

Spring Tide

*Considerations on Industrial Development and Price
Movement*

By

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Introduced and Translated By

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Contents

- 1 Long Waves in Economics: Bob van Gelderen's Extraordinary Contribution in 1913 7

Herman Pieterse

- 2 Spring Tide: Considerations on Industrial Development and Price Movement 17

Jacob (Bob) van Gelderen

Appendix 89

References 95

List of Figures

2.1	Sauerbeck's Price Indices, 1850–1911	25
2.2	Price Indices of Industrial Raw Materials, 1890–1911	34
2.3	Interest rates and securities prices in England, 1849–1910	66

List of Tables

2.1	Sauerbeck's Price Indices, 1850–1911 (Base 1867–1877=100)	24
2.2	Evolution of Wheat and Pig-iron prices in England (in Shillings)	26
2.3	Price Indices of Wholesale commodities, Total, 1890–1911 (Base 1890–1899=100)	28
2.4	Price Indices of Nutrients, 1890–1911 (Base 1890–1899=100).	29
2.5	Price Indices of Industrial Raw Materials, 1890–1911 (Base 1890–1899=100).	30
2.6	Price Indices of Nutrients, 1890–1910.	32
2.7	Price Indices of Industrial Raw Materials, 1890–1910.	32
2.8	Price Indices of Total Wholesale commodities (Base 1867–1877=100)	35
2.9	Composition of Japanese Imports, 1875–1904 (in million of yen)	41
2.10	Exports from Japan, 1872–1904 (in million of yen).	41
2.11	Gold Production in the Transvaal and Australia, 1881–1910 (in millions of fine ounces)	42
2.12	World Gold production, 1493–1911 (annual averages, in kilograms)	43
2.13	Gold Production in the Americas, Russia and Japan, 1895–1910 (in kilogrammes)	43
2.14	United States Electricity production, 1880–1905	44
2.15	Public Issues, 1871–1910 (Billions of Francs)	48
2.16	Newly founded limited liability companies in Germany, 1870–1911	49
2.17	Pig Iron Production, 1872–1910 (annual averages, in millions of tons)	50
2.18	Production, Imports, Exports and Consumption of Iron Ore in Germany, 1861–1910.	51

- 2.19 Coal and Lignite Production, 1851–1910 (annual averages, in million tons) 52
- 2.20 Industrial Census, 1880–1900. 53
- 2.21 Construction of Steam and Sailing Vessels for Own Use, 1841–1910 (5-year averages) 54
- 2.22 Strength of the German merchant fleet, ocean-going vessels, 1871–1910 55
- 2.23 Railway Network Length, 1840–1910 (in kilometres) 56
- 2.24 Railway Network Enlargement, 1850–1910 (annual percentage) 56
- 2.25 Turnover of the Clearinghouses, 1854–1910 (Billions of National Currency) 58
- 2.26 Total imports and exports in five-year averages. 60
- 2.27 United States, Share of Imports, 1870–1910 61
- 2.28 United States, Share of Exports, 1870–1910 61
- 2.29 Composition of German Foreign Trade, 1872–1910 63
- 2.30 Course of Interest Rates in England, 1849–1910 65
- 2.31 Average Level of Discount Rate in London, Paris and Berlin, 1895–1911 67
- 2.32 Average Bank Discount Rate, 1857–1906 68
- 2.33 Production and Exports of Wheat and Wheat Flour in the United States, 1880–1910 (Thousands of Winchester bushels) 70
- 2.34 Population and Livestock Growth, 1873–1900 71
- 2.35 Total Production and Consumption of Copper, 1904–1911 (in English tons of 2,240 lbs) 74
- A1 *The Economist* Price Index, 1890–1900 (Base 1845–1850=100). 90
- A2 Production of Iron and Steel Rails in the United States, 1871–1910 (in thousand tons) 90
- A3 Evolution of the English Economy, 1861–1910 91
- A4 Pig-Iron prices, 1907–1909 (in Reichsmarks per ton) 92
- A5 German Production of Steel, 1896–1902 (in Reichsmark per ton). 93

1 **Long Waves in Economics: Bob van Gelderen's Extraordinary Contribution in 1913¹**

Herman Pieterse

At the time of writing these lines, one crisis seems to tumble over another.²

The question arises as to where we actually stand. Will the world go down tomorrow or the day after tomorrow, and if so what will be the reason? It makes sense to look at patterns that characterise socio-economic development over longer periods. In this article, I try to point out the particularity of the contribution of the first systematic researcher of long waves in economics, Jacob (Bob) van Gelderen, writing as J. Fedder.

Jacob (Bob) Van Gelderen was born in Amsterdam in 1891, the scion of a dynasty of Jewish butchers. His mother was Frederika Fedder (1860-1908), daughter of a diamond worker with family connections in more affluent circles. After their marriage his father Michel van Gelderen (1857-1908) tried his hand as a shopkeeper but became an office clerk. Bob's parents died in 1908, the year of his graduation from the State Trade School, a form of secondary education. In 1910, he took state exams in Economics and Statistics.

1.1 **Alternating periods**

In England, the first country where the industrial revolution broke through, from the economic crisis of 1825 a business cycle of 7 to 11 years is visible, directly linked to the nature of the capitalist mode of production. Sometimes, this short cycle is less observable due to periods of war and recovery. From the 1850s, cycles became more international.

In the early twentieth century, the question was raised whether there was also a longer movement in the economy. This was due to a clear period of slowdown and stagnation of growth in the years between 1873 and 1895 and a sharp rebound thereafter. There had been earlier suggestions that such developments existed. W.

1 This introduction is a lightly updated version of Pieterse, 2024. It forms part of a broader project on the history and theory of long waves.

2 My thanks go to Jan Willem Stutje, Hans Boot and Joost Kircz for their comments.

Stanley Jevons (1835-1882), one of the founders of economic statistics in England, recorded clear periods of ups and downs in price trends as early as 1865. This concerned the first decades of the nineteenth century, but Jevons believed there was no unambiguous explanation.

Even before the capitalist mode of production became dominant, alternating periods of prosperity and famine existed, mostly caused by natural developments, such as fluctuations in the weather, epidemics and crop failures. Explanations for any regularities we leave aside here. Even though there seem to be longer waves that preceded the spread of industrial capitalism, in my opinion, they are not comparable to the long waves discussed here.

In 1901, the Russian Marxist Parvus (Alexander Helphand 1867-1924) was one of the first to note the alternation of periods of rapid and slower growth of production and trade in industrial capitalism. But he did not elaborate on his ideas. Shortly before World War I, others also saw this alternation of periods in price movements. At the time, prominent economists like Russian Ukrainian Michael Tugan-Baranovsky (1865-1919) and Frenchman Albert Aftalion (1874-1956) noticed the phenomenon in 1913. But they did not do more than note it.

In 1913, at just 21 years old, Bob van Gelderen published what was arguably the most pioneering article to appear in the Social-Democratic monthly *De Nieuwe Tijd* (*The New Times*, 1896–1921). Writing under the pseudonym J. Fedder, he presented his findings on long-wave movements in the economy in an article entitled “Spring Tide: Considerations on Industrial Development and Price Movements”. Published in three instalments in 1913, though largely written the previous year, the article was the first to combine systematic empirical investigation of long waves with a set of theoretical propositions. A decade later, the Russian economist Nikolai Kondratiev (1892–1938) in his book *The World Economy and its Conjunctures During and After the War* (1922) would arrive at broadly similar conclusions.

1.2 Wave movement

The war prevented Van Gelderen from publishing his text in German. Eight years after Van Gelderen’s contribution in *De Nieuwe Tijd*, Sam de Wolff (1878-1960) published an article on the long waves in 1921 in *De Socialistische Gids*, the monthly magazine of the SDAP entitled “Prosperity and Depression Periods”. De Wolff mentioned Van Gelderen and built on his work, which he mainly saw as a commentary on the vision Parvus had elaborated in the book, published in 1901, *Die*

Handelskrisis und die Gewerkschaften. De Wolff's article, translated into German in 1924, long remained the only international source on Van Gelderen's work, which, therefore, remained unknown to a wider audience.

Long waves became known via the name of Kondratiev. He published in the 1920s about them in Russia. Some of his work was also published in German. The Austrian-American economist Schumpeter (1883-1950) came up with his own interpretation in which he credited Kondratiev with discovering long waves. After World War II, long waves fell out of attention during the prolonged period of economic expansion. Flemish economist Ernest Mandel (1923-1995) was the first to announce the end of this expansion in 1964, referring to long wave movement. Mandel elaborated his theory further in several books and articles. Since the 1970s, numerous economists have again tried to explain the phenomenon in some form.

1.3 Van Gelderen speaking³

Van Gelderen formulated general conclusions for the periodic emergence of an era of spring tides, in which rapid business expansion was accompanied by high interest rates and high prices. He saw as a precondition for the emergence of a spring tide period a vigorous, either spontaneous or gradual expansion of production with two main forms:

1. The reclamation of sparsely used areas. Agriculture and stockbreeding provide in these newly exploited countries export products, with which the population pays for the products it needs; these are of two kinds: mass consumer goods, mainly textiles and means of production: machinery, railway and other means of transport, building materials.
2. The rather sudden emergence of a branch of production, more powerful than before, capable of satisfying a particular human need (automobile and electricity industries). Its operation, according to him, is on a smaller scale the same as the first form.

A sharp expansion in gold production precedes a new upward surge. Recall, here, that gold was the basis for money in the 19th and early 20th centuries.

The boom movement continues, as sales are guaranteed by the population and the

3 In the following paragraphs, Van Gelderen's article translated here is partly summarised, partly paraphrased, partly quoted verbatim. The literal quotes are referenced in the text with page numbers.

reclamation of new lands. The acceleration of production harbours two factors, which prepare its end, Van Gelderen said. Firstly, the expansion of production is going faster than sales, the markets of the countries to which the high-capitalist countries export are becoming oversupplied. This is greatly facilitated by the industrialisation beginning in those countries. Second, the expansion of industrial production is going faster than that of the production of raw materials. Van Gelderen:

The increasing price rise of raw materials during the spring tide period hampers further industrial growth. Production costs are rising; the market no longer tolerates a proportional increase in the prices of manufactured products; demand is decreasing, profits are falling. The turning of the tide is imminent. (p. 76)

Van Gelderen argued that the root cause of the spring tide phenomena must be sought in capitalist expansion. The quantitatively and qualitatively uncontrolled course of the capitalist mode of production is the explanation of the periodicity. Gold production has a secondary significance in this context because it affects the general price level.

His article aimed to show that the wave of price increases is essentially nothing more than the expression of a periodicity inherent to capitalism. Its function consists in “the ever renewed, efficient distribution of the social productive forces (capital and labour) among the constantly waxing number of countries drawn within the circle of their activities” (p. 78).

Van Gelderen reached these conclusions based on data on prices and production in the economically most important countries, especially England. He sought an explanation of the period of price increases in the years from 1895 onwards. Therefore, he looked at detailed figures on price trends from 1850 onwards.

1.4 Price movement and production in waves

Van Gelderen saw a fairly regular wave motion, the 7 to 11-year economic cycle. The industrial wave movement was entirely parallel to the fluctuation in the price level. England was, in the nineteenth century, the centre of world trade. And it was a free trade country. Therefore, the English market reflected particularly clearly the fluctuations of world market prices.

Industrial raw materials and nutrients participated in the rise, but not to the same

extent. Since the periodic movement of prices, and especially raw material prices, is a symptom of the course of production, Van Gelderen wondered: in the continuous rise since 1896, are we dealing with a phenomenon analogous to the boom? To investigate this, he went further back into the nineteenth century.

He saw a general trend in the price indices also for Germany, the US, Belgium and Austria-Hungary. Again, apart from the average decennial fluctuations in the general price level, the price index showed a larger wave movement over several decades. A general trend was observable: an increase from 1850-1873 - a decrease from 1873-1895 and an increase from 1896 (which was still running during his study).

In his view, this could not be a coincidence, because this was a phenomenon inherent to capitalism. And then it must be evident from the course of business. The symptoms of a boom period in the industrial cycle must correspond to those of an era of spring tides (1850-1873; 1896-1911). Both stem from the mechanism of the capitalist reproductive process. And he continued:

In the concrete historical development of capitalism, we already find the clue to the existence of this larger wave movement. In the main capitalist countries, economic life receives a powerful upward thrust in the early 1850s. (p. 37).

After 1873, the picture changed.

Sales were insufficient in most leading industries and improved only slightly in the few boom years of 1879-81, 1887-1890. The railway network, most of which had been completed in Europe, no longer demanded such capitals; the metal industry suffered from the decline in the formerly exerted demand for railway equipment. (p. 38).

1.5 Thirst for colonies

Finally, the supply of cheap grain from North America led to a prolonged depression in agriculture. The purchasing power of European farmers fell, resulting in a loss of sales for industry.

Trade policy turned from free trade to protectionist in most major countries. However, this did not prevent the depression or the price fall. As a result:

The thirst for colonies awakens in the governments of the main countries with increased vigour. [...] The British Empire, in particular, is expanding at an

awe-inspiring pace. [...] For the population of the countries to which capital is exported, an ever-growing stream of emigrants provides. The agricultural population that has become redundant can no longer find work in Europe in industries that are growing too slowly, and migrates across the oceans. (p. 39)

Van Gelderen also provided an explanation for the beginning of a new spring tide period from 1895. Two branches of production *par excellence* fulfilled the function of booster. First, since 1890: increased gold production in Australia (especially West Australia) and in the Transvaal. Second, the stormy development of the electricity industry. The countries at the forefront of this were the United States and Germany. With increases in several areas: the number of electrical plants, capital, value of product and number of workers. These increased in the US 10 times, 125 times, over 50 times and nearly 60 times respectively from 1880 to 1905. In Germany, power generation capacity increased 20 times from 1895 to 1907. The quantity and value of power cable exports from 1891 to 1907 increased 15- and 19-fold. This development brought with it a rapidly increasing demand for metals (especially copper) and insulating materials, which the greatly benefited metal industry, mining and electrical engineering.

Thus began the upward surge that gave economic life a feverish pace from 1895–1896. This upswing reached higher and further and was more general and stronger than in 1850–1873, as capitalism itself had grown.

As a peculiarity, Van Gelderen mentioned that emigration to the US was not decreasing but changing in composition. Meanwhile, in Germany and England, the ‘surplus’ rural population found work in industry. Migration came more from Italy, Austria-Hungary and Russia.

1.6 Tempo changes

In Van Gelderen's view, it was Parvus who in 1901 first drew the distinction between the cyclical years of boom and what he called the *Sturm und Drang* periods of capital. At certain times, according to Parvus, a strong expansion of the world market had to take place, and the entire world production had to be put on a new more comprehensive basis. Parvus called the alternation of *Sturm und Drang* periods and depression periods *tempo changes* of a business development that otherwise obeyed the laws of the capitalist cycle.

The price indices showed that the distance between highest and lowest cycle-points

was shorter in the upturn, longer in the depression, as in the periods before 1873 and from 1896 onwards. Figures for English exports showed the same. The numerical ratio of boom-and-bust years in one cycle also proved different. The spring-tide periods 1851–1873 and 1895–1911 had more years of upward than downward business cycles. In the 1873–1895 period, it was the reverse.

This prolonged depression seemed to many to be permanent. Even Tugan-Baranovsky, in the first editions of his work on England, failed to see that this change of pace was temporary, mistaking English development for the quintessentially capitalist and, according to Van Gelderen, failing to take sufficient account of England's being outstripped by the United States and Germany. For Van Gelderen, the latter two were the countries where we should study capitalism first.

1.7 Further consideration

Van Gelderen was the first to empirically substantiate the longer-wave movement across prices, interest rates, trade and production. His explanation was comprehensive and tried to encompass developments in various economic, as well as social and political fields. He saw a parallel between the course of the short cycle and the longer alternation of rapid expansion and slowed growth. He explained the start of a new spring tide from a convergence of enlarged outlets with renewal through the emergence of new industries and the involvement of new areas in the global market.

He did not answer the question of why new industries develop. He explained the turnaround at the end of a period of spring tide as a result of sales opportunities lagging behind the growth of production, and of raw materials becoming more expensive, whose production could not rise as fast. Van Gelderen based his description of the characteristics of a spring tide period mainly on the period of rapid growth from 1896 onwards. He gave a more or less theoretical framework in the passages on the conditions for the onset of a spring-tide period, without really making it explicit. His empirical attitude apparently made him cautious.

1.8 Van Gelderen underexposed

The question of why Van Gelderen's work was long underexposed, and he is rather referred to as a precursor, more in passing, can be partly explained simply. The "Spring Tide" article was not translated into a language more common at the time such as German. It was only through the German version of an article by Sam de

Wolff that people outside the Dutch-speaking world learnt of the existence of Van Gelderen's pioneering work. Because De Wolff tried to capture the idea of a long-wave movement in a tight cyclical regularity, a veil was simultaneously hung over Van Gelderen's actual originality. It takes us too far to go into De Wolff's contribution in more detail here. That, by the 1920s, De Wolff had also become an odd man out in his own country, too Marxist for the SDAP and too moderate for the revolutionary socialists and communists did not really help either.

Soon after Schumpeter attached Kondratiev's name to the long waves, Jan Tinbergen (1903-1994) in his *Theory of Economic Movement* correctly noted that the long waves had been previously described by Van Gelderen and De Wolff.

It was authors who were proficient in the Dutch language who appreciated Van Gelderen's contribution. Mandel, in his *Late Capitalism*, acknowledged Van Gelderen and not only for collecting data in support of the wave theory but also as someone who offered an initial explanation, particularly focusing on sudden expansions of production. According to Mandel, contemporaries such as Kondratiev and Schumpeter did not, in theoretical terms, stand above Van Gelderen's conception. This is also the opinion of Dutch economists Alfred Kleinknecht and Jan Reijnders. The latter calls Van Gelderen's article "Kondratiev in a nutshell". Kleinknecht points out that Van Gelderen mentions six important elements: the hypothesis of a leading sector; the hypothesis of periodic over- and under-investment of capital; credit expansion and financial crisis; periodic scarcity and abundance of raw materials; the opening of new territories and waves of migration; and fluctuations in gold production. All factors can be found in various combinations among later authors.

1.9 Meaning today

Van Gelderen's efforts had a practical political motive. He was concerned with explaining the continuous price rises that prevented improvement in the living standards of the working class. And, today, it is also useful to interpret prospects in economic development.

But confirming and applying a theory of long waves has several problems. At the moment, the main one is that, after the revival of the capitalist economy between roughly 1940 (for the US) and 1973, and a period of markedly slowing growth, no real new upswing can be observed. No beginning of a new Kondratiev. We did see a start in the 1990s, but it soon encountered limitations. First, the dotcom bubble (the

overvaluation of new internet companies) burst in 2000. Then the financial crisis broke out in 2007–2008, leading to a prolonged period of limited growth, at least in the US and Europe.

The key question in long-wave discussions is always: how does a fresh start of an upward period come about. It is important to remember here that there is no single factor, it is a complex of factors. Each period is a totally new one with its own characteristics. History also shows that it is not a fixed repeating pattern. The period around 1850 was very different from the period around 1895, which in turn was very different from the period around World War II. The recovery in the rate of profit, i.e. the profitability of capital, from 1990 onwards may be part of a fresh start. But it does not appear to be a sufficient boost. We see financialisation occurring, with huge capitals all over the world looking for possible returns. What exactly is causing this delay of a new upturn requires further investigation.

In doing so, it seems useful to look not only at the long waves but also at an even longer movement in which the centre of gravity of the world economy shifted each time, from the Netherlands to England, from England to the US. This approach by Immanuel Wallerstein (1930–2019), world-systems analysis, assumes such shifts. In that context, we are today facing a crisis of US hegemony and the possible beginning of a shift. That such a period is accompanied by trade conflicts, economic crisis and wars fits the 2025 world reasonably well. The question of whether and how world-systems analysis and long-wave theory can be combined is still under discussion. Can we see the long waves as applying to the entire capitalist world economy, or is there a pattern that does not work the same way when hegemony shifts from one country to another? Van Gelderen pointed out that we should look at the most developed countries, i.e. at the end of the nineteenth century to Germany and the US. And so, these days to China?

