacks on imports used for export production and state control on export quality, as well as the principles behind them, were uncannily similar to used by countries like Japan, Korea, and Taiwan during the postwar period (see section 2.7).

With the Industrial Revolution in the second half of the 18th century, Britain started widening its technological lead over other countries. However, even then it continued its policy of industrial promotion until the mid-19th century, when its technological supremacy became overwhelming. As we can see from table 1, Britain had very high tariffs on manufacturing products even as late as the 1820s, some two generations after the start of its Industrial Revolution, and when it was significantly ahead of its competitor nations in technological terms.

Table 1. Average Tariff Rates on Manufactured Products for Selected Developed Countries in Their Early Stages of Development

(weighted average; in percentages of value)[1]

	1820[2]	1875[2]	1913	1925	1931	1950
Austria[3]	R	15-20	18	16	24	18
Belgium[4]	6-8	9-10	9	15	14	11
Denmark	25-35	15-20	14	10	n.a.	3
France	R	12-15	20	21	30	18
Germany[5]	8-12	4-6	13	20	21	26
Italy	n.a.	8-10	18	22	46	25
Japan[6]	R	5	30	n.a.	n.a.	n.a.
Netherlands[4]	6-8	3-5	4	6	n.a.	11
Russia	R	15-20	84	R	R	R
Spain	R	15-20	41	41	63	n.a.
Sweden	R	3-5	20	16	21	9
Switzerland	8-12	4-6	9	14	19	n.a.
United Kingdom	45-55	0	0	5	n.a.	23
United States	35-45	40-50	44	37	48	14

Source: Bairoch (1993), p. 40, table 3.3.

Notes:
R= Numerous and important restrictions on manufactured imports existed and therefore average tariff rates are not meaningful.
1. World Bank (1991, p. 97, Box table 5.2) provides a similar table, partly drawing on Bairoch's own studies that form the basis of the above table. However, the World Bank figures, although in most cases very similar to Bairoch's figures, are *unweighted* averages, which are obviously less preferable to *weighted* average figures that Bairoch provides.
2. These are very approximate rates, and give range of average rates, not extremes.
3. Austria-Hungary before 1925.
4. In 1820, Belgium was united with the Netherlands.
5. The 1820 figure is for Prussia only.
6. Before 1911, Japan was made to keep low tariff rates (up to 5%) through a series of "unequal treaties" with the European countries and the USA. The World Bank table cited in note 1 above gives Japan's *unweighted* average tariff rate for *all goods* (and not just manufactured goods) for the years 1925, 1930, 1950 as 13%, 19%, 4%.

By the end of the Napoleonic War in 1815, however, there were increasing pressures for free trade in Britain from the increasingly confident manufacturers. Although there was a round of tariff reduction in 1833, the big change came in 1846,

when the Corn Law was repealed and tariffs on many manufacturing goods abolished (Bairoch, 1993, pp. 20-1).

The repeal of the Corn Law is these days commonly regarded as the ultimate victory of the Classical liberal economic doctrine over wrong-headed mercantilism. Although we should not under-estimate the role of economic theory in this policy shift, many historians point out that it is probably better understood as an act of "free trade imperialism" (the term is due to Gallagher & Robinson, 1953) intended to "halt the move to industrialisation on the Continent by enlarging the market for agricultural produce and primary materials" (Kindleberger, 1978, p. 196).[2] Indeed, many key leaders of the campaign to repeal the Corn Law, such as the politician Robert Cobden and John Bowring of the Board of Trade, saw their campaign precisely in such terms (Kindleberger, 1975, and Reinert, 1998).[3] Cobden's view on this is clearly revealed in the following passage:

> "The factory system would, in all probability, not have taken place in America and Germany. It most certainly could not have flourished, as it has done, both in these states, and in France, Belgium, and Switzerland, through the fostering bounties which the high-priced food of the British artisan has offered to the cheaper fed manufacturer of those countries" (*The Political Writings of Richard Cobden*, 1868, William Ridgeway, London, vol. 1, p. 150; as cited in Reinert, 1998, p. 292).

[2] See Semmel (1970) for a classic study of the role of economic theory in the development of British trade policy between 1750-1850.
[3] In 1840, Bowring gave the advice to the member states of German *Zollverein* that they should grow wheat and sell it to buy British manufactures (Landes, 1998, p. 521).

Symbolic the repeal of Corn Law may have been, it was only after 1860 that most tariffs were eliminated. And, as we know, the free trade regime did not last very long. By the early 20th century, re-introduction of protectionism was one of the hottest issues in British politics, as the country was rapidly losing its manufacturing advantage to the USA and Germany. The era of free trade ended when Britain finally acknowledged that it has lost its manufacturing eminence and re-introduced tariffs on a large scale in 1932 (Bairoch, 1993, pp. 27-8).

Thus seen, contrary to the popular belief, Britain's technological lead that enabled this shift to a free trade regime had been achieved "behind high and long-lasting tariff barriers" (Bairoch, 1993, p. 46). And it is for this reason that Friedrich List was so deeply disturbed by the British preaching for free trade and wrote the following passages, which completely contradicts the above-cited view of Sachs & Warner (1995) that infant industry argument is merely a rope that misinformed countries hang themselves with.

> "It is a very common clever device that when anyone has attained the summit of greatness, he *kicks away the ladder* by which he has climbed up, in order to deprive others of the means of climbing up after him. In this lies the secret of the cosmopolitical doctrine of Adam Smith, and of the cosmopolitical tendencies of his great contemporary William Pitt, and of all his successors in the British Government administrations.
>
> Any nation which by means of protective duties and restrictions on navigation has raised her manufacturing power and her navigation to such a degree of development that no other nation can sustain free

> competition with her, can do nothing wiser than *to throw away these ladders* of her greatness, to preach to other nations the benefits of free trade, and to declare in penitent tones that she has hitherto wandered in the paths of error, and has now for the first time succeeded in discovering the truth [italics added]" (List, 1885, pp. 295-6).

2.2.2. USA

As we have just seen, Britain was the first country to successfully launch a large-scale infant industry promotion strategy. However, its most ardent user was probably the USA – the eminent economic historian Paul Bairoch once called it "the mother country and bastion of modern protectionism" (Bairoch, 1993, p. 30).

This fact is, however, rarely acknowledged in the modern literature, especially coming out of the USA, and we are led to believe that the country developed thanks to free trade policy.[4] However, a careful and unbiased reading of the history reveals that the importance of infant industry protection in US development cannot be over-emphasised.

From the early days of colonisation, protection of domestic industry was a controversial policy issue in what later became the USA. To begin with, Britain did not want to industrialise the colonies and duly implemented policies to that effect.

[4] Even when the existence of high tariff is acknowledged, its importance is severely downplayed. For example, in what used to be the standard overview piece on US economic history until recently, North (1965) mentions tariffs only once, only to dismiss it as an insignificant factor in explaining the US industrial development He argues, without bothering to establish the case and by citing only one highly-biased secondary source (the classic study by F. Taussig, 1892), "while tariffs became

Around the time of the independence, the Southern agrarian interests opposed any protection, and the Northern manufacturing interests wanted it, represented by, among others, Alexander Hamilton, the first Secretary of the Treasury of the USA (1789-95).

Indeed, many point out that it was Alexander Hamilton in his *Reports of the Secretary of the Treasury on the Subject of Manufactures* (1791), and not Friedrich List as it is often thought, who first systematically set out the infant industry argument (Corden, 1974, ch. 8; Freeman, 1989; Reinert, 1996). In fact, as Henderson (1983) and Reinert (1998) point out, List started out as a free trade advocate and only converted to the infant industry argument following his exile in the US (1825-30). When he was in the US, he was exposed to the works of Alexander Hamilton and the then leading US economist and a strong advocate of infant industry protection, Daniel Raymond (p. 294) (for further details on List's life and work, see Henderson, 1983).

