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# Lecture Notes in Economics and Mathematical Systems

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## Technological and Social Factors in Long Term Fluctuations

Proceedings of an International Workshop  
Held in Siena, Italy, December 16–18, 1986



Springer-Verlag

New York Berlin Heidelberg London Paris Tokyo

INSTITUT FÜR VOLKSWIRTSCHAFTSLEHRE  
VORSTAND: O. PROF. DR. HELMUT FRISCH  
TECHNISCHE UNIVERSITÄT WIEN  
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ISBN 3-540-50663-2 Springer-Verlag Berlin Heidelberg New York  
ISBN 0-387-50663-2 Springer-Verlag New York Berlin Heidelberg

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© Springer-Verlag Berlin Heidelberg 1989  
Printed in Germany

Printing and binding: Druckhaus Beltz, Hemsbach/Bergstr.  
2847/3140-543210

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## THE STAGES OF INDUSTRIAL CAPITALISM

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### Introduction: A Brief Review of Selected Received Theory

The last decade has seen a revival of the "long-term" in economic theory construction. After years of short-term oriented macroeconomic modelling and advices for the fine-tuning of economic policy severe crisis symptoms in the world economy broke some illusions in the control of market economies and called for long-term oriented explanations. In my view the majority of these new approaches can be grouped in two schools: a neo-schumpeterian school and a school in marxist tradition.

It is worthwhile to consider what the ancestors of these schools, Marx and Schumpeter, have in common. What makes them so attractive for scholars concerned with long-term economic development? Basically there are two main reasons. First both of them founded their theories on a careful study of the actual behaviour of the economy in the past rather than on logical assumptions on abstract "actors"<sup>1</sup>. Second in abstracting from economic history both of them tried to describe a specified episode, a mode of production - capitalism - as a dynamic system consisting of contradictory movements. In Marx the main contradiction being that between the proletariat and the bourgeoisie, leading to rise and fall of the latter. In Schumpeter the more inner economic struggle between the disequilibrating innovations of the entrepreneurs and the ever present equilibrating market forces. Underlining, as Marx did, the progressive role of the bourgeoisie in increasing productivity Schumpeter nevertheless isolated the purely positive character, the innovator, and neglects the other side of Marx' contradiction. Schumpeters strict distinction between entrepreneur and capitalist therefore is the key issue for his

1) Schumpeter acknowledges this point explicitly:  
"Finally it is Marx basic idea that capital is essentially an instrument of power over production, and this idea is my idea too. It is based on the study of facts, and if these facts led Marx to conclusions that I don't share, ..., this nevertheless is a point where our opinions coincide." [Schumpeter, 1964, p.196, transl.G.H.]

ideological project. Despite this difference in scope and political intention the "visions" of the two men, describing a well defined period in social development as contradictory interdependent processes proved to be extremely inspiring for later generations of economists<sup>2</sup>.

Considering the fact, that Schumpeter was born the year Marx died, the two men evidently experienced capitalism at different stages, the difference being about 60 years, a time span attributed by Schumpeter to a long wave in economic development. Both approaches therefore provide not only insight into the general logic of the mode of production "capitalism" but also into particular, *different* stages of its evolution. It is for this reason, that the expertise of both theorists is indispensable for a comprehensive reconstruction of capitalist development.

Theorists working along schumpeterian lines have not always done justice to their master. Gerhart Mensch splitted Schumpeters endogenous cycles into a succession of different structures linked together by structural breaks for which catastrophe theory seemed to be an adequate modelling tool [G.Mensch, 1979, 1983]. "Morphogenesis", his key category, is something only loosely acquainted with Schumpeters ideas. Van Duijn in his rather vague argumentation for a long wave in economic life [Van Duijn, 1983] emphasizes long-run shifts in preferences and rigid lag-structures in expectations and entrepreneurial activities. Both arguments, the one concerning demand-side phenomena the other being a formal property of large scale dynamic systems, surely would sound strange in Schumpeters ear. Finally a team like Freeman-Clark-Soete coming, in my opinion, closest to Schumpeters original contribution, blends its theory with a keynesian view on economic policy that certainly would have been unacceptable for Schumpeter [C.Freeman/C.Clark/L.Soete, 1982].

On the other hand authors in the marxist tradition, for the better or the worse, were obliged to apply a variation of the 11<sup>th</sup> Feuerbach thesis on Marx own theory to incorporate long-wave phenomena: "Marxists only produced different interpretations of Marx theory. But it is necessary to change it."

Ernest Mandel [E.Mandel, 1980], who is considered the most orthodox of these authors, refers to long cycles in class struggles

2) In N.D.Kondratieffs work, which influenced Schumpeter, emphasis is laid on the conception of the world economy as a fully endogenous dynamic system [N.D.Kondratieff, 1926, 1928]. This limited task combined and probably influenced by his very special position as a soviet economist in Stalins days, proved to be insufficient to attract followers to take over his research task. In some sense Jay Forresters team comes closest to this type of project [J.Forrester, 1975].

and is forced to propose a new (theoretical) limit to capitalist development: the point in time where the mass of surplus value starts to decrease in absolute terms [E.Mandel, 1972]. Such concepts are absent in Marx'writings. David Gordon upsets Marx'view on the relation between economic base and superstructure, the institutional framework determines the functioning of economic processes instead of being explained by the development of the latter [D.Gorden, 1978]. Japanese marxists, like Kozo Uno and his school, challenge Marx in the methodological arena proposing a second type of theory construction: stages theory, complementary or even opposed to the traditional "pure" theory of capitalism<sup>3</sup> [K.Uno, 1980] (see also [Albritton, 1986]).

In the following chapters a proposal for a more detailed periodisation of the capitalist mode of production is made. Clearly this proposal owes much to the above mentioned works in marxist tradition and to many valuable points made by Schumpeter and Neo-Schumpeterians. Of course it sets only the framework for a research programme still waiting to be carried through in its full scope.

### I. Mode of Production

When talking about a specific time period in history we immediately have two problems: First it is necessary that some things (relations, variables) did not change during the period, otherwise we cannot construct any more than a statement like: "things are changing". If these things changed or did not exist before and after the considered period we can use this fact to define its borders. That is, we can specify a period by embedding it in a longer period (Problem 1). Second, the selection of the stable elements includes the non-selection of variable elements. Nevertheless the selection of variable elements is not arbitrary in the sense that it is a residuum - everything that is left. If, at the end of the considered period stability is broken, a useful theory only can be constructed if we can fix certain variable elements that caused this breakdown. Otherwise we only could state: "Some things are changing fast, others slow, but we don't see any connection." In other words, fixing a certain time period means fixing a time span during which some stable things resisted other elements usually called "dynamic forces". Useful theory

3) In fact they propose three types of theories the third being empirically oriented case studies.

construction thus consists of the double choice of stability and dynamics (Problem 2). Again, what might be a dynamic force in a longer period can be a succession of stable short-term situations transferring problem 2 one level lower.

Evidently problem 1 leads to infinite regress and only our limited knowledge saves us from starting with the history of the universe. Problem 2 proves to be even nastier since it refers to the usefulness of a periodisation: economists and economic historians are part of an evolving system and their intervention always has had some influence on stability. The solution of problem 2 inevitably is biased, it is useful for some group or class giving it a positive feedback. Being unable to avoid a bias, left alone the problem why one should avoid it, one could at least be conscious of it.