To conclude: in almost all elaborations of the long waves, two developments occupy an important place: the supply of raw materials and the expansion of the scope of capitalist accumulation. But are we in a whole new situation as a result of the climate crisis? An answer to the question of economic prospects today will have to integrate those aspects as well.

2 **Spring Tide: Considerations on Industrial Development and Price Movement¹**

Jacob (Bob) van Gelderen

Tempora mutantur

It is almost becoming a truism to say that we live in expensive times. No economic phenomenon of an international nature is so much the subject of public discussion as the constant rise in prices. The large number of commodities affected by it and the spread of its effects over all parts of the civilised world have gradually given it the character of a calamity of extraordinary magnitude. Especially the influence which the price movement exerts on the distribution of income, affects everyone's interests. After all, the distribution of incomes is based on a certain price level. Money income represents a certain purchasing power and the right to dispose of a quantity of commodities necessary to maintain oneself loses all certainty for the person earning a money income if a seemingly erratic price movement makes a varying quantity of goods available to him, the prospective buyer, for his money. Thus, the consumer, who has an equal amount of money at his disposal, comes to realise that high commodity prices are identical to low value of money. If money as a commodity followed the same movement as other goods in the world market, the exchange ratio between these goods and their general equivalent (and this exchange ratio is the price level) would remain unchanged. The exchange-value or purchasing power of money is revealed in and through the general price level. And only by comparing the state of today's level with that before, say, a decade ago, can one come to the conclusion that the present era is one of expensiveness. Once the relativity of the notion of expensiveness has been clarified, the question of what are the factors that triggered such a price movement is immediately followed by another: on which side of the exchange relationship, money/commodity, do they lie? Was the fall in the purchasing power of money brought about by the fall in its inner value or by the rise in that of all other commodities? And, indeed, the cause of expensiveness is sought both on the money side, and on the commodity side.

¹ Originally published as: Jacob van Gelderen (writing as J. Fedder) *De Nieuwe Tijd*, vol. 28, no. 4 (April), pp. 253-277, no. 5 (May) pp. 369-384 and no. 6 (June) pp. 445-464 - 1913. Available at the Marxist Internet Archive

Clearly, the resolution of this question is of more than theoretical importance. Knowledge of the causes of the expensiveness leads to the formation of an opinion about its nature, its significance for economic life and possibly even well-founded conjectures about its duration. The illusion of the end of the duration, once the influence of the unusually dry summer of 1911 had ceased, did not live for six months and, therefore, showed all the signs of unverity. For, on the one hand, the upward price movement dated from long before 1911 and, on the other, it included commodities, the market quotation of which is not related to either summer drought or rainfall, such as iron, coal, petroleum. On the Social-Democratic side, therefore, this economic milkman's weather prediction was not believed for a moment, but, on the contrary, expensiveness was repeatedly called a permanent capitalist phenomenon.

However, it seems to me that the necessary and therefore relatively permanent character of the upward price movement has not yet been sufficiently explained. Particularly in the German party organs, the expensiveness found a one-sided treatment, which can be explained by the fact that, in Germany and Austria, certain commodities, which rose to exorbitant levels, attracted all attention. Cereals and especially cattle and meat are quoted at prices unprecedented for the modern-day generation behind the protective wall of agricultural import duties, and the serious attack on popular prosperity contained therein called the Social Democrats to arms and made them see the increase in prices primarily as a consequence of agricultural development. In general, moreover, the expensiveness of food has, understandably, attracted the most attention and prompted the most discussion. However, a closer analysis of the price movement must, in my opinion, lead to the result that the prices of many metals, coal, and the like experienced an at least equally significant and regular rise, and it is the purpose of this essay to attempt an explanation of this.

To reach a good conclusion, it will be necessary not to treat the commodities as a homogeneous mass, but to dissect the general price level into its parts to distinguish some major groups of commodities, each of which shows a peculiar price development.

Thus, the Marxist analysis of the exchange process will be vindicated, since it assigns above all to prices their functions, which derive from the particular conditions of production of different commodities. Following this line of reasoning, if we consider the stages of the price movement as manifestations of the different phases of capitalist development, then knowledge of expensiveness must also mean knowledge of the nature of capitalism.

I

Before we look at the price movement of recent years on the basis of some statistical data, a brief explanation of some of the main factors, which cause *the continuous volatility* of the price level, is necessary.

In the free exchange process, prices are set by repeated bidding. Usually, the price quoted in market reports or newspapers is the average, highest, lowest or most frequent price. In any case, it is not the quotation at which all transactions on a market, on the same day, are carried out. The multiplicity of goods offered and the small variations of a temporarily and locally limited demand result in a constantly fluctuating quotation of all commodities within narrow limits. Even a price that remains constant is the result of many changes that cancel each other out. On the one hand, the flow of goods leaving the factories and mines splits into ever smaller streams, each with its own more-or-less erratic course, on the other hand, the unified social demand is made up of thousands of varied purchasing power needs. Thus, the daily, small settlements of supply and demand in markets, warehouses and shops, which propel commodities at all stages from initial production to individual consumption, express themselves in the constant oscillation of prices. Differences in the nature of supply, as exists between markets, exchanges, shops, bring about differences in price formation, which are of great importance for the intensity of fluctuations.

More complicated still is the process of price formation by the existing coherence of prices; a consequence of productive or consumption relations of the commodities. (As commodities, resulting from one production process, we mention: coke, tar and light gas; sugar beet and pulp; cocoa and cocoa butter; cotton and cotton kernel oil; steel and Thomas slag; as commodities, serving the same purpose — albeit to different extents: artificial and natural butter; wool, linen and cotton; wheat and rye; ox meat and pork; petroleum and light gas; coal, coke and anthracite). A similar effect has the fact that many commodities are used in one labour process, which creates a mutual influence on the price. Raw materials, auxiliary materials and semi-finished products are in demand simultaneously (yarn, weaving machines, coal in the weaving industry; stone, cement, wood, lime in the building industry). Moreover, the price of these commodities is jointly reflected in that of the final product as an element of the cost of production. It is this latter relationship that makes the influence of a subsequent factor, causing price fluctuations, general. Indeed, agricultural products are included in the vast majority of labour processes and these have a peculiar price movement, which equally reflects the course of

social production and distribution. First, the duration of the agricultural production process in temperate zone countries is predominantly one year, as a result of climatic conditions. This creates an almost annual periodicity of supply, stocking and delivery of products. The productivity of agricultural labour only partially controlled by man and thus the varying size of the world's harvests creates the possibility and even probability of a widely varying price level from year to year. Moreover, the large intervals of world supply have a second effect. From harvest time to harvest time, stocks are gradually used up. And with this goes - especially for fast rotting goods - a seasonal price change,² especially the price movement of horticultural products. However, this does not fully explain the annual fluctuation of many commodity prices. After all, the pricing of some agricultural products is influenced by demand, which also fluctuates annually. With this, we reach a deeper ground. Here, we are concerned with the demand for those agricultural products, which do not serve as foodstuffs, but as raw materials for industry (wood, wool, cotton, rubber, etc.). Like mining products, the demand for these commodities is determined by the level of prosperity of the various branches of industry. Of course, this is by no means the same for all industries, but the close connection between them means that one can speak of a general industrial situation. And this now shows a fairly regular wave motion, usually typified statistically by annual totals. This is the constantly recurring cycle of ups and downs that capitalist industry has experienced since the first quarter of the nineteenth century. We cannot set out in detail here the causes of this (average ten-year) periodicity; however, its external phenomena should be briefly recalled.

Namely, what are the symptoms of the cyclical course of production?³

After a crisis, under the pressure of lack of outlets, production is significantly curtailed, *prices* of commodities fell during the crisis *rapidly* and *currently remain low*. Low profits, fall in wages, high unemployment are the consequences. Money capital, saved from the debacle, is withdrawn from industry and entrusted to the big banks or invested in government bonds. Banks' cash reserves swell; interest rates are low. After some time, the thirst for new profits awakens. Entrepreneurs seek cost-cutting, technical improvements; in this, cheap credit comes to their aid.

2 The followers of Von Böhm-Bawerk's theory of value and interest are commended to consider the price movement of all these commodities. As a harvest or collection of products is less far behind us, the "present" good is lower in value than the "future" namely the same product at the time, before the next harvest comes in.

3 We refer, incidentally, the readers of *De Nieuwe Tijd* to the excellent article "Krisis" by J. Saks, 1908, in which Marx's cycle theory is explained with crystal clarity.

Falling prices created new demand; markets are sought more energetically than ever. New business activity begins. Enterprises are enlarged and established, emissions come to the market. Goods production rises, unemployment falls; wage increases occur. Demand for raw materials and foodstuffs increases. *Prices begin to rise.* This generates new confidence and further fires up production. This process accelerates into a upswing with full activity, ample profits, high interest rates, credit tension, *high commodity prices.* Until a new downturn follows.

The industrial wave movement thus runs entirely parallel to the fluctuation in the price level. Downturn-upturn-downturn in the commodity markets runs parallel to depression-upswing-depression.

Looking over the price movements treated so far, we find:

1. daily fluctuations
2. monthly or quarterly fluctuations
3. a cyclical change covering several years

all corresponding to the *typical* periodicity of economic life, which presents the picture of an undulating line, whose rises and falls are themselves results of even smaller modulations.⁴

The analysis of the production and exchange process, the results of which Marx presented in *Das Kapital*, proved the fact that and the way how commodity prices on the capitalist market ultimately perform the function of regulating the distribution of productive forces throughout the labour process according to the socially determined needs of the people. The process of value and price formation thus fulfils the task, which, in a consciously run society, is assigned to the executive organs of the entire producing and consuming human organisation. (The Lord and his helpers in the medieval manorial organisation; the elected production leaders of the peoples' community in the future.)⁵ However, the analysis of the crisis phenomena teaches that capitalism itself causes tendencies, which repeatedly prevent the performance of that task.

Essentially, the causes of the periodicity thus created, apart from all the factors, which derive from money and credit, can be reduced to the following three:⁶

-
- 4 We have dispensed here with all the disturbing — in part uneconomic — elements, which can bring about sudden price variations like wars, disasters, opening of a traffic road, fashion, tariffs, speculation.
 - 5 Compare Hilferding, 1904 and Hilferding, 1904-1905.
 - 6 See Hilferding, 1910 and on that Kautsky, 1910-1911.

1. the unregulated production
2. the continuous lead of the technically possible increase in production over the size of mass consumption
3. the differences in the speed of development of the various branches of production.

If we now know that prices are the symptoms of the course of economic life as reflected in market relations, we need to examine even more carefully which prices in particular may count as such. Statistics give the answer that they are the prices of industrial raw materials, mainly raw materials and finished goods of the means of production industries.

This is due to the different nature and intensity of demand for these products and for the necessary consumables. Foodstuffs and other mass-produced goods have a very wide sales base. The basic human needs ensure a demand for these products even in bad times, which does not differ too much from that in good times. Individual consumption, relying on the relative stability of workers' incomes, fluctuates only within narrow limits.⁷ Things are entirely different, however, as far as the means of production are concerned. The demand for these is determined by accumulation; production itself is the outlet here. The upswing takes place most strongly in the means of production industries, because each new industrial phase starts by continuing the labour process on a larger scale than before.⁸ This expansion of production generates a demand for raw materials that is very strong and elastic. Supply, on the other hand, rather does not increase or increases slowly. Both agricultural and inorganic production of raw materials can only expand gradually; the former is tied to the duration of the natural growth process of the product, the latter requires a lot of capital, lengthy development and its expansion is usually accompanied by rising costs. Consequently, in this phase, the prices of raw materials rise unusually fast, dragging along all the goods in whose production they are consumed.

If the turnaround comes and the labour process has contracted after the crisis, this again takes place first in the means of production industries. There is abundance of constant capital and demand for raw materials therefore falls very rapidly; this depresses prices. Here, no minimum mass consumption is operative to stop the

7 The effect of this is even more pronounced in that, usually, in times of rising incomes, the said goods are not consumed so much more and, in times of falling incomes, they are not cut back on first.

8 The increase in constant versus variable capital is the technical-economic expression of the increase in labour productivity.

price fall. In the abstract, it is conceivable that the means of production industry could be stopped altogether, as long as the need for means of production, arising from the attrition process of constant capital in the consumer industries, can be satisfied from existing stocks.

The further distant an industry is from the stage of delivering the finished product for individual consumption, the more telling is the bumpy periodicity of its development.

Let us now examine the previous on the basis of some figures. As is well known, so-called index figures are used to indicate changes in the price level. These indicate the price changes as a percentage of the price that applied to one or more goods in a certain year or group of years, which is taken as the starting point for the calculation and set at 100. The English statistician Sauerbeck has compiled indices that are particularly reliable. They are calculated from average market prices of 45 carefully chosen wholesale items and refer to a market, which maintained itself as the centre of world trade during the first 80 years of the 19th century. Moreover, as England has been a free trade country for the last 60 years, the English market reflects particularly clearly the fluctuations of world prices.⁹

Table 2.1 below and accompanying Figure 2.1 gives these indices of Sauerbeck from 1850 to 1911: the total index, that for vegetable food and that for minerals.

One can accurately follow the change of conjunctures from the line of the total index. (The crisis years are indicated in the diagram by a red line).¹⁰

The first crisis after 1850 was in the year 1857; the index drops from 105 to 91. The somewhat abnormal crisis year of 1866, preceded by the cotton crisis of 1864, shows a drop from 102 to 100, which continues to 96 in 1870. Now follows the upswing of the years 1870-1873; the index rises to 111, to fall to 102 in 1874 and 96 in 1875. After that, the line becomes slightly less sharp. A general decline sets in, punctuated by the upswing of 1879-1880, from 1887 to 1890, years after which the curve falls further each time. This is followed by another sharp decline in 1900 and in 1907, the two

9 The total index is composed of two main groups, each divided into three subgroups, as follows: Foodstuffs: a. plant foods (wheat, flour, barley, oats, maize, potatoes, rice); b. animal foods (beef, mutton, pork, bacon, butter); c. others (sugar, coffee, tea). Materials: a. minerals (iron, copper, tin, lead, coal); b. textile raw materials (cotton, flax, hemp, jute, wool, silk); c. others (hides, leather, tallow, palm oil, olive oil, linseed oil, petroleum, soda, sodium nitrate, indigo, wood). Some commodities of great importance are included in two types or listings.

10 I gave both 1880 and 1882 as crisis years, to characterise the gradual transition from the upswing 1879-1880 into downswing 1882-1886.

Table 2.1: Sauerbeck's Price Indices, 1850–1911 (Base 1867–1877=100)

1850–1880				1881–1911			
Year	Total	Veg./Food	Minerals	Year	Total	Veg./Food	Minerals
1850	77	74	77	1881	85	84	77
1851	75	73	75	1882	84	84	79
1852	78	80	80	1883	82	82	76
1853	95	100	105	1884	76	71	68
1854	102	120	115	1885	72	68	66
1855	101	120	109	1886	69	65	67
1856	101	109	110	1887	68	64	69
1857	105	105	108	1888	70	67	78
1858	91	87	96	1889	72	65	75
1859	94	85	98	1890	72	65	80
1860	99	99	97	1891	72	75	76
1861	98	102	91	1892	68	65	71
1862	101	98	91	1893	68	59	68
1863	103	87	93	1894	63	55	64
1864	105	79	96	1895	62	54	62
1865	101	84	91	1896	61	53	63
1866	102	95	91	1897	62	60	66
1867	100	115	87	1898	64	67	70
1868	99	113	85	1899	68	60	92
1869	98	91	89	1900	75	62	108
1870	96	88	89	1901	70	62	89
1871	100	94	93	1902	69	63	82
1872	109	101	127	1903	69	62	82
1873	111	106	141	1904	70	63	81
1874	102	105	116	1905	72	63	87
1875	96	93	101	1906	77	62	101
1876	95	92	90	1907	80	69	107
1877	94	100	84	1908	73	70	89
1878	87	95	74	1909	74	71	86
1879	83	87	73	1910	78	65	89
1880	88	89	79	1911	80	70	93

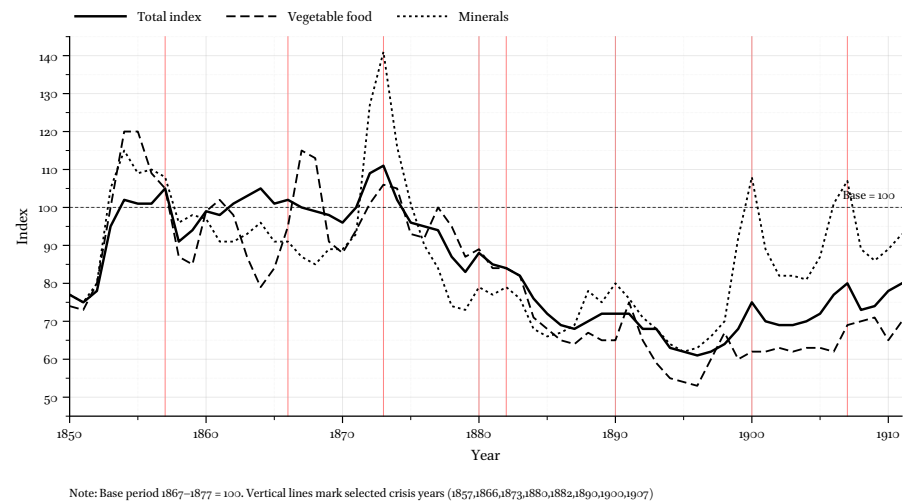


Figure 2.1: Sauerbeck's Price Indices, 1850–1911

final crisis years, each preceded by a very noticeable upswing.

If we now take a closer look at the curve of the minerals, we find that it moves perfectly parallel to the curve of the conjunctions. Here, too, we find the peaks 1857, 1864-1866, 1873, 1880-1881, 1890, 1900, 1907. And corresponding to what we explained above, the line of minerals is characterised by much more violent fluctuations than that of the total index. In boom years, it rises higher, only to fall deeper in the down years. Exorbitant movement we find between the years 1870-1874, 1898-1901, 1905-1908.

Year	Index	Year	Index	Year	Index
1870	89	1898	70	1905	87
1873	141	1900	108	1907	107
1874	116	1901	89	1908	89

A different picture is presented by the curve of plant nutrients. It too is characterised by strong fluctuations, but a regular periodicity cannot be detected in it. High years are 1854-1855, 1861, 1867-1868, 1873, 1877, 1888, 1891, 1898, 1907-1909.

Even if some high years (1873, 1891, 1907) coincide with those of an industrial upswing, i.e. with the general index, several by contrast are years with moderate or even low

general levels (1861, 1868, 1877, 1909). Against these, we find years with low food prices and high mineral prices (1864, 1889, 1890, 1899, 1906).¹¹

In order to make clear once more the great difference in price movement, which exists between industrial raw materials and cereals, we compare the course of the price of two commodities, which may in a certain sense be considered typical for both groups. We choose for this purpose: 1. the price of Scottish pig iron; 2. the price of wheat, both in England:

Table 2.2: Evolution of Wheat and Pig-iron prices in England (in Shillings)

Year	Wheat	Pig iron	Year	Wheat	Pig iron	Year	Wheat	Pig iron
1850	40/3	—	1871	56/8	59	1892	30/3	42
1851	38/6	40	1872	57/—	102	1893	26/4	42
1852	40/9	45	1873	58/8	117	1894	22/10	43
1853	53/3	62	1874	55/8	88	1895	23/1	44
1854	72/5	80	1875	45/2	66	1896	26/2	47
1855	74/8	71	1876	46/2	59	1897	30/2	45
1856	69/2	73	1877	56/9	54	1898	34/—	47
1857	56/4	69	1878	46/5	48	1899	25/8	64
1858	44/2	54	1879	43/10	47	1900	26/11	69
1859	43/9	52	1880	44/4	55	1901	26/9	54
1860	53/3	54	1881	45/4	49	1902	28/1	55
1861	55/4	49	1882	45/1	49	1903	26/9	52
1862	55/5	53	1883	41/7	47	1904	28/4	51
1863	44/9	56	1884	35/8	42	1905	29/8	54
1864	40/2	57	1885	32/10	42	1906	28/3	59
1865	41/10	55	1886	31/—	40	1907	30/7	64
1866	49/11	61	1887	32/6	42	1908	32/—	56
1867	64/5	54	1888	31/10	40	1909	36/11	55
1868	63/9	53	1889	29/9	48	1910	31/8	56
1869	48/2	53	1890	31/11	50	1911	31/8	54
1870	45/11	54	1891	37/—	47			

Note: Wheat prices are per imperial quarter, in shillings; pig-iron prices refer to Scottish pig iron per ton, in shillings.