In his *Reports on Manufactures*, Hamilton argued that the competition from abroad and the "forces of habit" would mean that new industries that could soon become internationally competitive ("infant industries")[5] would not be started in the USA, unless the initial losses were guaranteed by government aid (Dorfman & Tugwell, 1960, pp. 31-2; Conkin, 1980, pp. 176-7). According to him, this aid could take the form of import duties or, in rare cases, prohibition of imports (Dorfman & Tugwell, 1960, p. 32). He also believed that duties on raw materials should be generally low (p. 32). Once again, we can see close resemblance between this view and the view espoused by Walpole (see above), which in turn is remarkably similar to what lies behind the postwar East Asian industrial policy.

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increasingly protective in the years after the Civil War, it is doubtful if they were very influential in affecting seriously the spread of manufacturing" (p. 694).

[5] Bairoch (1993, p. 17) credits Hamilton for inventing the term, "infant industry".

Initially, the US did not have a federal-level tariff system, but when the Congress acquired the power to tax, it passed a liberal tariff act (1789), imposing a 5% flat rate tariff on all imports, with some exceptions (Garraty & Carnes, 2000, pp. 139-40, p. 153; Bairoch, 1993, p. 33). Between 1792 and the war with Britain in 1812, the average tariff level remained around 12.5%, but in order to meet the increased government expenses due to the war with Britain in 1812, all tariffs were doubled (p. 210).

A significant shift in policy occurred in 1816, when a new law was introduced to keep the tariff level close to the wartime level – especially protected were cotton, woollen, and iron goods (Garraty & Carnes, 2000, p. 210; Cochran & Miller, 1942, pp. 15-6). Table 1 shows that the average tariff level for manufacturing products in the US in 1820 was around 40%.

Between 1824 and 1846, there was a constant struggle between the Northern manufacturers (sometimes allying with domestic-market-oriented raw material producers in the West) and the Southern agrarian interests (and the shipping industry) on the tariff issue (Bairoch, 1993; Garraty & Carnes, 2000; Cochran & Miller, 1942). During this period, particularly high protection was accorded to iron and textile goods.

There were some reductions in protection in 1846 and 1857. Bairoch describes the period between 1846 and 1861 as one of “modest protectionism” (p. 35). However, this “modesty” is only by the historical standards of the USA (see table 1). It must also be pointed out that, given the high transportation costs of the time (at least until the 1870s), the US tariff would have been a greater barrier to international trade than the European ones, even if both were nominally at the same level (which they were not).

However, the tension surrounding the tariff issue, as well as the slave issue, persisted between the North and the South, and finally culminated in the Civil War (1861-65) following the election of Lincoln as the president. The Civil War is commonly known to have been fought solely over the issue of slavery, but in fact tariff was another important issue.

In his early political career, Lincoln was a leading member of the hard-line protectionist Whig Party and an enthusiastic follower of the charismatic politician, Henry Clay. Clay advocated the "American System", which consisted of infant industry protection ("Protection for Home Industries") and infrastructural development ("Internal Improvements"), in explicit opposition to the "British System" of free trade, and Lincoln fully shared this view (Luthin, 1944, pp. 610-1; Frayssé, 1986, pp. 99-100).[6] During the 1860 election campaign, the Republicans in some protectionist states assailed the Democrats as a "Southern-*British*-Antitariff-Disunion party [italics added]" (Luthin, 1944, p. 616).

Although he was consistently anti-slavery, Lincoln had never before advocated forceful abolition of slavery, considered the blacks racially inferior, and was against black suffrage (Garraty & Carnes, 2000, pp. 391-2; Foner, 1998, p. 92). Given this, there was probably less to fear for the South on the slavery front than on the tariff front upon his election. Indeed, even in the early days of the Civil War, Lincoln made it clear that he was quite willing to allow slavery in the Southern states

[6] One of Lincoln's economic advisors was the famous protectionist economist Henry Carey (see below). Lincoln even appointed a close associate of Carey to a post in the Treasury in charge of tariffs, although Carey is known to have been frustrated by Lincoln's unwillingness to take things as far as he wanted (Luthin, 1944, pp. 627-9). Frustrated at this, Carey is reported to have said: "Protection made Mr. Lincoln president. Protection has given him all the success he has achieved, yet has he never, so far as I can recollect, bestowed upon her a single word of thanks. When he and she part company, he will go to the wall" (his letter to Noah Swayne, enclosed as a copy

for the preservation of the Union (Garraty & Carnes, p. 405).[7] He declared slave emancipation only in the autumn of 1862 as a strategic move to win the war rather than out of moral conviction (pp. 414-5).

In 1862, disguised as a "compensation" for the increased excise tax and the emergency income tax during the Civil War (so that the previous margin of protection could be maintained), a new tariff act was introduced. This raised the rates to "their highest level in thirty years" (Cochran & Miller, 1942, p. 106). In 1864, tariffs were raised even further to meet the war expenditures at the highest ever rates (but including many abuses). Tariffs remained at that level even after the War, although other internal taxes were repealed (p. 106). In this way, the victory of the North in the Civil War ensured that the US remained the most ardent practitioner of infant industry protection until the Second World War – with the notable exception of Russia in the early 20th century.

In 1913, following the Democratic electoral victory in 1912, there was a significant trade liberalisation, reducing average tariff on manufactured goods from 44% to 25% (Bairoch, 1993, p. 37). However, the First World War that shortly followed made this bill ineffective, and a new "emergency" tariff legislation was put in place by 1922, following the Republican return to power in 1921 (p. 38).

Following the onset of the Great Depression, there was the infamous 1930 Smoot-Hawley tariff, which the Neo-Liberals see as a dramatic and disastrous departure from its traditional free-trade policy (recall the quote from Bhagwati in

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in Swayne to Carey, Feb. 4, 1865, *Carey Papers*, Box 78; cited by Luthin (1944, p. 629).

[7] In response to a newspaper editorial urging immediate slave emancipation, Lincoln worte: "If I could save the Union without freeing any slave, I would do it; and if I could save it by freeing all the slaves, I would do it; and if I could do it by freeing some and leaving others alone, I would also do that" (Garraty & Carnes, 2000, p. 405).

section 1; also see the article by a former European Commissioner in charge of trade, de Clercq, 1998). However, this is a very misleading characterisation of the 1930 tariff. While the Smoot-Hawley tariff provoked an international tariff war due to bad timing, the fact is that it only marginally, if at all, increased the degree of protectionism in the US economy. As we can see from table 1, the average rate of tariff that resulted from this bill was 48%, which still fell within the range of the average rates that prevailed in the US since the Civil War, if in the upper region of it. It is only in relation to the brief "liberal" interlude of the 1913-1929 that the 1930 tariff bill can be interpreted as increasing protectionism, although even then not by very much. Table 1 shows that the average rate of tariff on manufactures in 1925 was 37% and rose to 48% in 1931.

It was only after the Second World War, with its industrial supremacy unchallenged, that the US liberalised its trade (although not as unequivocally as Britain did in the mid-19th century) and started championing the cause of free trade – once again proving List right on his "ladder-kicking" metaphor.[8]

What is interesting to note is that, during the 19th century, the US was not only the strongest bastion of protectionist policies but also was its intellectual home. Most of the more original US economists of the period, at least until the last quarter of the 19th century, were strong advocates of infant industry protection –Daniel Raymond, who influenced Friedrich List, Mathew Carey, and his son Henry, who was described

[8] However, it should be noted that USA never practiced free trade to the same degree as what Britain did in its free trade period (1860 to 1932). It never had a zero-tariff regime like the UK and it was much more aggressively in using "hidden" protectionist measures. These included: VERs (voluntary export restraints); quotas on textile and clothing (through the Multi-Fibre Agreement); protection and subsidies for agriculture (cf. the repeal of the Corn Law in Britain); and unilateral trade sanctions (especially through the use of anti-dumping duties).

as "the only American economist of importance" by Marx and Engels[9] and was one of Lincoln's (somewhat frustrated) economic advisors (see Kaplan, 1931, on Henry Carey's life and work). Unfortunately, most of these economists have now been airbrushed out of the history of US economic thought, but it was they, rather than the American Classical economists who were then regarded as second rate by the British standard, who were the more prominent intellectual figures of the time.

