

Industrial Policy: A Long-term Perspective and Overview of Theoretical Arguments

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‘Wee felt it before in sense; but now wee know it by science’

Edward Misselden, *The Circle of Commerce or the Balance of Trade*,
London, Dawson for Nicholas Bourne, 1623, p. 130.

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<https://global.oup.com/academic/product/the-oxford-handbook-of-industrial-policy-9780198862420?q=industrial%20policy&lang=en&cc=au#>)

The aim of this chapter is to give a brief overview of the historical arguments that have been used to argue for industrial policy in its widest sense, i.e. that what a nation (or region) specializes in producing may be of key importance to the wealth and welfare of its inhabitants. Historically it has been generally agreed that *symmetrical trade* – trade in similar goods between nations at similar levels of technological developments – has tended to be beneficial to both trading partners. In these cases, employing Ricardian trade theory has not been detrimental to the trading partners. This chapter explains the situations when Ricardian trade theory is not beneficial to one of the trading partners, and – at the same time – the economic mechanisms which have been identified as making industrial policy desirable.

That *manufacturing matters* has – in various forms, been presented as a main reason for industrial policy at least since England’s ‘import substitution’ policies during the 1400s: adding value to English wool by spinning into woollen cloth and garments. This was mainly achieved by raising export duties on raw wool, making English wool cheaper for domestic manufacturers than for foreign ones. However, the reasons *why* manufacturing matters have varied. And – as the above quote from English economist Edward Misselden alludes to – that understanding has gone from intuitive inferences to the scientific. This chapter will historically present this process and the most common arguments for industrial policy over time.

1. New Perspectives on Cold War Economic Theory: Adam Smith, David Ricardo and Paul Samuelson revisited.

Initially it is of some importance to gain a broader perspective of what has developed into ‘general truths’ of the neoclassical economics during the Cold War.

The fact that David Ricardo’s theory of ‘comparative advantage’ in international trade dates back to 1817 conveys an impression that this principle has been ruling economic theory since then. It is also assumed that David Ricardo merely solidified the free trade principles in Adam Smith. However, the following quote from the young Adam Smith shows how far away his principles were from the logic of comparative advantage and neoliberalism:

‘When the legislature establishes premiums and other encouragements to advance the linen or woollen manufactures, its conduct seldom proceeds from pure sympathy with the wearer of cheap or fine cloth, and much less from that with the manufacturer or merchant. The perfection of police (i.e. policy), the extension of trade and

manufactures, are noble and magnificent objects. The contemplation of them pleases us, and we are interested in whatever can tend to advance them. **They make part of the great system of government, and the wheels of the political machine seem to move with more harmony and ease by means of them.** ¹

It is important to note that in his main work *The Wealth of Nations* (1776), Adam Smith refers to ‘the invisible hand’ only once: when private individuals prefer English goods to imported goods, which would happen around this time after about 300 years of England protecting its own manufacturing industry. But this is an argument for when to give up protectionism rather than against protectionism as a principle.

It is also worth noticing that the term ‘free trade’ historically did not at all have the unequivocal meaning it is usually given today. In an 1920 volume Edwin Seligman – Columbia University’s eminent economics professor and avid collector of economics books – makes the following point as regards the meaning of ‘free trade’ in Edward Misselden’s work:

“Free trade....denoted in those days something very different from what it signifies today. It did not mean freedom to import goods without the payment of duty. On the contrary...freedom to export goods as over against the companies which possessed a monopoly of trade, like the East India Company...Almost all free traders were in fact what we should today call protectionists” ²

Cold War Economics – the theories that stood victorious after the Fall of The Berlin Wall – had its roots in David Ricardo in 1817. However, recent n-gram technology has made it possible to illustrate how David Ricardo and his theory of ‘comparative advantage’ were virtually neglected until Paul Samuelson brought them into the core of economics at the start of the Cold War with two articles in *The Economic Journal* in 1948 and 1949 ³. Communism advanced under the utopian slogan ‘from each according to his ability, to each according to his needs’. With his renewed interpretation of David Ricardo, Paul Samuelson produced a counter-utopia: under the standard assumptions of neo-classical economics free trade would produce a tendency towards *factor-price equalization*: the prices of labor and capital would tend to equalize across the planet. This became the *noble lie* of neo-classical economics and neoliberalism and appeared to make industrial policy superfluous.

The n-grams below show how Cold War economics brought David Ricardo out of the shadows. Compared to other English economists and economic philosophers – father and son James and John Stuart Mill – David Ricardo had indeed been much less important during the first 100 years after his 1817 theory.

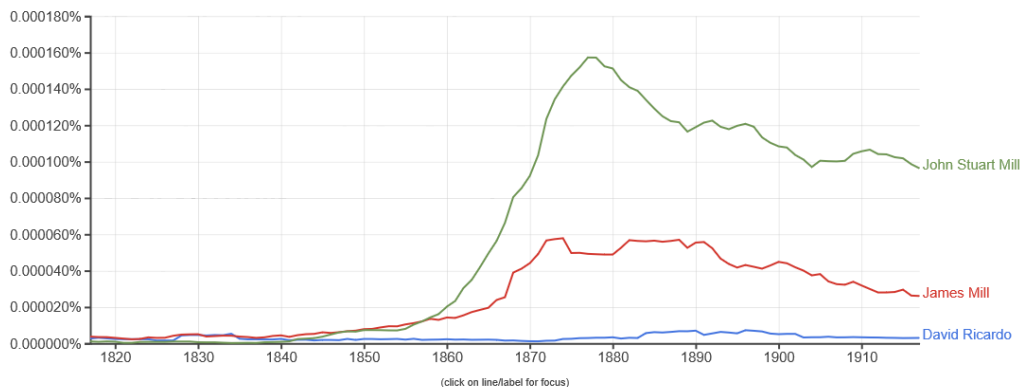


Figure 1. The frequency of 'David Ricardo' (in English) during the first 100 years after the 1817 publication of his main work, *Principles of Economics*, compared to that of two other, then much more famous, English economists.



Figure 2. Frequency of the term 'comparative advantage' (in English) from 1817 until today. As is clearly shown the term was very little used for the first 100 years of existence, but the use of the term started with the birth of the planned economy and exploded with the start of the Cold War in the late 1940s.

On the theoretical level, the Cold War (1947-1989) was fought between two *cosmopolitical* theories. Neither in neo-classical/neo-liberal theory nor in communism was the nation state a unit of analysis. In both *theories* the nation-state was not seen as having a place. Neo-classical economics is built on methodological individualism – no state needed – and also in Marxism the state was supposed to wither away as obsolete after a brief 'dictatorship of the proletariat'. In practice, of course, it was not the state but the rights of individuals that withered away under communism.

Both political extremes were far too abstract to be practical guides to human societies. The implicit conclusion in 1989, however, was that because communism had proven to be wrong, neoliberalism – the other political extreme – had to be perfect. This belief has led to increasing poverty in many countries. A key economist in the historical tradition in which this chapter is written, Gustav Schmoller (1838-1917), clearly saw that both political extremes were unfit for practical purposes. In his 1897 inaugural speech as *Rektor* of the University of Berlin, Schmoller expressed the hope that he had seen the end of the two ideological extremes, Manchester Liberalism (today's neoliberalism) and communism. His characterization of both these ideologies was harsh: 'the naïve optimism of "laissez-faire" and the childish and frivolous appeal to revolution, the naïve hope that the tyranny of the proletariat would lead to world happiness, increasingly showed their real nature, they were *twins of an ahistorical rationalism*'⁴ (Schmoller 1897, my translation, italics added).

In practice, the ideological extremes of 'the irrational twins' opened up for a wide spectrum of possible economic policies. In Western Europe Germany's *soziale Marktwirtschaft* (social market economy)⁵ and Sweden's *Middle Way*⁶ were successful models navigating the broad spectrum of opportunities between the 'irrational twins'. After the 1989 fall of the Berlin Wall and with the rule of the Washington Consensus, these 'middle ways' were in practice outlawed.

2. The Historical Roots of Industrial Policy Theory.

‘From manufacturing you may expect the two greatest ills of humanity, superstition and slavery, to be healed’.

Ferdinando Galiani (1728-87), Italian economist.

More than two decades ago, when I was working on another paper on the history of economic policy, David Landes – the eminent Harvard economic historian – gave me a serious warning: be careful, you are likely to end up with Adam and Eve. The point is well taken, it is possible to argue that Xenophon in his *Poroi* (also called *Ways and Means*) 355 BC – when he argued that a city’s economic problems could be improved by increasing the size of the population – could be seen as understanding increasing returns or economies of scale. In order to avoid the Adam and Eve problem, the story told in this chapter starts in the 1400s, with practical policies, and with a systemic theoretical understanding essentially starting in 1589 with Giovanni Botero’s *On the Greatnesse of Cities* ⁷, which is relatively unknown today.

One important note on earlier European history, though: If we allow US economic historian Richard Goldthwaite to be our guide, the history of the rise of European civilization was in fact a process of import substitution: from the 12th century onwards manufactured goods which had previously been imported from the Levant started to be produced in Europe. At the core of what is generally referred to as ‘the commercial revolution’ was the growth of an industrial sector, Goldthwaite argues:

“Initially Europeans had an unfavourable balance of payment...; and initially they made up the difference through piracy and plundering, but above all through the export of silver and gold ... With the growth and development of the European economy, the Italians steadily improved their situation. They began to produce for themselves the manufactured goods they had been importing, and by the fifteenth century they had gone beyond import substitution and were exporting these very goods to the Muslim world.”⁸

This has later been the logic of all European countries that have succeeded in upgrading their industrial sector, starting with England in the 1400s up until and including classical development economics and the Marshall Plan. ⁹ Only during very brief periods – the last of them being from around 1989 until about now – this principle of creating wealth through structural upgrading of national productive sectors has been abandoned. Just as industrial companies almost by definition initially go through several years of loss and need ‘subsidies’ from the owners, whole national systems also need years of subsidies and protection before they are profitable. This period of protection – which the great liberal John Stuart Mill (1848) called *infant industry protection* – is still needed.

Old economic policies were carried out with varying degrees of understanding of the underlying principles. These policies were, in our meaning of the word, not based on what we would normally call scientific analysis. These theories were based on ‘clues’, on a mode of inference called *abduction* - or *phronesis*, Aristotle’s third form of knowledge ¹⁰. This tradition is continued by the Italian philosopher Giambattista Vico (1668-1744), in the US philosophical tradition of C.S. Peirce, and in economics in Nicholas Kaldor’s ‘stylised facts’. According to Peirce, ‘(Induction) can never originate any idea whatever. No more can

deduction. All the ideas of science come to it by the way of Abduction. Abduction consists of studying facts and devising a theory to explain them. Its only justification is that if we are ever to understand things at all, it must be in that way.’¹¹ Pierce here describes the role played by the formulation of *hypotheses* as the fundamental element in the creation of new knowledge. This reasoning is also in line with the philosophy that lies at the root of the German Historical School of Economics, in the 18th century philosophers Gottfried von Leibniz and Christian Wolff.

No doubt most historical arguments have their points, but history shows that it has also been possible ‘to be right for the wrong reason’. We shall try to illustrate how the creation of industrial policy was generated through abductive reasoning with a parallel from the history of medicine: Starting in the 12th century sailors in the Mediterranean used lemons to prevent scurvy.¹² This was a very effective policy. However, the explanation as to *why this policy worked* only appeared in the early 20th century, with the discovery of Vitamin C¹³. In the meantime, *acidity* has been seen as the curative element, which led to disastrous experiments with vinegar instead of citrus fruits.

Likewise, we would claim that it is entirely possible to establish good economic policies for a time, without fully understanding the factors involved. For example, identifying ‘progress’, or ability to pay more taxes, with the use of machinery in an increasing number of industries would result in a beneficial public policy, even if the causal relationship between the use of machinery and wealth were not clearly established, or had been ‘unlearned’. The intuitive abduction often precedes what we would think of as a more ‘scientific’ type of knowledge. This view that abduction anticipates ‘science’ was expressed in the above quote from English economist Edward Misselden – an economist who was heavily influenced by Giovanni Botero in 1623: ‘Wee felt it before in sense, but now wee know it by science’.

England is an example of a country which appears to have created an industrial policy without much theory, other than a clear recognition of what at Harvard Business School used to be called ‘we are in the wrong business’. In the 15th century, England was a poor nation, heavily indebted to her Italian bankers. Her main export product was wool. But over a relatively short period, England went from being a poor nation on the periphery of Europe to being the leading nation of the world – from being a poor farming country to possessing a global empire on which the sun never set.

There are different versions of the story as to how this happened. Probably a policy originally intended to increase national revenues – a tax on the export of raw wool – ended up having the unintended by-product of creating a domestic industry of woollen cloth. The story is likely to have started earlier, but let us look at the version of Daniel Defoe – the polymath historian best known as the author of *Robinson Crusoe* – who described the English strategy retrospectively in his book *Plan of English Commerce* in 1728.

Henry VII, who came to power in 1485, had grown up in exile in Burgundy, where English wool was being spun into cloth. The wealth he observed there contrasted sharply with the poverty he later found in England. But, the Prince observed, the wealth in Burgundy depended totally on the import of English raw materials: wool and the Fuller's earth used to clean it. When he came to the throne of England, Henry employed the *anti-Ricardian* logic which during subsequent centuries dominated, not only in England, but also on the Continent: don't accept your comparative advantage, *shape* it. Manufacturers are rich, producers of raw materials are poor. Therefore, to get rich and develop the country, we must promote the production of manufactures. Selling manufactures is “good” trade – in today's language, it makes us competitive – while selling raw materials is “bad” trade.

The Tudor strategy which started with King Henry was to bring England into the wealth-creating downstream activities in wool manufacturing that he had observed abroad. Practice preceded theory, which is not uncommon when historical circumstances conspire to make certain facts, if not the deeper economic mechanisms at work or the theory explaining same, palpably visible, along with obvious policy measures. England's economic growth (her economy had been essentially static, like all premodern agriculture societies, for centuries before this) started by observing the economic structure of richer countries and *emulating* – copying and trying to improve upon – it. This meant pushing into manufacturing, which we noted in an earlier chapter is the quintessential (if today not the only) home of “advantageous” economic activities, the keys to sustained growth.

The English strategy was gradual, and started with import substitution, which to this day is a common first move in development plans. In 1489, tariffs on cloth were increased, and local cloth manufacturing was encouraged. The Crown paid for skilled foreign workers to be brought in, and businessmen were paid bounties (in modern terms, subsidies) for establishing textile manufacturing firms. And when sufficient manufacturing capacity had finally been achieved to process all domestic wool production, England prohibited the export of raw wool. During the next century – in the reign of Elizabeth I – the death penalty was introduced for the export of raw wool from England.

3. The Key to Wealth as Urban Synergies Created by Adding Value to Raw Materials under a Large Division of Labor: Giovanni Botero (1589).