Well, here again, the table fairly accurately reflects what we said. The crisis years are clearly recognisable in the iron price. Moreover, the symptomatic significance of the iron price is clearly revealed when we see, that the cyclical low of the curve of minerals always coincides with that of the iron price. Wheat shows an entirely

¹¹ One compares with this the profound explanation of the crisis by Stanley Jevons, from grain prices (crop failures). In his: *Studien zur Geschichte und Theorie der Handelskrisen in England*, Tugan-Baranovsky gives the following enumeration: upswing from 1823-1825, grain prices high; upswing 1833-1836, grain prices low; crisis 1847, bad crop year; crisis 1857, good crop year; crisis 1866, low grain prices; downswing 1867-1869, high grain prices.

unique and highly erratic price movement. Of the crisis years, 1857, 1866, 1890, 1900 and 1907 are low or average; 1873, 1881-1882 high as well as the depression years 1860-1862, 1867-1868, 1877, 1909. Again, no trace of periodicity.

Let us now take a closer look at the price movement of the last 20 years.

II

First, we present Table 2.3, in which we juxtapose the total indices of wholesale prices in England, Germany, France, Austria-Hungary, Belgium, United States, Canada.

Neither the method of collecting and processing prices, nor the commodities, whose price movement was checked, are the same. Moreover, the nature of economic life of these countries is different. A direct comparison of the *state of* prices in the said states would therefore be extremely difficult, if not impossible. The utter uniformity in the *movement* of commodity prices in all these countries should be called all the more striking.¹²

12 For England the oft-quoted index from *The Economist* is also known. However, it does not include enough commodities (only 22 until 1 January 1911), among which, moreover, cotton occupies too large a place, and is calculated according to prices on one day of the month. Thus, the movement of the index is too coincidental, too erratic. Incidentally, it shows *im Großen und Ganzen* [in general] the same picture as the figures included in the table, as evidenced by the statistic in Table A1 in the Appendix.

Table 2.3: Price Indices of Wholesale commodities, Total, 1890–1911 (Base 1890–1899=100)

Year	England I	England II	Germany	France I	France II	Austria-Hungary	Belgium	U.S.A.	Canada
1890	109	108	114	108	110	104	112	113	110
1891	109	112	118	105	109	105	111	112	109
1892	103	106	103	103	106	100	106	106	103
1893	103	104	97	103	104	101	102	106	103
1894	95	98	90	97	96	97	95	96	97
1895	94	95	91	97	94	98	98	94	96
1896	92	92	90	97	90	95	97	90	93
1897	94	94	92	95	91	97	89	90	92
1898	97	97	98	95	95	101	93	93	96
1899	103	96	104	101	103	103	98	102	100
1900	114	104	113	102	122	110	100	110	108
1901	106	101	108	98	105	108	100	108	107
1902	105	100	107	98	103	105	102	113	109
1903	105	101	107	100	104	108	96	114	111
1904	106	102	105	99	103	110	98	113	111
1905	109	101	107	102	109	115	97	116	114
1906	117	104	117	106	116	122	103	122	120
1907	121	110	126	107	118	127	110	130	126
1908	111	107	123	103	114	123	107	123	121
1909	112	108	120	107	116	127	105	126	121
1910	118	113	120	111	122	-	103	132	125
1911	121	114	131	-	-	-	-	129	127

Notes: England I uses Sauerbeck's series and England II Board of Trade data, both covering 45 commodities. Germany uses Schmitz (29 commodities); France I de Foville and France II March (43); Austria-Hungary Jankovich (45); Belgium Denis (28); and the US Bureau of Labor (257). *Sources:* See Appendix.

Table 2.4: Price Indices of Nutrients, 1890–1911 (Base 1890–1899=100).

Year	GB & I (I)	GB & I (II)	United States	Canada	Germany	France	Austria–Hungary
1890	105.2	106.6	109.7	115.0	106.9	104.3	102.4
1891	112.4	112.4	115.8	115.0	116.2	107.6	107.6
1892	106.6	106.6	104.0	104.2	109.6	107.6	100.1
1893	105.4	105.1	109.5	104.7	105.6	109.2	99.1
1894	98.9	96.3	98.3	96.3	98.4	103.0	96.8
1895	95.6	93.4	94.2	96.0	91.3	95.7	99.6
1896	80.7	90.5	83.3	87.9	85.8	88.9	95.0
1897	93.6	94.9	89.6	87.6	90.9	92.6	97.8
1898	98.3	99.3	96.3	96.2	99.5	96.5	103.9
1899	94.3	94.9	99.5	96.8	96.9	93.5	97.6
1900	96.1	100.7	106.2	100.2	99.5	94.4	97.5
1901	96.6	97.8	108.6	104.3	100.6	95.7	97.8
1902	97.7	97.8	117.4	107.5	98.4	93.5	100.9
1903	96.8	96.3	111.3	105.8	104.7	94.4	105.3
1904	97.5	99.3	113.6	108.2	104.8	93.9	110.1
1905	97.3	100.7	114.3	109.6	109.9	101.3	118.1
1906	96.7	100.7	116.2	113.6	111.6	98.4	117.6
1907	100.9	105.1	123.9	124.1	117.2	103.5	122.2
1908	102.4	105.1	125.4	122.9	110.0	108.9	124.9
1909	104.5	106.6	129.7	126.7	121.5	110.0	133.0
1910	104.7	108.0	133.9	128.3	124.7	114.7	—
1911	—	104.0	—	—	—	—	—

Notes: Reprinted in part from Hooker 1911. See Appendix for more details on sources.

Table 2.5: Price Indices of Industrial Raw Materials, 1890–1911 (Base 1890–1899=100).

Year	GB & I (I)	GB & I (II)	United States	Canada	Germany	France	Austria–Hungary
1890	114.8	111.1	113.8	107.9	114.0	115.2	104.7
1891	109.4	106.4	108.4	105.1	105.7	110.3	103.0
1892	103.8	101.7	104.0	102.1	99.2	103.9	99.5
1893	100.6	101.7	101.5	101.4	97.4	100.1	103.1
1894	95.5	93.9	91.8	97.6	90.4	90.8	97.1
1895	92.2	93.9	93.1	95.4	92.9	93.1	95.7
1896	96.5	93.9	91.8	94.8	95.3	91.5	94.9
1897	93.8	92.3	90.8	94.6	96.0	90.5	96.5
1898	93.4	95.5	95.1	96.0	98.4	93.6	97.8
1899	99.8	109.5	109.9	101.8	110.5	110.6	114.5
1900	122.7	125.2	117.9	112.3	121.8	121.8	120.3
1901	110.7	112.7	111.6	108.4	112.5	111.6	116.3
1902	106.7	111.1	119.3	109.2	107.9	109.8	108.2
1903	110.3	112.7	124.7	113.0	114.1	110.9	109.7
1904	113.6	112.7	118.9	113.1	116.2	110.5	110.4
1905	111.5	117.4	123.8	115.3	118.0	115.1	112.3
1906	123.0	129.0	132.7	123.3	133.6	130.0	125.4
1907	131.1	134.6	139.8	127.5	148.2	126.3	131.6
1908	117.1	115.8	124.6	119.7	129.3	118.0	120.6
1909	116.9	117.4	129.6	118.4	125.6	121.0	122.3
1910	132.6	126.8	136.9	123.4	131.6	127.2	—
1911	—	129.0	—	—	—	—	—

Notes: Reprinted in part from Hooker 1911. See Appendix for more details on sources.

From 1890 to 1895, there was a general fall in prices (only Germany reached the minimum in 1894) and, from 1895-1896, it was followed by a sharp rise, temporarily interrupted in the years immediately following the 1900 and 1907 crises. So, this rise in prices is not the usual upswing of a business cycle, as it already comprises the third cycle (1891-1900; 1901-1907; 1908-...). We know, however, that splitting the indices into those of industrial raw materials and foodstuffs is necessary to examine the nature of the price movement more precisely. In Table 2.4, this split is carried out for the same time period and largely the same countries, see Figure 2.2.

Table 2.6 shows immediately that both commodity price series participated in the increase. However, not to the same extent, which becomes clearer from the calculation below.

Table 2.6: Price Indices of Nutrients, 1890–1910.

Years	Great Britain I	Great Britain: II	United States	Canada	Germany	France	Austria-Hungary
1890–1899	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1901–1905	97.2	98.4	113.0	107.1	103.7	95.8	106.4
1906–1910	101.8	105.1	125.8	123.1	117.0	107.1	124.4
Difference	+4.6	+6.7	+12.8	+16.0	+13.3	+11.8	+18.0

Notes: 'Difference' is calculated between 1901–05 and 1906–10. *Sources:* Great Britain I is from Board of Trade, Great Britain II from Sauerbeck. Data for Austria-Hungary in 1910 not available, so average corresponds to 1906–1909.

Table 2.7: Price Indices of Industrial Raw Materials, 1890–1910.

Years	Great Britain: I	Great Britain: II	United States	Canada	Germany	France	Austria-Hungary
1890–1899	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1901–1905	112.0	113.3	119.7	111.8	113.7	111.6	111.4
1906–1910	124.1	124.8	132.7	122.5	133.7	124.5	125.0
Difference	+12.1	+11.5	+13.0	+10.7	+20.0	+12.9	+13.6

Notes: 'Difference' is calculated between 1901–05 and 1906–10. *Sources:* Great Britain I is from Board of Trade, Great Britain II from Sauerbeck. Data for Austria-Hungary in 1910 not available, so average corresponds to 1906–1909.

The rise in raw materials was already so strong in the 1901-1905 period that both the 1890-1899 and 1891-1895 averages had been surpassed, while the 1906-1910 period was even 25-30 per cent above base. The rise in foodstuffs was not so strong at first. In England and France, the 1901-1905 quinquennium was still below the 1890-1899 level; in Germany, Austria-Hungary and Canada, only slightly above it; only the United States had a 13 per cent rise to record by then. However, the period 1906-1910 shows a generally characteristic peculiarity.

The increase, which was already stronger in the strictly protectionist countries than in England, is now accelerating far ahead in those states. Yet, even in these countries (with the exception of Canada and Austria-Hungary), the increase in the level of foodstuffs still lags behind that of raw materials. However, the acceleration of food price increases after 1905 is general.

How pronounced the rise in commodity prices is, is further illustrated in the table by the fact that each successive cycle is higher than the previous one. The upswing year 1900 is generally higher than 1890; 1907 again higher than 1900. The price minima show the same upward trend; 1901-1902 is much higher than 1896-1897; and 1908-1909 is above 1901-1902.

Now, if the periodic movement of prices, and especially of commodity prices, is symptomatic of the course of production, we ask: in the continuous rise since 1896, are we dealing with a phenomenon analogous to the upswing? To investigate this, we need to go further back in the price history of the 19th century. That way, we can convince ourselves whether we are dealing with a temporary price rise triggered by completely new factors, or with a typical phase in the price movement of the last 60 years.

We use a series of indices for this purpose. They are all brought to base 100 for the period 1867-1877, which also served as a starting point for Sauerbeck. The German figures by A. Soetbeer include 114 items, according to prices declared at Hamburg when imported from sea. The American figures cover 223 wholesale items and were compiled by R. Falkner in a special way;¹³ Dr. H. Denis calculated a price average for Belgium from 28 commodities, and Dr. Béla von Jankovich chose the

¹³ Indeed, he did not take only the mathematical average of all prices to calculate the total index figure, but charged the price of each commodity in the total according to the significance of that commodity for exchange. This very cumbersome method is certainly theoretically preferable, however, its results generally yield minor differences from those calculated in the ordinary way. For our purposes, the method of weighting is quite redundant. However, it is indispensable for a close examination of the effects of food price movements on income distribution.

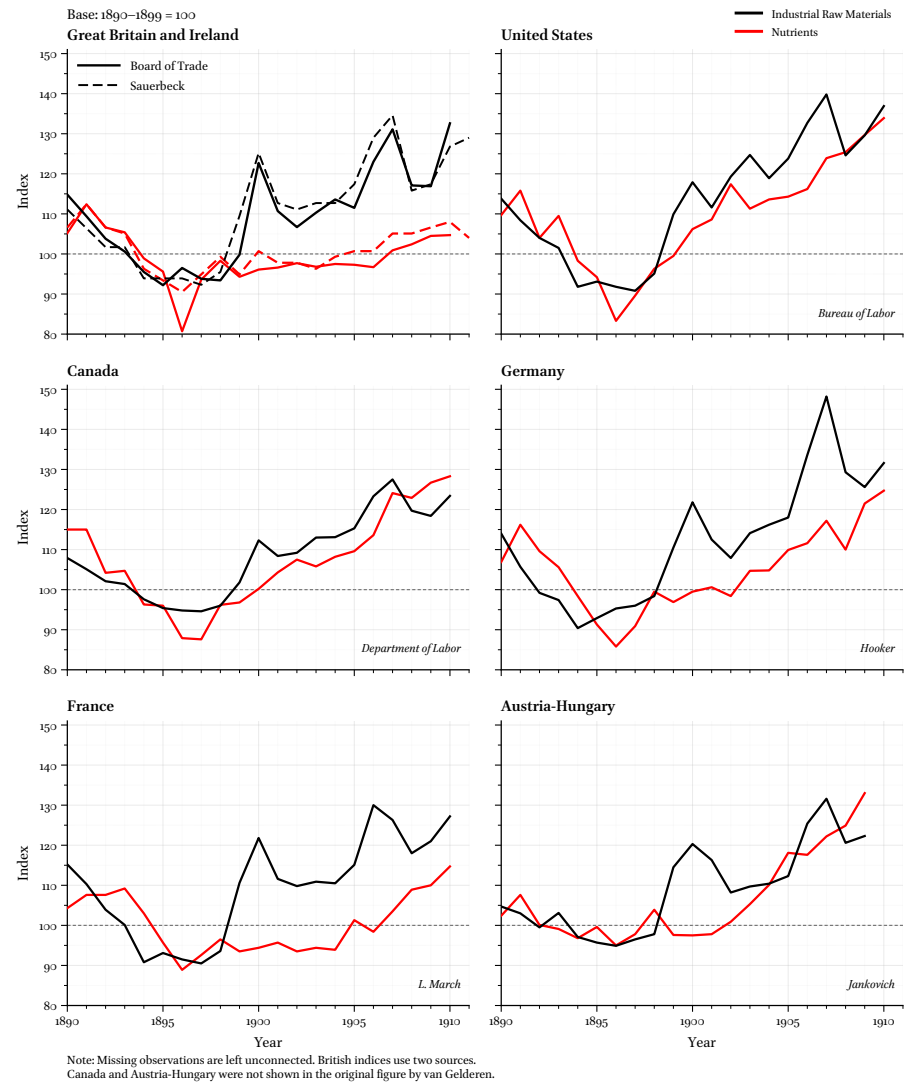


Figure 2.2: Price Indices of Industrial Raw Materials, 1890–1911

same commodities, which Sauerbeck used, to allow a comparison between England and Austria-Hungary.

Table 2.8: Price Indices of Total Wholesale commodities (Base 1867–1877=100)

1850–1880					1881–1910				
Year	Germany	U.S.	Belgium	Aus--Hun	Year	Germany	U.S.	Belgium	Aus--Hun
1850	77.7	73.5	94.4	---	1881	94.6	76.0	97.8	87.1
1851	77.9	76.1	90.6	---	1882	95.5	78.0	85.0	86.0
1852	79.0	73.9	91.0	---	1883	95.5	76.2	85.7	86.1
1853	88.3	78.4	93.4	---	1884	90.0	71.5	82.8	84.5
1854	94.2	81.1	96.3	---	1885	85.2	66.9	79.1	79.8
1855	96.5	81.3	99.3	---	1886	81.0	66.1	77.8	76.9
1856	95.8	81.4	104.5	---	1887	80.6	66.6	76.2	76.7
1857	101.1	80.9	107.8	---	1888	80.6	67.7	75.6	77.1
1858	88.3	73.2	106.7	---	1889	83.7	67.7	71.5	77.0
1859	90.4	72.0	111.1	---	1890	85.1	66.4	70.0	77.0
1860	94.6	72.0	103.6	---	1891	---	66.3	69.9	78.0
1861	92.0	72.0	98.8	---	1892	---	63.8	66.5	74.1
1862	96.3	84.0	99.9	---	1893	---	64.2	64.4	75.2
1863	97.8	106.8	104.2	---	1894	---	59.2	59.0	72.0
1864	100.8	137.0	116.6	---	1895	---	55.9	61.5	72.4
1865	96.3	156.0	106.9	---	1896	---	56.3	61.0	70.5
1866	98.5	138.0	106.9	---	1897	---	54.2	56.0	72.1
1867	97.0	123.0	93.1	104.1	1898	---	55.1	58.5	74.7
1868	95.5	115.0	95.8	97.7	1899	---	57.1	61.8	76.4
1869	96.3	110.0	91.6	99.6	1900	---	---	63.4	81.5
1870	96.3	102.0	91.8	102.4	1901	---	---	63.1	79.8
1871	100.0	97.8	98.8	105.6	1902	---	---	64.0	77.9
1872	106.4	99.8	109.0	105.1	1903	---	---	60.6	80.0
1873	107.9	98.8	108.6	103.5	1904	---	---	61.8	81.8
1874	106.4	95.6	108.3	99.0	1905	---	---	60.9	85.3
1875	101.7	91.8	113.4	91.2	1906	---	---	64.8	90.5
1876	100.1	85.0	108.3	94.5	1907	---	---	69.2	94.5
1877	100.1	79.7	103.0	97.8	1908	---	---	67.7	91.0
1878	94.6	72.8	98.4	89.2	1909	---	---	65.9	94.4
1879	91.5	69.5	95.8	84.5	1910	---	---	64.7	---
1880	95.5	76.9	100.1	99.3					

Notes: Data for Germany is from Soetbeer, for United States from Falkner–Hardy, Belgium from Denis, Austria–Hungary from Jankovich. Source: Guyot 1911, Tome XIX.

Table 2.8 clearly shows the phenomenon, which can also be learnt on closer inspection from Sauerbeck's curve in Figure 2.1. Apart from the average 10-year fluctuations in the general price level, the price curves also show *a larger wave motion*, which in its up and down line spans several decades.

A general trend is discernible in all curves - however divergent from each other in parts - and that is:

- a period of increase 1850–1873
- a period of decline 1873–1895
- a period of increase 1896 to the present.

In England and Germany, the peak is in the year 1873; in Austria-Hungary, in 1871; in Belgium, in 1875.

In the United States, the curve reached an exorbitant height in the 1860s, during the war between North and South, after which a fall, only briefly interrupted in the years 1871-1873, took place, continuing until 1897.