Many US intellectuals and politicians during the country's catch-up period clearly understood that the free trade theory advocated by the British Classical Economists was unsuited to their country. Reinert (1998) cites from List's work the comment by a US Congressman, a contemporary of List, who observed that English trade theory "like most English manufactured goods, is intended for export, not for consumption at home" (p. 296).[10] Indeed, List (1885) praises the Americans for not listening to influential economists like Adam Smith and Jean Baptiste Say, who had argued that infant industry protection would be a disaster for the resource-rich USA, and followed "common sense" and "the instinct of what was necessary for the nation" and proceeded to protect their industries (pp. 99-100).[11] The fact that the USA was, despite (or rather because of) being one of the most protectionist economies, the fastest growing economy in the world throughout the 19th century and up to the 1920s

[9] Letter to Weydemeyer, 5 March, 1852, in K. Marx & F. Engels, *Letters to Americans, 1848-95: A Selection* (New York: International Publishers, 1953). Cited from Frayssé (1994), p. 224, note 46.
[10] The original source is F. List, *Gesammelte Werke*, Vol. V., p. 338.
[11] Adam Smith, in his *Wealth of Nations*, argued: "Were the Americans, either by combination or by any other sort of violence, to stop the importation of European manufactures, and, by thus giving a monopoly to such of their own countrymen as could manufacture the like goods, divert any considerable part of their capital into this employment, they would retard instead of accelerating the further increase in the value of their annual produce, and would obstruct instead of promoting the progress of their country towards real wealth and greatness" (Smith, 1937 [1776], pp. 347-8).

(Bairoch, 1993, pp. 51-2) shows who was right (for further details on the assessment of US infant industry protection, see Chang, forthcoming, ch. 2).[12]

Important as it may have been, tariff protection was not the only policy deployed by the US government in order to promote the country's economic development during its catch-up phase.

It supported an extensive range of agricultural research by granting government land to agricultural colleges and establishing of government research institutes, and heavily invested in public education.[13] Even in the postwar era, the US federal government has played a very important role through large amount of defense-related R&D spending with enormous spill-over effects (Owen, 1966, ch. 9; Mowery & Rosenberg, 1993). The share of the US federal government in total R&D spending, which was only 16% in 1930 (Shapiro & Taylor, 1990, p. 866; Owen, 1966, pp. 149-50), stayed between one-half and two-thirds during the postwar years (Mowery & Rosenberg, 1993, table 2.3). Industries such as computers, aerospace, and the internet, where the US is still maintaining an international edge, would not have existed without defense-related R&D funding by the US federal government. The critical role of the US government's National Institutes of Health (NIH) in supporting R&D in

[12] Also, there is no evidence that the only significant reduction of protectionism in the US economy (between 1846 and 1861) had any noticeable positive impact on US development (Bairoch, 1993, pp. 51-2). O'Rourke (2000) shows some statistical evidence from 10 NDCs during the "liberal golden age" of 1875-1914, including the USA, that protection (measured by average tariff rates) was *positively* related to growth. The 10 countries are: Austria, Canada, Denmark, France, Germany, Italy, Norway, Sweden, the UK, and the USA

[13] In 1840, less than half of the total investment in education was public, whereas by 1900 almost 80% was public (Kozul-Wright, 1995, p. 101).

pharmaceutical and biotechnology industries and thus maintaining the US lead in these industries should also be mentioned.[14]

2.2.3. Germany

Germany is a country that is these days commonly known as the home of infant industry protection, both intellectually and in terms of policies. However, historically speaking, tariff protection actually played a much *less* important role in the economic development of Germany than that of the UK or the USA.

The tariff protection for industry in Prussia before the 1834 German customs union under its leadership (*Zollverein*) and that subsequently accorded to German industry in general remained mild (Blackbourn, 1997, p. 117). And the Prussian state constantly resisted political pressures for higher tariffs by other member states of *Zollverein* (Kindleberger, 1978, p. 196). In 1879, however, the Chancellor of Germany, Otto von Bismarck introduced a great tariff increase in order to cement the political alliance between the *Junkers* (landlords) and the heavy industrialists – the so-called "marriage of iron and rye". However, even after this, substantial additional protection was accorded only to the key heavy industries, especially the iron & steel industry, and industrial protection remained low in general (Blackbourn, 1997, p. 320). As it can be seen from table 1, the level of protection in German manufacturing was one of the *lowest* among comparable countries throughout the 19th century and the first half of the 20th century.

[14] Even according to the information provided by the US pharmaceutical industry association itself, only 43% of pharmaceutical R&D is funded by the industry itself, while 29% is funded by the NIH.

The relatively low tariff protection does not mean that the German state took a *laissez faire* approach to economic development. Especially under Frederick William I (1713-40) and Frederick the Great (1740-86) in the 18th century, the Prussian state pursued a range of policies to promote new industries – especially textiles (linen above all), metals, armaments, porcelain, silk, and sugar refining – by providing, among other things, monopoly rights, trade protection, export subsidies, capital investments, and skilled workers from abroad (Trebilcock, 1981, pp. 136-52).

From the early 19th century, the Prussian state also pioneered a less direct and more sophisticated forms of interventionism. One important example is government financing of road building in the Ruhr (Milward & Saul, 1979, p. 417). Another important example is educational reform, which not only involved building new schools and universities but also the re-orientation of their teaching from theology to science and technology – this at a time when science and technology was not taught in Oxford or Cambridge (Kindleberger, 1978, p. 191).[15]

There were some growth-retarding effects of Prussian government intervention in the first half of the 19th century, such as the opposition to the development of banking (Kindleberger, 1978, pp. 199-2000). However, on the whole, we cannot but agree with the statement by Milward & Saul (1979) that "[t]o successive industrialising countries the attitude taken by early nineteenth-century German governments seemed much more nearly in touch with economic realities than the rather idealised and frequently simplified model of what had happened in Britain or France which economists presented to them" (p. 418).

[15] The re-orientation of teaching is similar to what happened in Korea during the 1960s. During this time, the Korean government increased university places for science and technology subjects vis-à-vis humanities and social sciences. As a result, the ratio between these two subject groups changed from around 0.6 in the early 1960s to around 1 by the early 1980s. See You & Chang (1993) for further details.

After the 1840s, with the growth of the private sector, the involvement of the German state in industrial development became less pronounced (Trebilcock, 1981, p. 77). However, this did not mean a withdrawal of the state, rather a transition from a directive to a guiding role. During the Second Reich (1870 – 1914), there was a further erosion in state capacity and involvement in relation to industrial development. However, the importance of tariff policy and cartel policy for the development of heavy industries during this period cannot be under-estimated (Tilly, 1996). Moreover, during this period, Germany pioneered modern social policy, which was important in maintaining social peace (and thus promoting investment) in a newly-unified country that was politically, religiously, and regionally very divided.

2.2.4. France

Similar to the case of Germany, there is an enduring myth about French economic policy. This is the view, propagated mainly by British Liberal opinion, that France has always been a state-led economy – some kind of an anti-thesis to *laissez faire* Britain. This characterisation may largely apply to the pre-Revolutionary period and to the post-World-War-II period in the country's history, but not to the rest of it.