Let us first tackle problem 1. Following Marx we could consider capitalism a subperiod of the development of commodity producing societies. Let us call such a subperiod of commodity producing societies *mode of production*. Ancient slavery and Feudalism are the other two examples of modes of production. The commodity producing society itself is called a certain *type of society*. The only earlier type of society is summarized by Marx as "first social forms"<sup>4</sup>, whereas the one following the commodity producing societies is given the header "communism". Let us stop here, because the next step would be a definition of human production in reference to other forms of life.

Instead we can ask the question "What is the defining characteristic of capitalism?". To answer this question according to our methodology we need the reasons for the breakdown of feudalism, that is we have to solve problem 2 for feudalism. The appearance of capitalism then simply can be explained as a solution of these contradictions. As feudalism was for the contradictions of ancient slavery. In appendix A some basic ideas supported by simple formal models are given to answer these questions. The essential feature is, that feudalism, as a first negation of commodity production in ancient societies, partly suppressed commodity production. Only in the medieval cities commodity production and division of labour survived. On the other hand the organization of power in nation states had as an inherent characteristic a notorious excess demand for "finance". When rent began to be paid in money form this problem became acute. Taking together both phenomena explains the development of the two embryonic forms of capital: money lending capital and merchant capital. But

4) For a more detailed evaluation of this double structuring in Marx see also [R.Meek, 1977, p.128].



these embryonic forms did not immediately reach hegemony over human relations. This only happened when they were able to form a coalition with the nation state, which can be considered the essential product of feudalism<sup>5</sup>. Here the story of merchant capital engaged in international trade, supported by and supporting a nation state really starts. It is the story of the Netherlands and a little bit later of England.

Taking a closer look at merchant capital reveals that its essential feature is to lower the average labour content of products not by changing single production processes but by giving those processes with lower labour content a greater weight in the average. This means the existence and further development of the international division of labour and of world markets. Nevertheless this process is limited. Domestic production as well as foreign production would have to grow at a rate equal to the profit rate to keep the mechanism going (compare appendix B for a simple model). For a country like England the expansion of domestic production is limited, it needed the industrial revolution to overcome this difficulty<sup>6</sup>. The essence of this new phase of capitalism started by the industrial revolution in England is to change the labour content of single production processes. It is not surprising to see this phenomenon first in the industry most engaged in international trade: the cotton industry. I shall label this new *phase of the capitalist mode of production* as "industrial capitalism".

As the reader might have noticed we are already amidst solving problem 2 for capitalism. The capitalist mode of production consists of relative stable subperiods which we call *phases* of capitalism. What they have in common and what links them together is that the labour content of commodities is systematically lowered. At the same time this *common* property of the phases of capitalism is the *distinguishing* property of the capitalist mode of production itself. Pre-capitalist modes of production do not have it. Moreover this property is the motor of the inner dynamic of capitalism, pushing it from one phase of relative stability into the next. In that sense it shows how the problem of the outer structure and the inner dynamic, which we previously called problem 1 and problem 2, are interwoven.

5) "Indeed, we can say the drive to *political accumulation*, to *state building*, is the *pre-capitalist* analogue to the capitalist drive to *accumulate capital*." [R.Brenner, 1986, p.32]

6) One might ask why this did not happen in the Netherlands. A possible answer is that Amsterdam concentrated much more on money lending and other financial transactions. For a review of changes of economic leadership of nations according to our phases of capitalism see [A.Maddison, 1982, pp.29-42].

We have so far considered two phases of capitalism: merchant capital and industrial capital. Let me add a third one whose inner contradictions we experience in the moment, I call it "integrated capitalism". It has been given other names<sup>7</sup> and it started with the end of world war I. Its major task again is to solve the problems inherited from the phase of industrial capitalism: reconcile the class antagonism that developed in industrial capitalism and hindered productivity growth. This can be done by organizing and integrating the economy on a national level<sup>8</sup>. The major instruments has been the exploitation of increasing returns to scale by large scale production made possible by mass consumption which itself was supported by monetary and fiscal policy measures. A careful examination of all the other numerous elements of integration, from information policies to incomes policy, goes beyond the scope of this paper.

Instead of using sophisticated econometric techniques to prove my case I think it is sufficiently convincing to consider the following diagrams showing the most important economic variables for the United Kingdom since 1750. The vertical lines in 1790 and in 1914 are the border lines of the phase of industrial capitalism. While this is fairly evident for 1914 as most of the time series show, the lack of data makes it somewhat ambiguous for 1790<sup>9</sup>.

The most exorbitant breaks in 1914 are found in "monetary" variables like prices, money supply, nominal wages and export values. Deflated series or volumes usually show greater fluctuations since 1914 (volume of exports, real wages, industrial production, real GNP and real gross fixed capital formation).

The diagram on raw cotton consumption raises some doubts on the identification of Kondratieff cycles with product life cycles. If there is something inspiring an economic spurt then it is a *continuous growth rate* that influences *expectations* and not any demand determining absolute use value of a product - that seems to be the message of this diagram.

7) Gramsci and the new french school call it Fordism (see [A.Lipietz, 1978, 1982, 1985], [R.Boyer, 1979a, 1979b], [M.Aglietta, 1979], [J.Mazier, 1986]), Adolph Lowe called it "organisierter Kapitalismus" [A.Lowe, 1965, pp.98-113].

8) This process of integration by prudent state intervention is intimately bound to the project of J.M.Keynes who even tried to extend it to the international level. In that sense Keynes really was one of the first "modern" capitalist economists realizing and shaping the new phase of capitalism.

9) Some authors think it is prudent to give a range of years instead of a single figure. I agree and ask them to consider my figure as the expected value of a range of about 5 years.

An interesting speculation is suggested by the development of the investment to consumption ratio, which can be assumed to be a crude index for Marx rate of surplus value<sup>10</sup>. While class struggles influenced this ratio with a higher frequency but lower amplitude during industrial capitalism a higher degree of integration of the working class since 1914 led to a smoother development and to less but more dramatic breaks<sup>11</sup>.

The capital-output ratio after an impressing decrease during industrial capitalism seems to fluctuate around its lower level since then. This could signal important changes in the type of technical progress from industrial to integrated capitalism.

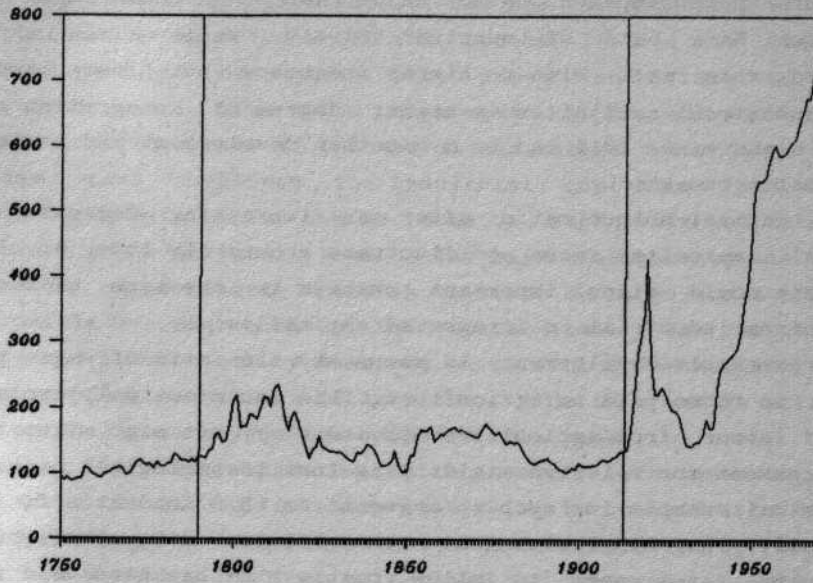
A remarkable development is shown by the ratio of wages paid in industry to those paid in agriculture. This could not only explain the drift of labour from agriculture to industry, but also might be used as an argument for relative rigidity against technological innovation. The classical example for such an argument is [N.D.Kondratieff, 1928].