Very clearly, the trend emerges, if we use Sauerbeck's 10–year averages, in which the effect of individual cycle years has been erased. We then find:

1845–1900			1892–1911		
Period	Average Index	Base 1890–1899	Period	Average Index	Base 1890–1899
1845–1854	85		1892–1901	66	100
1850–1859	92		1893–1902	66	100
1855–1864	100		1894–1903	66	100
1860–1869	101		1895–1904	67	101.5
1865–1874	102		1896–1905	68	103.0
1870–1879	97		1897–1906	70	106.1
1875–1884	87		1898–1907	71	107.6
1880–1889	76	115.2	1899–1908	72	109.1
1885–1994	69	104.5	1900–1909	73	110.6
1890–1899	66	100	1901–1910	73	110.6
1891–1900	66	100	1902–1911	74	112.1

Clearly, a movement so general cannot be based on local or accidental causes. Rather, we believe we are dealing here with a phenomenon inherent in capitalism, and, if we are right in this, it should be evident from the course of business. For then the symptoms of a upswing period in the industrial cycle should correspond to those that characterise an era of spring tides (1850–1873; 1896–1911). Both, in this case, spring from the mechanism of the capitalist reproduction process.



In the concrete historical development of capitalism, we already find the clue to the existence of this larger wave movement.

In the main capitalist countries, economic life receives a powerful upward thrust in the early 1850s. On an unprecedented scale, modern means of transport technology is applied. The railway network in Europe expands rapidly and exerts powerful demand for the products of the metal industry. It attracts by far the largest share of capital investment of the time. Werner Sombart¹⁴ publishes in *Der Moderne Kapitalismus* a statistic of joint-stock companies in Germany, which shows, that in the period 1851–1870 out of a total invested capital of 2, 408.85 million Reichsmarks (RM), 1, 722.44 million RM go to railways, this is 71.5 per cent. Mining, blast furnace operation and salt mining demanded 275.41 RM million, the banks only 94.65 million RM.¹⁵ Max Wirth,¹⁶ in his *Geschichte der Handelskrisen*, mentions the same trend for England and France, and that even a relatively backward country like the Russia of those days took part in railway construction may be seen from the figures, communicated by P. Masslow.¹⁷ From 1861 to 1873, 1, 115.6 million roubles were invested in companies in Russia, of which 698.5 million roubles (62 per cent) were for railways alone, and 226.9 million roubles (20 per cent) for banks.

The great emigration to North America had, and still has at that time, resulted in a sharp expansion of the population and the cultivated area of the United States. The population increased from 17 million in 1840 to 23 million in 1850 and 39 million in 1870; the cultivated area from 293.6 million acres in 1850 to 407 million acres in 1860, while the foreign population almost doubled from 1850 to 1860 (from 2, 244, 000 to 4, 139, 000).

Grain exports increase and exert demand for manufactured goods on the European market. Europe enters into an era of relative domestic calm, following the bourgeois revolutions of 1848 and Napoleon's coup in 1851. The banking system organises itself (Crédit mobilier 1852, Schaaffhausenscher Bankverein 1848, Disconto-Gesellschaft 1851, Darmstädter Bank für Handel und Industrie 1853) and provides credit to the burgeoning industry. The increasingly successful movement for free trade really creates an international market. (England: abolition of grain duties 1846; grain duty reforms 1853, 1860. Franco-English treaty 1860 and a series of international

¹⁴ 1902: II.16.

¹⁵ It is typical, that of the 3,302.81 million RM invested in the "Gründerjahre" [founding years] 1870–1874, only 778.01 million RM still fall on the railways (23.5 per cent), by contrast 838.27 million RM on the banks.

¹⁶ 1874.

¹⁷ 1912: 246.

trade treaties 1860-1865). During these years, the two gold producing countries California (1847), Victoria in Australia (1851) suddenly one after the other open up to trade. A flood of immigrants moves to these countries, and a large commodity export follows them.¹⁸ Australia's population, which was 430,600 souls in 1851, numbered 1,252,994 by 1861. When gold production proved unable to give work to all immigrants, many threw themselves into agriculture. The number of cultivated fields in 1850 was still 491,364, fell at first in 1854 to 458,165, but then rose rapidly in 1858 to 1,037,110;¹⁹ from 1860 to 1870 it further doubled.²⁰

The feverish development, which gripped the whole of European and North American industry, lasted with some violent interruptions, 1857, 1864-1866 until the year 1873. This year closed with a crisis of unprecedented ferocity and extension a three-year upswing that, especially in Germany and Austria, had degenerated into the most intense "*Gründungsmanie*" [founding mania].

Now, however, the overall picture of the conjuncture is changing. A general slowdown is setting in. Sales were insufficient in most leading industries and improved only slightly in the few upswing years 1879-1881, 1887-1890. The railway network, most of which had been completed in Europe, no longer demanded such capitals; the metal industry suffered from the decline in the formerly exerted demand for railway equipment. The continuous increase in cereal exports from North America, which has extensive farming over vast areas, depressed cereal prices in Europe and brought about a long-term depression in agriculture; the peasantry, in these years still a very large part of the total population, whose purchasing power had risen in the period 1850-1870 due to the high cereal prices, now saw its income decline rapidly, industry losing a wide sales area as a result.

Thus, the highly improved technology of transport makes itself felt mainly through reduced transport costs of most commodities. Industrial production technology reduces the price difference between raw material and finished product. This state of chronic economic "abundance" has the most profound effects. Trade policy turns from free-trade policy to protectionism; the closing off of domestic markets begins, again putting export industries at a disadvantage. Grain duties and duties on raw materials (iron!) are introduced. We mention only briefly: tariff laws 1878: Italy,

18 Wirth, 1874: 286 mentions, 'that the first effects of the discovery of the gold layers in California in 1848 have been noticed in the years 1850-1851 in England and manifested themselves in the enlarged demand for British and other European industrial products for export to the United States.'

19 It should be remembered from these figures that each estate consisted of numerous fields.

20 Compare Schachner 1909.

Austria, Russia. The United States in 1875 restores the old high tariff, which had been reduced in 1871. France introduces 1882 a moderate, 1892 a greatly increased tariff. In Germany, 1876 the protectionist *Zentralverband Deutscher Industrielle* [Central Association of German Industry] forms and an increased tariff is introduced as early as 1879; 1885 grain duties.

However, the monopolisation of domestic markets does not reverse the depression, nor does the fall in prices. Free capital looks for a way out to the other continents: North and South America, Asia; with increased energy, the expansion of the railway network is being worked on in those countries.²¹ The thirst for colonies awakens in the governments of the main countries with increased vigour. Russia's Asian policy becomes bolder; France seeks to gain a foothold on the north coast of Africa and in Indochina. The British Empire, in particular, is expanding at an awe-inspiring pace. A short list of conquests and of winning "spheres of influence" shows this: 1880 Afghanistan; 1882 Egypt; 1884 Somaliland; 1886 Burma; 1886 Bechuanaland; 1890 British East Africa; 1893 Abyssinia and the Upper Nile Valley; 1895 Rhodesia. The Boer War and the foundation of the Union of South Africa conclude these conquests.

An ever-growing flood of emigrants provides for the population of the countries, to which capital is exported. The agricultural population that has become redundant can no longer find work in Europe in industries that are growing too slowly, and migrates across the oceans. The United States alone receive the following numbers:²²

Decade	Immigrants
1871–1880	2,944,695
1881–1890	5,189,004
1891–1900	3,844,355

Accordingly, the census counted the following foreign-born population in the United States:²³

²¹ It is due to this factor, among others, that the depression period in North America was less prolonged than in Europe: 1886–1891/1893 are years of powerful upswing in the United States. The nominal capital of existing railway companies in the United States rose from \$1, 947.6 million in 1871 to 2, 248.4 million in 1876; 3, 177.4 million in 1881; 3, 956.4 million in 1886; 4, 751.8 million in 1891 Conrad et al., 1911: Aktiengesellschaften.

The production of iron and steel rails shows an analogous development, as shown in Table A2.

²² Ibid., Einwanderung.

²³ United States Census Office 1904: 9.

Census year	Foreign-born
1870	5,567,229
1880	6,679,943
1890	9,249,547
1900	10,341,276

Among them, Germans, Irish²⁴ and English occupy by far the largest place:

Year	Germans	English	Irish
1870	1,690,533	555,046	1,855,827
1880	1,966,742	664,160	1,854,571
1890	2,784,894	909,092	1,871,509

In the years 1880–1885, about 1 million Germans emigrated, 900,000 English.

Thus, after more than 20 years, capital has achieved its goal: new outlets have been created. However, what do new outlets mean? New buyers. So, new production in the countries, to which one wants to export; production that enables these countries to buy, to pay.

South America has experienced strong development; Argentina and Brazil are seeing a sharp rise in their exports.

While, in 1872, only approximately 580,000 hectares were in agricultural use in Argentina, by 1888 this was already the case with approximately 2,500,000 hectares, 1895 with approximately 5,000,000 hectares. The railway network amounting to 2,201 kilometres in 1877, was 14,755 kilometres long by 1897 (31,574 kilometres in 1911).²⁵ The population increased from 1,830,214 souls in late 1869 to 4,044,911 in 1895 (and 7,091,822 in 1910). Of these, foreigners were approximately 210,000 (11.5 per cent) in 1869, 1,004,527 (24.8 per cent) in 1895.

Favoured by industrial development, especially of Japan, trade on East Asia is increasing rapidly. And this development is best typified by considering the nature of Japan's imports in relation to value, as seen in Table 2.9.

²⁴ The emigration of the Irish, it is known, must be attributed to special causes.

²⁵ Consulaire Verslagen 1912.

Table 2.9: Composition of Japanese Imports, 1875–1904 (in million of yen)

Year	A:	B:			
	Immediate-use articles	Production goods	Iron & hardware	Machinery & instruments	Spinning materials
1875	18.5	8.5	1.0	1.0	0.4
1885	16.6	13.0	2.0	1.5	0.8
1895	60.0	70.0	10.0	6.0	26.0
1904	168.0	203.0	24.9	14.8	86.5

Notes: The final three columns are components of category B. *Source:* Rathgen 1906.

Table 2.10: Exports from Japan, 1872–1904 (in million of yen).

Year	parts of Asia	America	Europe
1873	4.8	4.2	19.1
1881	8.1	11.1	13.3
1889	14.3	26.1	26.8
1904	116.6	104.6	72.4

Notes: Parts of Asia, refers to China, Hong Kong, Korea & Russian Asia.

No less indicative of Japan's rapid development is the summary in Table 2.10.²⁶

In such a time of expanding sales, only one condition needs to be fulfilled for an acceleration of production to a upswing. In a given country or branch, production must receive a boost, a spontaneous expansion, which causes a rapidly rising demand for other products or goods from other countries. This function has now essentially been performed by two branches of production.

First, since 1890, the increased gold production in Australia (mainly Western Australia) and in the Transvaal, where, on the Witwatersrand, an unusually rich gold deposit was discovered and mined.

²⁶ How stormy the development of the Japanese railway network was is shown by the following figures: 1880–1881 it was long 98 miles; 1890–1891: 1,399 miles; 1895–1896: 2,290 miles; 1900–1901: 3,855 miles Kaiserliches Finanzministerium Japans, 1905. 1908– 1909 it was 5,292 miles.

Table 2.11: Gold Production in the Transvaal and Australia, 1881–1910 (in millions of fine ounces)

Period	Transvaal	10-year total	Australia	10-year total
1881--1885	24.6		5.71	
1886--1890	26.6	51.2	5.87	11.58
1891--1895	39.3		7.65	
1896--1900	63.2	102.5	13.54	21.19
1901--1905	78.1		18.08	
1906--1910	104.9	183.0	15.40	33.48

Annual world gold production, which has risen extraordinarily fast since 1850 anyway, reached the average figure of 652, 166 kilogrammes in the period 1906–1910, while it had been 245, 170 kilogrammes in 1891–1895.

Yves Guyot²⁷ calculated, that total gold production had amounted to:

Period	Value
	<i>million francs</i>
1493–1850	16,367.6
1851–1875	16,448.5
1876–1910	38,600.0

Accordingly, almost 18 per cent more has been produced in the last 35 years than in the 380-plus years since the discovery of America.

Table 2.12 shows the unprecedented acceleration in production, which, according to the generally considered reliable estimates of the American Director of the Mint, resulted in the gold supply rising from 15 billion Reichmarks in 1890 to 31 billion in 1910, so doubling in 20 years.

How many countries participated in the increased production is shown by the fact that the Americas and Russia, among others, also saw their gold production increase rapidly. The Americas (the entire continent) yielded as shown in Table 2.13.

No less stormy was the development of the electricity industry. The two countries, at the forefront of this, are again the United States and Germany.

²⁷ 1911c: 90.

Table 2.12: World Gold production, 1493–1911 (annual averages, in kilograms)

Period	Quantity	Period	Quantity
1493–1520	5,800	1861–1865	185,057
1521–1544	7,160	1866–1870	195,026
1545–1560	8,510	1871–1875	173,904
1561–1580	6,840	1876–1880	172,414
1581–1600	7,380	1881–1885	154,959
1601–1620	8,520	1886–1890	169,869
1621–1640	8,300	1891–1895	245,170
1641–1660	8,770	1896–1900	387,257
1661–1680	9,260	1901–1905	484,639
1681–1700	10,765	1906–1910	752,166
1701–1720	12,820	1901	392,705
1721–1740	19,080	1902	446,490
1741–1760	24,610	1903	493,083
1761–1780	20,705	1904	522,686
1781–1800	17,790	1905	568,232
1801–1810	17,778	1906	605,632
1811–1820	11,445	1907	621,375
1821–1830	14,216	1908	666,318
1831–1840	20,289	1909	683,331
1841–1850	54,759	1910	684,176
1851–1855	199,388	1911	703,441
1856–1860	201,750		

Source: Kaiserliches Statistisches Amt 1912.

Table 2.13: Gold Production in the Americas, Russia and Japan, 1895–1910 (in kilogrammes)

Year	Americas	Russia	Japan
1895	70,132	43,476	896
1900	119,126	30,315	2,124
1905	132,682	33,542	3,047
1910	144,853	53,535	4,284

The United States census brought the following results:²⁸

Table 2.14: United States Electricity production, 1880-1905

Year	Plants	Capital	Output Value	Workers
	<i>number</i>	<i>million RM</i>	<i>million RM</i>	<i>number</i>
1880	76	6.3	11.1	1,271
1890	189	79.5	80.1	8,802
1900	580	348.3	382.8	40,890
1905	783	802.4	589.2	59,336

For Germany, the following figures are instructive. There were public electricity companies:

Year	Number	Capacity
		<i>kW</i>
1895	180	46,573
1900	652	230,058
1905	1,175	625,870
1907	1,530	858,841

How much Germany already acts as a supplier is proved by the fact, that it exported just in cables for electric power:

Period	Quantity	Value
	<i>tons</i>	<i>million RM</i>
1891–1895 annual average	2,283	3.0
1896–1900 annual average	10,609	14.2
1901–1905 annual average	19,335	22.4
1906	22,695	31.8
1907	32,290	56.5
1908 (<i>crisis</i>)	29,731	52.0

²⁸ Conrad et al. 1911: Elektrizitätsindustrie.

This development, naturally, produced a rapidly rising demand for metals (including especially copper) and insulating materials (guttapercha), which greatly benefited metallurgy, mining and electrical engineering.

Thus began the general upward surge, which has brought a feverish pace to the economic life of the principal, leading countries since 1895–1896. To find a resemblance in the economic history of the last century, we have to go back more than sixty-plus years; but the spring tide of the last 15 years reaches higher and further, is more general in its effect and more violent in its deployment than that of the period 1850–1873, because capitalism itself has grown so much in breadth and depth.

One special feature still deserves mention.

In discussing the period 1873–1895, we mentioned European emigration to America, especially the United States. In the decade 1901–1910, it did not decline at all. In total, the immigration statistics of the United States recorded 8,795,386 immigrants during this period, of whom no less than 8,136,016 were Europeans.²⁹ It is, therefore, extremely interesting to see how, nevertheless, the statistics show what a profound influence the period's changes exerted on the migration of the European proletariat. One could distinguish two forces in emigration: a repulsion by the mother country (a centrifugal force) and an attraction by a new or rapidly developing economic environment (centripetal force). In the period 1873–1895, Europe really emitted a surplus land population, mainly in Germany and England. In the latest period, this is changing. The rapid, hopeful expansion of the United States lures labour across the ocean. The main European countries, however, are themselves in a time of rapid expansion. Their industries can use more and more workers. So, now, it is no longer Germany and England that provide the main quota of US immigrants, but two countries with much slower, partly stunted industrial development, namely Austria-Hungary and Italy. (The former lacks a seacoast with good ports; the latter suffers from the absence of sufficient minerals in its soil.)

In the United States, immigration between 1901 and 1910, from Austria-Hungary was globally 2,145,000, from Italy around 2,045,000 persons.

The *Handwörterbuch der Staatswissenschaften*, in the article *Einwanderung*,³⁰ gives the following statement of the nationality of immigrants in the United States, as a percentage of the total:

²⁹ These and following figures taken from Board of Trade, 1912.

³⁰ Conrad et al. 1911.

Period	Great Britain	Germany	Scandinavia	Italy	Aus-Hun	Russia	Other
1885–1894	26.2	21.6	12.6	10.4	10.4	8.3	10.5
1895–1904	12.1	5.9	8.3	24.4	21.8	16.6	10.8

For Germany, the following figures are telling:

Per 1,000 persons of the average male, female and total population, there was an annual gain (+) or annual loss (-) arising from migration:

	1871–5	1876–80	1881–5	1886–90	1891–5	1896–1900	1901–5	1906–10
Men	-1.93	-2.07	-4.85	-1.36	-1.91	+0.61	+0.16	-0.60
Women	-1.89	-1.40	-3.69	-1.39	-1.63	+0.09	+0.20	-0.42
Total	-1.91	-1.73	-4.26	-1.38	-1.77	+0.35	+0.18	-0.15

∴

We now consult statistics to take a closer look at the symptoms of the outlined development for the main branches of economic activity.³¹ Here, we keep in mind that the cyclical alternation of upswing and downswing shows the same characteristics - on a smaller scale - as the spring-tide and ebb periods. We distinguish the following points:

1. production acceleration.
2. traffic expansion.
3. trade turnover.
4. interest rates.

We have brought together the most necessary statistical material, which, although incomplete, nevertheless shows us in many details the profound effect of the change of pace of capitalism in all spheres of economic activity.³² Providing figures for the period 1850-70 presents particular difficulties. The expansion of state activity in the field of statistics, partly for administrative reasons, partly to collect material on the

³¹ The article was published in three installments. The editors of *De Nieuwe Tijd* did not follow the author's division in three sections. The second installment starts here.

³² A word of thanks to my friend J. Wiesebron, who faithfully assisted me in the time-consuming work of collecting and editing the numerical material.

social question that became “urgent” with the emerging proletarian class struggle, has for a large part first created statistics on socio-economic subjects. Statistics as a method found scientific practitioners only during the 19th century. Price, trade and production statistics, which give more reliable and complete figures, are all of recent date.³³

Production

First, then, some data on the general course of production in the main countries. For this purpose, a statistic of established and expanded enterprises would be useful. However, no such statistics exist. We do know figures on:

1. the formation of public limited companies
2. emissions

The latter are less useful, as they include all securities coming onto the stock exchange, bonds as well as shares, government loans and private capital. Nevertheless, the following table clearly shows how the strong development of economic life since 1896 has coincided with a sharp rise in issues (see Table 2.15). The 5-year totals reveal the trend, which is obscured by the very strong fluctuations from year to year.

However, this very sharp increase after the period 1891-1895 cannot be attributed to industrial development alone, as, during this time, European national debts and municipal loans increased very rapidly. For Germany, the well-known Dr. Karl Helfferich (Director of the Deutsche Bank) calculated the following distribution of issues (in millions of Reichmarks):³⁴

Period	Public loans	Industrial shares	Industrial bonds	Bank shares
1886–1890	1,782	800	146	329
1891–1895	1,765	372	202	257
1896–1900	1,679	2,495	497	1,303
1901–1905	3,320	1,456	642	561
1906–1910	6,073	2,921	1,080	858

Of these were:

³³ Grain price statistics and rough import and export figures may form an exception.