French economic policy in the pre-Revolutionary period – often known as *Colbertism*, named after Jean-Baptiste Colbert (1619-1683), the famous finance minister under Louis XIV – was certainly highly interventionist. For example, in the early 18th century, the French state tried to recruit skilled workers from Britain on a large scale and encouraged industrial espionage.[16]

[16] However, this attempt backfired and propelled the British to introduce a ban on the emigration of skilled workers, and especially on the attempt to recruit such workers for jobs abroad ("suborning") in 1719 (see Chang, 2001, for further details).

The Revolution, however, significantly upset this course. Milward & Saul (1979) argue that the Revolution brought about a marked shift in French government economic policy, because "the destruction of absolutism seemed connected in the minds of the revolutionaries with the introduction of a more *laissez-faire* system" (p. 284). Especially after the fall of Napoleon, the *laissez faire* policy regime got firmly established and persisted until the Second World War. The limitations of its *laissez faire* policy regime are regarded by many historians as one major source of the country's relative industrial stagnation during the 19th century (Trebilcock, 1981; Kuisel, 1981).

The best example is trade policy. Challenging the conventional wisdom that pitches free-trade Britain against protectionist France during the 19th century, Nye (1991) examines detailed empirical evidence and concludes that "France's trade regime was more liberal than that of Great Britain throughout most of the nineteenth century, even in the period from 1840 to 1860 [the alleged beginning of full-fledged free trade in Britain]" (p. 25). Table 2.2, which comes from Nye (1991), shows that, when measured by net customs revenue as a percentage of net import values (which is a standard measure of protectionism, especially among the historians), France was always less protectionist than Britain between 1821 and 1875, and especially until the early 1860s.

Table 2. Protectionism in Britain and France, 1821-1913
(measured by net customs revenue as a percentage of net import values)

Years	Britain	France
1821-1825	53.1	20.3
1826-1830	47.2	22.6
1831-1835	40.5	21.5
1836-1840	30.9	18.0
1841-1845	32.2	17.9
1846-1850	25.3	17.2
1851-1855	19.5	13.2
1856-1860	15.0	10.0
1861-1865	11.5	5.9
1866-1870	8.9	3.8
1871-1875	6.7	5.3
1876-1880	6.1	6.6
1881-1885	5.9	7.5
1886-1890	6.1	8.3
1891-1895	5.5	10.6
1896-1900	5.3	10.2
1901-1905	7.0	8.8
1906-1910	5.9	8.0
1911-1913	5.4	8.8

Source: Nye (1991), p. 26, Table 1.

What is interesting to note is that the partial exception to this century-and-half-long period of "liberalism" in France, that is the rule of Napoleon III (1848-70), was the only period of economic dynamism in France during this period (Trebilcock, 1981, p. 184). Under Napoleon III, the French state actively encouraged infrastructural developments and established various institutions of research and teaching (Bury, 1964, ch. 4). It also contributed to the modernisation of the country's financial sector by granting limited liability to, investing in, and overseeing modern, large-scale financial institutions like *Credit Mobilier*, *Credit Foncier* (the Land Bank)[17], and *Credit Lyonnais* (Cameron, 1963).

[17] Cameron (1963) describes Crédit Foncier as being "virtually an agency of the government" (p. 462).

On the trade policy front, Napoleon III signed the famous Anglo-French trade treaty (the Cobden-Chevalier treaty) of 1860, which reduced French tariffs quite substantially and heralded the period of trade liberalism on the Continent (1860-79) (see Kindleberger, 1975, for further details on the making of the treaty). However, as we can see from table 2, the degree of protectionism in France was already quite low on the eve of the treaty (it was actually *lower* than in Britain at the time), and therefore the reduction in protectionism that resulted from this treaty was relatively small.

The treaty was allowed to lapse in 1892 and many tariff rates, especially the ones on manufacturing, were raised afterwards. However, this had little positive effects of the kind that we saw in the similar move in countries like Sweden at the time (see section 2.5 below), because there was no coherent industrial upgrading strategy behind this tariff increase. If anything, the new tariff regime was actually *against* such thing – the author of this tariff regime, the politician Jules Méline, was explicitly against large-scale industrialisation, in the belief that France should remain a country of independent farmers and small workshops (Kuisel, 1981, p. 18).

Especially during the Third Republic, the French government was almost as *laissez faire* in its attitude towards economic matters as the then very *laissez faire* British government. Given its political instability and divisions, the country was basically run by the permanent bureaucracy, which was dominated by the very conservative and technocratic Ministry of Finance (Kuisel, 1981, pp. 12-3).

It was only after the Second World War that the French elite got galvanised into re-organising their state machinery in order to address the problem of the country's (relative) industrial backwardness. During this time, especially until the late 1960s, the French state used indicative planning, state-owned enterprises, and (what is

these days somewhat misleadingly known as) “East-Asian-style” industrial policy in order to catch up with the more advanced countries. As a result, France witnessed a very successful structural transformation of its economy, and finally overtook Britain both in terms of output and (in most areas of) technology (for the postwar French experience, see, among others, Shonfield, 1965, Cohen, 1977, and Hall, 1986).

2.2.5. Sweden

Sweden, despite its reputation as *the* “small *open* economy” during the postwar period, did not enter its modern age with a free trade regime. After the end of the Napoleonic wars, its government enacted a strongly protective tariff law (1816), and banned the imports and exports of some items (Gustavson, 1986, p. 15).

However, from about 1830 on, protection was progressively lowered (p. 65). Especially after the 1857 abolition of tariffs on foodstuffs, raw materials, and machines, a very low tariff regime was maintained until the end of the 19th century (Bohlin, 1999, p. 155). As we can see in table 1, around 1875, Sweden had one of the lowest tariff rates in the major economies listed in the table.

This free trade phase, however, was short-lived. Sweden started using tariffs as a means to protect the agricultural sector from American competition since around 1880. After 1892, it also provided tariff protection and subsidies to the industrial sector, especially the newly-emerging engineering sector (Chang & Kozul-Wright, 1994, p. 869; Bohlin, 1999, p. 156).

Despite (or rather because of) this switch to protectionism, the Swedish economy performed extremely well in the following decades. According to a calculation by Baumol et al. (1990), Sweden was, after Finland, the second fastest

growing (in terms of GDP per work-hour) of the 16 major industrial economies between 1890 and 1900 and the fastest growing between 1900 and 1913 (p. 88, table 5.1).[18] The tariff protection of the late 19th century was particularly successful because it was combined with industrial subsidies as well as supports for R&D aimed at encouraging the adoption of new technologies (Chang & Kozul-Wright, 1994, p. 871; also see Heckscher, 1954, p. 259).

Tariff protection and subsidies were not all that Sweden used in order to promote industrial development. More interestingly, during the late 19th century, Sweden developed a tradition of close public-private cooperation to the extent that was difficult to find parallel in other countries at the time, including Germany with its long tradition of public-private partnership (see section 2.3).

This cooperative relationship first developed out of state involvement in the agricultural irrigation and drainage schemes (Samuelsson, 1968, pp. 71-6). This was then applied to the development of railways from the 1850s, telegraph and telephone in the 1880s, and hydro-electric energy in the 1890s (Chang & Kozul-Wright, 1994, pp. 869-70; Bohlin, 1999, pp. 153-5). Public-private collaboration also existed outside the infrastructural sector, such as the iron industry (Gustavson, 1986, pp. 71-2; Chang & Kozul-Wright, 1994, p. 870). Interestingly, all these resemble the patterns of public-private collaboration for which the East Asian economies later became famous (Evans, 1995, is a classic work on this issue).

The Swedish state made great efforts in facilitating the acquisition of advanced foreign technology, including through state-sponsored industrial espionage.

[18] The 16 countries are, in alphabetical order, Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, the UK, and the USA.

However, more notable was its emphasis on the accumulation of what the modern literature calls “technological capabilities” (see Fransman & King (eds.), 1984, and Lall, 1992, for pioneering works on this issue). It provided stipends and travel grants for studies and research, invested in education, helped the establishment of technological research institutes, and provided direct research funding to industry (Chang & Kozul-Wright, 1994, p. 870).