Finally we can see that the little data available for unemployment rates seems to follow roughly what has been said for the "rate of surplus value", the investment to consumption ratio. If this is true, then we should prepare for constantly high unemployment rates at least in the next decade.

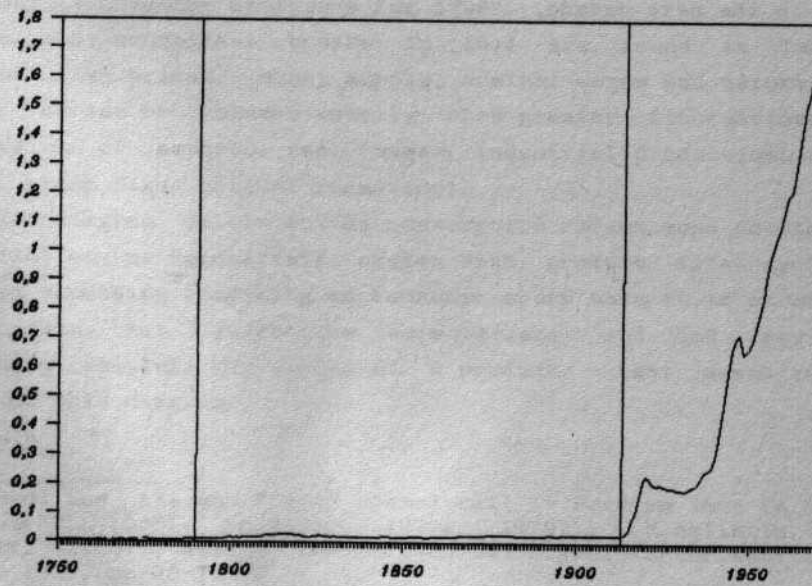
10) Basically one has to assume that capitalists are defined by their function as accumulation machines, that prices are proportional to labour values, that all measured labour is productive labour and that depreciation is negligible.

11) This could suggest that long-term Goodwin cycles are more likely to be found in integrated capitalism while they might explain the usual business cycles before.