³⁴ Retrieved from Neymarck, 1911: 232.

Table 2.15: Public Issues, 1871–1910 (Billions of Francs)

Year	Billions of francs	Year	Billions of francs
1871	15.6	1891	7.6
1872	12.6	1892	2.5
1873	10.9	1893	6.0
1874	4.1	1894	17.8
1875	1.7	1895	6.5
1871–5 total	44.9	1891–5 total	40.4
1876	3.7	1896	16.5
1877	7.9	1897	9.6
1878	4.6	1898	10.5
1879	9.4	1899	11.3
1880	5.5	1900	11.9
1876–80 total	31.1	1896–1900 total	59.8
1881	7.2	1901	9.9
1882	4.5	1902	21.9
1883	4.2	1903	18.4
1884	4.9	1904	14.4
1885	3.3	1905	19.1
1881–85 total	24.1	1901–05 total	83.7
1886	6.7	1906	26.5
1887	5.0	1907	15.3
1888	7.9	1908	21.2
1889	12.7	1909	24.6
1890	8.1	1910	26.5
1886–90 total	40.4	1906–10 total	114.1

Source: Statistique générale de la France 1911, 88.

Table 2.16: Newly founded limited liability companies in Germany, 1870–1911

Period	Public limited companies	Share capital
1871–1875	1,073	2,933
1876–1880	270	223
1881–1885	620	595
1886–1890	1,061	1,100
1891–1895	635	586
1881–1895	2,316	2,281
1896–1900	1,390	1,997
1901–1905	625	1,103
1906–1910	940	1,364
1896–1910	2,955	4,464
1911	169	234

Notes: Share of capital in million Reichmarks. Sources: Conrad et.al. 1911 and Kaiserliches Statistisches Amt. 1912

Period	Domestic	Foreign
1886–1890	4,360	2,322
1891–1895	4,833	1,462
1896–1900	8,216	2,420
1901–1905	8,339	2,147
1906–1910	12,615	1,497

The feverish development in the quinquennium 1896–1900 causes the issues of industrial shares to increase sevenfold! A similar picture emerges from the table of limited companies created, which shows that the number of “*Gründungen*” [foundings] in the downswing years of the period 1896–1910 still exceeded that of the upswing years in the period 1881–1895 (1, 103 versus 1, 100 million RM), see Table 2.16.

The English statistics on joint-stock companies are less suitable for our purposes, as they underwent a change in 1903, which does not allow comparison of previous and subsequent years. However, it also shows a very strong development in the period

1895-1900, which saw the nominal share capital of joint-stock companies created double compared to the previous five years (from £674.9 million to £1,340.7 million). According to the statistics, the aggregate capital of limited companies registered in England on 1 April 1895 amounted to £1,145.4 million; by 1911, this figure had risen to £2,222.3 million and thus almost doubled.

How iron production accelerated is shown in the following statistic, which also clearly shows the outstripping of England by Germany and the United States.

Table 2.17: Pig Iron Production, 1872–1910 (annual averages, in millions of tons)

Period	Germany	England	United States
1872–1875	2.0	6.2	2.4
1876–1880	2.1	6.6	2.5
1881–1885	3.4	8.1	4.2
1886–1890	4.2	7.7	7.1
Increase, 1872–75 to 1886–90	+2.2	+1.5	+4.7
1891–1895	5.0	7.2	8.1
1896–1900	7.4	8.8	11.4
1901–1905	9.4	8.7	18.2
1906–1910	12.9	9.8	24.0
Increase, 1891–95 to 1906–10	+7.9	+2.6	+15.9

Sources: Retrieved from: Statistique générale de la France 1911: T. I.

Especially for Germany, statistics show that its need for iron ore increased more than its own production of it. While before 1891–1895, iron ore imports exceeded exports only in the period 1866–1870, and to a small extent, this was regularly the case since 1896–1900, see Table 2.18

The enormous acceleration in production of coal and lignite also stands out; it doubled in the last 15 years in Germany and the United States. Table 2.19 also shows at close inspection the great wave movement in production; the increase from 1851–1871 and from 1895–1910 is faster than that from 1871–1895, however, coal production is obviously more stable than iron production, as it is partly for mass consumption. The highly volatile demand exerted by production and traffic is only part of the total demand, albeit the largest part.

Table 2.18: Production, Imports, Exports and Consumption of Iron Ore in Germany, 1861–1910.

Period	Production	Imports	Exports	Consumption	Increase
	<i>million kg</i>	<i>million kg</i>	<i>million kg</i>	<i>million kg</i>	(%)
1861–1865	2,406	66.2	278.6	2,293.6	—
1866–1870	3,564	387.6	375.2	3,576.4	63.0
1871–1875	5,262	618.0	662.8	5,217.2	45.9
1876–1880	5,650	579.8	1,716.5	4,513.3	–13.5
1881–1885	8,557	809.0	1,724.1	7,641.9	69.3
1886–1890	10,183	1,155.7	2,035.2	9,303.5	21.7
1891–1895	11,677	1,749.4	2,330.5	11,095.9	19.3
1896–1900	16,496	3,512.4	3,034.8	16,973.6	53.0
1901–1905	20,251	5,139.8	3,148.2	22,242.6	31.0
1906–1910	26,585	8,404.4	3,320.3	31,669.1	42.4

Notes: Figures are 5-year average in million kg. Consumption is calculated as Production plus Imports minus Exports. The rapid development of 1881–1885 can be attributed to the invention of the Thomas process in 1879, which made it possible to mine the highly phosphorous iron deposits in Alsace-Lorraine.

Sources: Retrieved from Kaiserliches Statistisches Amt. 1912 and *Statistisches Handbuch*.

Table 2.19: Coal and Lignite Production, 1851–1910 (annual averages, in million tons)

Period	France	Germany	Belgium	England	United States
1851–1855	5.9	—	7.3	—	9.6
1856–1860	7.8	—	8.8	69.8	12.6
1861–1865	10.8	23.1	10.6	88.5	18.3
1866–1870	13.0	31.9	12.8	105.4	28.3
1871–1875	16.1	44.1	14.9	125.8	46.5
1876–1880	17.5	52.1	15.0	136.3	55.6
1881–1885	20.2	68.7	17.5	158.8	95.7
1886–1890	22.8	81.1	18.9	169.6	123.5
1891–1895	26.7	96.9	19.8	181.9	159.6
1896–1900	31.7	129.2	22.0	208.9	202.7
1901–1905	33.5	161.8	22.6	228.9	302.9
1906–1910	36.9	210.8	23.6	261.7	411.8

Sources: Statistique Générale de la France 1911

Good services in examining the direction of economic development can also be provided by occupational and business statistics. For Germany, the results of the last census clearly show the strong development of industry, especially of the means of production industries. We derive the following data on this subject from the statistical study by Dr. M. Mendelson.³⁵

While, during the period 1895–1907, Germany's total population increased by 19.22 per cent, the number of those, who were engaged in occupations in: fishing increased by only 8.03 per cent; wage-labour of varying nature and domestic services by 10.61 per cent; agriculture by 15.58 per cent.

However, stronger than the entire population were increasing:

Sector	Increase (%)
1. Transport sector (excluding sub-sector 3)	53.06
2. Graphical trades	59.70
3. Post, Telegraph and Railways	59.93
4. Mining, blast furnaces and salt extraction	61.44

³⁵ Mendelson 1912: 405.

Sector	Increase (%)
5. Lighting, soaps, oils, greases and varnishes	62.05
6. Insurance business	113.60
7. Machinery, instruments and equipment	115.25 (!)

During almost the same period (1896-1906), the population of France rose, working in:

Sector	Increase (%)
Agriculture	4.16
Industry	13.34
Trade	24.92

Of the industries, the metal industry increased by 24.7 per cent; the manufacture of electrical machinery and tools by 184.8 per cent and, in the period 1901 to 1906, the automobile industry by 191 per cent!

What does the Census (business census) of the land of unlimited possibilities tell us? We show in Table 2.20 some figures taken from the *Abstract of the twelfth census*.³⁶ The results of the 1910 census are not yet known.

Table 2.20: Industrial Census, 1880-1900.

Industry	Year	Companies	Capital	Workers	Output
		<i>number</i>	<i>th. USD</i>	<i>number</i>	<i>th. USD</i>
Textile	1880	14,137	594,923	710,493	971,275
	1890	16,847	1,008,050	824,138	1,261,673
	1900	30,048	1,366,604	1,029,910	1,637,484
Iron & steel	1880	8,823	487,871	379,491	659,411
	1890	11,169	997,872	531,823	1,144,057
	1900	13,869	1,528,979	733,968	1,793,491
Other metals	1880	9,801	87,580	85,278	173,274
	1890	10,019	204,286	123,239	316,908
	1900	16,305	410,646	190,757	748,795
Shipbuilding	1880	2,188	20,980	21,345	36,800
	1890	1,010	53,393	24,811	40,342

³⁶ 1912.

Industry	Year	Companies	Capital	Workers	Output
Tram & rail cars	1900	1,116	77,363	46,781	74,578
	1880	130	9,273	14,232	27,998
	1890	166	48,461	35,148	76,352
Bicycles	1900	193	106,721	44,063	107,186
	1890	110	2,230	2,009	2,870
	1900	6,640	36,544	23,274	45,682
Foundry & machinery	1880	4,984	155,022	145,650	215,442
	1890	6,500	383,257	231,331	413,197
	1900	9,324	665,058	350,327	644,991

Traffic

Needless to say, commodity transport also underwent a major expansion during the upswing period. Even better than the figures on transport itself, which are moreover difficult to collect for the various countries, the statistics on the construction of seagoing vessels tell us about the course of traffic Table 2.21.

Table 2.21: Construction of Steam and Sailing Vessels for Own Use, 1841-1910 (5-year averages)

Period	United States	France	England
1841–1845	185,307	—	—
1846–1850	185,307	—	—
1851–1855	366,603	—	—
1856–1860	366,603	—	—
1861–1865	300,880	—	330,060
1866–1870	300,880	—	347,041
1871–1875	353,203	40,643	452,214
1876–1880	193,244	23,664	396,625
1881–1885	242,546	37,129	567,972
1886–1890	197,649	26,155	481,275
1891–1895	204,674	22,010	590,583
1896–1900	266,723	58,001	636,911
1901–1905	419,466	87,825	758,388
1906–1910	416,890	43,307	637,581

Notes: Data for US 1841–1870 in 10-year averages and for 1906–1910 in 4-year averages, of which two depression years. US data in gross tons, France and England in net tons. Adapted from: America: US Bureau of Statistics 1910; France: *Annuaire Statistique* 1910, p. 50; England: *Sündbärg* 1908 and Board of Trade 1912.

The decline in US shipbuilding during 1876–1890 is particularly striking. The average of the decade 1850–1860 was only exceeded again in the period 1901–1905. France showed a similar development, while England, although its shipbuilding for its own fleet did not fall in the same way as the other two countries periodically did, showed a more vigorous increase after the period 1891–1895.

For Germany, the following figures are taken from *Kaiserliches Statistisches Amt*,³⁷ which show a decrease of the merchant fleet by number from 1876 to 1896 and for tonnage a slow increase. The number increases from 1896 and even faster the capacity.

Table 2.22: Strength of the German merchant fleet, ocean-going vessels, 1871–1910

Year	Vessels	Capacity	Increase (%)
1871	4,519	982,355	—
1876	4,745	1,084,882	10.4
1881	4,660	1,181,525	8.9
1886	4,135	1,282,449	8.6
1891	3,653	1,433,413	11.8
1896	3,592	1,502,044	4.8
1901	3,883	1,941,645	29.3
1906	4,320	2,469,292	27.2
1910	4,658	2,859,307	15.8

Notes: Capacity in net register tons. Numbers to 1st January of each year.

Somewhat different is the development of the railway network, on which Table XII provides figures. It shows a gradual reduction in the pace of construction. And it stands to reason that it is precisely in the length of the network that an increase proportional to traffic cannot occur. What is remarkable for the development of traffic is the gradual shift of the countries with the strongest construction from Europe to America and, finally, Asia and how in each of these continents, after a

³⁷ 1912.

maximum increase, there is a gradual decrease in the growth rate. It is precisely railway construction which receives new impulses in the depression period: first through the release of investment capital; second through the urge to expand exchange, opening new markets.

Table 2.23: Railway Network Length, 1840–1910 (in kilometres)

Year	Europe	America	Asia	Africa	Australia
1840	2,925	4,754	—	—	—
1845	9,159	7,531	—	—	—
1850	23,504	15,064	—	—	—
1855	34,052	31,693	350	144	38
1860	51,862	53,935	1,393	455	367
1865	75,612	62,426	5,489	599	825
1870	104,914	93,139	8,185	1,786	1,765
1875	143,187	135,266	11,310	2,475	3,698
1880	168,983	174,666	16,287	4,646	7,847
1885	195,645	248,853	22,668	7,822	12,935
1890	223,869	331,417	33,742	9,836	18,889
1897	263,145	380,384	49,764	15,948	23,014
1900	283,525	402,171	60,301	20,114	24,014
1907	320,810	487,506	90,577	29,798	28,598
1910	333,848	526,382	101,916	36,854	31,014

Sources: Years 1885–1889: Neumann-Spallart 1896; Others: De Economist 1912; Conrad et.al. 1911, “Eisenbahnen”

The tempo change was thus:

Table 2.24: Railway Network Enlargement, 1850–1910 (annual percentage)

Region	1850–1860	1869–1870	1870–1880	1880–1890	1890–1900	1900–1910
Europe	121	102	61	32	27	18
America	257	73	88	90	21	31
Asia	—	487*	99	107	79	69

Notes: The enormous percentage of Asia 1896–1870 derives from the fact that the network was still very small in 1860 (1,393 kms), so the enlargements weighed heavily.

It is very clear from this, that, in the depression era 1873–1895, railway construction had turned to America and Asia. In the decade 1890–1900, statistics show a strong stagnation in America, in Asia a smaller increase. In Africa, the railway network expanded very rapidly especially after 1890, as a result of English colonisation and the energetic implementation of the Cape Town-Cairo plan.

Trade

Trade statistics will also have to reveal the workings of the economic wave movement. We chose - to check this - two sets of data. First, the turnover of the central clearing houses; second, import and export statistics.³⁸

The turnover of clearinghouses (Table 2.25) provides an (albeit rough) picture of trading activity, as may be seen from their fairly accurate cyclical fluctuations (maxima are 1857, 1873, 1881, 1899, 1906–1907).

In England, annual turnover doubles from 1870 to 1890, but with many slumps. A continuous faster rise (with minor interruptions in 1900 and 1908) begins from 1896. In the last 15 years, it doubles again. However, the periodicity becomes even clearer in US statistics. These give an average in the years 1856–1860 of \$6.7 billion, while 1871–1875 gives an average \$29.3 billion. In 1886–1890, the annual average has risen to \$34.3 billion and again 15 years later it is \$74.8 billion to rise as high as \$94.9 billion in the quinquennium 1906–1910!

German clearing turnover also shows a big acceleration from 1896.

The statistics of international trade completely confirm these results. We have refrained from giving the rather unproven figures of world trade estimates to satisfy ourselves with those of imports and exports to and from some of the major countries.

However, when considering these figures, it should be remembered that they magnify the trend of periodicity, as it were, in perspective. In the period of slow rise or even fall in commodity turnover (1873–1895), the value of traded goods also falls. In the upswing periods (1850–1873 and 1895–1910), the reverse is true; with turnover, unit prices also rise. The variations are thus magnified. However, for our purposes this does little harm to these figures. For the symptomatic meaning of import and export totals, it is indifferent how the result of the two factors (commodity turnover and commodity price) has been obtained. The welfare consequences, which an altered

³⁸ Clearinghouses are institutions, where businessmen, usually bankers meet to settle their mutual claims. Only account balances are paid there by cheque or cash.

Table 2.25: Turnover of the Clearinghouses, 1854–1910 (Billions of National Currency)

Year	France <i>bn fr.</i>	Germany <i>bn Mk.</i>	England <i>bn £</i>	U.S. <i>bn \$</i>	Year	France <i>bn fr.</i>	Germany <i>bn Mk.</i>	England <i>bn £</i>	U.S. <i>bn \$</i>
1854	15.52	---	---	5.7	1883	65.08	---	5.9	40.3
1855	19.15	---	---	5.6	1884	62.81	12.13	5.8	34.1
1856	23.47	---	---	6.9	1885	60.73	12.55	5.5	25.3
1857	20.51	---	---	8.3	1886	71.10	13.35	5.9	33.4
1858	19.93	---	---	4.7	1887	65.44	14.20	6.1	34.9
1859	24.12	---	---	6.4	1888	73.78	15.51	6.9	30.9
1860	22.97	---	---	7.2	1889	82.85	18.04	7.6	34.8
1861	23.33	---	---	5.9	1890	86.66	17.99	7.8	37.7
1862	30.81	---	---	6.9	1891	97.19	17.66	6.8	34.1
1863	30.44	---	---	14.9	1892	74.90	16.76	6.5	36.3
1864	28.03	---	---	24.1	1893	76.18	18.27	6.5	34.4
1865	31.86	---	---	26.0	1894	92.34	18.39	6.3	24.2
1866	34.80	---	---	28.7	1895	104.94	21.28	7.6	28.3
1867	35.14	---	---	28.7	1896	85.25	22.90	7.6	29.3
1868	43.34	---	3.5	28.5	1897	86.27	24.19	7.5	31.3
1869	43.38	---	3.6	37.4	1898	93.59	27.97	8.1	39.8
1870	38.07	---	3.9	27.8	1899	102.62	30.23	9.2	57.4
1871	35.98	---	4.8	29.3	1900	102.44	29.47	9.0	51.9
1872	55.65	---	5.9	33.8	1901	111.82	28.92	9.6	77.0
1873	45.54	---	6.2	35.5	1902	120.23	29.96	10.0	74.7
1874	47.67	---	5.9	22.8	1903	124.96	31.13	10.1	70.8
1875	59.63	---	5.6	25.1	1904	152.82	32.63	10.6	59.7
1876	51.44	---	5.0	21.6	1905	171.22	37.60	12.3	91.9
1877	44.47	---	5.0	23.3	1906	189.33	42.03	12.7	103.7
1878	50.64	---	5.0	22.5	1907	179.39	45.31	12.7	95.3
1879	58.85	---	4.9	25.2	1908	170.26	45.96	12.1	73.6
1880	65.42	---	5.8	37.2	1909	214.19	51.42	13.5	99.3
1881	95.15	---	6.4	48.6	1910	245.84	54.34	14.7	102.6
1882	77.72	---	6.2	46.5					

Source: Statistique Générale de la France 1911, T.I fasc. II, pp. 212–213.

ratio of these factors has, are entirely beyond our consideration.

Table 2.26 shows annual averages in five-year periods of import and export values combined.

Table 2.26: Total imports and exports in five-year averages.

Period	France	Germany	England	United States	Argentina	Japan
	<i>mn francs</i>	<i>mn Reichsmarks</i>	<i>mn pounds</i>	<i>mn dollars</i>	<i>mn pesos nacionales</i>	<i>mn yen</i>
1841–1845	1,590.2	—	—	182.6	—	—
1846–1850	1,526.6	—	—	262.5	—	—
1851–1855	2,553.0	—	—	417.0	—	—
1856–1860	3,830.6	—	—	583.2	—	—
1861–1865	5,014.3	—	453.8	408.0	—	—
1866–1870	5,963.5	—	527.4	701.1	—	—
1871–1875	7,146.5	5,891.6 ³⁹	657.8	1,049.6	—	—
1876–1880	7,672.7	6,306.6	632.4	1,145.6	—	—
1881–1885	7,966.0	6,199.4	694.9	1,437.6	154.4	97.5
1886–1890	7,658.8	6,638.3	688.1	1,432.9	220.7	113.5
1891–1895	7,419.8	7,138.2	705.3	1,652.4	195.0	194.7
1896–1900	8,067.2	9,010.5	788.0	1,866.4	247.9	416.0 ⁴⁰
1901–1905	8,936.2	11,123.2	909.0	2,379.9	379.2	648.0
1906–1910	11,754.9	15,116.1	1,117.7	3,079.2	641.6	882.5

Notes: The figures refer to trade, minus pure transit trade (*Spezialhandel, commerce spécial*). However, as is well known, little weight can generally be attached to this distinction.