I first met practical industrial policy as a young student and assistant to the professor of Spanish at the Latin American Institute at the University of St. Gallen in Switzerland. In 1972 The Swiss Federal Technical Cooperation, in cooperation with UNCTAD in Geneva, organized an Export Promotion Training Course for representatives for Spanish speaking South American nations. I was recruited to travel to Latin America to select the candidates that had been presented by the local governments, and also to organize the part of the course that took place in St. Gallen in the summer of 1972.

The core idea of the course was to promote Latin American exports with higher value than the traditional raw materials. In cooperation with the local Swiss embassies my task was also to pick one product from each country for which the participants, in addition to theoretical courses, should do practical market research during their two months' stay in St. Gallen and Geneva. Although the idea was completely in line with classical development economics as it was still practiced at the time neither I – nor probably anyone else – had any idea that this idea of *added value* had been at the very core of theories explaining the differences in national incomes. *Value added* had been the key explanation for what created wealth in the few cities of wealth in Europe – like Amsterdam, Florence, Venice – since Giovanni Botero's 1589 work *On the greatness of cities*. By 1671 Botero's book had been published in around 42 editions in all the important European languages¹⁴, his thoughts were spread in German-speaking areas by Veit Ludwig von Seckendorff's 1656 book on *The German Principality*¹⁵ – which stayed continuously in print for 100 years – and in English through the works of Francis Bacon.¹⁶

Two apparently different economic traditions – *cameralism* and *mercantilism* – seem to have grown out of the extremely widely diffused works of Giovanni Botero (1544–1617)¹⁷ as a common platform and point of reference. Botero, in turn, built on two much older traditions:

his work *Ragion di Stato* – of which *On the Greatness of Cities* is part – satisfied the oldest tradition in economic policy advice, the tradition of *Fürstenspiegel*, a kind of *owner's manual* to the innumerable small states of Europe¹⁸. Botero's other main work, *Relazioni Universali* (1591) satisfied another very old tradition; the need for surveys and the fact-finding missions' quest for geographical, cultural and anthropological knowledge¹⁹. All in all, at the time when the knowledge of the whole world and its cultures became codifiable, Giovanni Botero provided an unusually complete range of social sciences²⁰. It is worth noting that in contrast to the many utopias of the period, Botero's reasoning was based on the observation of history and of facts. In his work he clearly distances himself from 'bullionism' – the idea that a nation's wealth consists in the amount of precious metals owned – of which mercantilism is sometimes accused.

Giovanni Botero was born in the small town of Bene Vagienna in the province of Cuneo in the Italian Piedmont region. As a Jesuit, he was keenly interested in non-European cultures. From the point of view of now long-standing Western Eurocentrism, the ability of the Jesuits to engage in two-way cultural communication reminds us that Eurocentrism is not necessarily a 'natural' state of affairs. Jesuit Matteo Ricci (1552–1610), a contemporary of Botero, ventured with a small group to China, where he translated not only Christian and Western scientific texts into Chinese, but also Chinese texts into Latin. By entering inside foreign cultures – from the Chinese to the Guaraní in South America – Jesuit travellers also played the role of anthropologists. As one observer says, Botero 'brought together an immense mass of geographical and anthropological information, which he tried to organize according to broad methodological categories (like "resources", "government", and "religion")'

Apparently little unites Sir Walter Raleigh (1554–1618), Francis Bacon (1561–1626), utopian Tommaso Campanella (1568–1639), English economist Edward Misselden (1608–1654), Spanish economist Gerónimo de Uztáriz (1670–1732), and Swedish technologist and economist Christopher Polhem (1661–1751). But one thing does: they all convey key insights found originally in Giovanni Botero, but following the practice of the time they do not quote him or anyone else as to the origins of these insights. Clearly the work of the first German bestseller, Veit von Seckendorff (1626–1692) is also very much influenced by Botero (E. Reinert 2005). There are still 30 editions of Botero's works (mainly uncatalogued) in the Gotha Library that Seckendorff formed for Ernest the Pious (*Ernst der Fromme*) of Sachsen-Gotha-Altenburg, and Botero was on the reading list Seckendorff made for the education of princes. The large number of translations of Botero's works testify to his strong influence on the European seventeenth century zeitgeist.

Botero argues that one of the reasons for the economic superiority of cities over and above the countryside is that the ability to invent new things is much greater there than in the countryside. Here we find an early trace of 'Schumpeterian' thinking, which was followed up by Francis Bacon's 1625 essay 'Of innovations'²¹

Botero's *Ragion di Stato* (1589) was the first modern economic bestseller. In English *Ragion di Stato* came to be called *Reason of State* and in German *Staatsräson*. In his 1925 work on *Staatsräson* Friedrich Meinecke mentions Botero's many followers and the 'true catacombs of forgotten literature' which follow in Botero's path.²² A new translation of Botero's *The Cause of the Greatness of Cities* has an excellent introduction by Geoffrey Symcox²³.

DELLA RAGION
D I S T A T O
LIBRI DIECI,

*Con Tre Libri delle Cause della Grandezza,
e Magnificenza delle Città*

DI GIOVANNI BOTERO BENESE.

ALL'ILLVSTRIS. E REVERENDIS. SIG.

IL SIG. VOLFANGO TEODORICO,

Arciuefcouo, e Prencipe di Salczburg. &c.



CON PRIVILEGI.



IN VENETIA, APPRESSO I GIOLITI.
M. D. LXXXIX.

Figure 3. The cover of the first edition of the book that laid the earliest foundations for a Theory of Industrial Policy. Botero's 1589 volume was translated into all important European languages – the first translations in Germany were from Italian into Latin – and the book reached a record of 42 editions between 1589 and 1671.

The understanding that grew out of Botero's work was that only in barren areas lacking natural resources and with limited possibilities for food production – but in favorable geographical positions such as Venice and Amsterdam – would economic development tend to come 'naturally'. In virtually all countries heavy-handed government policies were

required during the transition from diminishing returns activities (agriculture) to increasing returns activities (manufacturing), as they were identified by Serra (1613)²⁴; or from ‘natural activities’ to ‘artificial activities’, to use the later terminology of Thomas Mun (1664). This was the essence of the thinking that Botero’s influence turned into the economic mainstream at the time. What Venice and the Dutch Republic had achieved – rather than the policies of Venice and the Dutch Republic – was the object of attention of foreign economists and foreign rulers alike. Edward Misselden argued in 1620 that it was necessary to understand the difference between heaps of stones and logs and a house. Between them was the added value of human knowledge and skills. This rings a bell when reading Botero, the first English translation of which was in 1605:²⁵

“... some will aske me; whether Fertilitie of Land, or Industrie of Man, importeth more to make a place Great, or populous? Industrie, assuredly. First because Manufactures framed by the skilfull hand of Man, are more in number²⁶, and price²⁷, than things produced by Nature: For Nature giveth matter, and subject: but the Curiositie and Art of Man addeth unspeakable varietie of formes. Wool, from Nature, is a rude and simple Commodity: What fair things, how various, and infinite, doth Art make out of it?”²⁸

“Compare the Marbles, with the Statues, Colossuses, Columns, Borders, and infinite other Labours, taken. Compare the Timber, with the Galleys, Galleons, Vessels of many sorts, both of Warre, Burthen, and Pleasure: Compare also the Timber, with the Statues, the Furnitures for Building, and other things innumerable, which are built with the Plane, Chesill, and Turners-Wheele. Compare the Colours with the Pictures...(etc.)”²⁹



NOI SOPRA PROVEDITORI, & Proueditori alle Biauè,

Commettemo à te Capo del
 Bastion, e Magazen ò altra
 persona, che assiste in esso, & che di tempo in tempo si troueranno à seruir in detto Magazen, che sotto pena di Ducati cinquanta da esser tolti subito ogni volta, che contrafarai al presente nostro ordine da esser datta la mettà all'accusator, e l'altra metà applicata alli luoghi Pij di questa Città, oltre tre tratti di Corda, non possi, ne debbi vender, ne permetter, che sia venduto in detto Bastion, ò Magazen niuna sorte di Pane Forestiero, ò di Casa, ò Buffetto da Pistor di questa Città, ma solamente di tagliato, e trauerso del vostro Pistor, che sei sottoposto, & obligato. Douendo in conformità delle leggi restar in tutti prohibita l'introduzione del Pan Forestiero, di Casa, e Buffetto come di sopra è espresso, sia di che sorte si voglia, niuna eccettuata. Et il presente nostro ordine douerai tener in luoco conspicuo, acciò possi esser osseruato à chiara notitia di cadauno, conseruandolo per douerlo restituire al Magistrato nostro, ogni qual volta che vi farà richiesto.

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Figure 4. One Example of the Practical Consequences of 'the Cult of Value Added'. While the import of grain was free for any tariffs into Venice, this document – which, due to the name of the ducal printer, can be dated to between 1631 and 1657 – prohibits the sale of imported bread ('pane forestiero'). The penalty for contraband of bread was 50 ducati ('to be paid every time') and 'three pulls of the cord' (tre tratti di corda). This refers to a form of torture – also referred to as strappado – wherein the victim's hands are tied behind his or her back and suspended by a rope attached to the wrists, typically resulting in dislocated shoulders. The goal of the death penalty for exporting raw wool from England under Elizabeth I (ruling from 1558-1603) was exactly the same as this procedure against the import of bread: to keep the value added to the raw materials in the home country. Historically – of course – the policy towards the colonies had exactly the opposite effect: to prohibit value added (manufacturing) activities in the colonies, see the references to Gee later.

Botero's basic ideas around the geographical clustering of economic activities leading to progress have had many modern followers. Although geography was obviously present in other economists, in relatively modern times it was not until the publication of Johann Heinrich von Thünen's first volume of *Der Isolirte (sic) Staat* (The Isolated State) in 1826³⁰ that location theory based around a core industrial city – as Botero had – was rediscovered. von Thünen (1783-1850) also places the industrial city at the geographical and economic core of the modern state.

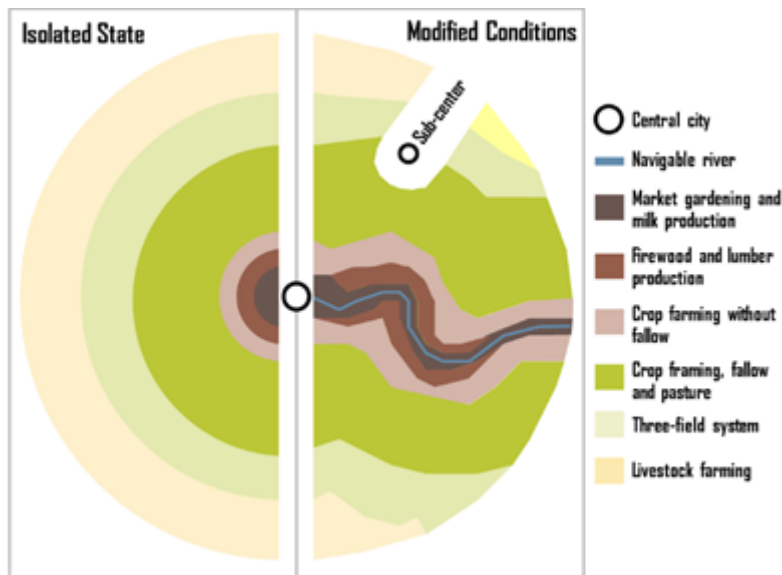


Figure 5. von Thünen's map of a modern state, with the industrial city at its core.

Thünen drew a map of civilized society with four concentric circles around a core of increasing returns activities – the city. Moving outwards from the city core, the use of capital and advanced skills gradually decreases and the use of nature gradually increases. Near the city the most perishable products are produced, such as dairy products, vegetables, and fruit; grain for bread is produced further out, and in the periphery there is hunting in the wilderness. Economists today have rediscovered Thünen's approach to economic geography, but many miss the crucial point he stresses, namely what stands on the lines on the first page of the *Isolirte Staat*: 'Man denke sich eine sehr große Stadt in der Mitte einer fruchtbaren Ebene gelegen'; a very big city is at the core of society. As with Botero, the city is at the core of the system. It is worth noticing that already very early on economists distinguished between manufacturing cities (like Venice or Milan) from which wealth spread, and *administrative cities* (the typical example was Madrid) that played more of a parasitic role.

Since von Thünen was a farmer and mainly interested in the improvement of agriculture, he does not pay too much attention to the factories in the city, even though they are also mentioned in his book. Thünen did not argue against the accepted knowledge of the time that a state needed manufacturing industry, and that this industry needed tariff protection. Underlying what happened in Thünen's outer circles was a development machine at the core of the concentric circles – the urban increasing returns industries (manufacturing) – which, for a time at least, needed targeting, nurturing, and protecting. In other words, the presence and state of development of the core city would also determine the standard of living in the rest of the country, in these outer circles.

In von Thünen's map the most 'modern' sector – manufacturing – formed the city core, and the most 'backward' sector – hunting and gathering – formed the periphery furthest from the city. Moving outward away from the city, the use of nature as a factor of production *increases* and the use of capital *decreases*. Only the city will have authentic increasing returns, free from nature's flimsy cyclicalities and supply of resources (land, minerals) of different qualities.

As one moves from the city towards the periphery, man-made comparative advantage (subject to increasing returns) gradually diminishes and nature-made comparative advantage (subject to diminishing returns) increases. As we move outwards in the circles, the carrying capacity of the land in terms of population also diminishes.

The importance of the linkages and synergies for agricultural development, seeing the benefits accruing to agriculture from the proximity of manufacturing, was not uncommon in 18th century economics: 'Husbandry ... is never more effectually encouraged than by the increase of manufactures,' says David Hume in his *History of England* (1767, Vol. III).

Thünen's model pictures all the stages of development inside one nation-state, one labor market, one school and university system, and one social security system. The synergies that David Hume points to are partly the result of an equal access to basic institutions and government services accruing to the 'hunters' in the outermost circle as well as to the city dwellers. The local city market does to national agriculture what an international market can never do. Proximity to a city in the same labor market, rather than abroad, assures employment for the second and third son on the farm. The wage pressure from the city activities makes labor more expensive in the countryside, allowing for technological change that would never be profitable with low wage rates. The proximity to the city gives access to advanced technology and expertise that a rural-only nation would never achieve. All in all von Thünen's model provides a useful picture for development as a synergy between town and countryside.

Late in the 19th century, in his *Principles of Economics* (1890) and in an earlier work, Alfred Marshall introduces 'industrial districts'. In 1909 Alfred Weber publishes *Über den Standort der Industrie* (Theory of the Location of Industries). After World War II, Botero's ideas of geography-based economic agglomerations appear in August Lösch's *The economics of location: a pioneer book in the relations between economic goods and geography* (1954), with French economist François Perroux as 'growth poles', and with Harvard Business School's Michael Porter as 'clusters'. In Italy Giacomo Becattini re-introduced 'Marshallian industrial districts', where 'The Third Italy' – the economic power of the many small and medium sized enterprises in Central Italy – caught much attention. In the Third World the importance Albert Hirschman gave to 'linkages', also reflects this way of thinking.

It is worth noticing that some of these ideas had clear Schumpeterian influences. August Lösch was a student of Schumpeter in Bonn, and François Perroux translated Schumpeter's *Theory of Economic Development* into French (1935).