Swedish economic policy underwent a significant change since the electoral victory of the Socialist Party in 1932 (which has been out of the office for less than 10 years since then) and the signing of the “historical pact” between the union and the employer’s association in 1936 (the *Saltsjöbaden* agreement) (see Korpi, 1983, Pontusson, 1992, and Pekkarinen et al. (eds.), 1992). The policy regime that emerged after the 1936 pact initially focused on the construction of a system where the employers will finance a generous welfare state and high investment in return for wage moderation from the union.

After the Second World War, use was made of the regime’s potential for promoting industrial upgrading. In the 1950s and the 1960s, the centralised trade union, LO (*Landsorganisationen i Sverige*) adopted the so-called Rehn-Meidner Plan (LO, 1963, is the document that set out the strategy in detail). This introduced the so-called solidaristic wage policy, which explicitly aimed to equalise wage across industries for the same types of workers. It was expected that this would generate pressure on the capitalists in low-wage sectors to upgrade their capital stock or shed labour, while allowing the capitalists in the high-wage sector to retain extra profit and expand faster than it would otherwise have been possible. This was complemented by the so-called “active labour market policy”, which provided retraining and relocation

supports to the workers displaced in this process of industrial upgrading. It is widely accepted that this strategy contributed to Sweden's successful industrial upgrading in the early postwar years (Edquist & Lundvall, 1993, p. 274).

Sweden's postwar industrial upgrading strategy based on the combination of solidaristic wage bargaining and active labour market policy differ quite a lot from the strategies adopted by other countries that we discuss. However, despite their differences, both types of strategy share are in fact based on similar understanding of how real world economies work. They are both based on the belief that a shift to high value-added activities is crucial for a nation's prosperity, and that, if left to the market forces, this shift may not happen at a socially desirable rate.

2.2.6. Other Small European Economies

A. Belgium

We have already talked about the dominance of the woollen industry of the Low Countries up to the 15th century, which was concentrated in what later became Belgium. The Belgian woollen industry subsequently went into a relative decline, not least because of the competition from protected British producers, but the country still maintained industrial strengths and was the second country to start the Industrial Revolution after Britain. Although it lost some of its technological edge to its competitors by the middle of the 19th century (p. 446), it still remained one of the most industrialised and richest countries in the world, specialising in industries like textile, steel, non-ferrous metals, and chemicals (Hens & Solar, 1999, p. 195). Not least because of this technological superiority, Belgium remained one of the less

protected economies throughout most of the 19th century and the early 20th century (table 1).

However, before this period, Belgium was quite a lot more protectionist than the Netherlands or Switzerland (see below; also see Bairoch, 1993, p. 22). During the first three-quarters of the 18th century, the Austrian government that then ruled what was later to become Belgium strongly protected it from the British and the Dutch competition (Dohndt & Bruwier, 1973, pp. 350-1) and invested in a range of infrastructure (Van der Wee, 1996, p. 65). During the early 19th century, it was subject to active ITT policies as part of the United Kingdom of the Netherlands (1815-30) under William I (see below). And until the 1850s, some industries were quite heavily protected – tariffs reached 30-60% for cotton, woollen, and linen yearn, and 85% on iron (see Milward & Saul, 1977, p. 174).

B. The Netherlands

The Netherlands was, as it is well known, one of the world's dominant naval and commercial powers during the 17th century, its so-called "Golden Century", when the Dutch East India Company outshone the British East India Company. However, its naval and commercial strength showed a marked decline in the 18th century, the so-called "Periwig Period" (*Pruikentijd*), with its defeat in the 1780 Fourth Anglo-Dutch War marking the symbolic end to its international supremacy (Boxer, 1965, ch. 10).

It is not simple to explain, like most historical events, why the Netherlands failed to translate its naval and commercial strengths into industrial and overall economic domination (for further discussions, see Wright, 1955; Boxer, 1965; Kindleberger, 1990 and 1996). Whatever the exact cause was, the Netherlands failed

to industrialise to the same extent as its competitor countries – Britain, Germany, and Belgium. Nevertheless, thanks to the strengths of its commercial network, it remained one of the richest countries in the world until the early 20th century (Dhont & Bruwier, 1973, p. 329, p. 355).

One exception to the policy paralysis that seemed to have gripped the Netherlands between the late 17th century and the early 20th century was the effort by King William I (1815-1840). King William I established many agencies providing subsidised industrial financing (Kossmann, 1978, pp. 136-8; van Zanden, 1996, pp. 84-5). During the 1830s, strong state support was also provided for the development of modern cotton textile industry, especially in the Twente region (Henderson, 1972, pp. 198-200).

However, from the late 1840s, the country reverted to a *laissez faire* regime, which lasted until at least the First World War, and to an extent until the Second World War. First of all, as we can see in table 1, except for Britain in the late 19th century and Japan before the restoration of tariff autonomy, the Netherlands remained the least protected economy among the NDCs. Second, the country abolished the patent law (which was first introduced in 1817) in 1869, inspired by the anti-patent movement that swept Europe at the time, which condemned patent as just another form of monopolcy – this movement in fact had a strong association with the free trade movement (Schiff, 1971, Machlup & Penrose, 1950). Despite international pressures, the country refused to re-introduce the patent law until 1912.

On the whole, during this extreme *laissez faire* period, the Dutch economy remained rather sluggish, and its industrialisation remained relatively shallow. According to the authoritative estimate by Maddison (1995), measured in 1990

dollars, it was the second richest country in the world after the UK in 1820, after a century of relative decline ($1,756 vs. $1,561). However, a century later (1913), it was overtaken by no less than 6 countries – Australia, New Zealand, USA, Canada, Switzerland, and Belgium – and almost nearly by Germany. Germany's per capita income was only about 60% that of the Netherlands in 1820 ($1,561 vs. $1,112), but it was only a shade below the latter ($3,950 vs. $3,833) by 1913.

It was largely for this reason that the end of World War II saw the introduction of more interventionist policies (van Zanden, 1999, pp. 182-3). Especially up to 1963, rather active industrial policy was practiced. This included things like financial supports for two large firms (one in steel, the other in soda), subsidies to industrialise backward areas, encouragement of technical education, encouraging the development of the aluminium industry through subsidised gas, and the development of key infrastructures (van Zanden, 1999, pp. 183-4).

C. Switzerland

Switzerland was one of the earliest industrialisers of Europe. Biucchi (1973) argues that the Industrial Revolution of Switzerland started barely 20 years later than that in Britain (p. 628). And by 1850, like Belgium, Switzerland was one of the most industrialised economies in the world (p. 464), although the heterogenous and decentralised nature of the country meant that the degree of industrialisation remained uneven across the *cantons*.

Especially the cotton industry experienced an incredible development in the 1820s and the 1830s. Switzerland was a world technological leader in a number of important industries (Milward & Saul, pp. 454-455), especially in the cotton textile

industry, where it was deemed technologically more advanced in many areas than Britain (Biucchi, 1973, p. 629).

Given this very small technological gap with the leader country (if at all), infant industry protection was not very necessary for Switzerland. Also, given its small size, protection would have been more costly for the country than what it would been the case for bigger countries. Moreover, given the country's highly decentralised political structure and very small size, there was little room for centralised infant industry protection (Biucchi, 1973, p. 455).

Biucchi (1973) argues that free trade was the most important aspect of Swiss economic policy at least from the 16th century (p. 628). However, he admits that the "natural" protection from British competition accorded by Napoleon's intervention provided a critical "breathing space" to the Swiss textile industry (pp. 630-1). Moreover, Switzerland's *laissez faire* policy did not necessarily mean that its government had no sense of strategy in its policy-making. Its refusal to introduce a patent law until 1907, despite strong international pressure, is such an example. This anti-patent policy is argued to have contributed to the development of a number of industries. Especially affected by this were the chemical and pharmaceutical industries, which actively "stole" technologies from Germany, and the food industry, where the absence of patents actually encouraged foreign direct investment (see Schiff, 1971, and Chang, 2001).