Sources: March 1911, Board of Trade 1912

³⁹ 1872–1875

⁴⁰ A (small) part of this jump must be explained from the fact, that since 1896 Formosa (modern Taiwan) has been included in the statistics.

Clearly, after the period 1871–1875, the tendency towards very slow growth or even a decline in total value can be observed. There is a general strong increase since the period 1891–1895. Germany's trade even doubled. However, incomparably stronger still was the increase in imports and exports in the two young countries Argentina and Japan. From 1896–1900 to 1906–1910, Argentina shows an increase of more than 150 per cent; in the same period, Japan of 110 per cent.

For the direction of development of the economic life of nations, however, the nature of imports and exports is even more characteristic than total value. The higher a country's industrial development, the larger share of its exports are manufactured goods and the larger of its imports usually make up foodstuffs and raw materials. Thus, for the United States, the world's most versatile country, industrialisation reveals itself in a sharp decline in food exports (especially since 1900) and a sharp rise in manufactured exports. Prof. Bernhard Harms⁴¹ gives the following statement of the nature of imports and exports of the United States, supplemented by me with the year 1910.

Table 2.27: United States, Share of Imports, 1870–1910

Year	Food & live animals	Raw materials	Semi-finished products	Finished products	Misc
1870	34.4	12.8	12.5	39.6	1.1
1880	32.7	19.7	16.5	29.4	1.5
1890	33.1	21.6	14.8	29.2	1.1
1900	27.1	32.5	15.7	23.9	0.6
1910	21.0	21.4	18.3	23.6	0.7

Table 2.28: United States, Share of Exports, 1870–1910

Year	Food & live animals	Raw materials	Semi-finished products	Finished products	Misc
1870	24.6	56.6	3.6	14.9	0.9
1880	55.7	28.9	3.5	11.2	0.4
1890	42.2	36.0	5.5	15.6	0.5
1900	39.8	23.7	11.1	24.2	1.0
1910	21.6	33.1	15.7	29.2	0.4

41 1912: 206.

While nutrients and industrial raw materials still accounted for 81 per cent of total exports in 1870, by 1910 they made up only 55 per cent of the total.⁴²

Germany's trade statistics show entirely the same picture. We derive from a statistical study by Dr M. Mendelson⁴³ the absolute figures of the following table, alongside which we place the relative figures.

42 It is entirely consistent with this trend, that the United States' trade with the highly industrialised countries of Europe increased much more slowly than with Asian and South American states, which are still largely agricultural. From 1901 to 1910, US imports increased by 77.5 per cent overall. Imports from England increased by 74.4 per cent; from Germany by 66.7 per cent; from France by 49.8 per cent; by contrast, from North and Central America by 104.3 per cent (of which from Canada by 127.8 per cent); from Japan by 100.5 per cent; from China by 82.9 per cent; from Argentina by 240.4 per cent and from Chile by 110.9 per cent. See on this *Auswärtiges Amt*, 1911.

43 1912: 531.

Table 2.29: Composition of German Foreign Trade, 1872–1910

Year	Total trade		Raw & semi-finished		Finished		Food & livestock	
	Imports	Exports	Imports (%)	Exports (%)	Imports (%)	Exports (%)	Imports (%)	Exports (%)
1872	3,256.8	2,317.7	51.4	37.3	21.7	44.3	36.7	21.7
1880	2,803.5	2,923.4	48.8	26.5	18.4	51.0	32.9	22.5
1890	4,145.5	3,326.5	42.6	21.3	23.6	64.6	33.6	14.2
1900	5,765.6	4,611.4	48.6	24.1	20.8	64.7	30.6	11.2
1910	8,934.1	7,474.7	56.9	25.7	15.3	64.2	27.8	10.2

Notes: Total trade is reported in millions of Reichsmarks (RM). The remaining columns report the percentage share of total imports or exports. Food and livestock includes Food, beverages & live animals.

Interest rates

In any industrial upswing, interest rates are high. The increasing demand for money capital to set up and expand enterprises, on the one hand, and the demand for corporate credit in the form of bills of exchange and loans, closely linked to trade turnover, on the other, cause interest rates, which were low in the depression years after a crisis, to rise. During an upturn, disposable capital flows into the many streams of corporate credit only to flow back from there during and shortly after a crisis into the safe haven of central banks or sovereign debt investments. If the course of short-term credit (revealing itself in the state of private and bank discount rates) is already very much sharper than that of long-term investments (evidenced by mortgage rates and the price of public debt securities), a comparison over a larger epoch than one industrial cycle shows that both are changing in similar directions. And now, for the knowledge of the nature of the periods 1851–1873, 1873–1895, 1895–1911, it is eminently instructive to discover that the course of interest rates shows precisely the same tripartite development. This may count as strong evidence for our argument that underlying this wave motion, which, as we saw, revealed itself in the course of prices, is a mode of development of international business as a whole.

We have now compiled a table for England (See Table 2.30 and Figure 2.3) , for which most of the data are available, which shows us:

1. the course of the market discount rate and the bank discount rate
2. the price of consols (English public debt) and their pure yield, calculated as a percentage of their price⁴⁴
3. the price of preferred shares of one of the largest railway companies, converted on a basis of a fixed dividend of 4 per cent

44 It should be clarified that, if a security of Fl. 1,000 a year gives Fl. 30 interest, the yield is 3 per cent. Now, if the price (i.e. the purchase price) is at Fl. 500 then the possessor of the security for a capital value of Fl. 500 also has Fl. 30 so 6 per cent.

Table 2.30: Course of Interest Rates in England, 1849–1910

Year	Market rate	Consol price	Consol yield	Railway stock	Bank rate
1849	2.25	92.50	3.25	---	---
1850	2.25	96.50	3.11	---	---
1851	3.00	97.10	3.09	---	---
1852	1.87	99.40	3.02	---	2.50
1853	3.50	97.70	3.07	---	3.40
1854	4.87	91.90	3.27	91	5.10
1855	4.50	90.50	3.32	91	4.80
1856	5.50	93.10	3.22	91	5.80
1857	6.75	91.90	3.27	91	6.70
1858	2.73	96.90	3.10	90	3.00
1859	2.50	95.10	3.15	93	2.75
1860	4.00	94.00	3.19	93	4.25
1861	5.00	94.00	3.19	91	5.25
1862	2.25	91.50	3.28	92	2.50
1863	4.25	92.60	3.24	92	4.50
1864	7.00	90.10	3.33	90	7.50
1865	5.32	89.50	3.35	88	4.75
1866	6.41	88.00	3.41	86	7.00
1867	2.66	93.00	3.23	86	2.50
1868	2.46	93.90	3.20	86	2.25
1869	3.37	92.50	3.26	89	3.25
1870	3.28	92.50	3.28	88	3.12
1871	2.89	92.15	3.27	89	2.85
1872	4.08	92.50	3.28	91	4.12
1873	4.70	92.50	3.28	90	4.75
1874	3.56	92.50	3.28	91	3.75
1875	3.14	93.75	3.24	94	3.25
1876	2.26	95.00	3.16	96	2.62
1877	2.62	95.37	3.14	100	2.85
1878	3.59	95.18	3.15	100	3.75
1879	2.14	97.50	3.08	100	2.38

Year	Market rate	Consol price	Consol yield	Railway stock	Bank rate
1880	2.53	98.37	3.05	102	2.76
1881	3.05	100.00	3.00	106	3.48
1882	5.55	100.50	2.99	108	4.14
1883	3.22	101.40	2.96	106	3.58
1884	2.57	101.00	2.97	106	2.96
1885	2.40	99.30	3.02	106	2.92
1886	2.33	100.80	2.98	109	3.05
1887	2.65	101.80	2.95	110	3.34
1888	2.53	101.00	2.97	119	3.30
1889	2.85	98.00	2.81	120	3.55
1890	3.88	96.30	2.86	122	4.69
1891	2.77	95.70	2.87	127	3.35
1892	1.76	96.70	2.85	130	2.52
1893	2.32	98.50	2.80	135	3.06
1894	1.18	101.10	2.71	137	2.11
1895	0.96	106.20	2.59	145	2.00
1896	1.57	110.75	2.48	154	2.48
1897	1.92	112.40	2.45	152	2.64
1898	2.62	110.90	2.48	148	3.19
1899	3.25	106.90	2.58	143	3.75
1900	3.70	99.60	2.76	137	3.94
1901	3.17	94.25	2.92	132	3.90
1902	2.97	94.37	2.91	130	3.33
1903	3.38	90.75	2.75	127	3.76
1904	2.68	88.25	2.84	121	3.30
1905	2.62	89.80	2.78	122	3.08
1906	3.97	88.30	2.83	119	4.27
1907	4.49	84.10	2.97	116	4.92
1908	2.29	86.10	2.91	110	3.00
1909	2.28	84.00	2.98	110	3.10
1910	3.16	81.00	3.09	106	3.72

Notes: Market rate denotes the market discount rate. Railway stock refers to the price of Lancashire and Yorkshire Railway guaranteed preference stock, calculated on a 4 per cent basis. Rates and yields are percentages. Compiled from: Sauerbeck 1912, 400 and 276 and Hilferding 1910, 108

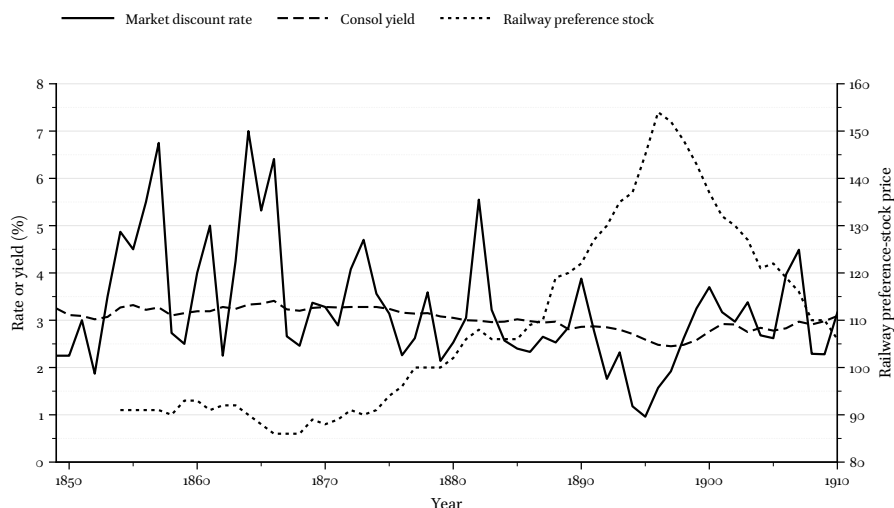


Figure 2.3: Interest rates and securities prices in England, 1849–1910

All series show the same trend. High average interest rates in the years 1850–1873 (with many peaks); a low in 1896–1897 and a sharp rise in the last 15 years.

The interest rate, subject to few modulations, drawn from funds invested in consols,⁴⁵ does represent about the minimum interest rate of long credits in the three periods, since the risk is thereby reduced to zero. What is certain in capitalism if not the English state? More striking is the curve of share prices, because it gives a fairly pure picture of interest made from capital put into first-tier companies. The share price rises (i.e. interest rates fall) steadily until 1896, in which year a very rapid fall (so interest rates rise) begins. The price falls from 154 to 106!

A closer look at the table also shows how, since the 1880s, the decoupling of the market discount rate from that of the Bank of England begins. In this one should see a result of the much faster growth in importance of the private than of the circulation banking business.⁴⁶ For our purposes, this is noteworthy, as the depression period is better reflected in the decline of the private discount rate than in that of the bank discount rate. The mutual competition of free money capitals and the low need for commercial credit caused the discount rate to fall from 2.63 percent on average

⁴⁵ Consols: (originally short for consolidated annuities, but subsequently taken to mean consolidated stock) were British government debt issues in the form of perpetual bonds, redeemable at the option of the government.

⁴⁶ On this general tendency, see Sven Helander, 1912.

Table 2.31: Average Level of Discount Rate in London, Paris and Berlin, 1895–1911

Year	London	Paris	Berlin
1895	0.80	1.59	2.02
1896	1.40	1.75	2.99
1897	1.80	1.81	3.09
1898	2.60	2.07	3.55
1899	3.25	2.96	4.45
1900	3.70	3.08	4.41
1901	3.14	2.43	3.06
1902	2.96	2.43	2.19
1903	3.24	2.82	3.00
1904	2.65	2.19	3.14
1905	2.61	2.10	2.85
1906	3.98	2.72	4.04
1907	4.49	3.40	5.12
1908	2.13	2.25	3.52
1909	2.26	1.79	2.87
1910	3.10	2.44	3.54
1911	2.89	2.67	3.59

Sources: Sauerbeck's figures in Sauerbeck 1912.

in the years 1883–1887 to 1.59 percent on average in 1893–1897. The year 1895 itself yielded an average of 0.96 per cent. This was a different state of the money market from the good old days, when it was proverbially said that John Bull could tolerate anything but 2 per cent.

That the strong upward movement of the market discount rate can be observed not only in England, but internationally over the last 15 years, can be seen from Table 2.31, which records the average level of the discount rate in the three main European markets.

That the movement of the bank discount rate of the main central circulation banks is moving in the same direction as that of the market discount rate we would like to show by the following table taken from,⁴⁷ which very clearly shows the decline since the third quarter of the 19th century and the new rise since its end.

In passing, it should be noted that Hilferding, in his reflections on the course of

⁴⁷ Hilferding 1910: 109.

Table 2.32: Average Bank Discount Rate, 1857–1906

Period	England	France	Germany	Austria-Hungary	Average
1857--1866	4.82	4.48	4.83	5.06	3.67
1867--1876	3.25	3.89	4.34	4.85	3.38
1877--1886	3.19	2.96	4.11	4.26	3.63
1887--1896	3.04	2.71	3.59	4.21*	4.09
1897--1906	3.52	2.85	4.28	4.05	4.79

Notes: Data for England are from the Bank of England and for France from the Banque de France. For Germany, data for 1857–1875 are from the Preussische Bank and, after 1875, from the Deutsche Reichsbank. For Austria-Hungary, data before 1878 are from the Oesterreichische Nationalbank and, after 1878, from the Oesterreichische-Ungarische Bank.

* The difference in Austria-Hungary during the decade 1887–1896 should be explained by the circumstance that Austrian monetary and banking arrangements were not adequately regulated until 1892 and 1899. Before 1892, a paper standard prevailed and the Austro-Hungarian Bank had to maintain the currency primarily through its discount policy. On this, see, among others, Schmidt (1910) and Zuckerkandl (1909).

interest rates, did not mention the three-part wave motion we have shown.

∴

Only briefly, we want to draw attention to the fact that, although food prices show a development in the 10-year cycle that is completely different from that of industrial raw materials, they also show the phases 1850–1873, 1873–1895, 1895–1911.⁴⁸ It is beyond the scope of this essay to give a detailed account of the rise in the price of agricultural foodstuffs in the last 15 to 20 years. It is the one that the masses of the people feel personally, it also was therefore the most discussed. Especially in Germany the literature on the price movement of bread, meat, eggs, etc. is multiplying by the day and the Social Democrats have made not the least contributions to this.⁴⁹

We, therefore, confine ourselves at this point to pointing out that industrial expansion — the subject of our discussion - did not fail to have its effect on agriculture as well. The rapid industrialisation of the United States of North

⁴⁸ This is the start of the third installment.

⁴⁹ We refer to Otto Bauer, 1910's excellent treatise and numerous essays in *Die Neue Zeit*, including by K. Kautsky, M. Nachimson, *Spektator*.

America, which is constantly forcing that country to consume a large part of its harvests itself, is one of the causes of the high prices of grain. Table 2.33 below shows that wheat exports, which still averaged 30.2 per cent of production in the period 1880–1884, fell to 16.9 per cent in the quinquennium 1906–1910. Minima like 8.1 per cent exports in 1904 and 9.9 per cent in 1910 were previously unknown; export rates of more than 30 per cent occur only 3 times in the 1900–1910 period, 8 times in the 1890–1899 period. The number of grain-consuming and importing countries is increasing, and the rising production of Canada and Argentina has so far failed to eliminate the price-increasing effect of the divergence of supply and demand.⁵⁰

The same is true of meat production. Livestock development is inadequate in almost all countries. The population is increasing faster than livestock, as the statistic in Table 2.34 shows, taken from Richter.⁵¹

The gradual relative decline or too slow absolute increase has even led some researchers to believe that a “depecoration” (cattle reduction) is a constant phenomenon.⁵² Prof. Steinbrück writes: As in Europe, a relative decline in livestock can also be observed in the United States of North America. The chief of the Agriculture Department, Wilson, calculated, that according to livestock counts for every 100 inhabitants there were in:

Year	Cattle	Sheep	Pigs
1840	88	113	154
1900	69	52	83

In seventy years, the number of animals intended for meat consumption has fallen to less than three-fifths of the previous ratio.⁵³

We cannot comment further on this issue here. It seems to us, however, that depecoration is too little associated with the agricultural property relations in

50 After the Chinese Revolution, China is also replacing rice with wheat and rye as its staple food.
51 1912.
52 See e.g. Wygodzinski, 1906; Steinbrück, 1910; and Esslen, 1912.
53 In his *Economische Kroniek* of 10 April 1910, Wibaut, 1910 contested the assertion, that the livestock population is increasing more slowly than the population, wrongly in my view. If the intermediate estimates may be wrong, the results of the periodic censuses are more reliable and show the same phenomenon and in most countries.

Table 2.33: Production and Exports of Wheat and Wheat Flour in the United States, 1880-1910 (Thousands of Winchester bushels)

Year	Production	Imports	Total supply	Exports	Export share
1880	498,550	211	498,761	186,475	37.4%
1881	383,280	865	384,146	122,598	31.9%
1882	504,185	1,087	505,272	148,786	29.4%
1883	421,086	32	421,118	111,636	26.5%
1884	512,765	212	512,977	132,852	25.9%
1885	357,112	388	357,500	94,913	26.5%
1886	457,218	282	457,500	154,163	33.7%
1887	456,329	595	456,924	120,127	26.3%
1888	415,868	136	416,004	88,822	21.3%
1889	490,560	163	490,693	109,611	22.3%
1890	399,262	584	399,846	106,802	26.7%
1891	611,780	2,462	614,242	227,505	37.4%
1892	515,949	968	516,917	192,485	37.2%
1893	396,132	1,183	397,315	164,500	41.4%
1894	460,267	1,438	461,705	145,362	31.5%
1895	467,103	2,116	469,219	128,806	27.4%
1896	427,684	1,544	429,228	146,627	33.4%
1897	530,149	2,059	532,208	219,187	41.1%
1898	675,149	1,875	677,024	224,554	33.2%
1899	547,304	320	547,624	186,394	34.0%
1900	522,230	603	522,833	216,659	41.4%
1901	748,460	121	748,581	234,818	31.4%
1902	670,063	1,080	671,143	204,167	30.4%
1903	637,822	218	638,040	120,896	18.9%
1904	552,400	3,286	555,686	44,700	8.1%
1905	692,979	262	693,241	97,642	14.1%
1906	735,261	590	735,851	147,300	20.1%
1907	634,087	520	634,607	163,352	25.7%
1908	664,602	457	665,059	114,272	17.1%
1909	737,189	816	738,005	87,501	11.8%
1910	695,443	1,147	696,590	69,313	9.9%

Notes: Exports refer to indigenous and imported wheat and wheat flour.