4. Increasing returns: from Antonio Serra (1613) to Alfred Marshall (1890) and Paul Krugman (1979-1980).

‘I apprehend (the elimination of Diminishing Returns) to be not only an error, but the most serious one, to be found in the whole field of political economy. The question is more important and fundamental than any other; it involves the whole subject of the causes of poverty; ..and unless this matter be thoroughly understood, it is to no purpose proceeding any further in our inquiry’.

John Stuart Mill, *Principles of Political Economy*, 1848.

Joseph Schumpeter gave Antonio Serra the honour of having been ‘the first to compose a scientific treatise . . . on economic principles and policy’³¹. Schumpeter’s succinct description of Serra’s work confirms the author’s anti-bullionist bias, the normal criticism against mercantilists:

‘Its chief merit does not consist in his having explained the outflow of gold and silver from the Neapolitan Kingdom by the state of the balance of payments but in the fact that he did not stop there but went on to explain the latter by a general analysis of the conditions that determine the state of an economic organism. Essentially, the treatise is about the factors on which depend the abundance not of money but of *commodities* – natural resources, quality of the people, the development of industry and trade, the efficiency of government – the implication being that if the economic process as a whole functions properly, the monetary element will take care of itself and not require any specific therapy.’³²

Regardless whether this long theoretical tradition which dominated Europe until the late eighteenth century be labelled mercantilist, Colbertist or cameralist, Botero’s narratives and Serra’s theories in a sense laid the foundations for all three schools by establishing two crucial dichotomies in economics. The taxonomies Serra established are important for understanding the wealth and poverty of nations, and indeed provide a continuing key to what his contemporaries called *buon governo*, or ‘good government’.³³

Serra’s two dichotomies, I will argue, were in the recent past still part and parcel of all three dominant ideologies and their economic policies in the 1930s³⁴, but were subsequently lost with the formalization of modern neoclassical economics, and are conspicuously absent in the rather superficial discussion of good governance presented by the Washington institutions today. The first is a dichotomy separating economic activities subject to increasing returns from those subject to diminishing returns. Putting ‘manufacturing’ in another category than ‘raw materials’ from the point of view of policy-making had already been the core element of the English Tudor strategy from 1485, promoting woollen manufactures at the expense of the export of raw wool by slowly building up the export duties of raw wool. For a thorough discussion see Reinert (2007).

There had been scattered references to the wisdom of such practices,³⁵ but what Giovanni Botero did in his volumes was to elaborate the vision of the role of manufacturing, the insight that civilization was based on adding knowledge and value to Nature's raw material, into a full-fledged theory of economic development.

In Botero's volume the degree of economic and societal development manifested itself as the ability of a city to hold the maximum number of inhabitants in satisfactory conditions. This again was the result of the number of different professions that were exercised in the city: in other words, the degree of division of labor – the degree of complexity – would determine the wealth of a city.³⁶ Botero explained the mechanisms, but Serra's big contribution to this was to explain why. He did so by highlighting the key difference between the production of raw materials and manufactured goods, that is, what happens to the development of costs as production is increased. In manufacturing there were increasing returns, and the synergies of the multitude of artisanal and manufacturing activities, each of them subject to increasing returns, produced the linkages and cumulative causations that Botero and Serra saw as being the main factor which attracted so many people to the city-states that had specialized in manufacturing.

In the first edition of his *Principles of Economics* Alfred Marshall, the founder of neoclassical economics, emphasizes the crucial importance of diminishing returns: 'The tendency to a Diminishing Return was the cause of Abraham's parting from Lot³⁷, and of most of the migrations of which history tells' (Marshall 1890, 201). Today the migration experienced in Europe is from nations dominated by diminishing returns activities (for example, Eritrea) to nations where increasing returns activities dominate (for example, Holland).

The second dichotomy is that separating the financial sector from the real economy. As already mentioned, this dichotomy is of course much older than Serra's work. An academic expression of the problems which may arise when the financial and monetary spheres decouple hails back at least to Nicolaus Oresme (c.1320–1382)³⁸ and the Bible. This dichotomy is not there in Botero's *Greatness of Cities* – which concentrates on the real economy – but it is very much there in Antonio Serra's discussion with his contemporary MarcAntonio de Santis on how to deal with the outflow of money from the Kingdom.³⁹ De Santis was of the opinion that the lack of money in the Kingdom was due to the excessively high level of the exchange rate. On the basis of his theory several measures had been introduced to manage the rate of exchange and limit the export of metallic money, without positive results. Serra, on the other hand, starts by noting that there are countries with no natural supplies of metals from domestic mines that nevertheless manage to have an abundance of money. In other words, Serra asks: why on earth do the gold and silver which flow into Spain from the New World end up accumulating in places like Venice, which have no mines and raw materials at all?

Serra's reply was based on Botero's analysis of what attracted people and resources to some cities and not to others, above all the abundance of different manufacturing industries. In other words the solution to the problems posed by dichotomy two – the conflict between the financial and the real economy – lies in observing the insights emanating from dichotomy one: money will leave the cities and countries with no increasing returns activities, being attracted to cities with manufacturing and increasing returns. In Schumpeter's quote above he emphasizes Serra putting the real economy at center stage: 'if the economic process as a whole functions properly, the monetary element will take care of itself and not require any specific therapy'⁴⁰.

In fact, digging deeper into Serra's arguments, we can argue with him that de Santis's fiddling with monetary variables – as long as these monetary variables did not positively affect the health of the real economy – were not only completely in vain, but potentially destructive to the real economy. The present tragedy of Greece inside the European Union carries with it the same type of discussion as that between Messrs de Santis and Serra more than 400 years ago.

The jury is still out on whether the policies carried out from the start of the financial crisis until the present (2019) by the Federal Reserve – and even more so those of Mario Draghi and the European Central Bank – again will justify Antonio Serra's warning: fiddling around with financial variables, which in reality do not improve conditions in the real economy, will not help, but will probably worsen the situation. Schumpeter saw the need for economic 'cold showers' provided by financial crises, because unproductive capital lost its value and the system was reset with a clean slate. From that point of view we can ask whether Draghi, by providing more liquidity and more debt, presently prevents Europe from taking the necessary 'shower', cleansing itself from a huge debt overhang and kick-starting the real economy. Increasing debt and demand contraction in vicious circles – as a result of policies of austerity – seem to prevent the virtuous circles that originate in Serra's increasing returns to scale (that is, falling unit costs as the volume of production increases).

The key factor being put back into trade theory is, again, increasing returns, and the key person in the process of rediscovery is MIT's Paul Krugman. Krugman correctly observes that economic theory 'has followed the perceived line of least mathematical resistance'⁴¹ His explanation is that the reason scale effects were excluded was that the profession was unable to express these mathematically.

Starting in 1979 Krugman published a series of articles introducing increasing returns in international trade theory. His 1979 and 1980 articles model a world where an initial discrepancy in capital-labor ratio exists between two countries or groups of countries. A period of increasing international trade follows, where only the industrial sector works under increasing returns to scale. The result of this is a world divided into two groups, a rich industrialized center and a poor underdeveloped periphery. In these papers, Krugman refers to Myrdal, Frank, Baran, Wallerstein and even Lenin.

This breakthrough in international trade theory was the result of using models originating in the study of imperfectly competitive markets in the field of industrial economics. Krugman inadvertently opened a Pandora's box, where international markets no longer are fully competitive, and where countries may grow poorer in the presence of free trade than under autarky. Paradoxically, the wave of Reaganomics free market policies, which hit the developing countries in the early 1980s, coincided with the first proof of neo-classical trade theorists that government intervention really *could* improve the free trade situation of a poor country. After the early 1980s, however, Krugman seems not to have used models with both increasing and diminishing returns. Schumpeter had referred to using overly abstract models with limited practical relevance such as Ricardian trade theory as 'the Ricardian Vice'. To this I added the concept of 'the Krugmanian Vice': having much more relevant theory but refusing to apply it in practical economic policy.

The core of 19th century protectionism is exactly what Krugman points out: By protecting the national market for national industries the market was extended, because the increasing returns which accrued to new industries more than outweighed the initial increase in price

caused by the protection. A higher initial price for industrial goods was traded off for an even higher increase in real wages and profits in the protecting nation – a phenomenon which is inexplicable without the existence of imperfect competition and/or increasing returns.

5. How Economic Activities Differ, Leaning Curves, and the Sequencing of Technological Change.

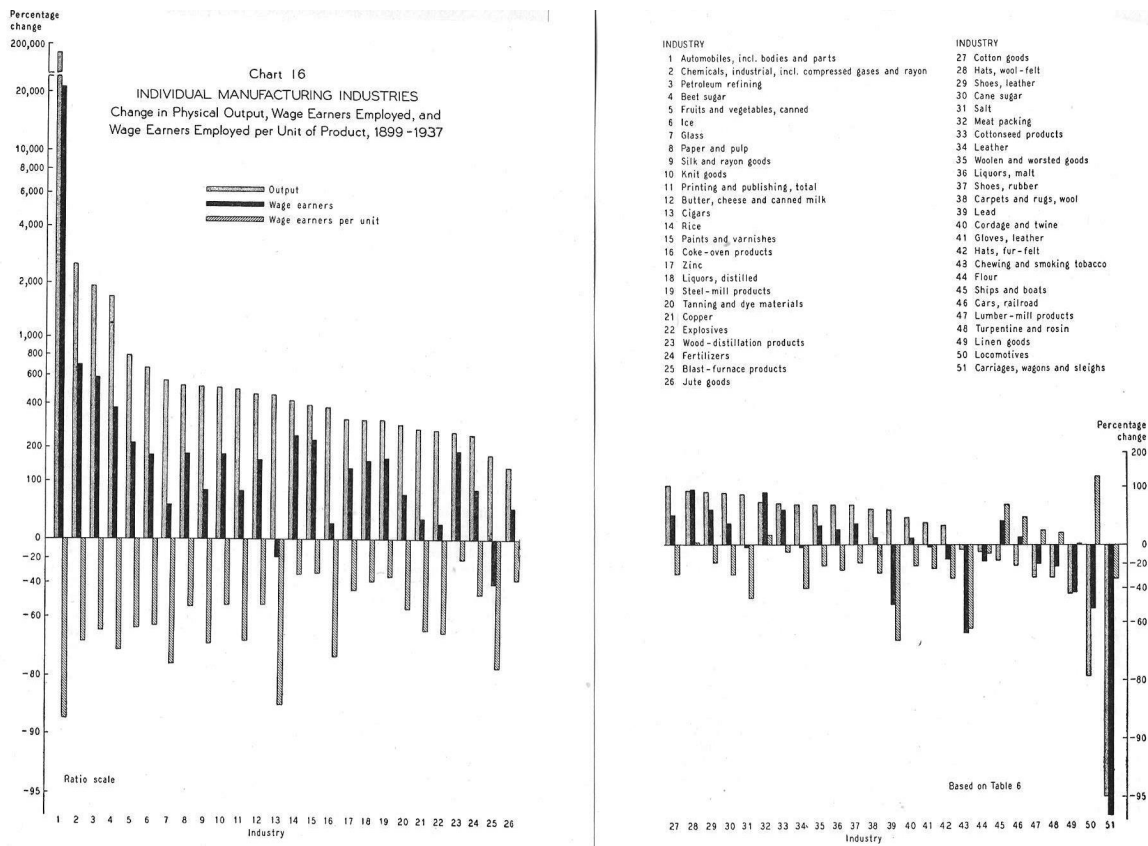


Figure 6. How industries differ (Fabricant, National Bureau of Economic Research, 1942)⁴²

Figure 6 ranks the development of 51 industrial sectors in the United States from 1899 to 1939 according to three factors: a) the increase in production (output), b) the number of employees (wage earners) in the industry, and c) the increase in productivity (measured as the lowered use of manpower behind each unit of production). The sector with the highest increase in output, almost 200,000 per cent, was the automotive industry. In this industry, however, the increase in the number of wage earners only increased by just over 20,000 per cent. The number of wage earners per unit of product (the third column) was reduced by more than 85 per cent. The table is also an indication of Verdoorn's Law, that industries with the largest increase in volume of production also tend to present the largest growth in productivity.⁴³

Assuming perfect competition the differences in Figure 5 would not have had any impact on the rate of economic development in countries that had an automotive industry vs. countries

that did not. In reality, however, the automotive industry became a wage leader pulling up the general wage level in the United States. In March 1914 Henry Ford doubled the wages of his workers, from US\$ 2.50 a day to \$ 5 a day. The Marshall Plan policy to distribute important high-growth/high-productivity-growth industries among all large nations dominated until the end of the 1980s. Italy’s car industry was protected from foreign competition by an annual import ceiling of 40.000 engines for assembling the Italian version of the *Morris Mini*, the *Innocenti*. Under the integration of Spain into the EEC during the 1980s, tariffs were lowered gradually, while support was given to local industries, particularly to the important Spanish automotive industries with many subcontractors. The last 10 per cent duty on Japanese cars imported into the European Union was abolished in December 2017. Although the theoretical reasons for these policies were gone from the Washington Institutions paradigm, in the rich countries the policies themselves lingered on in practice.

During what we could call the nation-based development paradigm most countries had the whole range of production represented in Figure 6. There was of course much trade, but mostly symmetrical trade: France and Germany exporting cars to each other. Also smaller countries had car production, Holland had their DAF and Yugoslavia had a car called Yugo, rudimentary but cheap. But with globalization came Daewoo and Hyundai from a military-dominated South Korea, where wages were lower than in Yugoslavia. Korea's strategic significance for the United States – especially after the defeat in Vietnam – allowed Korea to use protectionist rules contrary to what was prescribed by the Washington Consensus. An independent communist Yugoslavia could not, and the Yugo disappeared.

This is but one very brief example of what happened when the global economy took over from the nation-based economy. Many countries lost the high value-added activities to the left in figure 6, and world trade became much more of a winner-takes-it-all game.

Table 1. How the Game Changed.

Nation-based capitalism.	Global capitalism
High-tech, high-growth industries present in all countries of any size.	Hi-tech, high-growth industries disappear in peripheral countries (from Greece to Mexico)
Move advanced economic activities to lagging countries. Adjust exchange rates (Europe)	Move human beings from one country to the other. Freeze exchange rates (Europe)
Create jobs in order to solve crises (Keynes)	Create money in order to solve crises (EU Central Bank President Mario Draghi)
Strong government and labor unions (balance of countervailing powers)	Gradual power shift to the financial sector (the rule of the one per cent)
Harmonization (harmony created through economic policy)	Polarization (spontaneous chaos ⁴⁴)

Figure 6, above, shows a ‘productivity explosion’ in the automotive industry. Figure 7, below, shows the First Industrial Revolution as another such ‘productivity explosion’. All European

countries attempted to get their share of this by attracting such activities to their own states: they would bring higher wages, higher profits and higher tax incomes to the state treasury.