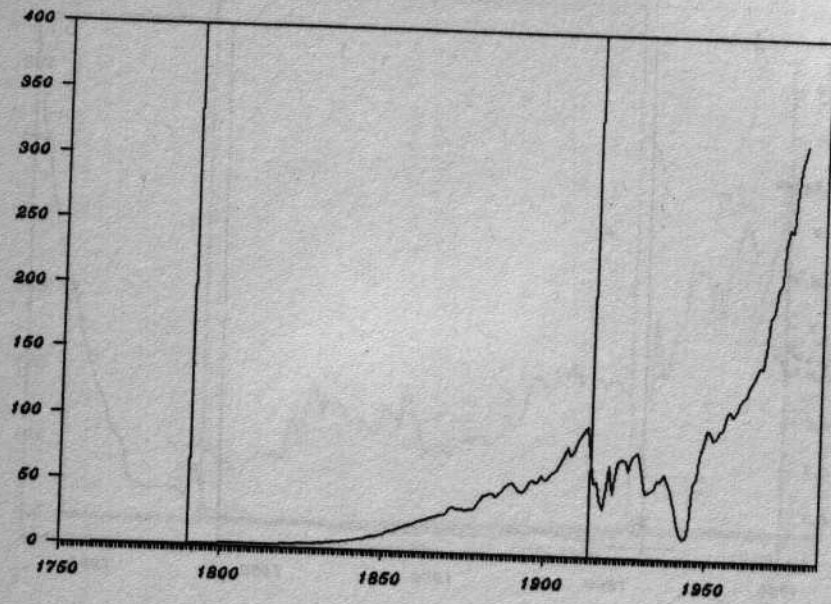
## Wholesale Price Index



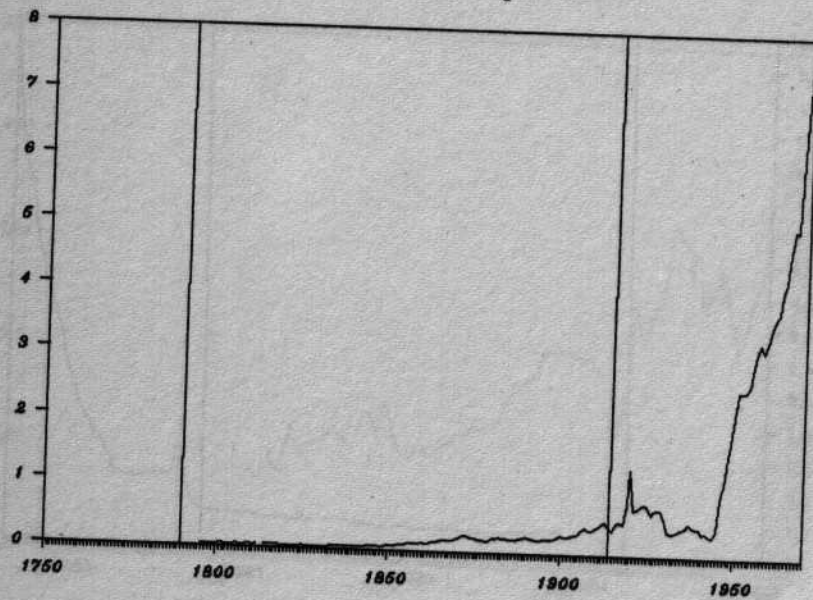
## Banknote Circulation



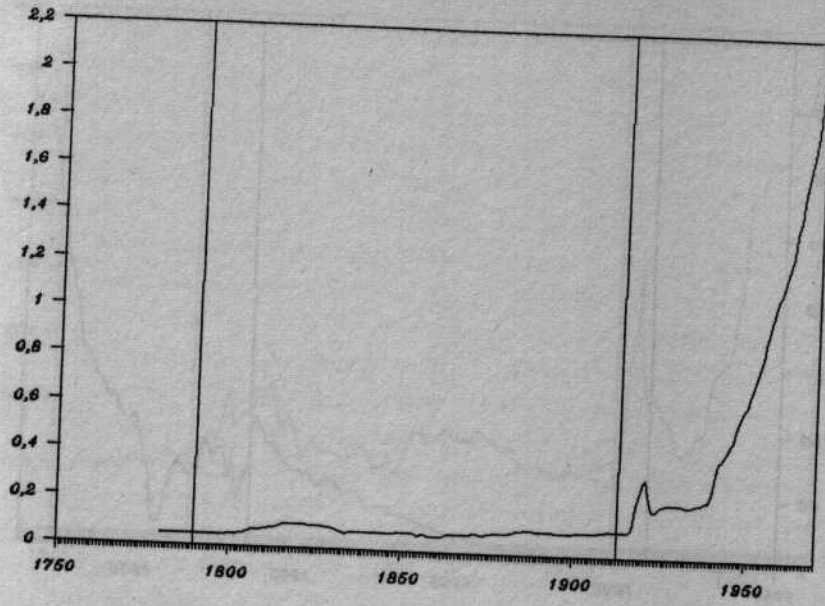
Volume of Exports



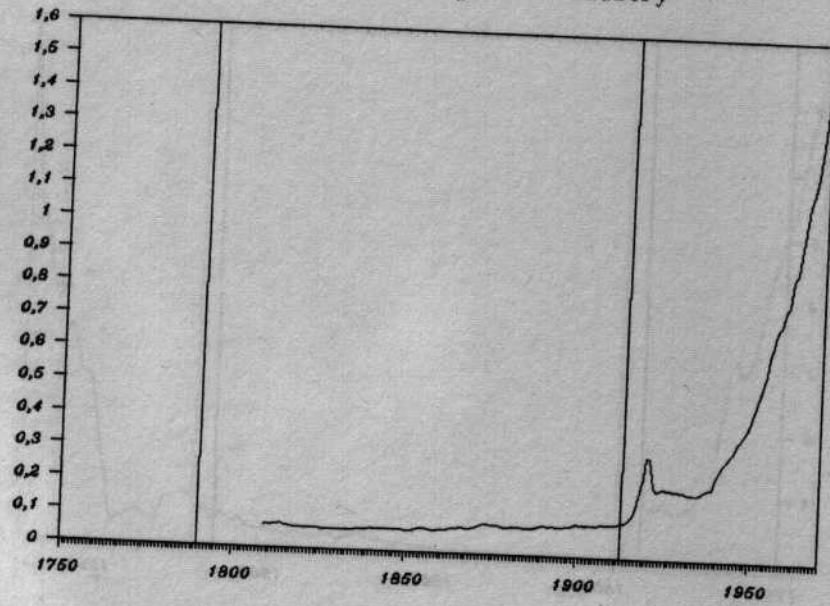
Value of Exports



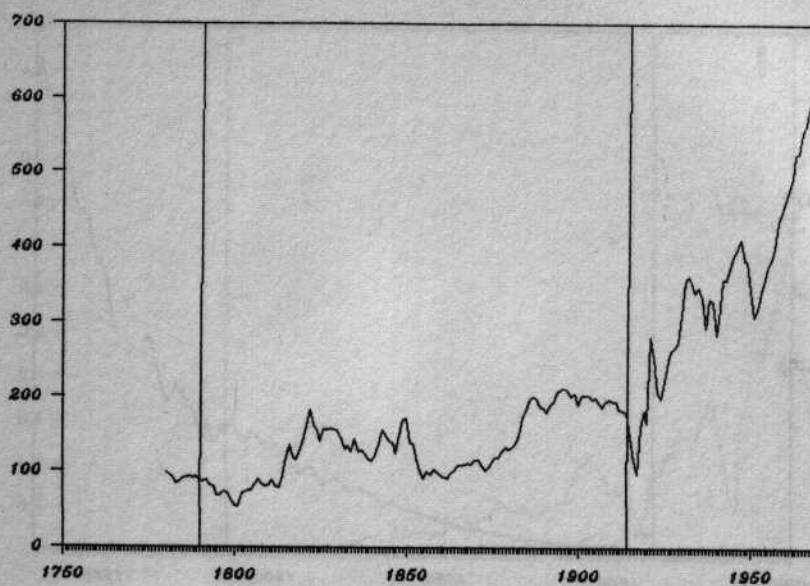
Nominal Wages in Agriculture



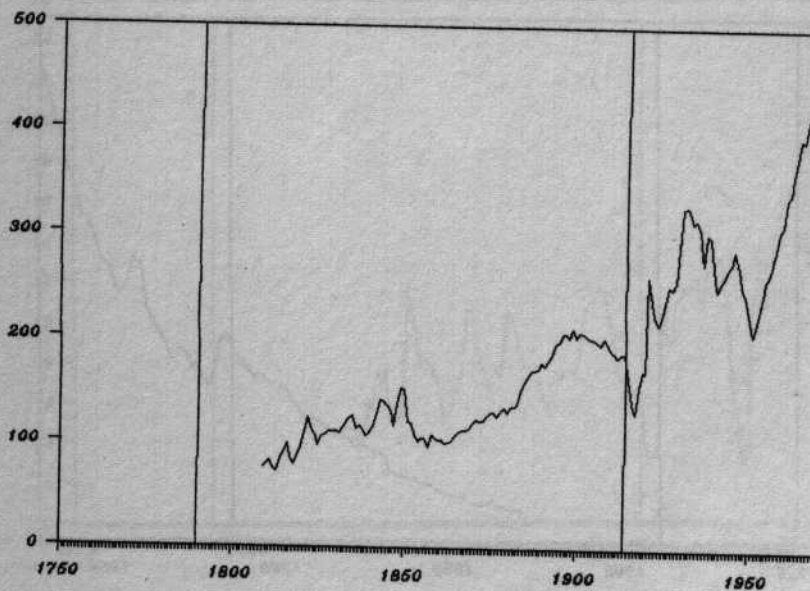
Nominal Wages in Industry



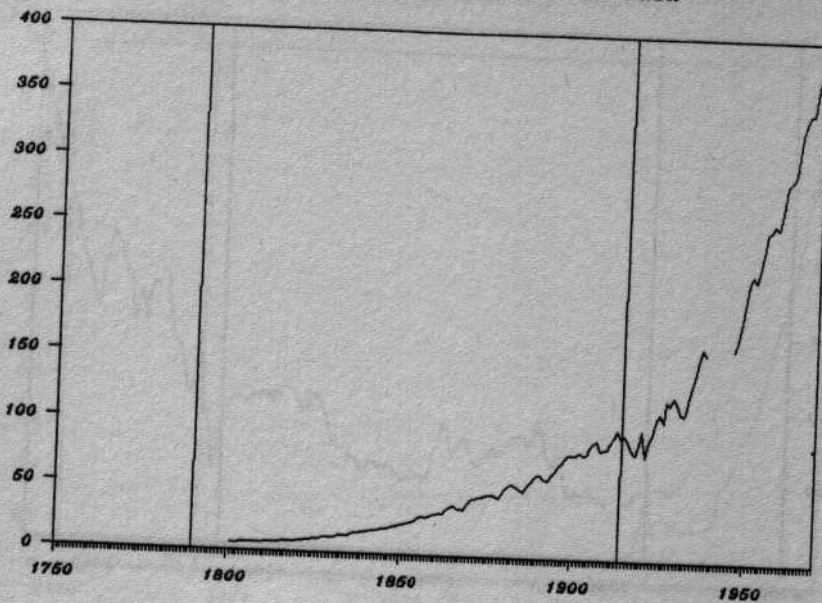