2.2.7. Japan and the East Asian NICs

Japan came to the industrial scene rather late. It was forced open by the Americans in 1853 (the infamous "Black Ship" incident). Soon after, the feudal

political order collapsed and a modernising regime was established after the so-called Meiji Restoration of 1868. The role of the Japanese state since then has been crucial in the country's development.

In the earlier days of its development, Japan was *not* able to use trade protection, as the series of "unequal treaties" that it was forced to sign upon opening up barred it from having tariff rates over 5%. For example, as we can see in table 1, the average rate of tariff on manufactured products in Japan in 1875 was 5%, when the US, despite having a much smaller technological gap with Britain, boasted up to 50% average tariff rate. Therefore, the Japanese government had to use other means to encourage industrialisation until it recovered tariff autonomy, which happened only in 1911.

Initially, the Japanese state established state-owned "model factories" (or "pilot plants") in a number of industries – notably in shipbuilding, mining, textile, and military industries (see Smith, 1955, and Allen, 1981, for further details). Although most of these were soon sold off to the private sector at discounted prices, this did not mean the end of state involvement in the industry (McPherson, 1987, p. 31, pp. 34-5). For example, in the 1870s and the 1880s, most state shipyards were privatised but even after privatisation they were given large subsidies. The first modern steel mill was also established by the government in 1901 (The State Yawata Iron Works) (McPherson, 1987, p. 31). State involvement in large-scale projects, however, did not stop with model factories but extended to infrastructural development such as railways (McPherson, 1987, p. 31) and telegraph (Smith, 1955, pp. 44-5).

Following the ending of the unequal treaties, the post-Meiji Japanese state started introducing a range of tariff reforms intended to protect infant industries, make imported raw materials more affordable, and control luxury consumption goods

(McPherson, 1987, p. 32). During the 1920s, under strong German influence (Johnson, 1982, pp. 105-6), it started encouraging "rationalisation" of key industries by sanctioning cartel arrangements and encouraging mergers, which were aimed at restraining "wasteful competition", achieving scale economies, standardisation, and the introduction of scientific management (McPherson, 1987, pp. 32-3). These efforts were intensified and government control over cartels strengthened in the 1930s (Johnson, 1982, pp. 105-115).

Despite all these developmental efforts, during the first half of the 20th century, Japan was on the whole not the economic super-star that it became after World War II. According to the authoritative study by Maddison (1989), between 1900 and 1950, Japan's per capita income growth rate was only 1% p.a.. This was somewhat below the average for the 16 largest now-OECD economies that he studied, which was 1.3% p.a.[19] – although it must be noted that part of this rather poor performance was due to the dramatic collapse in output following the defeat in the Second World War.[20]

After World War II, however, especially until the 1970s, Japan's growth record was unrivalled (all the information in this paragraph come from Maddison, 1989, p. 35, Table 3.2). Between 1950 and 1973, per capita GDP in Japan grew at a staggering 8%, more than double the 3.8% average achieved by the 16 NDCs mentioned above (the average includes Japan). The next best performers among the

[19] The 16 countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Norway, Sweden, Switzerland, the UK, and the USA.

[20] Japanese GDP (not per capita) in 1945 is estimated to have fallen to 48% of the peak reached in 1943. This was, however, less dramatic than what Germany experienced, where 1946 GDP was only 40% of the peak reached in 1944 or Austria,

NDCs were Germany, Austria (both at 4.9%) and Italy (4.8%), while even the East Asian "miracle" developing countries like Taiwan (6.2%) or Korea (5.2%) came nowhere near Japan, despite the bigger "convergence" effect that they could expect given their greater backwardness.

There has been long and ideologically-charged debate about the causes of economic "miracle" in postwar Japan and East Asian NICs over the last 2-3 decades. Despite remaining disagreements, there is now a broad consensus that the spectacular growths of these countries (except Hong Kong) fundamentally owe to activist industrial, trade, and technology (ITT) policies by the state.[21]

Surveying the postwar experiences of the East Asian countries, we are once again struck by the similarities between their ITT policies with those used by other NDCs before them, starting from 18th century Britain, through to 19th century US, and to late-19th and early-20th century Germany and Sweden. However, it is also important to note that they have not exactly copied the policies that the more advanced countries had used earlier. The ITT policies used by the East Asian countries (and indeed those used by some other NDCs like France) during the postwar period were a lot more sophisticated and fine-tuned than their historical equivalents.

For example, they used more substantial and better-designed export subsidies (both direct and indirect) and much less (actually very little) export taxes than in the earlier cases (Luedde-Neurath, 1986; Amsden, 1989; World Bank, 1993). As I have repeatedly pointed out, tariff rebates for imported raw materials and machinery for

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where the 1945 GDP was only 41% of the peaks reached in 1941 and 1944. See Maddison (1989, pp. 120-1, Table B-2).

[21] There is an extensive literature on this now. See Johnson (1982), Johnson (ed.) (1984), Dore (1986), Thompson (ed.) (1989), Amsden (1989), Wade (1990), and Chang (1993), for the earlier phase of the debate. See World Bank (1993), Singh (1994), Lall (1994), Stiglitz (1996), Wade (1996), and Chang (1999), for the more recent phase

export industries – a method that many NDCs, notably Britain, had used to encourage exports – were widely used (Lueede-Neurath, 1986; Chang, 1993).

Coordination of complementary investments, which had been previously done, if ever, in a rather haphazard way, was systematised through indicative planning and government investment programmes (Chang, 1993 and 1994). Regulations of firm entry, exit, investments, and pricing were implemented in order to "manage competition" in such a way that reduces "wasteful competition" (Amsden & Singh, 1994; Chang, 1994 and 1999). Once again, these regulations had some reflection of the late-19th and early-20th century cartel policies, but were a lot more aware of the dangers of monopolistic abuse and more sensitive to its impact on export market performance, when compared to their historical counterparts. There were also subsidies and restriction of competition intended to help technology upgrading and the smooth-winding down of declining industries (Dore, 1986; Chang, 1999).

The East Asian governments also integrated human-capital- and learning-related policies into their industrial policy framework a lot more tightly than their predecessors did, through "manpower planning" (You & Chang, 1993). Technology licensing and foreign direct investments were regulated in a way that was intended to maximise technology spill-over in a more systematic way (Chang, 1998a). There were serious attempts to upgrade the country's skill base and technological capabilities through subsidies to (and public provision of) education, training, and R&D (Kim, 1993; Hou & Gee, 1993; Lall & Teubal, 1998; Chang & Cheema, 2001).[22]

[22] With the recent crisis in Korea and the prolonged recession in Japan, it has become popular to argue that activist ITT policies have been proved mistaken. While this is not a place to go into this debate, a few points may be made (for a criticism of this view, see Chang, 1999 and 2000). First of all, whether or not we think the recent troubles in Japan and Korea are due to activist ITT policies, we cannot deny that these policies were behind their "miracle". Second, Taiwan, despite having used activist ITT policies, did not experience any financial or macroeconomic crisis. Third, all

3. A Summary: Some Historical Myths and Facts

A. (Almost) Every Successful Country Used Infant Industry Protection and Other Activist ITT Policies When They Were "Catching-up" Economies.

My discussion in this paper reveals that almost all NDCs had adopted some form of infant industry promotion strategy when they were in catching-up positions. Tariff protection was in many countries a key component of this strategy, but was by no means the only, or not even necessarily the most important, component in the strategy. Interestingly, it was the UK and the USA, the supposed homes of free trade policy, which used tariff protection most aggressively (see sections B and C below).