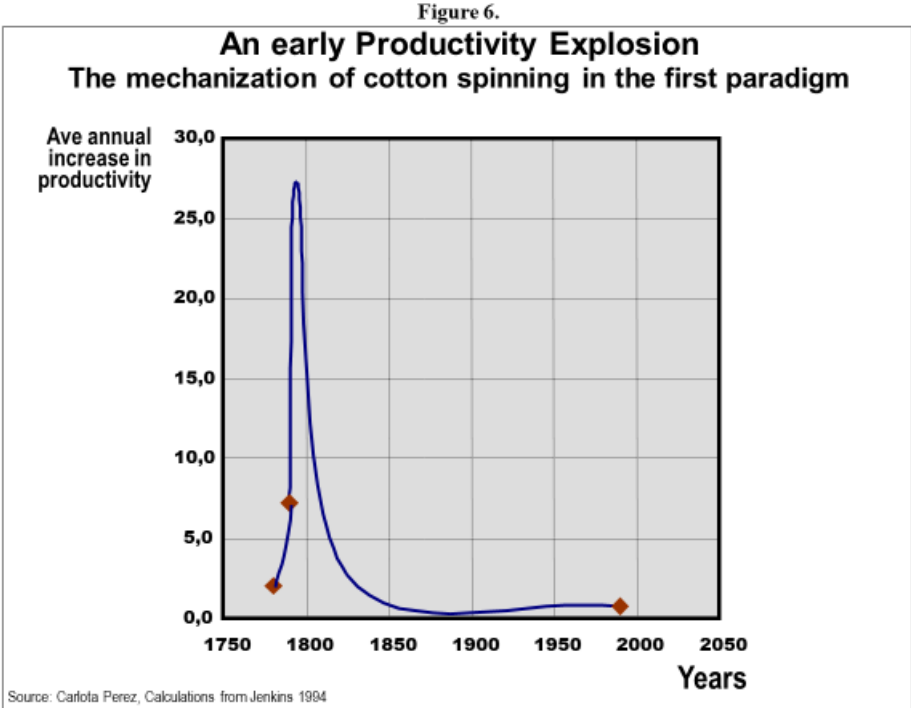


Figure 7. Productivity explosion cotton spinning (source Carlota Perez)

Figure 8, below, shows similar dynamics in the form of a learning curve, plotting the number of man-hours per unit of production. A similar tool – the experience curve⁴⁵ – plots the lowering of total costs. These are useful tools for any industrial policy research. The natural dynamics of global competition tends to farm out mature products with flat learning curves to poor countries.

Figure 7. Learning Curve of Best-Practice Productivity in Medium Grade Men's Shoes', United States 1850-1936.

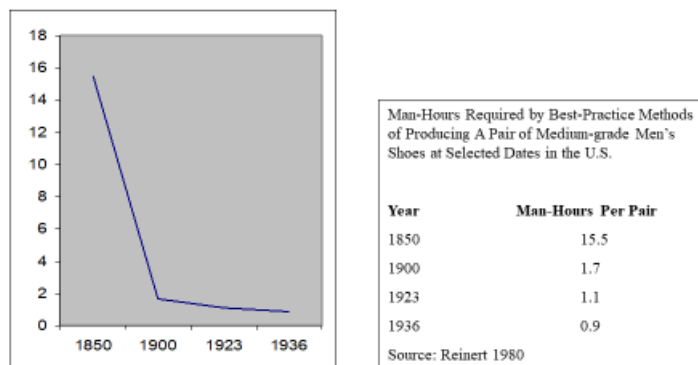


Figure 8. US Learning curve in men's shoes 1850-1936. An important aim for industrial policy is to produce where the learning curves are steep.

6. On the 'Quality' of Economic Activities: Barriers to Entry, Hierarchies of Skills, and Dynamic Imperfect Competition.

Salomon Fabricant's chart reproduced in the last section shows the vast differences in volume of production, productivity growth, and employment between different US industries in the early 20th century. However, the chart does not distinguish between qualitatively different types of competition.

In the third edition of his *Principles of Political Economy and Taxation* (1817) – which appeared in 1821 – the author had probably heard that the extensive use of machinery might make his theory of comparative advantage invalid. In this edition Ricardo therefore explicitly assumed that the use of machinery would simply lower the price of the goods. In that case, Fabricant's taxonomy of economic activities would not have any consequences. Especially so because David Ricardo's trade theory – the essence of modern capitalist trade theory – does not at all consider capital as a factor of production. This theory, which was later picked up by Marx, is based on the *labor theory of value*.

On the basis of this I distinguish between two types of competition: what I call *classical competition* – based on the classical economist David Ricardo – where the only thing technological change does is to lower the prices of production. The counterpoint to this I have called *collusive competition*; collusive in the sense that, as a result of dynamic imperfect competition and high barriers to entry – capitalists (profits), workers (wages), and government (taxes) – are able to 'collude' and prevent prices from falling at the same rate as the productivity falls. This is a *main reason* why industrial policy is important. The figure below explains the mechanisms which create, respectively, *collusive* and *classical* modes of diffusion of productivity improvements.

Table 1. Characteristics of the two modes of diffusion of productivity improvements, the *collusive* and the *classical* modes.

	Collusive	Classical
Characteristics of mode		
Divisibility of investments Degree of perfect information	Indivisible, comes in ‘chunks’ Imperfect (e.g., patents, internal R&D)	Divisible Perfect (competitive market for technology itself)
Source of technology from user company point of view	Internal, or external in big chunks = high degree of economies of scale	External
Barriers to entry Industry structure Economies of scale Market shares	Increase Increases concentration Increase Very important	No change Neutral No change Unimportant
How benefits spread		
GNP as measured	Highly visible (at producer level)	Tends not to appear (Solow-paradoxes)
Profits level	Increases stakes: possibilities for larger profits or losses	No change
Monetary wages Real wages (nationally) Price level Terms of trade	Increase Increase No change No change	No change Increase Decreases Turns against industries experiencing technological progress
Examples of innovations in the two groups	New pharmaceuticals, automotive paint production, Microsoft, Google, Facebook	Electricity, online sales of hotel bookings and used books, use of PCs, dispersion paint production, containers
Where found	Traditionally mainly in industry, in recent products and processes, IT-related monopolies.	In primary and tertiary industry, use of new basic technologies, mature industry

Source: Reinert, Erik, ‘Catching-up from way behind - A Third World perspective on First World history’ in Fagerberg, Jan, Bart Verspagen and Nick von Tunzelmann (eds.) *The Dynamics of Technology, Trade, and Growth*, Aldershot, Edward Elgar, 1994 (modified).

In Fabricant’s graph above we find that industry 4 – beet sugar – appears as having a very high score in increase in output and productivity. However, we can safely assume that a commodity like sugar will operate under perfect competition, we cannot expect profits or wages to increase like in the automotive industry. In fact we find that in all developed countries beet sugar – which in productivity is inferior to tropical cane sugar – like so many agricultural products is subsidized by the governments.

The conceptual Quality Index of economic activities in figure 9 adds the dynamics of profits, wages, and taxes from oligopolistic competition and the lack of such dynamics from perfect competition (commodity competition) to Fabricant’s graph. New inventions and innovation enter at the top – initially under near-monopoly conditions – but fall, with very different gravity, towards perfect competition. Economic theory generally only defines well monopolies (black, at the top of the Quality Index) and perfect competition (white, at the

bottom of the Quality Index). Most economic activities are inbetween, and – in the absence of new innovations – tend to fall towards perfect competition. E. g. when a patent expires on a medicine, this product would experience a sharp drop on the Quality Index (towards perfect competition) As a product matures and the learning curves flatten out (figure 8), the same thing will happen. That only continuous innovations will secure continuous profits is the main source of dynamism in an economy. Rich countries produce goods with a high score on the Quality Index, poor countries produce goods with a low score (see Reinert 2007 for more details)

Appendix III The Quality Index of Economic Activities

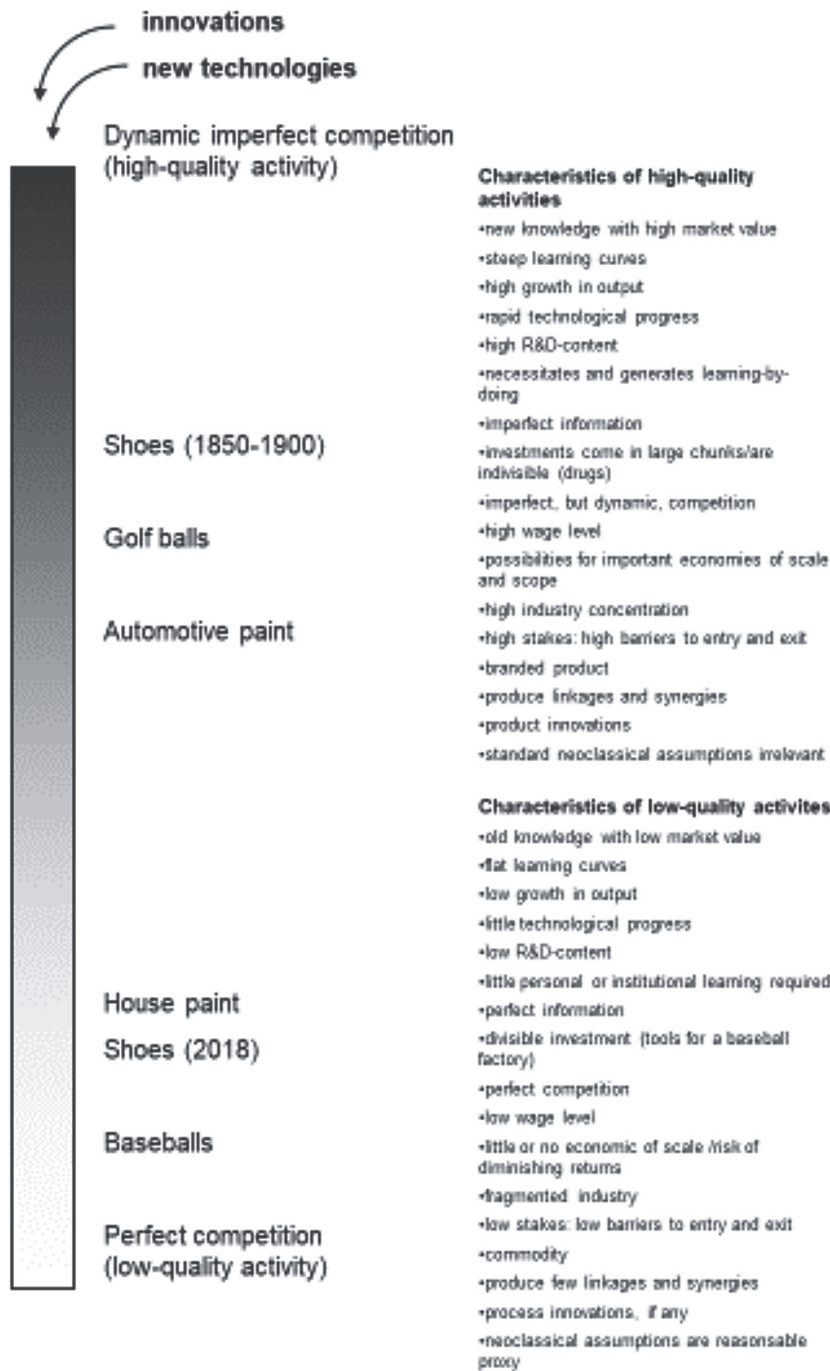


Figure 9. The Quality Index of Economic Activities.

Source: Reinert, Erik, 'Catching-up from way behind - A Third World perspective on First World history' in Fagerberg, Jan, Bart Verspagen and Nick von Tunzelmann (eds.) *The Dynamics of Technology, Trade, and Growth*, Aldershot, Edward Elgar, 1994, p. 184

These dynamics make it possible to theorize about industrial policy around ‘good’ and bad’ economic activities, around ‘smart’ and ‘unsmart’ specialization

Table 2.
‘Good’ and ‘Bad’ Economic Activities.

Characteristics of economic activities that are good /smart to specialize in.	Characteristics of bad/unsmart economic activities.
Increasing returns to scale (higher volume = lower costs)	Diminishing returns (higher volume = higher costs, after a point)
Rapid technological development (steep learning curves)	Slow technological change (flat learning curves)
Technical change leads to higher wages to the producers (‘Fordist wage regime’)	Technical change tends to lower prices to the consumers
Dynamic imperfect competition	‘Perfect competition’ (commodity competition)
Have stable prices	Show strong price fluctuations
Generally skilled labor	Generally unskilled labor
Create a middle class	Create ‘feudal’ class structure
Irreversible wages (‘stickiness’ of wages)	Reversible wages
Create large synergies (linkages, clusters)	Create few synergies

Empirically the effect of these activities can be measured as in Table 3 below.

Table 3.**Table 1. Average wage per cluster category in Europe**

Aerospace	44,718 €	Paper products	24,995 €
Financial services*	43,930 €	Sporting and children's goods	23,498 €
Biotech	42,384 €	Building fixtures	22,827 €
Pharmaceuticals	40,735 €	Stone quarries	21,183 €
Analytical instruments	39,519 €	Processed food	20,993 €
Chemical products	38,381 €	Construction	20,894 €
Information technology	37,360 €	Construction materials	20,063 €
Oil and gas	36,073 €	Textiles	17,902 €
Telecommunication equipment	35,960 €	Jewelry and precious metals	16,303 €
Production technology	32,371 €	Furniture	16,131 €
Automotive	29,399 €	Leather products	15,594 €
Plastics	29,066 €	Maritime	14,274 €
Medical devices	28,928 €	Tourism and hospitality	13,961 €
Power generation and transmission	28,927 €	Agricultural products	13,852 €
Lighting and electrical equipment	28,767 €	Tobacco	13,567 €
Transportation and logistics	27,462 €	Education and knowledge creation	13,132 €
Heavy Machinery	26,393 €	Apparel	11,885 €
Metal manufacturing	26,269 €	Footwear	11,238 €
Business services	25,964 €	Entertainment	11,034 €
Distribution	25,888 €	Farming and animal husbandry	3,859 €
Media and publishing	25,556 €		

Data based on 255 European regions.

Source:

http://www.foreurope.eu/fileadmin/documents/pdf/Workingpapers/WWWforEurope_WPS_n0014_MS47.pdf

7. Colonialism and Industrial Policy.

Two recent works on early economic bestsellers – defined as economics books appearing in 10 editions or more before 1850⁴⁶ – reveal that many works in economics which were very influential at their time are today virtually forgotten. And forgotten to the extent that there are not even entries on them in Wikipedia.⁴⁷

In this context we shall only mention one work, published by Joshua Gee in 1729, which is typical of English industrial policy before Adam Smith. It is also typical of a lot of English colonial *practice* until long after Smith and Ricardo.

The massive title, in the tradition of the day, reads:

The trade and navigation of Great-Britain considered: shewing that the surest way for a nation to increase in riches, is to prevent the importation of such foreign commodities as may be rais'd at home. That this Kingdom is capable of raising within itself, and its colonies, materials for employing all our poor in those manufactures, which we now import from such of our neighbours who refuse the admission of ours.