Real Wages in Agriculture



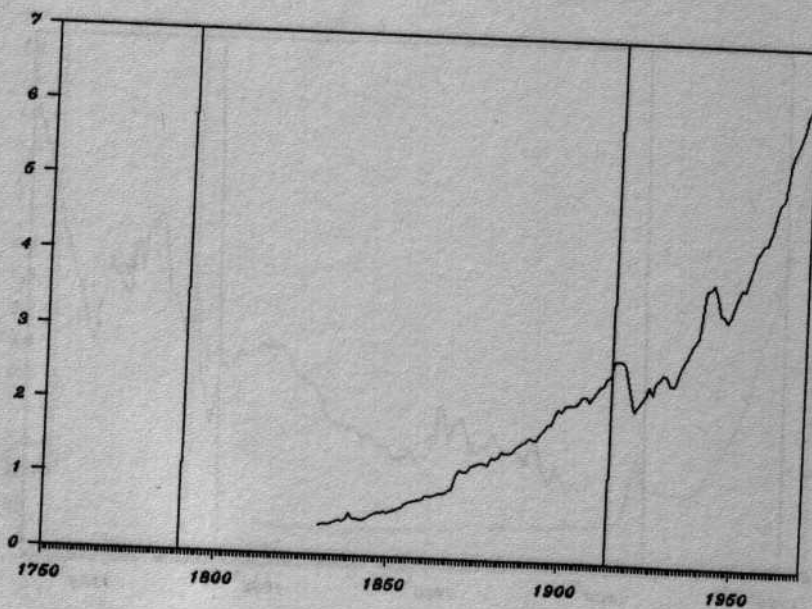
Real Wages in Industry



Industrial Production Index

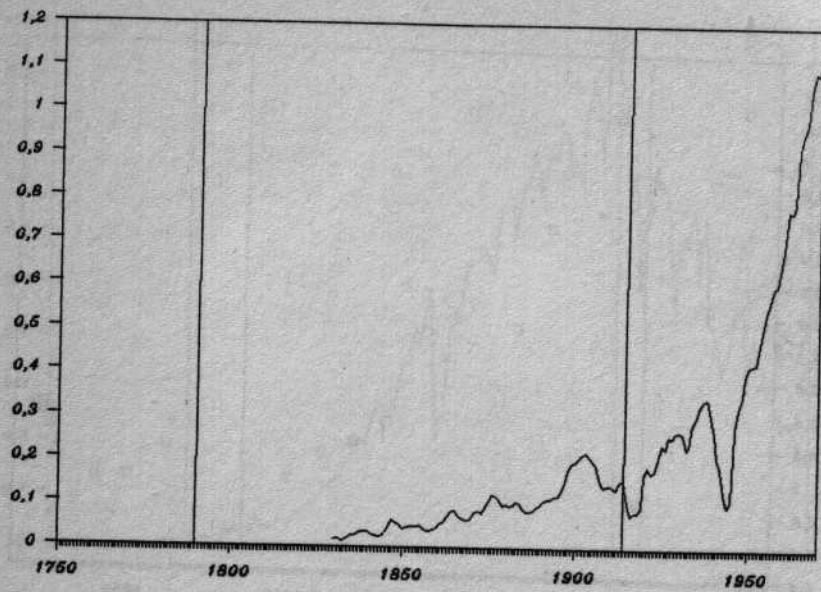


Real GNP

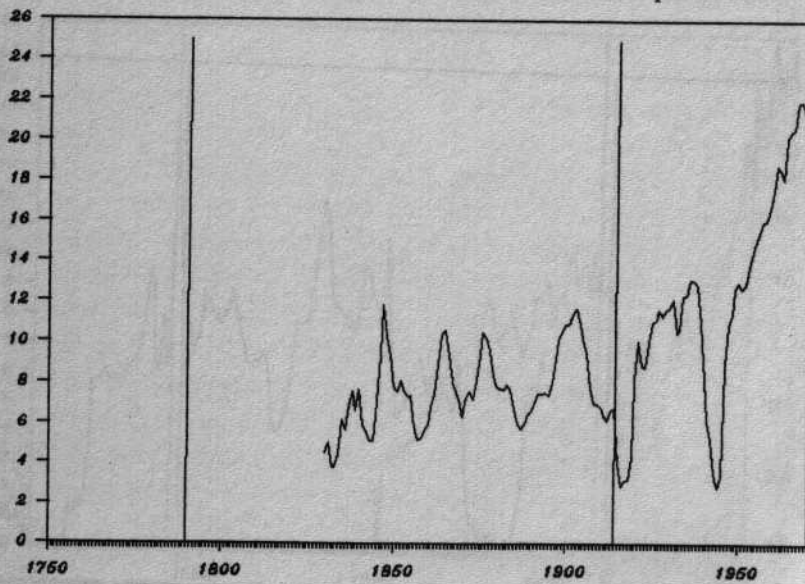




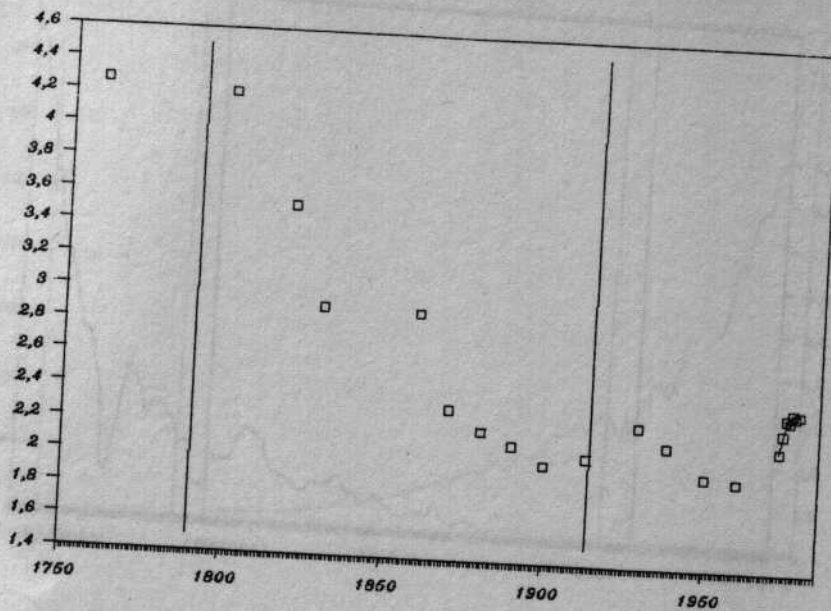
Real Gross Fixed Capital Formation (incl. stocks)



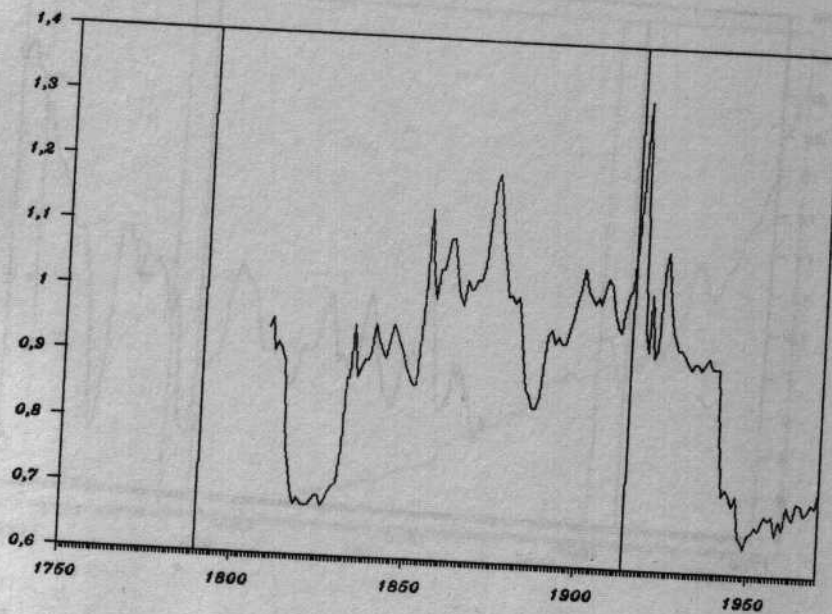
Investment to Consumption Ratio (in percent)