Source: Board of Trade 1910

Table 2.34: Population and Livestock Growth, 1873–1900

Country	Population growth	Period	Livestock growth
Germany	47	c. 1873–1907	37
France	15	1840–1907	22
Great Britain	37	1867–1901	20
Austria	44	1857–1900	17
Hungary	31	1863–1900	9

capitalism and especially with the hampering influence, in most countries, of cereal tariffs, which favour arable farming at the expense of livestock farming (Jankovich,⁵⁴ mentions, that, since 1895 in Hungary, 1.5 million morgen⁵⁵ of grazing land has been turned into arable land).

It is this and similar disproportionality in the growth of the branches of production that most aptly typifies the uncontrolled course of capitalism.

III

Surveying the results of the historical-statistical material adduced, we ask first of all, on what does the periodic return of an era of spring tide, characterised by a rapid expansion of business, accompanied by high interest rates and high prices, now essentially rest?

The precondition for the emergence of a spring-tide period is a vigorous, either spontaneous or gradual expansion of production. This creates demand for other products, indirectly always for products of the means of production industries and for minerals. The nature of the demand created by production expansion depends on the way it occurs. It can occur in the two following main forms:

1. Through the reclamation of hitherto sparsely occupied areas. In these countries, agriculture or stockbreeding provide export products with which the population pays for the products it needs; these are of two kinds: mass consumer goods, mainly manufactures, and production material: machines, railway and other traffic material, building materials. The price increase, the result of this demand, propagates from one branch of production to another.

⁵⁴ 1911: 136.

⁵⁵ A morgen was a measure of area of land, varying in size regionally. In Austria-Hungary it was 2,700 square meters.

2. By the rather sudden emergence of a branch of production, which is more powerful than it has been so far, capable of satisfying a particular human need (automobile and electricity industries). Its operation is on a smaller scale the same as above. The incomes of those, who use labour or capital in the new industry (wages and consumed profits) plus the accumulated surplus-value, exert a demand, which also propagates.

Here, it is immediately clear that this demand is exercised for quantitatively and qualitatively determined use-values, namely foodstuffs and industrial raw materials, of a kind determined by the technical nature of the industry. The more the product of the new industry is in demand and remains so when production increases, the more demand is exercised by its appearance on the commodity market. If the demand for it is quickly satisfied, then, with continued production, the price falls and the latent demand contained in the product disappears. So, it will depend on the nature of the newly produced good what effect the increase in production can have on the whole price level.

Now, suppose the iron industry receives a powerful jolt. Much iron enters the market and initially finds outlets. Now demand is exerted: *a.* by workers in the iron industry for foodstuffs, *b.* by entrepreneurs as consumers for foodstuffs and luxury articles, *c.* by entrepreneurs as producers for raw and auxiliary materials of the iron industry. This variegated demand raises prices and enlivens a number of businesses (e.g. textile industry, diamond industry, coal and iron ore production). However, the extent of business enlivenment rests on one basis: the iron produced and offered must satisfy a social need: in other words, value must be embodied in the new product. Herein now, we believe, lies the explanation of the fact that it is mainly a strong expansion of gold production which precedes a new upward surge. The scale of gold requirements is unusually broad. After all, in capitalism, gold acts as the embodiment of the purchasing power-in-itself and thus exercises demand for other commodities. With a strong expansion of gold production, a demand for goods arises, just like in the iron industry. This is no less quantitatively and qualitatively determined by the division of the output of gold production into *a* labour, *b* consumed profit, *c* accumulated surplus-value. However, the price-increasing effect of this demand can persist for quite some time, since, in the event of a large sustained supply of gold, there is no destruction of value in the form of a fall in the price of the excess good itself. A fall in the value of gold would be reflected in a rise in the price of other commodities. This reduces gold production in the long run, because a general rise in prices means higher production costs for gold

producers.⁵⁶ There is, however, another special feature that may make the price-increasing effect of increased gold production general. This is the circumstance, that the gold, if it flows to the central circulation banks, enables them to grant 2.5 times or 3 times as much credit as the quantity of gold at their disposal.⁵⁷ For the commercial world, the enlarged gold stock appears as capital augmentation in money form, in the abstract. A low discount rate, which is usually the initial consequence of a persistently enlarged gold supply, by facilitating credit to all, also generates demand for all commodities. At the start of a new upswing period, the flow of gold merely reinforces the effect which the accumulation at the central banks of surplus-value not included in the reproduction process during the downturn period triggered.

A general activity is thus triggered by the increased gold supply. Now, we assume that gold production finally remains stable and that the increased commodity turnover increases the need for gold as a means of circulation; moreover, the discount rate increases. The trigger factors have now ceased to work. However, now the upswing movement continues, since, as we hypothesised above, sales are ensured by the population and reclamation of new lands.⁵⁸ The close connection of the various branches of production spreads and continues the upswing.

It is now apparent - at the start of a new spring tide - that capital still has numerous functions to perform, numerous needs to satisfy. There is, according to A. Spiethoff's apt expression, a "vacuum" that must be filled.⁵⁹ Under the lash of profit hunger, this is being done with great impetuosity. The acceleration of production harbours two factors, which prepare its end; it is destroying itself.

56 Lehfeldt, 1912 points out the fact, that in Transvaal gold is found in a special form. Until now, alluvial gold and quartz gold were the main known forms. At the Witwatersrand, however, gold occurs in a compact layer in the rock. This mineralogical peculiarity is, according to him, of the greatest significance for the technique and the economic importance of production. He writes: 'the Witwatersrand gold lumps occur as regularly as is hardly the case with metals or other minerals. They can be worked as is done in any factory industry. The gold layers act as a reservoir, lending stability to the value of the gold, to a much greater extent than similarly sized quartz layers ... Thus, gold falls under the normal categories (meaning supply, demand and price formation) of economics.' To this, then, should be attributed the great regularity of the increase in production of Transvaal gold. The great significance of South African gold is evident from the fact that Transvaal in 1906 produced 28 per cent and in 1911 already 36 per cent of world production.

57 In most countries there is a compulsory metal coverage of two-fifths or one-third of the daily due debts.

58 Moreover, the prolonged fall in prices of most goods during the long depression period (1873-1895) increased the purchasing power of the popular masses, insofar as its effect was not removed by greater unemployment.

59 Spiethoff 1902.

Firstly, the expansion of production outstrips sales, i.e. the markets of the countries, to which the high-capitalist countries export, become oversupplied. This is greatly assisted by the industrialisation beginning in those countries, which *a* reduces their supply of raw materials and foodstuffs to foreign markets, *b* increases their own supply of manufactured goods.

Secondly, however, the expansion of manufactured production rushes ahead of that of raw materials. Both production of vegetable raw materials (cotton, rubber) and of inorganic ones (coal and metallic ores) are more difficult to expand than those of finished products.

To illustrate this, we would like to provide figures on a key industrial material of each kind namely cotton and copper.

To this end, we retrieve from the *Berliner Jahrbuch für Handel und Industrie*⁶⁰ the following statistic, concerning the total production and consumption of copper:

Table 2.35: Total Production and Consumption of Copper, 1904-1911 (in English tons of 2,240 lbs)

Year	Consumption	Production	Balance
1904	674,427	644,800	-29,627
1905	742,141	693,700	-48,441
1906	787,564	741,654	-45,910
1907	698,026	702,004	+4,018
1908	748,330	746,585	-1,745
1909	833,739	834,940	+1,201
1910	932,000	856,600	-75,400
1911	940,000	867,000	-73,000
1904-1911	6,356,227	6,087,323	-268,904

So, in these eight years, there are only two in which more copper was produced than consumed, in the others, the rapidly increasing consumption (from 1904 to 1911 an increase of almost 40 per cent) was drawn from existing world reserves.

For cotton, we retrieve the data from the comprehensive study by Dr. K. Apelt.⁶¹ The US cotton crop, which supplies by far the largest contingent of the world's harvest, amounted to:

60 Korporation der Kaufmannschaft von Berlin 1911: 239.

61 Apelt 1912: 303.

Period	Annual average	Increase	Period increase	Annual increase
	<i>1,000 bales</i>	<i>1,000 bales</i>	<i>%</i>	<i>%</i>
1871–1875	2,666	—	—	—
1876–1880	3,396	730	27.4	5.5
1881–1885	4,158	762	22.5	4.5
1886–1890	4,620	462	11.1	2.2
1891–1895	5,588	968	21.0	4.2
1896–1900	6,254	666	11.9	2.4
1901–1905	6,880	626	10.0	2.0
1906–1910	7,408	528	7.7	1.5

Dr K. Apelt notes: “In percentage terms, the increase (in American cotton production) in the last five years is considerably smaller than in all previous periods. However, it is precisely during this period that cotton consumption has risen sharply.”⁶² For the latter, the following table speaks a clear language.⁶³

Country	1900	1 Sept. 1911	Growth
	<i>spindles</i>	<i>spindles</i>	<i>%</i>
Great Britain	45,400,000	54,522,554	20.1
European continent	33,000,000	41,847,411	26.8
— Germany	8,100,000	10,480,090	29.4
— Russia	7,500,000	8,671,664	15.6
— France	5,550,000	7,300,000	31.5
— Austria	3,500,000	4,563,745	30.4
United States	19,008,352	28,872,000	52.0
India	4,945,783	6,250,000	26.4
Japan	1,250,000	2,131,494	70.5
Other countries	1,770,000	3,655,293	106.5
Total	105,374,135	137,278,752	30.3

Therefore, the price rise of the main type of cotton, American middling, amounted to, the decade 1891-1900 set at 100:

⁶² Ibid.: 301.

⁶³ Ibid.: 302.

Market	1891-1900	1901-1905	1906-1910	1911
New York	100	133.3	167.1	205.1
Liverpool	100	132.6	155.2	190.8
Bremen	100	130.3	155.1	170.3

The increasing price rise of raw materials during the spring-tide period hampers further industrial growth. Production costs are rising; the market no longer tolerates a proportional increase in the prices of manufactured products; demand is decreasing, profits are falling. The turning of the tide is imminent.⁶⁴

• •

Did the discussed periodicity of economic life go unnoticed? It is certain, that in its individual characteristics it came to the awareness of economists, all the more so since the present phase (from 1896 onwards) provoked a more precise examination of capitalist market phenomena.⁶⁵ For example, Dr. Paul Wallich,⁶⁶ noted in his article *Zinsfuß* in the *Handwörterbuch der Staatswissenschaften*, a periodicity in the movement of interest rates with the phases 1850-1872, 1873-1896, 1896-1909.⁶⁷

The price movement itself was treated especially extensively during the long

64 The above lines had just been written when the new publication of the "Verein für Sozialpolitik" appeared. It included a study by Dr. Lothar Hertel on: *Einfluss der Konjunkturen auf die Preisentwicklung der unedlen Metalle und der Steinkohlen seit 1890* (Hertel 1912). The data provided therein completely confirm the view, explained above. In vain, however, I looked for a distinction between the periods before and after 1895. Dr Hertel apparently knows of no economic movement greater than the cyclical one. Thus, the space-printed conclusion: 'The price level is undergoing a gradual rise since six-seven years which will probably continue in the near future' (ibid.: 161) remains completely unmotivated. As we saw, in reality, the upswing starts approximately eight years earlier and cannot be inferred from the normal approximately 10-year change.

65 In passing, it should be noted that Stanley Jevons, in his study of the development of the price level, distinguished a period of rise 1790-1818 and one of fall 1818-1849. Nils Wohlin notes: 'The prices rose significantly more for wheat and colonial produce.' (Wohlin 1906: 107) Jevons openly declared, 'No single cause that I know of can be sufficient to account for so singular an event.' See Jevons, 1865.

66 1911.

67 In his excellent book: *Die Konzentration des Deutschen Bankwesens*, Wallich, 1905 points out the different form of the concentration process in the upswing and downswing and concludes, that, in this respect, a difference can be observed between the period 1880-1895 and 1895-1903 (his book concludes with 1904).

depression period and provided the material for the widely spread doctrine of bimetallism (double standard), which has now completely disappeared from the battlefield. Among the writers, who treated price rise in general, we mention: E. Levasseur, Ch. Gide, Freiherr von Myrrbach, Ludwig Pohle, Yves Guyot, Hooker, Fr. Eulenburg, Irving Fisher, Ashley. Most of these writers deal extensively with gold production and some of them believe they can explain more or less on the basis of the old quantity theory, the periods of high prices 1850–1873 and 1896–1911 (Levasseur, Gide, Irving Fisher, Von Myrrbach).

We believe we have shown that the root cause of the spring-tide phenomena is to be sought in capitalist expansion, and in the quantitatively and qualitatively uncontrolled course of the capitalist mode of production the explanation of their periodicity. In this context, gold production has only a secondary significance insofar as it influences the general price level to a greater extent than any other industry. This particular influence Yves Guyot⁶⁸ denies, in my opinion wrongly. What is interesting here is that, like other opponents of the quantity theory, he cites the high level of the discount rate against an alleged abundance of gold.⁶⁹ This means overlooking the fact, however, that a low discount rate does not mean a large gold supply relative to the need for means of exchange in circulation, but low demand for credit, for money capital. This is especially noticeable — as we saw — shortly after a crisis, when, in the subsequent depression period, the production process has contracted, and this no longer sucks up the available money capital. Extremely characteristic of the essential similarity between the cyclical upswing and the capital's spring-tide period is that the movement of the discount rate is the same in both. At the start, we find a general depression and low interest rates, i.e. ample money capital. When the production process expands during the upswing, then free money capital shrinks and the interest rate rises, until it tumbles from its high peak at the next crisis or downturn.⁷⁰

Numerous studies on the price movement appeared in Germany, but most were

68 Guyot 1911a, 1911b.

69 To avoid misunderstanding, it should be pointed out that the view set out above on the influence of gold production on the price level differs fundamentally from the quantity theory, which is, in my view, completely incorrect.

70 One should recall here the sharp formulation of this phenomenon in Marx, 1894. Teil 2, 26–7. 'Aber am Anfang des industriellen Zyklus ist der niedrige Zinsfuß zusammenfallend mit Kontraktion und am Ende des Zyklus der hohe Zinsfuß mit überreichlichkeit von industriellem Kapital.' See: *Capital III*, p. 620: 'At the beginning of the industrial cycle, however, a low rate of interest coincides with a contraction of industrial capital, and at the end of the cycle a high rate of interest coincides with an over-abundance of industrial capital.' (Marx 1991: 620)

one-sidedly concerned with the expensiveness of foodstuffs and, in connection with this, with the organisation of the bread and meat supply of the big cities or with the influence of protectionism. A favourable exception is the lecture by Prof. Fr. Eulenburg.⁷¹ He discusses the main factors, which triggered the upward price movement, but without putting the analogy of the larger periods of production development with the plus-minus 10-year cycle in the right light. And it is precisely from here, we believe, that the rise in prices must be examined, in order to understand it as a phase in the production and market development of capitalism, whose cyclical tempo changes were so brilliantly analysed by Marx. And it has been my aim in writing this essay to make an attempt in this direction by illuminating the expensiveness of industrial raw materials from the point of view: that it is essentially nothing other than the revelation of a periodicity inherent in capitalism, the function of which consists in accomplishing, on the basis of capitalist relations of production and property: *the ever renewed, efficient distribution of the social productive forces (capital and labour) among the constantly waxing number of countries drawn within the circle of their activities.*

There is virtually no trace of this line of thought in Prof. Fr. Eulenburg's study. Both his socialist reviewers, Spectator⁷² and Conrad Schmidt⁷³ have apparently missed the deeper core of the issues raised by Eulenburg. C. Schmidt understands the expensiveness too much as an agrarian and mining phenomenon.

It was Werner Sombart, who, in the introduction to *Der Moderne Kapitalismus*, II, explicitly distinguished two "Periods of Capitalist Development."⁷⁴ He called them periods of "Expansion" and of "Contraction", which already slightly shows, that he saw in the circulation phenomena the main moment of those periods. This becomes even clearer, where he writes:

Periods of expansion are those in which the amounts of capital are rapidly and steadily *increased through increased precious metal production or other partial increases in precious metals or their surrogates*. Examples are the years after 1450, after 1850, after 1871 (for Germany), after 1895. Here the increased capitalist activity coincides with rising prices, increasing prosperity and, as a result, increased or facilitated sales. Contraction periods are those in which the additional capital is supplemented by pure overcapitalisation, *without a*

⁷¹ 1912.

⁷² 1912.

⁷³ 1912.

⁷⁴ Sombart 1902.

considerable increase in the means of circulation, in which the expansion of capitalist activity is thus accompanied by falling prices and a deterioration in sales.⁷⁵

We copied this extract entirely to show how much W. Sombart, who does see the fact of the spring-flood and stagnation periods, remains on the surface. He thinks he can recognise causal factors in the expansion and contraction of gold production and stock respectively. As a result, he confuses the actual spring-tide period 1850–1873 and after 1895 with a prolonged era of gradual price increase, solely due to the flooding of Europe with gold and silver after the discovery of America - and with the short, normal upswing phase 1871–1873, which itself concludes the spring tide. Moreover, this largely gives the alternation of periods of “expansion” and “contraction” the character of coincidence, since then nothing can be discerned of a regular circular progression resulting from the nature of the capitalist reproduction process. One could, indeed, argue against such a presentation of the cause of high prices that gold production is, after all, only a very small part of the total production process - as E. Varga⁷⁶ and Yves Guyot suggested against the quantity theory.⁷⁷

It was a Marxist, Parvus, who first made the distinction between cyclical years of upswing and what he called *Sturm-und-Drang* periods of capital. In his excellent pamphlet *Die Handelskrisis und die Gewerkschaften*,⁷⁸ he developed this idea, which showed sharp analytical abilities. He specifically identified for the *Sturm-und-Drang* period, which began in 1895, as the causes:⁷⁹

1. Industrial development of Russia.
2. Development of the United States into an industrial state.
3. Rapid rise in gold production.
4. Industrialisation of East Asia.
5. Development of exchanges with some colonial territories (Africa, Asia Minor).
6. Development of electrical engineering.

Expressly, he mentions the alternation of *Sturm-und-Drang* periods and depression periods as *tempo changes* of a business development ‘which nevertheless obeys the

⁷⁵ Ibid.: 8, emphasis in the original.

⁷⁶ 1912.

⁷⁷ Incidentally, W. Sombart observed aptly that, in the depression period, the competition of big business against the remnants of small business is very sharp. Entirely analogous to this, P. Wallich finds that, in the depression years, the concentration in the banking business especially takes the form of fall and destruction of the small, weaker banks.

⁷⁸ Parvus 1901.

⁷⁹ Ibid.: 28–31.

laws of the capitalist cycle'.⁸⁰ Parvus did not elaborate on this idea, although he emphasises its fruitfulness for the study of the developmental factors of capitalism. When discussing the fall in interest rates during the 80s and early 90s of the 19th century in his book *Der Staat, die Industrie und der Sozialismus*,⁸¹ he again points to this viewpoint 'which has repeatedly served me well in explaining the phenomena of the capitalist world market'.

In our country, J. Saks has, in his perceptive study "Krisis",⁸² applied Parvus' idea for one part of the business cycle and that is for the crisis. He points out, that with the 20th century comes an era of short, violent crises following the prolonged stagnation period 1873–1895, which had more lingering depressions. At that time, the view arose among many socialists, which even managed to penetrate Kautsky's *Erfurter Programme*, that capitalism was in a stage of chronic overproduction, from which it would no longer be able to rise. The artificial term for this was "capitalism is choking on its own fat". Bourgeois economics, on the other hand, mainly drew attention to the fact that the fluctuations of the business cycle became less violent; the angular lines of ups and downs became rounded, or, as also Tugan-Baranovsky said: "The export curve has taken on a wave-like character."⁸³ Saks pointed out how the old, acute crisis form returned in the 20th century, with which the failure of the crisis-tempering factors invoked became clear.⁸⁴

Again, statistics provide the evidence for this, as may be seen in the following statistic, taken from Sauerbeck's indices.

The overall index shows:

Peak year	Trough year	Interval
1847	1849	2 years
1857	1858	1 year
1866	1870	4 years
1873	1879	6 years
1880	1887	7 years

⁸⁰ Ibid.: 27.