Some account of the commodities each country we trade with take from us, and what we take from them; with observations on the Balance

London: Printed by Sam. Buckley, in Amen-Corner. MDCCXXIX

There were at least 20 editions of Gee's work between 1729 and 1780, and the issues are unusually widely spread geographically. There are English editions published in London, Glasgow, and Dublin, French translations (the first in 1749), published in London, Amsterdam and Geneva, Dutch (1750), Spanish (1753), and German (in Copenhagen, 1757).

One factor leading both to the geographical spread of this book, and to its later oblivion is probably that Gee not only was very straightforward when he described English interest in protecting their manufacturing industry, he was also unusually honest about the intention of colonialism being the opposite, to hinder manufacturing there:

That all Negroes shall be prohibited from weaving or spinning or combing of Wool, or manufacturing hats, ...Indeed, if they set up manufactures, and the Government afterwards shall be under a Necessity of stopping their progress, we must not expect that it will be done with the same ease that now it may.

At the time it must have occurred to those who published the 1730 Dublin edition of Gee's volume that not only blacks were subject to this policy, so was Ireland. In 1779 John Hely-Hutchinson – then Provost of Trinity College, Dublin – anonymously published *Commercial Restraints of Ireland considered in a series of letters addressed to a Noble Lord*.⁴⁸ The English authorities thought Hely-Hutchinson's book protesting against the prohibition to export woolen manufactures from Ireland so insidious that the book became the last book in the United Kingdom to be publicly burned by the hangman.

Joshua Gee was a contributor to the journal *The British Merchant* which opposed a commercial treaty that would have established free trade with France. The polemical articles from this journal were published in 1721 in three volumes as *The British Merchant; or, Commerce preserv'd* (London, John Darby), with Charles King as the author/compiler, and became another bestseller.

Together with Charles King and John Cary⁴⁹, Joshua Gee's volume probably scores higher than any other book on this list on what we could call *the fame to oblivion axis*: compared to the popularity at the time these volumes seem to be the least remembered today. These were the three authors who probably were the most honest in explaining the policies that were actually carried out by the English. They show, without modesty, that the industrial policy of colonialism was preventing manufacturing from taking place in the colonies.

This was of course an important reason for the United States to wish independence from England, an event which caused another economic bestseller – that of Alexander Hamilton – to clearly spell out the reasons why the United States would not be a wealthy country without a manufacturing industry.⁵⁰

8. The Marshall Plan and the Need to Rediscover the Economics of Industry, Trade, and Population Density.

‘There is a phase of this matter which is both interesting and serious. The farmer has always produced the foodstuffs to exchange with the city dweller for the other necessities of life. ***This division of labor is the basis of modern civilization.*** At the present time it is threatened with breakdown’.

George Marshall, announcing the future Marshall Plan, Harvard University, June 5, 1947, (italics added)

Curiously the immediate post-WW II era saw two contradictory types of economic theory grow simultaneously. On the one hand – with the 1947 Marshall Plan – we saw, at the practical level, a repeat of the principles that this paper has traced back to England in the 1400s: the only way to create wide-spread national wealth is through industrialization. Indeed, the Marshall Plan re-industrialized Europe, but also created a ‘sanitary belt’ of wealthy industrial countries around the communist block from Norway in the North-West – via Italy, Greece and Turkey – to South Korea and Japan in the North-East. On the other hand – at the theoretical level – Paul Samuelson’s theoretical papers in *The Economic Journal* in 1948 and 1949 (cited above) based on Ricardian trade theory, argued almost the exact opposite: whatever you produced, international trade tended to create ‘factor price equalization’.

The two opposite theories – that manufacturing was needed for wealth creation and that it was not – lived side by side, but slowly – as the Cold War developed – Samuelson’s theory got the upper hand over 500 years of experience. The UN institutions – like UNCTAD – defended the old Marshall Plan order, while the Washington Institutions – The International Monetary Fund (IMF) and the World Bank (WB) – started basing their recommendations on the Ricardo/Samuelson theories. As the communist threat waned, a Washington-based type of neo-colonialism was initiated, often with disastrous economic results.⁵¹

At the very core of the Marshall Plan was a profound understanding of the relationship between a nation’s economic structure and its carrying capacity in terms of population density. We argue that it is necessary to rediscover this theoretical understanding – which has profound implications for trade and industrial policy – in the mutual interest of poor and rich countries.

In early 1947, worries grew in Washington that an impoverished Germany – where manufacturing industry had been forbidden under the Morgenthau Plan – would fall an easy prey to the Soviet Union. US President Truman therefore sent former president Herbert Hoover on a fact-finding mission to Germany. One powerful sentence in Hoover’s Report of March 18 that year zeroed in on the basic problem:

*‘There is the illusion that the New Germany left after the annexations can be reduced to a “pastoral state”. It cannot be done unless we exterminate or move 25.000.000 out of it’.*⁵²

Hoover understood that the population density of a country is determined by its economic structure: Industrialization makes it possible to dramatically increase the population carrying

capacity of a nation. ‘Exterminate’ was an extremely strong word to use after the horrors of World War II, and everyone understood that there was no place where 25 million Germans could be sent: Re-industrialization was the only option.

The lesson from the Marshall Plan is that only extreme danger – in this case a communist takeover of Germany – will convince the West temporarily to give up what has been called ‘free trade imperialism’. Temporarily, we argue, two events come together that may enable a rediscovery of the relationship between the economic structure and population densities of nations, and consequently benefit Africa.

At the moment – facing a situation similar to what England did after the 1929 crisis – the United States under Donald Trump is withdrawing from the ideology of free trade. *‘Donald Trump can embed a single visceral truth in a welter of falsehoods,’* wrote Rana Foroohar in *The Financial Times* in 2018. The ‘visceral truth’ is that David Ricardo’s 1817 trade theory is being marginalized. Last time Ricardian trade theory collapsed – in the 1930s – this marked the start of a process of industrialization in Latin America that lasted for decades. We argue that the current situation presents a major opportunity for Africa and other poor countries in a similar way.

A second event is migration. In 1947, Herbert Hoover stated the facts regarding industrialization and population density. However, Alfred Marshall – the founder of neo-classical economics – in his 1890 textbook *Principles of Economics*⁵³ gives a framework to understand why: Activities subject to diminishing returns (agriculture, mining, fisheries) must after a point shed population, while activities subject to increasing returns attract population. As mentioned before Marshall emphasized the huge impacts of diminishing returns: *‘This tendency to Diminishing Returns was the cause of Abraham’s parting from Lot, and of most of the migrations of which history tells’*. This includes the present migration from Africa, we argue. In an attempt to show us the age of this fundamental insight, Marshall refers to the Bible’s Genesis xiii: 6: *“And the land was not able to bear them that they might dwell together; for their substance was great so they could not dwell together”*⁵⁴

Alfred Marshall essentially rediscovered what was already old knowledge. All over Europe, development economics of the 1600s and well into the 1700s was dominated by the insights of Giovanni Botero’s work *On the Greatness of Cities* (1591), a work that appeared in more than 60 editions in all the main European languages. Botero explained why the only ‘islands’ of wealth in Europe were a few cities – like Venice, Amsterdam and Florence – where adding value to raw materials, producing manufactures, was the key to wealth. In 1613, Antonio Serra⁵⁵ added the basic theoretical foundation to this: The production of raw materials was subject to diminishing returns, while manufacturing was subject to increasing returns. Consequent productivity increases and barriers to entry made it possible for manufacturing cities simultaneously to raise wages and lower the cost of their goods.

Centuries of trade policy followed the principles of Botero and Serra, all over Europe and in the United States. Former World Bank Chief Economist Justin Yifu Lin put it very succinctly: *‘Except for a few oil-exporting countries, no countries have ever gotten rich without industrialization first’*⁵⁶

In line with this analysis, we suggest it is time for Africa and poor countries elsewhere to follow Alfred Marshall’s recommendation: *‘One simple plan would be the levying of a tax by the community on their own incomes, or on the production of those goods which obey the Law of Diminishing Returns, and devoting the tax to a bounty on the production of those goods*

with regard to which the Law of Increasing Returns acts sharply.''⁵⁷ Here Marshall describes what all presently wealthy countries have done, mostly through the protection of increasing returns activities through tariffs, ever since England in the 1400s started to tax the export of raw wool, while at the same time subsidizing the local production of woollen cloth. This was the essence of import-substitution industrialization that took some non-Western countries out of economic colonialism. For centuries, colonies were essentially areas where the production of most industrial products was prohibited, as in the United States until 1776.

The United States under Donald Trump is now ideologically and indirectly paving the way for the industrialization of Africa. This must be an industrialization not primarily focused on the nation-state, like Latin America's industrialization was. Nor can it be based primarily on supplying global markets, as East Asia's industrialization was. It must be focused on the African continent, producing industrial goods that rich countries take for granted, but whose production has not reached Africa to any extent.

An unintended consequence of the Apartheid boycott of Zimbabwe (Southern Rhodesia) was the rapid growth of the industrial sector, reaching more than 30% of GDP. Recently, de-industrialization there has rapidly increased outward migration, proving the principle Herbert Hoover explained in 1947 still true.

A consequence of Africa's industrialization could very well be reduced migration because more Africans will be able to find jobs in Africa. In 1947, a possible communist takeover of Germany was a threat big enough for the West to temporarily abandon free-trade imperialism. The threat now is the 821 million people worldwide who were undernourished in 2017 according to the FAO. Migration cannot solve their problems. Industrialization can. We can only hope the West sees the light as it did in 1947.

9. 'Institutions' – a Failed Attempt to Reverse the Arrows of Causality of Economic Development.

Early economic theory saw strong arrows of causality between *modes of production* of a society and its social and economic structures. Arab economist Ibn Khaldun (1332-1406) concluded that 'the differences between different peoples arise out of the differences in their occupations'.⁵⁸ Francis Bacon, a scholar who was heavily influenced by Giovanni Botero⁵⁹, wrote in his *Novum Organum* (1620) that 'there is a startling difference between the life of men in the most civilized province of Europe, and in the wildest and most barbarous districts of New India. This difference comes not from the soil, not from climate, not from race, but from the arts'. The same point is strongly emphasized by German economist Karl Bücher (1847-1930) in his bestseller *Die Entstehung der Volkswirtschaft*⁶⁰, in the English translations rendered as *Industrial Evolution*.⁶¹

This way of thinking represents an attempt to systematize the understanding of different categories of human societies – much in the same way as Linnaeus did with plants – freeing economics from what Nobel Laureate James Buchanan called the *equality assumption* in economic theory. In 1721 English economist Charles King in his very influential work⁶² - already mentioned – made a classification of international trade in the same spirit as the Quality Index presented in this chapter. Importing manufactured goods and exporting raw material was 'bad trade' for a country, while importing raw materials and exporting manufactured good was 'good trade'. Interestingly exchanging manufactures for other manufactures was considered 'good trade' for a nation. The principle expressed by King was

based on the same observations as those of Giovanni Botero (1589) and Antonio Serra (1613). 250 year later UNCTAD's idea of *symmetrical trade* as being good for all trading partners recalls King's ideas.

The craving for taxonomies also created the so-called *stage theories*⁶³, to which also Adam Smith subscribed. In German these theories have recently been referred to as *Wirtschaftsstile*⁶⁴, which implicitly emphasizes the fact that different economic styles – or stages – may coexist at the same time in different places.

At the core of stage theories is that the mode of production – that is, whether you are in the *Stone Age* or the *Computer Age* – will determine your institutional structure. In this stage tradition, the structure of production tends to influence the institutional structure more than the other way around.⁶⁵

On a personal note: Having worked with pastoralists in the high Andes and with Saami reindeer herders in Northern Fennoscandia, I can testify to the striking similarities in the social organization of pastoralists under extreme climatic conditions in so different areas and cultures. Here, as under other extreme climatic conditions, the market economy has not penetrated (other than in the extraction of minerals). These societies have sequential usufruct of land over the years, not private property.

Clearly some institutional innovations are crucial to economic development. Primogeniture – the right of the firstborn legitimate son (or child) to inherit his parents' entire estate – has created stability in European kingdoms, e.g. compared to the Arab world. In agriculture primogeniture prevented farm sizes from diminishing into or beyond self-sufficiency. Werner Sombart – the great historian of capitalism – sees the birth of two institutions – *double entry book-keeping* and *bankruptcy* – as the two key institutional ingredients making the system possible. Historically these institutions bring us back to Venice in the 12-13th centuries.⁶⁶

However, it is generally most useful to see institutions being born out of the mode of production itself, as in the quotes from Ibn-Khaldun and Francis Bacon above. With their 2012 book Daron Acemoglu and James Robinson's *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*⁶⁷ in practice come to the defense and salvation of neo-classical trade theory by blaming former European colonies for not 'getting the institutions right'. They seem to disregard the key point that the 'extractive institutions' they blame for the lack of development represent *the very essence of Western colonialism*. When explaining that 'North America became more prosperous [than Peru and Mexico] precisely because it enthusiastically adopted the technologies and the advances of the Industrial Revolution' (p. 53), Acemoglu and Robinson leave out that Peru and Mexico for a long time were colonies, and that a key element in colonial policies was precisely to prohibit manufacturing there. When Peru and Mexico later gained formal independence, they were still de facto colonies, as power just shifted from Spaniards in Spain to Spaniards residing locally⁶⁸, with the same vested interests in exporting raw materials.⁶⁹ In this way Acemoglu and Robinson – instead of attacking the colonial policies we have emphasized in this chapter, appear as blaming the victims of colonialism.

I would argue, in the Bücher tradition, that the Venetians did not invent an official property register (*catasto*), around 1150, later to create capitalism, but rather because the capitalist growth of the city created a need for the property register. The problem appeared before the solution. Likewise, one could argue that the Venetians did not invent insurance, and then – based on this – start long-distance trading. Rather, one could argue that the previous system of

spreading risk through ever smaller percentages of ownership of ships and cargo became impracticable because of the many owners, and that the impracticability of this fractionalized ownership is at the origin of a system of insurance: risk is being spread without spreading ownership. In practice, economic activities and their institutions co-evolve, and the first geographical area where this process of co-evolution created capitalism was in the Italian city-states, starting in the twelfth century.⁷⁰

In short, historical observations tend to reverse the arrows of causality in economic development compared to the formal theorizing of modern institutional economics (as opposed to the classical institutional economic of Thorstein Veblen and his contemporaries).

10. When Industrial Policy Intuition Clashes with Ricardian Trade Theory.

Economists are unlikely to say to their children ‘my son (or my daughter), I have observed your efficiency in washing the dishes. It is clear to me that you have a comparative advantage in this activity, and I would recommend a career washing dishes in restaurants’. As a parent, the economist would react according to the pre-Ricardian logic we have described in this chapter. As an economist – advising the children of Africa – his advice would be based on David Ricardo.

This is a clear example of what US economist Thorsten Veblen warned against, that formal education might contaminate healthy human instincts. *Exoteric* knowledge – practical and intuitive knowledge – could with higher education be lost to much more prestigious – but practically of little use – *esoteric* knowledge, such as Ricardian trade theory. As already referred to, Schumpeter referred to this as ‘the Ricardian Vice’; bringing the theory to such a high level of abstraction that it became irrelevant.