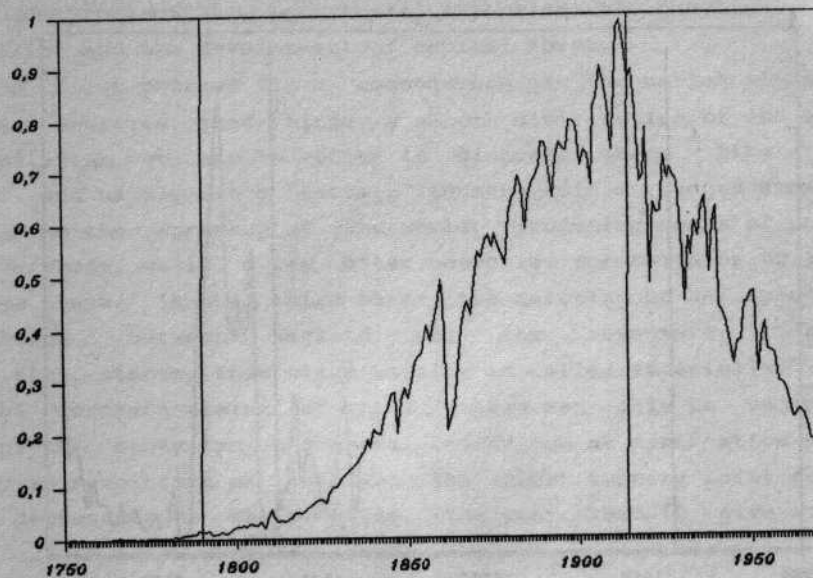
Capital/Output Ratio



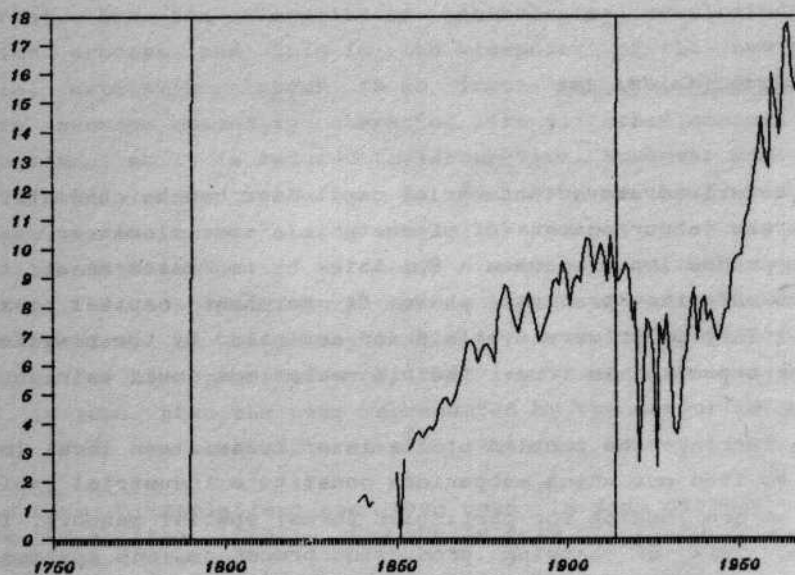
Wages in Industry / Wages in Agriculture



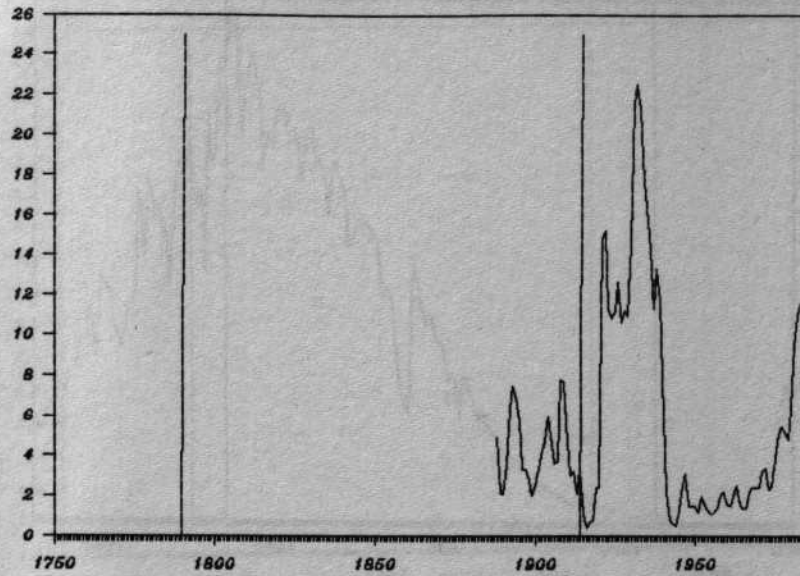
Raw Cotton Consumption Index



Output of Pig Iron



Unemployment Rate



## II. Industrial Capitalism

As described above industrial capitalism can be characterized by lowering the labour content of products in a special manner, namely in changing production processes. But this by no means meant that the mechanisms of the previous phase of merchant capital ceased to function. They only were overlaid and dominated by the new dimension. Quite the opposite is true: the old mechanisms could be resumed at a larger scale<sup>12</sup>.

Transferring the problem of the inner dynamic one level lower, we can try to find out which subperiods constitute industrial capitalism. That is we are looking for particular forms, special manners, in which the common task of changing production processes was approached. We shall call these subperiods with different prevailing forms *stages of industrial capitalism*.

12) In the same sense trade and especially technological productivity growth are only overlaid by the new dimension of integrated capitalism.

As will be seen it is useful to discuss these stages as a threefold process: the territorial expansion, the constitution of the proletariat and the development of capital forms.

The first process is a consequence of the nation states, these discrete entities, that hinder a smooth distribution of the new phase of capitalism. It has to occur in discrete steps. First only in England and mainly in a certain industry. In a second step England appears as the workshop of the world, producing means of production for everybody, while a few other countries are catching up and adopt the new phase. In the third phase the catching up has succeeded and competition between England and the newcomers, territorial competition, starts. This stage usually is called imperialism<sup>13</sup>.

The concrete timing of these stages can only be understood in view of the other two processes. Let us use as demarcation point the bourgeois revolution of 1848 and the lower turning point during the great depression of the nineties, the year 1896 to give a certain year.

Now the first break from the the age of cotton in England to the "age of capital", as Eric Hobsbawm calls it [E.Hobsbawm, 1975], surely has to do with the second process, the constitution of the proletariat. From the viewpoint of technological revolution of the production process, and this is the viewpoint of the new phase, of industrial capitalism, labour is an input like all other inputs and therefore assumes commodity character like all other commodities. Its unit is time, so it is reduced to labour-time. Moreover since labour, like all other commodities, can be considered as input or output, we can think of the worker being simply the output of his consumption bundle, his input. Now if we choose a unit of a certain commodity we can define the concept of surplus. For example choosing labour<sup>14</sup>, its unit being time, we could say that, if the time spent directly and indirectly for the production of the input consumption bundle of workers is less than the time represented by the output these workers produced, then there exists a surplus. This is, as certain neo-marxist

13) The term "imperialism" has been used in many different meanings (compare [G.Arrighi, 1978]). Its use here is solely to be defined out of the present context.