⁸¹ Parvus 1910: 49.

⁸² Ibid.: 799.

⁸³ Tugan-Baranovsky 1901: 152.

⁸⁴ Mr. M.W.F. Treub mentions many of them in his well-known book; so does Tugan-Baranovsky, and it may be especially telling, that Gustav Schmoller in his *Grundriss* Vol. II, in the year 1903, explained at length why the opinion was justified, that the danger of crisis is diminishing, precisely after and during the first sharp general crisis after 1873!

Peak year	Trough year	Interval
1891	1896	5 years
1900	1902	2 years
1907	1908	1 year

A completely parallel development show English exports. According to specifications by Tugan-Baranovsky, they recovered.

After the crisis of 1847, 1857 and 1866 in two years; after the crisis of 1873, an upward movement was not seen until 1880. After 1882–1883, recovery followed in six, after 1890 in five years; after 1900, however, again already in three years, as well as after 1907.

It is entirely consistent with this that it was the United States, Argentina and Australia that experienced a fierce, acute crisis in the 1890s, namely in 1893. Expansion of the railway network and gold industry had caused these countries to accelerate earlier than in Europe.

One phenomenon closely related to the aforementioned change in form is this:

As a result of the difference in intensity of the transition from upswing to downswing in the major wave periods, the numerical ratio of upswing-and-downswing years in one cycle is also different. The spring-tide periods 1851–1873 and 1895–1911 have more years of upturns than downturns. The 1873–1895 period the other way round.⁸⁵

The prolonged depression period has seemed to very many to be of a permanent nature. “The Royal Committee on Trade Depression”, set up in England to issue a report on the state of the economy and its likely future, stated in 1886: ‘In the future, one can expect greater stability in the ratio of supply and demand and a more even,

⁸⁵ Tugan-Baranovsky writes (anno 1899): ‘Previously there were less downturn years than upturn years, now the reverse is the case.’

There can be no further discussion here of changes in the character of the crisis associated with the major period change. It seems to me, however, that a more precise analysis will show that the ratio of the factors, which evoke the catastrophe, changes; that, namely, the impediment to sales in the period 1873–1895 becomes more prominent against the underproduction of raw materials and the immobilisation of floating capital in the two other periods. Hence, the absence in the 1873–1895 period of the regular pre-crisis credit crunch. (Occurrences like the fall of Bontoux (1882) are isolated cases.)

though lower, rate of profit.⁸⁶ Fully in line with this, Tugan-Baranovsky declared therefore in 1899⁸⁷ that one was facing ‘a new prolonged period of depression’ and tried to explain the change in the crisis form as a permanent result of development. He closed the way to understanding the temporary nature of this change of tempo by mistaking English development for the typical capitalist (‘...the capitalist economy, whose typical form is represented by the English economy...’) and did not theoretically take England’s outstripping by the United States and Germany (which he nevertheless noted) sufficiently into account.⁸⁸ It is through the latter two countries that we now have to study and demonstrate capitalism foremost.⁸⁹ They communicate their impetuous development to the whole world market and now fulfil the same function as England did in the second and third quarters of the 19th century. (Marx, as is well known, mainly studied and described English conditions in depth; from Germany came as a first the idea of a larger wave movement than the cyclical one, recognised as such in 1896.)

Of the deep impression, left by the period 1873–1895, the official standard work of German economics, the *Handwörterbuch der Staatswissenschaft*, also bears witness. Even in the latest edition, Heinrich Herkner declares, in the article “Krisen”⁹⁰ after distinguishing between normal and abnormal (*krankhafte*) periods:

And as the diseased condition, modern economics regards the upswing, while the old economics, more in line with the business community, regarded the downturn, the downswing, the depression as the diseased. ... The technique of the production process is cited as the by far easiest part of the economic task, compared with the concern to preserve and open remunerative markets.⁹¹

Also, Sombart stated, ‘The so-called natural condition of modern economic life is the depression.’

86 Royal Commission on the Depression of Trade and Industry 1886; see Tugan-Baranovsky 1901: 166.

87 Tugan-Baranovsky 1901: Chapter VIII, 233.

88 See Table A3 in the Appendix, which Tugan-Baranovsky included in his book to show statistically the prolonged depression in England. Here, the effect of the new rise is clearly discernible. However, with the exception of the rise in the value of exports, the pace remains slower than in the years between 1861–1880.

89 In collecting statistical material for this essay, I have taken this into account as much as I could.

90 Herkner 1910: VI.254.

91 Here, Herkner lets go off the following remark: ‘Large expenditures on army and navy are often looked upon kindly in business circles, because in this way new orders flow into industry.’ Instructive to think of in these times of war noises!

The latest spring tide proved the relative incorrectness of these views. Capitalism is tougher than even its admirers suspected! And it is also more unbridled!

For to what, among other things, was it attributed that the fluctuations of the business cycle were less violent than before?

To the beneficial, dampening effect of trusts and cartels. For these would systematically strive to adjust production to consumption for their own benefit, but also for the benefit of national prosperity. Thus, anarchic free competition was replaced by the wise consultation of the big industrial leaders.

From other and especially Social-Democratic quarters, more attention is drawn to the functioning of trusts and cartels precisely in the present phase. The expensiveness is said to be largely attributable to their price policies.⁹² Both considerations require some further discussion.

The optimistic view of the operation of trusts and cartels as organisations that make the course of economic life more regular is based on two claims:

1. They prevent excessive expansion of production in the upswing period.
2. In this way, they also help us get through the depression years sooner.

That the periodicity of the business cycle would be removed by trusts and cartels has been completely belied by the actual development of the last 15 years. The crises of 1900 (United States 1903) and 1907 are there to prove it.

So how could one imagine a production-regulating influence of trusts and cartels? To this end, surely, the control of supply and demand, both, is necessary. The highest effect, however, that the cartels and trusts could exert, is to control supply. This only in those branches of production where they are dominant among producers. This is most likely to be the case in branches that lend themselves particularly well to the formation of cartels. As is well known, these are mainly mining and the production of industrial (raw) materials (heavy industry, etc.). Product uniformity and strong business concentration (favoured by natural monopolies) contribute to this (compare: coal and iron industry, petroleum and soda industry).

However, these industries all depend entirely on the state of demand for means of production (machinery, tools, railway equipment) for their sales, the latter creating

92 In our own country, this opinion was expressed especially in Wibaut's *Economische Kronieken*. Wijnkoop and the syndicalists went even further, attributing the costliness simply to speculation. *De Arbeid* [the paper of the syndicalist unions] recognises no other cause of costliness than the politics of entrepreneurs.

a need for industrial raw materials for the producers of these commodities.

Producers of raw materials do not control this demand at all. And this demand, as we saw, is of a periodically increasing and decreasing character in capitalism; for it is in this that the general fluctuations of the business cycle reveal themselves most sharply. The purpose of the activity of trusts and cartels is none other than this: to maximise and stabilise the profits of the entrepreneurs involved. To this end, they basically act just like the independent, individual entrepreneur, but with more power and thus much better results. Their relationship to the business cycle is this: In the upswing, to benefit as much as possible from the favourable state of the market; in the downswing, to suffer as little as possible from the unfavourable one. How do they pursue their goal?

To this end, they must increase their output equally rapidly in the good years when demand for raw materials is expanding rapidly. A cartel that did not meet this requirement would soon break up, as the participants would no longer see their advantage safeguarded by the cartel. Moreover, the cartel faces two kinds of competition during this period. If its production lags behind the demand for its product, the resulting very sharp increase in price will allow foreign actors to act with an advantage in the domestic market. Even if a protectionist law prevents this, the cartel is not completely safe, as a sharp price rise at home breeds outsiders, who will try to challenge the cartel for the market.

That the American trusts, to whom a more monopolistic character is attributed than the cartels, do not control or even want to control the business cycle either, is most clearly shown by the policy of the US Steel Corporation. It deliberately allows outsiders to rapidly increase their production during the upswing in order not to suffer from overproduction itself in the coming depression. The risk of the downturn is then transferred to the outsiders.⁹³

What, then, is the wisdom of the trust and cartel leaders during or after the crisis? It is simply to try and escape themselves the ill effects of the adverse years as much as possible. They will forcefully cut production in order to reduce the oversupply. They will stubbornly strive to maintain the price of their product. The larger their share of production is, the more successful they will be. But is this production and price policy generally economically beneficial? In no way. Before the crisis, the trusts and cartels tried to bind their customers through long contracts, thus trying to secure a high price for a long time. In doing so, they exerted artificial pressure on the demand

93 See further Hilferding 1910: 245-8.

for their product. Now comes the crash and manufacturing prices tumble down. The purchasers of raw materials see their own production fall rapidly, but are not relieved by a proportional fall in their production costs. The large quantities of raw materials, which they bought expensively in advance in the upswing, are now forced on them unless the cartel agrees to compensate for the refused purchase.⁹⁴ In this context, the sharp conflict of interest between the “clean” and “mixed” companies in the syndicates of the coal and iron industry should be noted. The “mixed companies” (those associated with pig iron production, ore mining or even coal mining) benefit from keeping raw material prices high. During a depression, they throw on the market coal and ore they did not need themselves, while in their own business they do not feel the burden of the expensive raw material, as they produced it themselves. So, here, within the cartel, the operation of the price policy for raw materials revealed itself.

This price policy has an aggravating effect on industries whose raw materials are cartelised; moreover, however, its effect is more general in that a strong price fall after the crisis was a corrective. For it was precisely this that made the renewed expansion of demand for raw materials possible.⁹⁵

However, if we see that economic life recovered faster from the crises 1900 and 1907 than in the preceding period 1873–1895, this is due to the general acceleration of the speed of production, as shown above. This makes itself felt not thanks to, but despite the business policies of entrepreneurs, which rather hinders the return of the upswing.

In the fluctuation of the price level, even after the generalisation of trusts and cartels, the fact is revealed that these business organisations do not control economic life, and, more specifically, the development of the international commodity market. Conversely, the state of the world market has, until now, determined the extent to which entrepreneurs were able to benefit from their association through their business policy. This should also be borne in mind when assessing the contribution of trusts and cartels to international price movements over the past 15 years.

First of all, we do not want to deny that the expensiveness of many commodities is due to the policy of the entrepreneurs. However, in order to explain this price policy

94 Very illustrative is Table A5, taken from Cunow, 1903: 173. See further: Wiese, 1902: 299 and Liefmann, 1902: 207.

95 On the other hand, the demand for consumer goods is not greater than before either, since the vigorous restriction of production results in high unemployment, i.e. loss of income of the workers.

causally, we must ask ourselves: what gives the entrepreneurs, in their cartels and trusts, the power to influence the state of prices more than ever before? In answering this question, again, the influence of the general business cycle on trusts and cartels deserves full attention. The analysis of competition in price formation shows that, when prices rise, the strongest competition is on the demand side. When prices fall, on the supply side. Indeed, in both cases, for either party, the desire to conduct transactions (either buying or selling) is thwarted by the movement of the price. When prices rise, the prospective buyer wants to buy as soon as possible; when prices fall, the possessor wants to sell his goods as soon as possible. It is, therefore, when prices are rising, i.e. sales are easy, that sellers most easily join together to exploit the market position. Each producer can then work at full capacity and is sure of its share of sales. The association then increases the speed, with which prices are raised. The reverse is the case, when prices fall, i.e. sales become more difficult. Then competition among the sellers, the producers, is fiercest. At any price, they are inclined to dispose of their wares. It comes down to undercutting competitors in order to secure a share in sales.⁹⁶

Completely in line with the course of the business cycle, the operation of the cartels is lower or stronger. In the “*sauve qui peut*” of the debacle, only the very strongest organisations manage to stand their ground and maintain prices. They usually do not achieve more than a slowing down of the price drop.⁹⁷

Consequently, in the downswing years, cartels often collapse; in 1908, for example, the large Roheisensyndikat in Düsseldorf. In contrast, the association of entrepreneurs is most lively in the upswing years.⁹⁸ As cartel years, Cunow mentions: 1880–1882, 1889–1890, and especially 1896 to 1900 (Drahtstiftverband, Halbzeugverband, Rheinisch-Westfälische Schweisseisenwerke; the Rheinisch-Westfälische Roheisensyndikat had been founded in 1897).

Apart from the indicated difference in the nature of competition when prices are falling and rising, another moment operates, which makes it easy for cartels to raise prices sharply when demand rises. The cartel price, like the competition price, has its limits, although they are not the same for both.⁹⁹

96 See the perceptive account by Hilferding, 1910: 232ff. Also Marx, 1894: Chapter 10, 173–4.

97 Compare Table A4 in the Appendix from Hillringhaus, 1911: 233.

98 ‘The organisations in the blast furnaces sector are children of the upswing’ Wiese, 1902: 307.

99 We will not elaborate on this in order not to make this section too comprehensive. Incidentally, it should be noted that, here again, Marxist theory succeeded in proving its superiority over subjective value and price theory by providing, through Hilferding, the first successful analysis of the cartel price, as the reviewer of Hilferding’s book in *Schmöller’s Jahrbuch* Dr Felix Somary

We are particularly interested in the upper limit here. This is determined by the demand-restricting effect, which every price increase brings with it.¹⁰⁰ During the upswing period, it manifests itself least or not at all. The demand for raw materials is so “justified” by the general increase in production and trade that the higher price does not deter buyers. After all, finished goods are also rising. Moreover, speculative demand works in the same direction, as the whole capitalist world then is filled with “happy faith in the future”. It seems to us that this factor has made its effect strongly felt in the present tidal wave.¹⁰¹ Only the general upswing, the rapid pace of development, can tolerate the price usury that the trusts and cartels now often try to exercise without hindering sales.

This seems to us to reduce the operation of trusts and cartels to its proper proportions. On the periodic movement of the prices, they only have the effect of sharpening the rises and slowing down the drop.¹⁰² The wide scope for price variation, which the acceleration of production provides them with, strengthens their effect just as much as the monopoly-like position enjoyed by raw material producers at a time like this, characterised by a strong demand for industrial raw materials.

So here, too, the broad tides of economic life appear to move individual entrepreneurs as well as their organisations on their swell.

Nowadays the tide is very favourable to them.¹⁰³

openly acknowledges.

100 Hilferding gives another limit, namely the profit rate of non-cartelised industries, which use the cartel products as raw materials. This seems to us to have only minor practical validity.

101 ‘Likewise it is clear that monopolistic associations control the market more effectively in a rising business cycle than in times of depression.’ Hilferding, 1910: 234.

102 Similarly, Dr K. Apelt writes, in his above-mentioned study on cotton prices, after mentioning the relatively slow accretion of the crop: ‘The fact continues to exist as well that also in years in which the amount of cotton has been sufficient – e.g. 1904–1905, 1906–1907 and 1908–1909 – the prices maintained a level that partly even rises substantially above the average of the preceding decade. To explain this we have to look at the influence the American cotton planters more and more try to exercise on the prices.’ Apelt, 1912: 303.

103 The rise in the price of food deserves, in my view, an entirely separate and methodically different treatment; related to this we need to examine the movement of real incomes, which is influenced to a large extent by the current expensiveness.

I would like to mention that the above study was already fully completed when Kautsky’s *Wandlungen der Goldproduktion*, etc. appeared as an appendix to *Die Neue Zeit*.

Appendix

Notes on Sources

Table 2.3, Table 2.4 and Table 2.5 compile data from several sources and are partly reproduced from Hooker.¹⁰⁴ For Great Britain and Ireland, series I is based on Board of Trade data and series II on Sauerbeck; the United States series is from the Bureau of Labor, Canada from the Department of Labor, and Germany from Hooker. The French series is calculated from the Institute,¹⁰⁵ with March's index covering 43 commodities, broadly comparable to those included by Sauerbeck, while Jankovich used the same commodity basket for Austria-Hungary. Additional sources include Sauerbeck for England, March for France, Jankovich for Austria-Hungary, and Denin for Belgium, as reported in the *Journal of the Royal Statistical Society*;¹⁰⁶ Board of Trade data for England and Schmitz's data for Germany, reproduced in Eulenburg;¹⁰⁷ de Foville's French data, calculated from the Institute;¹⁰⁸ and the United States Bureau of Labor;¹⁰⁹ The original does not identify the source for Coats.

Note from the Editor: For an overview of the methodologies and sources used in the construction of wholesale price indices during this period, encompassing multiple countries, see Willis.¹¹⁰

The Figures and Tables of these edition were newly typeset and redrawn by Dr Juan Grigera from the original publication.

Tables

¹⁰⁴ 1911.

¹⁰⁵ 1911.

¹⁰⁶ Hooker 1911.

¹⁰⁷ 1912.

¹⁰⁸ 1911.

¹⁰⁹ 1912.

¹¹⁰ 1922.

Table A1: *The Economist* Price Index, 1890–1900 (Base 1845–1850=100).

Date	Index	Date	Index
1 Jan. 1890	101	1 Jan. 1901	96
1 Jan. 1891	101	1 Jan. 1902	88
1 Jan. 1892	97	1 Jan. 1903	91
1 Jan. 1893	96	1 Jan. 1904	99
1 Jan. 1894	94	1 Jan. 1905	97
1 Jan. 1895	87	1 Jan. 1906	106
1 Jan. 1896	90	1 Jan. 1907	113
1 Jan. 1897	89	1 Jan. 1908	105
1 Jan. 1898	86	1 Jan. 1909	99
1 Jan. 1899	87	1 Jan. 1910	108
1 Jan. 1900	97	1 Jan. 1911	114

Table A2: Production of Iron and Steel Rails in the United States, 1871–1910 (in thousand tons)

Period	Average annual production
	<i>1,000 tons</i>
1871–1875	748
1876–1880	911
1881–1885	1,274
1886–1890	1,710
1891–1895	1,265
1896–1900	1,882
1901–1905	2,499
1906–1910	3,238

Table A3: Evolution of the English Economy, 1861–1910

Period	UK		Ships cleared	Growth	Pig iron	Growth	Coal	Growth	Cotton use	Growth
	exports	Growth								
	<i>£ million</i>	%	<i>100,000 tons</i>	%	<i>million tons</i>	%	<i>million tons</i>	%	<i>10 million lb</i>	%
1861–1870	166	—	154	—	4.7	—	97	—	81	—
1871–1880	221	33	241	56	6.6	40	131	35	128	58
1881–1890	234	7	332	38	7.9	20	164	25	149	17
1891–1899	233	—	420	26	8.0	1	192	17	163	9
1901–1910	340	46	589	40	9.3	16	245	28	175	7

Notes: Adapted from Tugan-Baranovsky 1901: 56. The figures for 1901–1910 were added from the Statistical Abstracts of the United Kingdom. The table was used to illustrate the prolonged depression in England.

Table A4: Pig-Iron prices, 1907-1909 (in Reichsmarks per ton)

Iron type	Nov. 1907	Dec. 1907	Jan. 1908	May 1908	Dec. 1908	Mar. 1909
Spiegeleisen	90–92	85–87	85–87	85	63	63
Puddling iron, Ia	78	78	74	74	56	60–63
Foundry pig iron, IIIa	85	85	79	76	58–59	57–58
Foundry pig iron, Ia	78	78	71	71	59–60	55–56
Hematite pig iron	88	88	85	80–88	60	58–60
Bessemer pig iron	88	88	83	80	—	—
Thomas pig iron	—	—	53	—	—	49–50

Notes: The syndicate was dissolved from 1 January 1909.

Table A5: German Production of Steel, 1896-1902 (in Reichsmark per ton).

Year	Thomas steel	Bar iron	Difference
	<i>RM per ton</i>	<i>RM per ton</i>	<i>RM</i>
1896	75.15	115.90	40.75
1897	83.00	130.00	47.00
1898	83.50	119.38	35.88
1899	99.00	157.50	58.50
1900	116.75	183.75	67.00
1901	84.50	110.00	25.50
1902	79.40	106.85	27.45

Source: Cunow 1903

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