It is also intuitively obvious that – in spite of the theories of David Ricardo – a free trade between a Stone Age society and a Computer Age society will not tend to produce factor-price equalization. A similar intuitive reasoning made presidential candidate Bill Clinton in 1992 advocate high-tech industries. The reply from George H. W. Bush’ economic advisor Michael Boskin came straight out of the neo-classical economic textbook: ‘computer chips, potato chips, what’s the difference’. With time, Boskin seems to be on the losing side when it comes to US industrial policy, but not when it comes to US trade policy towards Africa.⁷¹

11. Nichification: an ‘Industrial’ Policy Strategy for Agriculture

The 20th century was dominated by standardized mass production. Henry Ford’s statement in 1909 that ‘Any customer can have a car painted any color that he wants so long as it is black’ was a statement that expresses the need to standardize in order to keep costs down. Gradually, and especially with the introduction of information technology, it was possible to produce smaller runs. The need for standardization diminished.

In agricultural production, more so in Northern Europe than in Southern Europe, standardization increased as a by-product of the economic crisis of the 1930s. Agricultural economists claim, probably correctly, that agriculture is the first economic activity to enter into an economic crisis and the last to leave it. Due both to market power and to strong

unions, during the crisis of the 1930s the industrial workers who kept their jobs tended to keep their wages. The crisis had a completely different effect in agriculture: farmers' sales prices and their incomes fell precipitously. John Steinbeck's 1939 *Grapes of Wrath* captures the drama of the situation.

After WW II it was understood that farmers could not produce their way out of their problems, this would only cause overproduction and falling prices. Agriculture was seen as needing more market power, in that sense agriculture ought to be more like industry. For this reason national farmers' cooperatives were given monopoly powers, and in the United States agriculture was (and still is) exempt from anti-trust and often heavily subsidized.

This brought agricultural production – previously locally based – into the logic of Fordist mass production. While previously in Europe every farm, or every region or valley, had its own cheese, cheese production became more and more industrialized and more and more standardized. This coincided with the rise of big supermarket chains that came to dominate the retail food market. Farm products became bulk products, and when competition slowly opened up the farmers found themselves in the clearly inferior position of being specialized in bulk products, basically left to compete on price alone. A very 'bad specialization'.

In Southern Europe the local and regional pattern survived much longer, and big supermarkets also came to dominate later there than in Northern Europe. People wanted their local cheese and their local *salame*, so price competition between bulk producers was much less dominant. The local niche products, and with them decentralized production, survived.

General de Gaulle once rhetorically asked 'How can you govern a country which has two hundred and forty-six varieties of cheese?' According to a book on Italian cheeses, Italy beats that number by more than 200 varieties, registering four hundred and fifty-one different varieties of cheese.⁷² Having avoided the bulk- and mass-production paradigm, French and Italian cheese – as well as some cheeses from Spain and Switzerland – became a 'smart specialization'.

The organizational principle of Fordist mass production in bulk was *economies of scale in hierarchies*, while 'smart specialization' depended on *economies of scope among small players in networks*. Competition here is based on quality and product differentiation, not on price as in the mass production paradigm.

In agriculture and food production there is today an ever-increasing diversity, more so in Southern Europe than in Northern Europe and the US. Italy has of course hundreds of different types of pasta, and this diversity multiplies because regional differences between pasta types – often with the same names – are enormous. The *casoncelli* of Lombardy – a kind of *ravioli* – are very different in Cremona from those in Bergamo or Brescia. In many ways this Italian diversity is a remnant of pre-Fordism. More than most countries France and Italy have managed to preserve a variety in food and agriculture, while at the same time utilizing the industrial economies of scale. At the other extreme of the scale, Norway, with only about 4 million people, was probably the country where Fordist mass production – killing off previous niches – most came to dominate agricultural production, both meat and milk. This was also partly a conscious political emulation from the Soviet Union.

The development and importance of diversity is illustrated by figures from modern biological research. Figure 10 is from the Harvard biologist Stephen Jay Gould's book: *Full House. The Spread of Excellence from Plato to Darwin*⁷³. The illustration shows the evolution of the diversity of biological species from a common 'ancestor'. In the case of horses, it would be a kind of *Urpferd* or *Sifrhippus*. Each end point further to the right represents a new biological

variety descending from the same ‘ancestor’ (to the left in the drawing), like Shetland ponies, Peruvian paso horses, zebras, and donkeys. In Gould’s scheme a small number of varieties – as a result of random evolution – grow much larger than the rest. This is represented by the larger varieties at the bottom of the time axis (the varieties to the right, seen from the point of view of the ‘ancestor’).

If we transfer this illustration to *economic* diversity, we create a graph that corresponds to Botero’s idea of increasing value added the further one moves away from the raw material. In this graph the end points represent a *product*. For example let this common ‘ancestor’ be milk (the single starting point to the left). As the biological ‘ancestor’ the starting point is generic and *non-specialized*. Milk can come from a variety of animals, from cows to sheep, reindeer, and moose. The first more specialized branch could be the product *cheese*. The product cheese is again divided into new and ever more specialized products as we move towards the right of the time axis. Other products could be yoghurt, buttermilk, whole milk, cream, sour cream and so on. Far out to the right on the diversity tree of cows’ milk, we find e.g. Appenzell cheese, which is only produced in two small cantons in Switzerland, or – as an extreme example – 650 Parmesan cheeses coming from 650 different cheese factories which all produce technically slightly different cheeses. (On the biological axis far out to the right we find e.g. one type of panda which is so specialized it only eats the leaves from one specific kind of eucalyptus.)

Wine is an example of extreme nichification. If we look at Gould’s starting point at the left (bottom) of Figure 10, the single starting point would be that by fermenting grapes you can produce wine. If we add that there are green and red grapes, and that red grapes may be left with the skin for a while to create rosé wine, you have the next stage of diversification in Gould’s graph: white, red, and rosé wine. Then, further to the right, a huge variety of grapes and climates produce a never-ending variety of niche wines. These niches – from Barolo in Piedmont to Zinfandel in California – make it possible to compete along other aspects than price: more value is added as in Botero’s theory. The wine industry was the first to use *terroir* – clusters of environmental factors affecting quality – as a marketing tool. Reportedly the first such geographical protection was established in 1716 by Cosimo III de’Medici, the Grand Duke of Tuscany, for the Chianti wine.

With the end of Fordist mass production and the introduction of information technology, the potential for decentralization increased: on Gould’s axis many production processes moved towards the right, towards a far greater diversity. The possibilities not only vary from industry to industry, but also from product to product. In the last instance it is also the human will – no invisible hand – deciding to what extent the decentralizing element in the present economic paradigm shift should be used to strengthen the economic periphery. Also in the new organizational paradigm we have large industries – like Boeing and Microsoft in Seattle – representing the larger varieties at the bottom right of the time axis. When it comes to both large and small industries, it is the increasing human amount of knowledge that advances the process. One of Gould’s main points in the book is that over time the small units – in spite of the many visible large units (read ‘firms’) – dominate ever more. We see the same development in the economy during the transition from the Fordist to the future techno-economic paradigm. Gould’s second important point from this worldview is that to utilize *average values* becomes more and more meaningless as development advances.

In the economic world there are different degrees of demand for the original generic product (the ‘ancestor’ and the basis for the illustration) – *commodities* like e.g. generic ‘milk’. It is only natural that different business strategies make some firms specialize in production of the generic product, where the demand is for low prices rather than high quality. Here the margins

are very small, and this strategy needs an enormous turnover (and/or low wage rates) to survive (a result of economies of scale). Here we find giants like Cargill in the world grain markets. It is worth noting that the strategy in this volume market essentially implies a fight for market shares because *high volume = low unit costs*.

Emilia-Romagna in Italy is an interesting area from the point of view of nichification. In Emilia-Romagna the *high volume-low cost* strategy was represented by the production of ultra-pasteurized milk by the giant firm Parmalat, building on the importance of globalization and economies of scale in this market, by e.g. buying up 36 dairies on the East Coast of South America. However, at the time operating in more than 30 countries, Parmalat came close to bankruptcy in the midst of a financial scandal.

The high volume-low cost strategy bulk production failed Emilia-Romagna's agriculture. What makes Emilia-Romagna agriculture so special is the fact that in many agricultural products – milk, ham, vinegar, olive oil – local raw materials are used. Producers in this region receive higher prices than the producers of the same raw materials do in the rest of Italy. The explanation is that Emilia-Romagna delivers very high-quality niche products that we find far to the right in Gould's figure 10 below. Industrial giant Parmalat mass-produced its standard quality milk based on milk imported from Bavaria in Germany. When this author researched this issue in 1996, the producers delivering milk for Parmesan cheese achieved 40 % higher prices than did the producers of normal consumer milk in nearby regions. When it comes to milk production this region has managed to get the best from all worlds:

1. High prices for local raw materials for niche products, higher prices than for the same products in many parts of Europe.
2. A decentralized production of niche products utilizes the partly rugged geographical territory in the Apennines very well (1996: 650 dairies producing milk for Parmesan cheese).
3. And – to the extent this still lasts – economies of scale in hi-tech mass production of bulk milk based on import of cheap milk imported from Germany (Parmalat etc.).

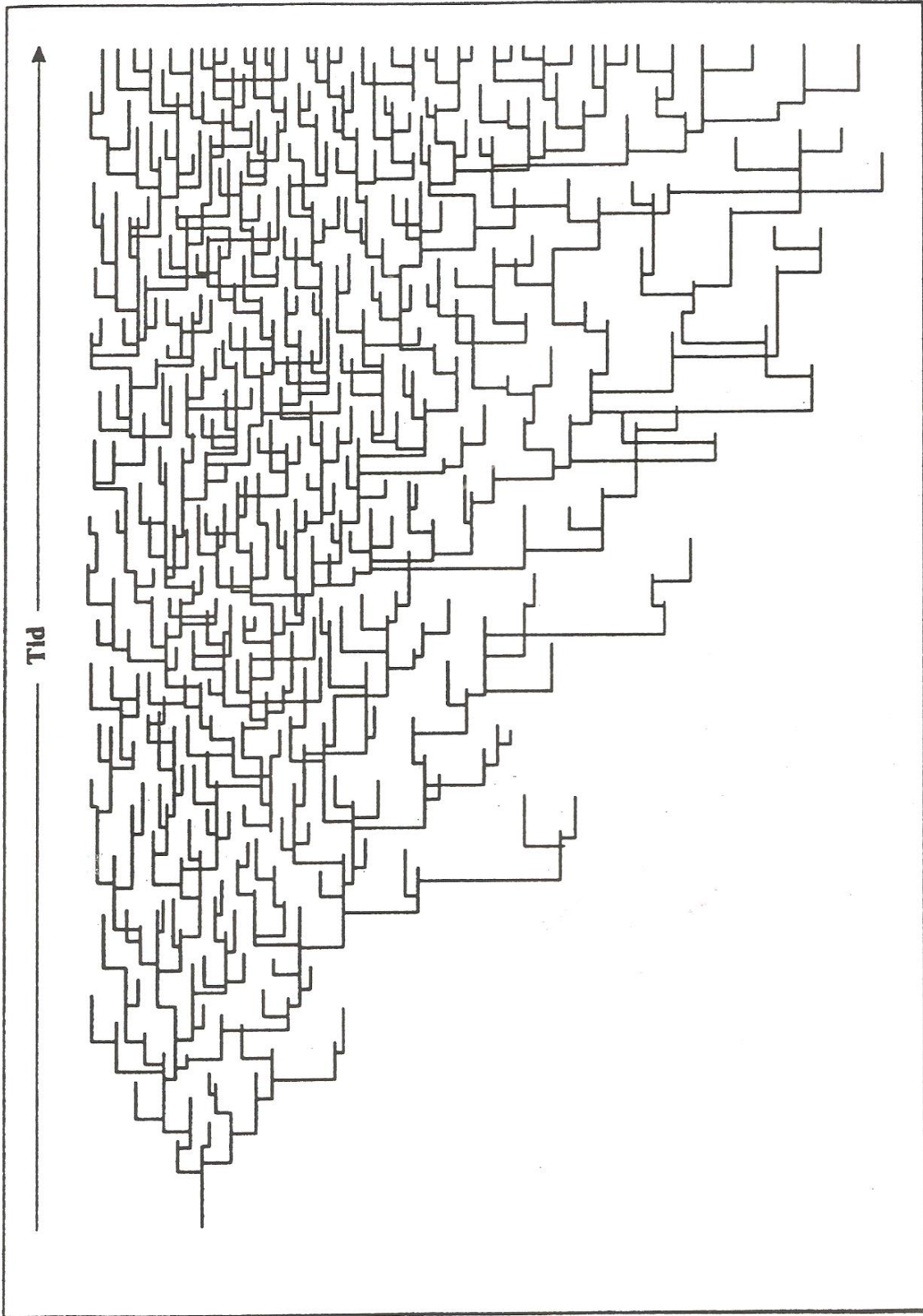


Figure 10: Increasing diversity and specialization over time (= 'tid').

Source: Stephen Jay Gould, *Full House. The Spread of Excellence from Plato to Darwin* New York, Harmony Books, Crown Publishers, 1996.

12. What is new in the present industrial policy game?

As regards industrial policy, the US Republican Party platform in 1884 sounded as if it had been based on the writings of Giovanni Botero almost 300 years earlier:

“The largest diversity of industry is most productive of general prosperity, and of the comfort and independence of the people. We, therefore, demand that the imposition of duties on foreign imports shall be made, not ‘for revenue only’, but that in raising the requisite revenues for the government, such duties shall be so levied as to afford security to our diversified industries and protection to the rights and wages of the laborer; to the end that active and intelligent labor, as well as capital, may have its just reward, and the laboring man his full share in the national prosperity.

Against the so-called economic system of the Democratic party, which would degrade our labor to the foreign standard, we enter our earnest protest.”⁷⁴

Policies to this effect could be achieved by allowing all raw materials free of duty into the country, and by increasing the customs duty proportionately with the added value to the raw materials. The principle of industrial policy was to apply the highest duty to the technologically most sophisticated product.

Since then, many developments have complicated the issue. The minimum efficient size of industrial firms – and therefore also of nations – has increased considerably.⁷⁵ In the 1930s a country like Estonia, at the time richer than Finland, with a population of only 1 million people, could have internal competition in many industries. This is no longer possible. The essence of the 1988 Cecchini Report⁷⁶ arguing for a single market in Europe had a good point when predicting that most of the benefits from the single market would occur because of increasing returns to scale in manufacturing industry. What Cecchini did not calculate, was that – particularly with the help of frozen exchange rate in the form of the Euro – manufacturing industry would die out in the countries in the European periphery, thus creating a win-lose situation where Germany in the end appears to be the biggest, or sole, winner.

From a perceived hierarchy of increased value added based on raw materials, the appearance of global value chains has complicated the issue. Often global value chains can be analyzed using the Quality Index in this chapter, but sometimes the categories – e.g. high technology goods – contain a large diversity of products of different levels of sophistication. The trade issues between the United States and China illustrate the issue. One thing is clear, though, that by putting high tariffs on important products that are already subsidized – like soy beans – China hit a weak point in the US.