14) In fact there has been a discussion why one should choose labour (see for example [J.Roemer, 1981]). In my opinion this is a question of definition: we define production processes as processes involving human labour. They are to be distinguished from other processes, like the growth of a tree, where no human activity interferes, although some measures, like a dimensionless growth rate and the like, might make sense for both types of processes. If one accepts this proposition, then the choice of labour is justified by its unique property to appear in all processes.

authors sometimes called matrix-marxists would say, Marx' basic story<sup>15</sup>. Maximizing output for given inputs (or minimizing inputs for a given output) thus means squeezing out a maximum of labour-time from a working class held at subsistence consumption level. Against this, against its existence as a pure commodity input that is to minimize, workers organize and start to become a class, a socio-economic subject of its own. As a consequence, their first success is the limitation of the working day. So in 1848 the development of the proletariat led to a revolution in Europe with the result that in the following years structures adequate to industrial capitalism could be established on the continent. In England the situation was different. The emergence of a new capital form, above referred to as the third relevant process, made it possible, and even necessary, to prevent a sudden rupture in accumulation by social reforms. This new capital form in turn was brought about from the increasing pressure of falling price levels on profit expectations. Of course these falling price levels were a late but unavoidable consequence of the very logic of industrial capitalism in a competitive economy, that is of reduced labour content of products.

An important question is to determine, who executes the tendencies of industrial capital. Who is the subject of the accumulation process, its agent. We have to give different answers to different stages of the industrial capitalist phase. In the first stage the pioneer, the innovator, the entrepreneur Schumpeter envisages so enthusiastically seems to have existed physically. Here the Godfather of all the myths of crude methodological individualism seems to have his historical pendant<sup>16</sup>. Against these physical agents of capital workers united. Their capital was linked to them as physical persons, or should we rather say they were attached to their capital to perform its functions. The break in the third process can be understood as a general spill over of capital from one type of production lines to all branches of production, from one country to

15) There are many contributions to this type of approach to Marx'theory in recent years. Some of the most elaborated works in the field are [M.Morishima, 1973], [J.Roemer, 1981] and [P.Flaschel, 1983].

16) "Methodological individualism" including "institutions" as "individuals" does not deserve the name "individualism". On the other hand it might be useful for some problems to consider physical individuals as smallest units, of whose activities all conclusions ought to be derived from. The prescriptive variant of the postulate of methodological individualism, that in *all* problems this is the *only* proper way to derive conclusions is wrong. It first appeared in Schumpeters ideological attack on Marx referred to above [J.Schumpeter, 1908] and recently was revived by Elster [J.Elster, 1983, pp.15-88, 1985, pp.3-27].

several others, from the economic sphere to the whole of cultural and social life. It also is a change of agent from the single capitalist-entrepreneur to the group of capital owners necessary to finance such enormous projects like railroads<sup>17</sup>. The spreading of capital was only possible with the place where it was most developed, with England, as origin. It signals a sudden jump in flexibility, in getting loose from the attachment to single physical persons. The new prosperity in the fifties of the last century, due to the new capital form and to the possibility to export means of production to the European countries, made it possible to finance the reforms in England. This closes the circuit.

So at a certain point in time the interaction of the three processes led to a new stage of industrial capitalism. It prevailed till the end of the great depression in the nineties of the last century.

In some sense the end of the "age of capital" seems to be a repetition of the events in the years before 1848. Via competition and free trade the new productive capacity installed has lowered price levels and has led the prevailing capital form to reduced and riskier profit expectations<sup>18</sup>. Under the circumstances of economic depression process 2 sets in again - it is the hour of trade unionism<sup>19</sup>. These difficulties together with the appearance of competing nations, which even have certain advantages concerning the education system and hence in the new growth industries, Britain falls back upon its traditional policy - territorial expansion. But now the capital form has changed, capital in international competition appears as national capital, government with all its military and political force playing a major role. Indeed it can be doubted that this desperate attempt to restore and to defend profitability of national capitals by direct oppression and implementation of capitalist rules in the remaining parts of the

17) Schumpeter most of the time has this stage in mind although he sometimes seems to mix it with the preceding one (see note 16).

18) "When the investments began to come to fruition the prices of agricultural products tended to fall, creating difficulties for financial institutions which had lent to primary producers and which now found their assets illiquid or reduced in value; hence the financial crisis, ..." [J. Foreman-Peck, 1983, p.89]. A similar description of this process can be found in [E. Hobsbawm, 1968].

19) "1889 unquestionably marks a qualitative transformation of the British labour movement and its industrial relations. Between the great dock strike and World War I we observe the appearance of effective and permanent employers' organizations on a national scale, ... We encounter the first genuinely nationwide and national disputes and collective bargains, the first interventions of central government in labour disputes, ... A new era in labour relations (or class conflict) was clearly opening." [E. Hobsbawm, 1984, pp.156-157]

world was successful in lowering labour content of products. Capital forms, our process 3, had gained a life of their own, somewhat independently of what might, in retrospective, appear as their historical justification - and leading directly to World War I.

It goes beyond the scope of this contribution to support all aspects of this rather complex story of industrial capitalism with empirically observed data. Nevertheless the following diagrams should convince the reader that the main ideas expressed are not implausible.

Price series exhibit those famous two long waves that inspired so many long wave theorists. In our view a long-term decline in prices is a good index for a possible change in capital form in the near future. Usually such a change involves also changes in the international constellation and a further step in the constitution of the proletariat. As the velocity of money does not fully compensate for the fluctuations in prices, the long wave phenomena are to be found in banknote circulation series too.

Real wages, especially in industry, tend to reach a maximum just before a new capital form succeeds to subordinate labour again.

Increasing fluctuations in the industrial production index might indicate increasing influence of class struggles, but it might as well be only the bad quality of the data before 1850 that leads to this shape of the diagram.

Real GNP does not show an interesting shape. That seems to support the view of many economists concerned with long-run phenomena, that GNP is not a very useful concept for this type of research.

Surprising enough neither the value nor the volume of trade grew much during the first stage of industrial capitalism, the take-off clearly being the "age of capital", with a second spurt during imperialism.

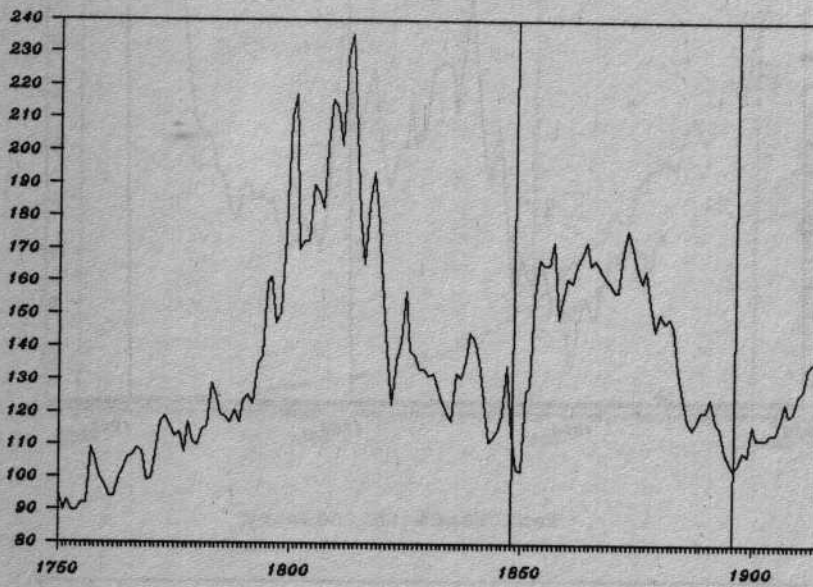
Finally net capital exports (private and public) show the great leap forward during imperialism that was suggested above.