The apparent exceptions to this historical pattern among the countries I have reviewed are Switzerland and the Netherlands. However, these were countries that stood very close from (or even at) the world's technological frontier throughout the period of European Industrial Revolution (see section 2.6 for details), which meant that they *did not need* much infant industry protection.

Of course, against all these, it may be said that the NDCs industrialised independently of, or even despite, activist ITT policies. When many historical events are "over-determined" in the sense that there are more than one plausible explanatory factors behind, it is inherently difficult to "prove" that activist ITT policies, or for that

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informed observers of Japan, regardless of their views, agree that the country's current recession cannot be attributed to government industrial policy – it has more to do with factors like structural savings surplus, ill-timed financial liberalisation (that led to the bubble economy), and macroeconomic mismanagement. Fourth, in the case of Korea, industrial policy was largely dismantled by the mid-1990s, when the debt build-up that led to the recent crisis started, so it cannot be blamed for the crisis. Indeed, it may be argued that, if anything, the demise of industrial policy contributed

matter any other factor, was the key to the success of these countries them. However, it seems to be a remarkable coincidence that so many countries that had used such policies, down from 18th century Britain to 20th century Korea, have been industrial successes, especially when such policies are supposed to be very harmful according to the orthodox argument.

B. The Myth of Britain as a Free-Trade, *Laissez-Faire* Economy

Contrary to the popular myth, Britain had been an aggressive user, and in certain areas a pioneer, of activist ITT policies intended to promote infant industries until it so clearly established its industrial hegemony in the mid-19th century and adopted free trade.

Such policies, although limited in scope, date back from the 14th century (Edward III) and the 15th century (Henry VII) in relation to woollen manufacturing, the leading industry of the time. And between the 1721 trade policy reform of Walpole and the repeal of the Corn Law in 1846, Britain used many "East-Asian-style" ITT policies – such as export subsidies and import tariff rebates on inputs used for exporting. In addition, it should be noted that even its free trade policy was partly motivated by its desire to promote its industries. Many leading campaigners for free trade, including their leader Richard Cobden, believed that free imports of agricultural products by Britain will discourage manufacturing in the competitor countries, which would not have developed without the presence of the British Corn Law.

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to the making of the crisis by making "duplicative investments" easier (see Chang, 1998b; Chang et al., 1998).

C. The USA as "The Mother Country and Bastion of Modern Protectionism"

It was the US, and not Germany as it is commonly believed, that actually first systematised the logic of infant industry promotion that Britain had used so effectively in order to engineer its industrial ascent. The first systematic arguments for infant industry were developed by American thinkers like Alexander Hamilton and Daniel Raymond, while Friedrich List, the supposed intellectual father of infant industry protection argument, first learned about the argument during his exile in the USA.

The US government put this logic into practice more diligently than any other country for over a century (1816-1945). During this period, the USA had one of the highest average tariff rates on manufacturing imports in the world. Given that the country enjoyed an exceptionally high degree of "natural" protection due to high transportation costs at least until the 1870s, it seems reasonable to say that the US industries were literally the most protected in the world throughout its industrial catching-up. There is a point when the maverick American right-wing populist politician Pat Buchanan says that free trade is an "un-American" thing.

It is certainly true that the US industries did not necessarily need all the tariff protections that were put in place and that many tariffs outlived their usefulness. However, it is also clear that the US economy would not have got where it is today without strong tariff protection at least in some key infant industries. The role of the US government in infrastructural development and supporting R&D, which is still continuing, also need to be noted.

D. The Myth of France as the *Dirigiste* Counterpoint to *Laissez-faire* Britain

Pre-Revolutionary French state was actively involved in industrial promotion. However, this "Colbertist" tradition got largely suppressed due to the libertarian ideologies of the French Revolution and the ensuing political stalemate that produced a series of weak and visionless (if not actively backward-looking) governments over the following century and half.

Thus, despite its public image as an inherently *dirigiste* country, France ran a more *laissez faire* policy regime in many ways than either Britain or especially the USA throughout most of the 19th century and the first half of the 20th century. For example, between the 1820s and the 1860s, the degree of protectionism remained *lower* in France than in Britain.

The *laissez-faire* period in French history was largely associated with the country's relative industrial and technological stagnation – a fact that indirectly proves the validity of the infant industry argument. It is largely because of the country's industrial success through a decidedly interventionist strategy pursued after the Second World War that the country has come to acquire its current image as an inherently interventionist one.

E. The Limited Use of Trade Protection in Germany

Despite its frequent identification as the home of infant industry protection, Germany never really used tariff protection extensively. Until the late 19th century, it had one of the most liberal trade regimes in the world, although some key heavy industries received rather substantial tariff protection.

However, this does not mean that the German state was a *laissez faire* one. As best manifested in the early Prussian experience, infant industries were promoted

through means other than tariffs – state investment, public-private cooperation, and various subsidies.

Subsequent development of the private sector, partly due to the very success of such attempts, made direct state intervention unnecessary and unpopular. However, the state still played an important "guiding" role in some key heavy industries in the late 19th and the early 20th centuries (which during this time were also given strong tariff protection). This is also when the German state pioneered the establishment of social welfare institutions in an attempt to diffuse revolutionary agitation and establish social peace.

Therefore, while it can hardly be described as the same kind of *laissez faire* regime as the French one of the 19th and early 20th centuries, state intervention in Germany's main catching-up period was not as extensive as some people think, especially in relation to tariff protection.

F. Sweden was Not Always the "Small Open Economy" that It Came to Represent Later.

Although probably not as surprising as the above cases, the Swedish experience also contains some myths that need dispelling.

Sweden's tariff protection during its catch-up period was in general not extensive despite its economic backwardness. However, the Swedish state seems to have used tariff protection strategically – to promote the textile industry in the early 19th century and to promote the mechanical and electrical industries in the late 19th century. It is interesting to note that its tariff regime for the textile industry in the early 19th century was a classic late-20th-century "East Asian", or rather 18th-century

British, promotional strategy – high tariffs on final products, low tariffs on raw material imports.

One more thing to note is that Sweden also developed interesting forms of public-private cooperation in infrastructural development and in some key industries (especially iron) from early on. This public-private cooperation is surprisingly similar to what we find in East Asia during the postwar period. Its early emphasis on education, skill formation, and research is also notable.

G. State Activism in Early Modern Japan was Limited due to External Constraints.

When it first opened up and embarked on modern industrial development, Japan could not use tariff protection to promoted new industries because of the unequal treaties that it was forced to sign, which bound its tariff rate at below 5%. Other means for industrial promotion had to be found, and so the Japanese state set up model factories in key industries, provided subsidies to key industries, and invested in infrastructure and education. However, given the importance of tariff as a tool for industrial promotion at the time (when other policy tools were not invented yet and/or considered "too radical"), its lack of tariff autonomy was a serious handicap.

It was only in the early 20th century, with the termination of the unequal treaties in 1911, that Japan could establish a more comprehensive industrial development strategy that included tariff protection as a key element. The vastly superior performance of Japan during the postwar period, when it came up with an impressive array of "innovation" in ITT policy tools, also shows how the ability to use a wider range of policy tools can make state intervention more effective. Basically the same picture is found in Korea and Taiwan.

H. "Poachers Turn Gamekeepers": Policies Shift with Development

One important fact that emerges from our discussion in this paper is that the NDCs shifted their policy stances according to their relative position in the international competitive struggle. Part of this is deliberate "ladder-kicking", as List put it, but it also seems to be due to natural human tendency to re-interpret the past from the present's point of view.

When they were in catching-up positions, they protected infant industries, poached skilled workers and smuggled contraband machines from the more developed countries, engaged in industrial espionage, and willfully violated patents and trademarks. However, once they joined the league of the most developed nations, they started advocating free trade, prevented outflow of skilled workers and technologies, and became strong protectors of patents and trademarks. In this way, poachers have turned gamekeepers with a somewhat disturbing historical regularity (see Chang, forthcoming, chapter 2, for further details).