Conclusion. Unrealistic Utopias that Boomerang as the Curse of Europe and the West.

„The naive optimism of ‘laissez-faire’ and the childish and frivolous appeal to revolution, the naive hope that the tyranny of the proletariat would lead to world happiness, increasingly showed their real nature, they were twins of an ahistorical rationalism ... The period 1870–1890 led to the theoretical and practical bankruptcy of both the old schools.

Gustav Schmoller, German economist,
Inaugural speech as Rector of the University of Berlin, 1897

Again we appear to stand at a bankruptcy of a school of economics, of a big vision of how the world was supposed to work. This time it is neoliberalism, the modern version of Manchester liberalism, one of the two ahistorical twins Schmoller refers to above. Since one irrational twin – communism – died in 1989, in the ideological triumphalism that followed we allowed the other twin – neoliberalism – rule the field virtually alone for 30 years. One curious aspect of this is that in the balance of countervailing power that had existed between capitalism and communism the industrial policy of Friedrich List had ruled on both sides. That West Germany (Deutsche Bundesrepublik) and East Germany (Deutsche Demokratische Republik) both has issued stamps with the same portrait of Friedrich List. List’s 1841 textbook on industrialism had been the ruling on both sides. The disappearance of this ideology was probably the most important defect when neoliberalism went from theory to practical policy following the 1989 fall of The Berlin Wall.

Austrian–Swiss economist Felix Somary (1881–1956) made the perceptive observation that all big universalist projects of Europe have boomeranged, and caused the opposite of what was intended:⁷⁷

1. The Crusades to the Holy Land should bring the infidels to Christianity and strengthen the union of the Catholic Church. Instead the Crusades led to the fall of Constantinople – of the Eastern Roman Empire and its Church – to the Muslims.
2. The aspirations of religious tolerance under the Reformation – the basic rule – *cuius regio, eius religio* ('whose realm, his religion') – meaning that the religion of the ruler was to dictate the religion of country, suffered the indignity of centuries of devastating religious wars and more intolerance (including anti-Semitism). There were enough countries, after the 1648 Peace of Westphalia – which brought an end to this period – there were around 400 small states in Germany alone.
3. A little more than 100 years later the French Bourgeoisie started its Revolution for political and economic freedom, which led to a blood-bath, despotism and to four generations of dictatorship. Adam Smith had taught us that “It is not from the benevolence of the....baker that we expect our dinner, but from (his) regard to (his) own self-interest”. However, what Smith had not envisioned, was that in the decades before the French Revolution much more money could be made from withholding flour and grain from the market – causing prices to raise – than by baking bread⁷⁸. To most *economistes* of the time – Physiocrats – it was inconceivable that money made *from producing goods and services* could have different effects in the economy than

money made *from increasing the prices of things already produced* (i.e. from speculation)⁷⁹.

It belongs to the history of the French Revolution, that the Minister of Finance – Jacques Necker (1732-1804), born in the Republic of Geneva – was in ardent opposition to the Physiocratic *laissez-faire* doctrine which was mainly responsible for the shortage of bread in Paris. When the French Revolution broke out with the storm of the Bastille on July 14, 1789, the fact that Necker had been dismissed as Minister of France three days earlier was a main reason for these disturbances. Necker's popularity as an economist is proven by the fact that he is the only author – of more than 80 – represented with four different works on the list of economic bestsellers before 1850.⁸⁰

Today we can observe – in the spirit of Somary – that the lofty ideals of the European Union project resulted in countries divided by a common currency with serious economic problems in the periphery; that the United States is faced with falling real wages, a dwindling middle class, and increased mortality of white males; and that the vision of globalization as an exercise in increasing harmony – propelled by the Ricardian Cold War visions of Paul Samuelson – often proves to be more an exercise in *factor-price polarization* than in *factor-price equalization* (with China as the great exception).

During the French Revolution, the supposed 'natural' forces of automatic harmony – from Franz Anton Mesmer's quack science of *Mesmerism*⁸¹ – and its supposed creation of a *Society of Universal Harmony* to the Physiocrats' idea of 'laissez faire' provided the opposite: famine and revolution. This shows that the nature of economic systems obeys Charles Darwin more than it obeys any unreal abstract theories creating illusions of automatic harmony: economic harmony is man-made. We therefore need meso-level theories adopted to the specific contexts of each nation. From this point-of view neoclassical economics and neoliberal theory has functioned as snake oil, a cure-all for most ailments. Googling the term 'austerity' together with 'snake oil' in fact gives a surprisingly large number of hits.

The wealth and poverty of a country are to such a degree a result of its economic structure, that industrial policy – in its widest sense – is necessary in order to create peace and economic justice. The present ecological crises only reinforce the need for the understanding of the mechanisms of diminishing returns (which created Malthus' *dismal science*) and increasing returns under which it is possible to *harvest* a generous nature rather than to unrenewably *extract* the products of nature.⁸² Utopian visions of automatic harmony resulting from free trade are main drivers of human migration away from un-industrialized or de-industrialized countries in Africa and Latin America to Europe and North America.

In 1997, the WTO Director-General, Renato Ruggiero, declared – in the spirit of Paul Samuelson's interpretation of David Ricardo – that we should unleash 'the borderless economy's potential to equalize relations among countries and regions'.⁸³ This is the foundation upon which the whole world economic order came to rest, and also the ideological marching order for the Washington Institutions – the International Monetary Fund and the World Bank – in their policies towards the poor countries of the world. It is again important to emphasize that – in terms of industrial policy -this theoretical understanding was exactly the opposite of the theory on which the extremely successful 1947 Marshall Plan had been built.

'The worse the situation, the less laissez-faire works', said Keynes. Historical developments proved this to be true: the negative effects of laissez-faire *first* showed up in the Third World,

then in the Second (former communist) World, and *in the end* in the core of the First World, in the United States and the European Union.

One important side-effect of the policies of the Washington Institutions is that dictatorships obtain a considerable advantage over countries which try to be democratic. China and Singapore are doing extremely well under their system of well-managed free trade – opening up to free trade where it suits them like Europe used to do – while the policies of the Washington Institutions de-industrialize and impoverish many democratic countries (Figure 11). The virtual ‘prohibition’ of industrial policy through the conditionalities of the Washington Institutions has, in many places, been very costly in terms of failed development and economic retrogression.⁸⁴

In 1989 real wages in Ukraine were considerably higher than those in Belarus. The reason real wages in Belarus now are about the double of those in Ukraine is not because the statue of Lenin still stands on the main square in Minsk, it is probably not that Belarus is less corrupt than its neighbors, it is mainly because – as a dictatorship – the country does not have to follow the foreign dictates of the Washington Institutions and can actually pursue a national industrial policy.

We are in a period when the attitude towards industrial policy is slowly changing, but in the reverse order of what should happen if we follow Keynes’ insight above. The clearest changes in favor of industrial policy are taking place in Germany and in the United States. The process is much slower in poor countries where there has been a prohibition of industrial policy and where it is most needed. Last year I was called to contribute to an annual report on development of the OECD and could observe how alternative ideas are only extremely slowly filtering into this powerful global institution. It is difficult for a whole generation of experts to admit that they were wrong, and the virtual monopoly of neo-classical economics at the university level makes it difficult to recruit professionals with alternative views. In a sense the world faces the same kind of intellectual monoculture that faced the universities in former East Germany on the 1990 German unification: there were 23 professors of Marxist economics at the universities in former East Germany, and little else.

CHART 1.13. Percentiles of the population with income growth above/below the G7 average, 1989-2016

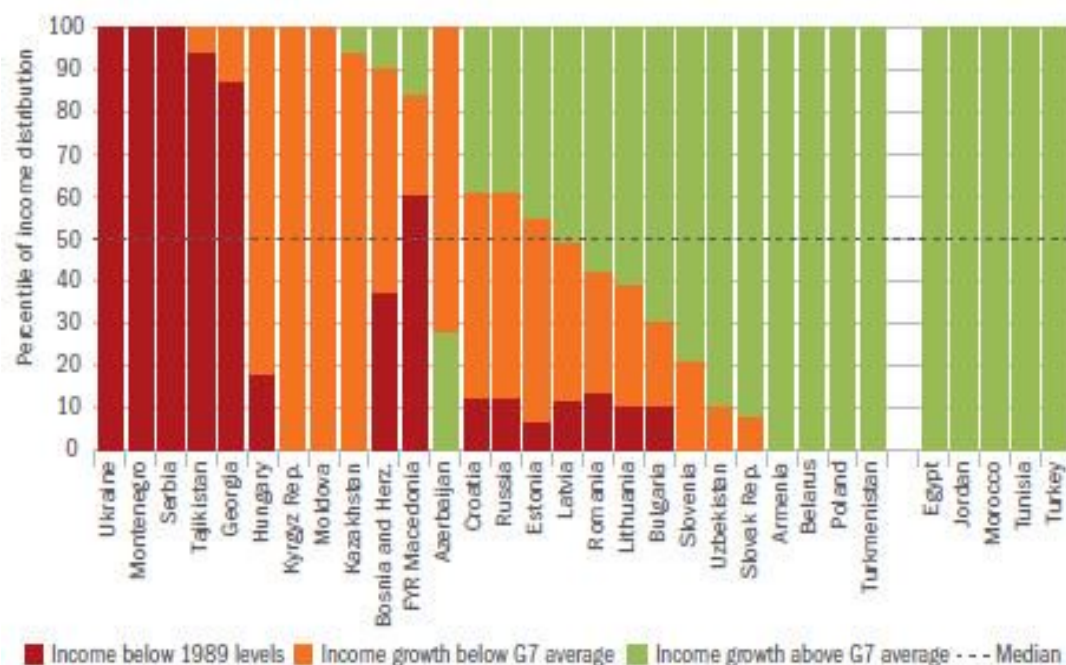


Figure 11. Economic Growth since 1989 (Fall of the Berlin Wall): percentiles of population with income growth above/below the 1989 level / the G7 average level.

Source: Branco Milanovic.

¹ A more complete quote from Adam Smith (1759): The same principle, the same love of system, the same regard to the beauty of order, ...frequently serves to recommend those institutions which tend to promote the public welfare. ...When the legislature establishes premiums and other encouragements to advance the linen or woollen manufactures, its conduct seldom proceeds from pure sympathy with the wearer of cheap or fine cloth, and much less from that with the manufacturer or merchant. The perfection of police (i.e. policy), the extension of trade and manufactures, are noble and magnificent objects. The contemplation of them pleases us, and we are interested in whatever can tend to advance them. They make part of the great system of government, and the wheels of the political machine seem to move with more harmony and ease by means of them. We take pleasure in beholding the perfection of so beautiful and grand a system, and we are uneasy till we remove any obstruction that can in the least disturb or encumber the regularity of its motions.' Adam Smith, 'The Theory of Moral Sentiments' (1759), in *Collected Works*, London, Cadell and Davies, 1812, Vol. 1, p. 320 (our emphasis).

² Seligman, Edwin, *Curiosities of Early Economic Literature*, San Francisco, Privately Printed by John Henry Nash, 1920.

³ Samuelson, Paul A. 'International Trade and the Equalisation of Factor Prices', *Economic Journal*, June 1948, Vol 58., pp. 163-184, and 'International Factor-Price Equalisation once again', *Economic Journal*, June 1949, Vol. 59, pp. 181-197.

⁴ Schmoller, Gustav, *Wechselnde Theorien und feststehende Wahrheiten im Gebiete der Staats- und Socialwissenschaften und die heutige deutsche Volkswirtschaftslehre: Rede bei Antritt des Rectorats gehalten in der Aula der Königlichen Friedrich-Wilhelms-Universität am 15. October 1897*, Berlin, W. Büxenstein, 1897.

⁵ Economist Alfred Müller-Armack used the term in a 1947 book, also defining it as a Third Way, but it became popular later.

⁶ Childs, Marquis William, *Sweden; the middle way*, New Haven, Yale University Press, 1936.

⁷ However, a modern version is found in Symcox, Geoffrey (ed.), *Giovanni Botero, On the Causes of the Greatness and Magnificence of Cities (1589)*, Toronto, University of Toronto Press, 2012.

- ⁸ Goldthwaite, Richard A., *The Economy of Renaissance Florence*, Baltimore, MD: Johns Hopkins University Press, 2009, p. 6.
- ⁹ The only exception to this appears to be the Dutch Republic. On this see Reinert, Erik 'Emulating Success: Contemporary Views of the Dutch Economy before 1800', in Gelderblom, Oscar (editor), *The Political Economy of the Dutch Republic*, Aldershot, Ashgate, 2009, pp. 19-40.
- ¹⁰ For a more general discussion of these issues, see Reinert, Erik. and Arno Daastøl, 'Exploring the Genesis of Economic Innovations: the religious gestalt-switch and the duty to invent as preconditions for economic growth,' in *European Journal of Law and Economics*, Vol. 4, 1997, pp. 233-283.
- ¹¹ Pierce, Charles S., in Hartshorne, C. and Weiss, P. (eds.), *Collected Papers of Charles Sanders Pierce*, Cambridge, MA, Harvard University Press, 1867. Vol. V, p. 146. Quoted in Lawson, *op. cit.*, p. 68.
- ¹² Villner, Katarina, *Blod, Kryddor och Sott*, Stockholm, Carlsson Bokförlag, 1986, pp. 110-113.
- ¹³ Mervin, Leonard, *Vitamin C*, Willingborough, Thorsons Publishers, 1981, pp. 14-15.
- ¹⁴ Reinert, Erik S. et al., '80 Economic Bestsellers before 1850: A Fresh Look at the History of Economic Thought', *The Other Canon Foundation and Tallinn University of Technology Working Papers in Technology Governance and Economic Dynamics*, No. 74, 2017. Downloadable on http://technologygovernance.eu/eng/the_core_faculty/working_papers/ and Reinert, Erik S. and Fernanda Reinert, '33 Economic Bestsellers published before 1750' in *The European Journal of the History of Economic Thought*, Vol. 24, 2018.
- ¹⁵ Reinert, Erik 'A Brief Introduction to Veit Ludwig von Seckendorff (1626-1692)' in *European Journal of Law and Economics*, 19, May 2005, pp. 221-230.
- ¹⁶ A 2018 Cambridge Ph. D thesis by Jamie Trace – *Giovanni Botero and English Political Thought* – documents Botero's influence on Bacon and other English authors.
- ¹⁷ See Firpo, Luigi (1971), 'Botero, Giovanni', in *Dizionario Biografico degli Italiani*, Vol. 13, [http://www.treccani.it/enciclopedia/giovanni-botero_\(Dizionario-Biografico\)](http://www.treccani.it/enciclopedia/giovanni-botero_(Dizionario-Biografico)), and Firpo, Luigi, 'La "Ragion di Stato" di Giovanni Botero: redazione, rifacimenti, fortuna', in Gianrenzo Clivio and Riccardo Massano (eds), *Civiltà del Piemonte. Studi in onore di Renzo Gandolfo nel suo settantacinquesimo compleanno*, Vol. I, Turin: Centro Studi Piemontesi, 1975, pp. 139–164.
- ¹⁸ The *Fürstenspiegel* ('Kings' Mirror') literature, bringing advice to the rulers on how to govern, can be seen as part of this broader tradition. The *Sachsenspiegel*, from German Saxony, about 1230, is the best known, but even in peripheral Norway, this tradition goes back to a text from around 1250: *Konungs skuggsjá* (Old Norse for 'King's mirror').
- ¹⁹ The tradition of accurate country surveys and descriptions, dating back to *De magnalibus urbis mediolani* of Bonvesin de la Riva (1288) and later works also on the Florentine state. Such descriptive surveys were the purpose of costly and extensive *visitae* in the Spanish provinces of the New World, some of which have been republished (Ortiz de Zúñiga, Iñigo 1967/1972)
- ²⁰ Of course Botero made mistakes, such as when his sources were not correct. The remarkable thing, however, is the acuteness of his analysis of generalized wealth and policy prescriptions that came to typify the centuries of economics that go under the name of cameralism and mercantilism. Botero was involved in the process of making the Vatican's list of prohibited books, which in his days also comprised the works of Jean Bodin (1530–1596). This position clearly gave him access to much new material.
- ²¹ Bacon, Francis, 'An Essay on Innovation', in *The essayes (sic) or counsells, civill and morall, of Francis Lo. Verulam, Viscount St. Alban. Newly written*. London, printed by John Haviland for Hanna Barret, 1625. Bacon's Essays represent the transition from innovations being a threat to status quo and therefore doubtful, as when Roger Bacon was arrested in Oxford around 1277 for 'suspicious innovations', into something desirable. Before 1850 Bacon's Essays had been translated into Dutch, French, German, Spanish, and Swedish.
- ²² 'Wahre Katakomben von vergessener Literatur' (Meinecke 1925, 83n).
- ²³ Symcox, Geoffrey (ed.), *Giovanni Botero, On the Causes of the Greatness and Magnificence of Cities (1589)*, Toronto, University of Toronto Press, 2012.
- ²⁴ Reinert, Sophus A. (ed.), *Antonio Serra, A Short Treatise on the Wealth and Poverty of Nations (1613)*, London, Anthem Press, 2011.
- ²⁵ The second English translation is clearer on this and is used here (Botero 1635, pp. 85-86).
- ²⁶ i.e. greater diversity of products.
- ²⁷ Presumably this indicates that these products command a higher price and therefore a higher profit to the producer. Today we could say that manufactured goods are produced under higher barriers to entry than most raw materials, and under increasing rather than diminishing returns. Both these factors would produce a higher profit margin for manufactured goods than for raw materials.
- ²⁸ The second English translation is clearer on this and is used here: *The Cause of the Greatnesse of Cities. Three Bookes, With Certaine Observations concerning the Sea. Written in Italian by John Botero...* London: Printed by E.P. for Henry Seile, 1635, pp. 85-86.
- ²⁹ *Ibid*, pp. 88-89.

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- ³⁰ Hamburg, Perthes, 1826.
- ³¹ Schumpeter, Joseph, *History of Economic Analysis*, New York, Oxford University Press, 1954, p. 195.
- ³² Schumpeter (1954, p. 195). Note the term ‘economic organism’, which indicates a type of economic theory based on biological metaphors, rather than on metaphors from physics as is present-day theory.
- ³³ See Patalano, Rosario and Sophus Reinert (eds), *Antonio Serra and the Economics of Good Government*, London, Palgrave, 2016.
- ³⁴ I am here referring to communism, fascism and Roosevelt’s New Deal.
- ³⁵ Luis Ortiz’ 1558 memorandum to King Philip II of Spain is a famous example.
- ³⁶ This argument is being rediscovered; see Hausmann and Hidalgo (2014).
- ³⁷ Marshall’s footnote here: “The land was not able to bear them that they might dwell together; for their substance was great so that they could not dwell together”. Genesis xiii.
- ³⁸ Nicolas Oresme (1356), *De Moneta*. For a recent discussion see Schefold et al. (1995).
- ³⁹ This was a problem of the whole of Spain, not only in the Spanish Viceroyalty of Naples where the discussions between Serra and de Santis took place.
- ⁴⁰ Schumpeter, Joseph, *History of Economic Analysis*, New York, Oxford University Press, 1954, p. 195.
- ⁴¹ Krugman, Paul, *Rethinking International Trade*, Cambridge, MA, MIT-Press, 1990, p. 4.
- ⁴² Fabricant, Solomon, *Employment in Manufacturing, 1899-1939*, New York, National Bureau of Economic Research, Inc, 1942. pp 90-91
- ⁴³ Verdoorn, J. P., ‘Fattori che regolano lo sviluppo della produttività del lavoro’, *L’industria*, 1949.
- ⁴⁴ My book ‘Spontaneous Chaos’ was published in Norwegian in 2009 and has, tellingly, been translated into Russian and Serbian.
- ⁴⁵ Boston Consulting Group, *Perspectives on Experience*, Boston MA, 1972.
- ⁴⁶ ‘Reinert, Erik S. et al., ‘80 Economic Bestsellers before 1850: A Fresh Look at the History of Economic Thought’, *The Other Canon Foundation and Tallinn University of Technology Working Papers in Technology Governance and Economic Dynamics*, No. 74, 2017. Downloadable on http://technologygovernance.eu/eng/the_core_faculty/working_papers/ and Reinert, Erik S. and Fernanda Reinert, ‘33 Economic Bestsellers published before 1750’, in *The European Journal of the History of Economic Thought*, Vol. 24, 2018.
- ⁴⁷ This has recently changed as my students at Tallinn University of Technology have been writing such entries as partial fulfillment of their course obligations.
- ⁴⁸ Dublin, William Hallhead, 1779. For the reproduction of a second edition (Dublin, M. H. Gill & Son, 1882), see <http://www.gutenberg.org/files/38841/38841-h/38841-h.htm>
- ⁴⁹ Cary, John, *An essay on the state of England, in relation to its trade, its poor, and its taxes, for carrying on the present war against France*, Bristol, printed by W. Bonny, for the author.
- ⁵⁰ Hamilton, Alexander, *Report of the Secretary of the Treasury of the United States on the subject of manufactures: Presented to the House of Representatives, December 5, 1791*, [Philadelphia], Printed by Childs and Swaine, 1791.
- ⁵¹ There are several examples in my book *How Rich Countries Got Rich... and Why Poor Countries Stay Poor*, London, Constable, 2007 (new edition New York, publicaffairs, 2019). On Mongolia as a particularly ugly example, see my ‘Globalization in the Periphery as a Morgenthau Plan: The Underdevelopment of Mongolia in the 1990s’ in Reinert, Erik (ed.), *Globalization, Economic Development and Inequality: An Alternative Perspective*, Cheltenham, Edward Elgar, 2004, pp. 157-214.
- ⁵² Quoted in Baade, Fritz (1955), ‘Gruß und Dank an Herbert Hoover’, *Weltwirtschaftliches Archiv*, 74(1), 1–6.
- ⁵³ Marshall, Alfred, *Principles of Economics*, London, Macmillan, 1890.
- ⁵⁴ Marshall 1890, p. 201
- ⁵⁵ Reinert, Sophus A. (ed.), *Antonio Serra, A Short Treatise on the Wealth and Poverty of Nations (1613)*, London, Anthem Press, 2011.
- ⁵⁶ Lin, Justin Yifu, *New Structural Economics: A Framework for Rethinking Development and Policy*, Washington DC, World Bank Publications, 2012, p. 350.
- ⁵⁷ Marshall 1890, p. 452.
- ⁵⁸ Ibn Khaldun quoted in Issawi (1987), p. 17.
- ⁵⁹ See Trace 2018.
- ⁶⁰ Tübingen, Laupp, first edition 1893.
- ⁶¹ G. Bell & Sons, London, 1901, and New York, H. Holt, 1901.
- ⁶² King, Charles, *The British Merchant; or, Commerce Preserv’d*, London, John Darby, 1721 (3 vols.). There were translations into Dutch, French, and German.
- ⁶³ Meek, Ronald (1976), *Social Science and the Ignoble Savage*, Cambridge: Cambridge University Press.
- ⁶⁴ Schefold, Bertram, *Wirtschaftsstile*, 2 volumes, Frankfurt, Fischer Taschenbuch Verlag, 1994 & 1995.

⁶⁵ Some anthropologists argue that the institution of cannibalism tends to appear in environments with limited sources of animal protein, for example in Central America and the Caribbean. The conditions create the institutions, not the other way around.

⁶⁶ Mueller, Reinhold & Frederic Lane, *The Venetian money market: banks, panics, and the public debt: 1200-1500*, Baltimore, Johns Hopkins University Press, 1997. See also other publication of both authors on Renaissance economics.

⁶⁷ Acemoglu, Daron and James Robinson, *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*, London: Profile Books, 2012.

⁶⁸ Bollinger, Armin, *Widersprüche zwischen Unabhängigkeit und Dekolonisation in Lateinamerika*, Zürich, Orell Füssli, 1970.

⁶⁹ There were examples of local industrial policies in Latin America. In Peru when the exports from guano had died out and before nitrate exports started, and in Brazil before gold was found in the province of Minas Gerais. But the local elites fell back on traditional raw material exports whenever a new commodity became available. In that way the industrial mentality hardly had a chance to be established.

⁷⁰ The massive work on *Der Moderne Kapitalismus* by Werner Sombart (1863–1941) argues for the origins of capitalism in the Italian city states. A first English translation of this work, of the four-volume 1916 edition, is scheduled to be published as *Modern Capitalism* (Springer, 2020).

⁷¹ As an early confrontation between neo-classical economics and common sense this quote is precious. But potato chips unfortunately are not a good example to use in international trade. This product is very intensive in transportation costs and is normally not carried over long distances.

⁷² di Corato, Riccardo, *451 formaggi d'Italia. Catalogo storico-gastronomico delle varietà regionali*, Milano, Sonzogno, 1977.

⁷³ New York, Harmony Books (Crown Publishers), 1996.

⁷⁴ Johnson, Donald Bruce and Kirk H. Porter (compiled by), *National Party Platforms 1840-1972*, University of Illinois Press, Urbana, Chicago, London, 1973, pp.72-73.

⁷⁵ Minimum efficient size is discussed in my thesis *International Trade and the Economic Mechanisms of Underdevelopment*, Cornell University, 1980, pp. 143-146.

⁷⁶ Cecchini, Paulo, *The European Challenge 1992. The Benefits of a Single Market*, Aldershot, Wildwood House, 1988.

⁷⁷ Somary, Felix. *Krise und Zukunft der Demokratie*. Jena: TvR Medienverlag, 2010.

⁷⁸ Kaplan, Steven, *Bread, Politics and Political Economy in the Reign of Louis XV*, 2nd edition, London, Anthem, 2015.

⁷⁹ In Florence, the practice - apparently already from the 1200s - of prohibiting the movement of food out of the city, shows that this problem had once been understood. It is worth noting that while the French economists at the time - the Physiocrats - argued that all economic activities other than agriculture were sterile, and therefore rendered much power to the feudal lords, the practice of Florence - one of our earliest democracies - was to exclude landowners from the political process.

⁸⁰ See Reinert, Erik S. et al., '80 Economic Bestsellers before 1850: A Fresh Look at the History of Economic Thought', *The Other Canon Foundation and Tallinn University of Technology Working Papers in Technology Governance and Economic Dynamics*, No. 74, 2017.

⁸¹ Darnton, Robert, *Mesmerism and the End of Enlightenment in France*, Cambridge MA, Harvard University Press, 1968.

⁸² Mathews, John and Erik Reinert, 'Renewables, manufacturing and green growth: An energy strategy based on capturing increasing returns', in *Futures*, Vol. 61, 2014, pp. 13-22.

⁸³ Ruggiero, Renato, Speech in Berlin October 23, 1997.

https://www.wto.org/english/news_e/spr_e/berlin_e.htm

⁸⁴ My edited volume, *Globalization, Economic Development and Inequality: An Alternative Perspective*, Cheltenham, Edward Elgar, 2004, presents two particularly ugly case studies, Mongolia and Peru.

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Table 19.1 How the game changed

Nation-based capitalism	Global capitalism
High-tech, high-growth industries present in all countries of any size	Hi-tech, high-growth industries disappear in peripheral countries (from Greece to Mexico)
Move advanced economic activities to lagging countries	Move human beings from one country to
Adjust exchange rates (Europe)	the other. Freeze exchange rates (Europe)
Create jobs in order to solve crises (Keynes)	Create money in order to solve crises (EU Central Bank President Mario Draghi)
Strong government and labour unions (balance of countervailing powers)	Gradual power shift to the financial sector (the rule of the one per cent)
Harmonization (harmony created through economic policy)	Polarization (spontaneous chaos)*

Note: My book *Spontaneous Chaos* was published in Norwegian in 2009 and has been translated into Russian and Serbian.

Source:

Table 19.2 Characteristics of the collusive and classical modes of diffusion of productivity improvements

Collusive		Classical
Characteristics of mode		
Divisibility of investments	Indivisible, comes in ‘chunks’	Divisible
Degree of perfect information	Imperfect (e.g. patents, internal R&D)	Perfect (competitive market for technology itself)

Source of technology from user company point of view	Internal, or external in big chunks = high degree of economies of scale	External
Barriers to entry	Increase	No change
Industry structure	Increases concentration	Neutral
Economies of scale	Increase	No change
Market shares	Very important	Unimportant
How benefits spread		
GNP as measured	Highly visible (at producer level)	Tends not to appear (Solow paradoxes)
Profits level	Increases stakes: possibilities for larger profits or losses	No change
Monetary wages	Increase	No change
Real wages (nationally)	Increase	Increase
Price level	No change	Decreases
Terms of trade	No change	Turns against industries experiencing technological progress
Examples of innovations in the two groups	New pharmaceuticals, automotive paint production, Microsoft, Google, Facebook	Electricity, online sales of hotel bookings and used books, use of PCs, dispersion paint production, containers
Where found	Traditionally mainly in industry, in recent products and processes, in IT-related monopolies	In primary and tertiary industry, use of new basic technologies, mature industry

Source: Reinert (1994), modified.

Table 19.3 'Good' and 'bad' economic activities

Characteristics of economic activities that are good/smart to specialize in	Characteristics of bad/unsmart economic activities
Increasing returns to scale (higher volume = lower costs)	Diminishing returns (higher volume = higher costs, after a point)
Rapid technological development (steep learning curves)	Slow technological change (flat learning curves)
Technical change leads to higher wages to the producers (Fordist wage regime)	Technical change tends to lower prices to the consumers
Dynamic imperfect competition	Perfect competition (commodity competition)

Have stable prices	Show strong price fluctuations
Generally skilled labour	Generally unskilled labour
Create a middle class	Create 'feudal' class structure
Irreversible wages ('stickiness' of wages)	Reversible wages
Create large synergies (linkages, clusters)	Create few synergies

Source:

Table 19.4 Data based on 255 European regions

Source:

http://www.foreurope.eu/fileadmin/documents/pdf/Workingpapers/WWWforEurope_WPS_no014_MS47.pdf.