Britain in the 19th century upset many people, especially the Germans and the Americans, who regarded the British preaching for the virtues of free trade as hypocritical, given that Britain used infant industry protection measures more strongly than any other country during the 18th century. One may express the same sentiment today, when the American trade negotiators preach the virtues of free trade or when the Swiss pharmaceutical firms argue for strong protection of intellectual property rights.

I. Comparison with Today's Developing Countries

Those few Neo-Liberal economists who are aware of the records of protectionism in the NDCs try to avoid the obvious conclusion (namely, it can be very useful for economic development) by aruging that, while some (minimal) tariff protection may be necessary, most developing countries have been practising it beyond reason.

In their classic work, Little et al. (1970) argues that "[a]part from Russia, the United States, Spain, and Portugal, it does not appear that tariff levels in the first quarter of the twentieth century, when they were certainly higher for most countries than in the nineteenth century, usually afforded degrees of protection that were much higher than the sort of degrees of promotion for industry which we have seen, in the previous chapter, to be possibly justifiable for developing countries today [which they argue to be at most 20% even for the poorest countries and virtually zero for the more advanced developing countries]" (pp.163-4). Similarly, World Bank (1991) argues that "[a]lthough industrial countries did benefit from higher natural protection before transport costs declined, the average tariff for twelve industrial countries[23] ranged from 11 to 32 percent from 1820 to 1980 … In contrast, the average tariff on manufactures in developing countries is 34 percent" (p. 97, Box 5.2).

This argument sounds reasonable enough, especially when we consider the fact that tariff figures are likely to underestimate the degree of infant industry promotion in today's developing countries when compared to those for the NDCs in earlier times. Governments in today's developing countries tend to use a wider range of policy tools for infant industry promotion, although some of these tools (e.g.,

[23] They are Austria, Belgium, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden, Switzerland, the UK, and the USA.

export subsidies except for the poorest countries) have been "outlawed" by the WTO.[24]

However, the above argument is highly misleading in one important sense. The problem with it is that the productivity gap between today's developed countries and the developing countries is much greater than what existed between the more developed NDCs and the less developed NDCs in earlier times. This means that the currently developing countries need to impose much higher rates of tariff than those used by the NDCs in earlier times, if they are to provide the same degree of actual protection to their industries as the ones accorded to the NDC industries in the past.[25]

According to Maddison's estimate, throughout the 19th century, the ratio of per capita income in PPP terms between the poorest NDCs (say, Japan and Finland) and the richest NDCs (say, the Netherlands and the UK) was about 2 or 4 to 1.[26] This is nowhere as big as the gap between the contemporary developing countries and developed countries. Recent data from the World Bank website show that in 1999 the gap in per capita income in PPP terms, between the most developed countries (e.g., Switzerland, Japan, the USA) and the least developed ones (e.g., Ethiopia, Malawi, Tanzaina) is in the region of 50 to 60 to 1. Middle-level developing countries like Nicaragua ($2,060), India ($2,230), and Zimbabwe ($2,690) have to contend with

[24] For an assessment of the additional constraints imposed by the WTO agreement on policy choice by developing country governments, see Akyuz et al. (1998), Amsden (2000), and Chang & Cheema (2001).

[25] Note that up to Second World War, virtually none of today's developing countries had trade policy autonomy due to their colonial status or unequal treaties. Because of this, it is meaningless to discuss them at the same level as contemporary developing countries. For the details on these unequal treaties, see Bairoch (1983), and Amsden (2001).

[26] For example, per capita incomes measured in 1990 dollars in Japan and Finland in 1820 were $704 and $759 respectively, while those in the UK and the Netherlands were $1,756 and $1,561 – a gap of less than 2.5 to 1. By 1913, the gap between Japan ($1,334) or Portugal ($1.354) and the UK ($5,032) or the USA ($5, 505) increased to

productivity gaps in the region of 10 or 15 to 1. Even for quite advanced developing countries like Brazil ($6,840) or Columbia ($5,580), the productivity gap with the top industrial countries is about 5 to 1.

When the USA accorded over 40% average tariff protection to its industries in the late 19th century, its per capita income in PPP terms was already about 3/4 that of Britain ($2,599 vs. $3,511 in 1875; see Maddison, 1995). And this was when the "natural protection" accorded by distance, which was especially important for the USA, was considerably higher than today, as even the above quote from World Bank (1991) acknowledges. Compared to this, the 71% trade-weighted average tariff rate that India used to have just before the WTO agreement, despite the fact that its per capita income in PPP terms is only about 1/15 that of the US, makes the country look like a champion of free trade. Following the WTO agreement, India cut its trade-weighted average tariff to 32%, bringing it down to the level below which the US average tariff rate never sank between the end of the Civil War and World War II.

To take a less extreme example, in 1875, Denmark had an average tariff rate around 15-20%, when its income was slightly less than 60% that of Britain ($2,031 vs. $3,511; see Maddison, 1995). Following the WTO agreement, Brazil cut its trade-weighted average tariff from 41% to 27%, a level that is not far above the Danish level, but its income in PPP terms is barely 20% that of the USA ($6,840 vs. $3,1910; see World Bank website).

Thus seen, *given the productivity gap*, even the relatively high levels of protection that had prevailed in the developing countries until the 1980s do not seem excessive by historical standards of the NDCs. When it comes to the substantially lower levels that have come to prevail after two decades of extensive trade

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around 4 to 1. For further details from Maddison's historical income estimates, see

liberalisation in these countries, it may even be argued that today's developing countries are actually even less protectionist than the NDCs in earlier times.

4. Conclusion: Infant Industry Promotion – A Rope or A Ladder?

So what do we conclude from our survey of the history of infant industry promotion in the now-developed countries? Does it tell us whether infant industry protection is a "rope to hang oneself with", as Sachs & Warner (1995) put it, or "a ladder to climb up to the top with", as List (1885) put it?

Our paper shows that, while infant industry protection through tariffs cannot guarantee economic success, success without it seems to be the exception rather than the rule. As I have argued, countries like Switzerland and the Netherlands, which have become rich (largely) without it, are the country which did not need it very much due to their advanced technologies.[27] There is a remarkably persistent historical pattern, stretching from 18th-century Britain to late-20th-century Korea, where successful economic development was achieved with the help of infant industry protection measures.

Important tariff protection may have been in the development of most NDCs, I repeat once more, it was by no means the only, or not even necessarily the most important, policy tool used by these countries in promoting infant industries. There were many other tools, such as export subsidies, tariff rebates on inputs used for exports, conferring of monopoly rights, cartel arrangements, directed credits,

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table 3.7 in chapter 3 of the present volume.

investment planning, manpower planning, R&D supports, and the promotion of institutions that allow public-private cooperation.

Moreover, there was a considerable degree of diversity among the NDCs in terms of their policy mix, depending on their objectives and the conditions they faced. This implies that there is no "one-size-fits-all" *model* for industrial development – only broad guiding principles and various examples to learn from.

In the end, I can only conclude that infant industry promotion is *not* a rope with which misinformed countries have hanged themselves, as Sachs & Warner (1995) believe. Rather, it is a ladder that most countries have needed (and actively used) in order to climb up to the top – and was eagerly "kicked away" when no more necessary – as List (1885) saw it. Whatever their intention is, the developed countries that are trying to prevent the developing countries from using infant industry promotion are, thus seen, "kicking away the ladder", which List, and indeed many of his contemporaries in the USA, accused Britain of doing in the mid-19th century.

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[27] It is interesting to note that even these two countries do not fully conform to the Neo-Liberal ideal, as they refused to protect (private) intellectual property rights until they were very rich.

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