It is clear that the next step of the proposed research program would be to develop business cycle theories for each stage describing the inner dynamic. The agents interacting in these cycles are defined by their behavioural characteristic, which usually also will change from stage to stage, although on a more abstract level it is always capital and labour who interact. Richard Goodwin and Lionello Punzo have, based on a sectorial model, doubted the appearance of any regularity leading to cycles [R. Goodwin/L. Punzo, 1986]. An evident argument would be the introduction of expectations common to all sectors and leading to a synchronization of actions. Instead of

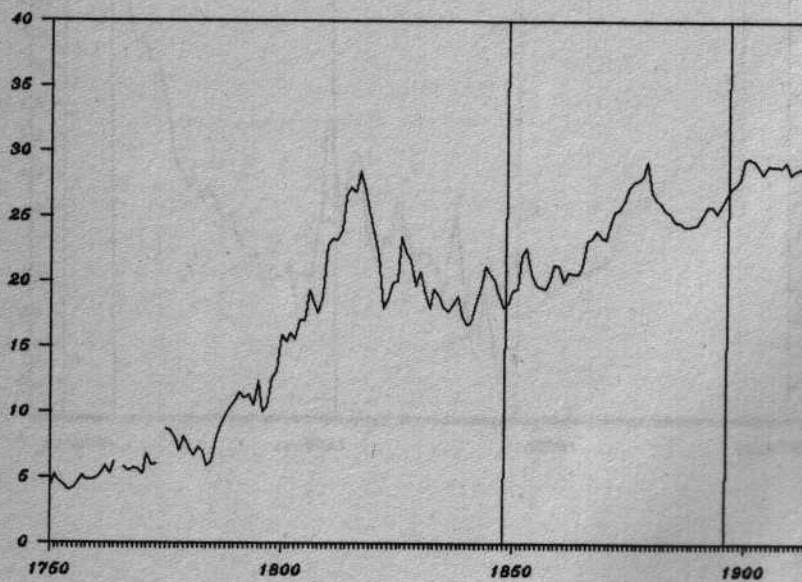


developing these ideas further let me now return to the original topic.

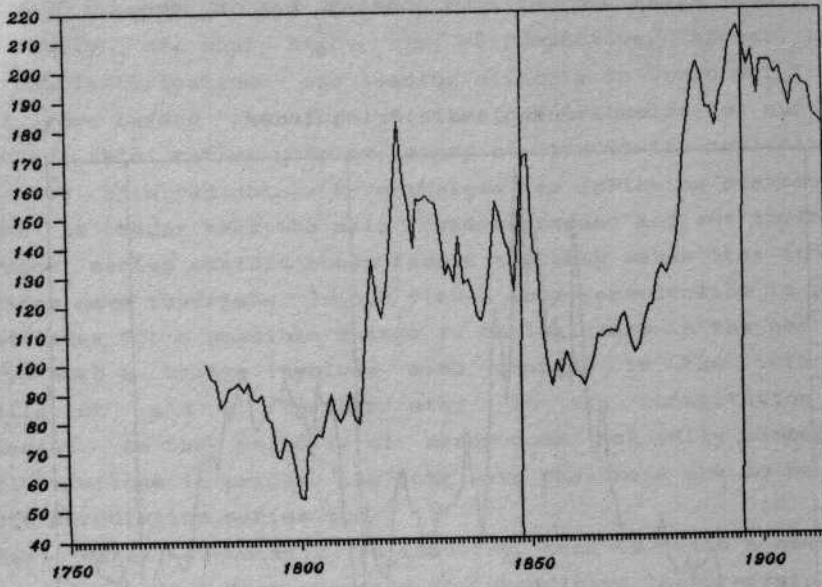
Wholesale Price Index



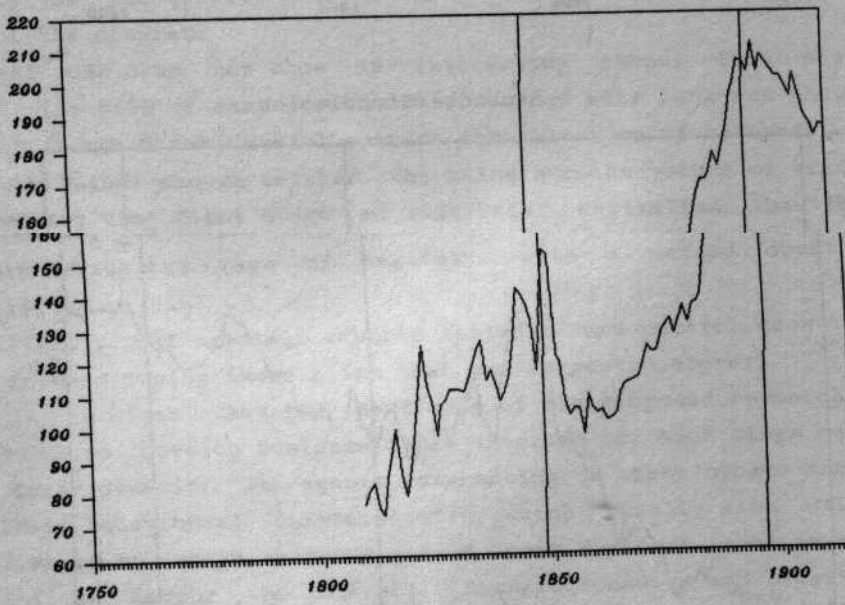
Banknote Circulation



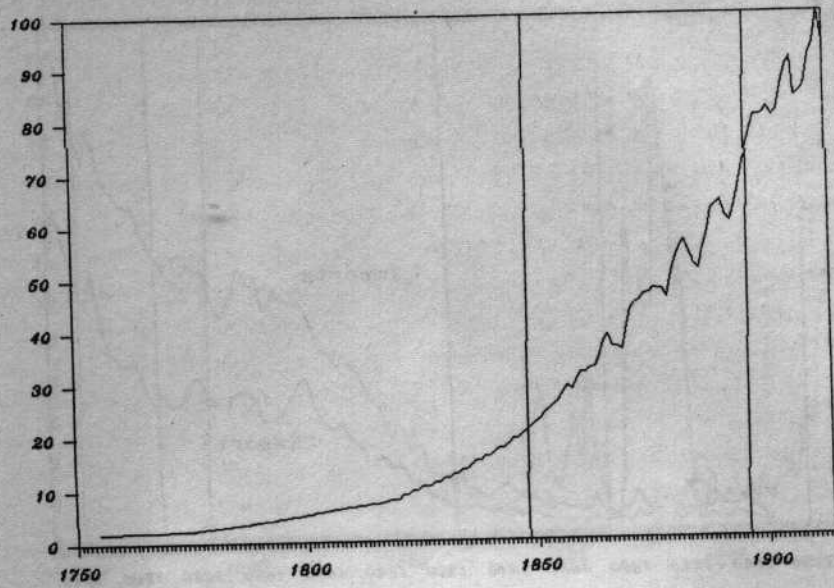
Real Wages in Agriculture



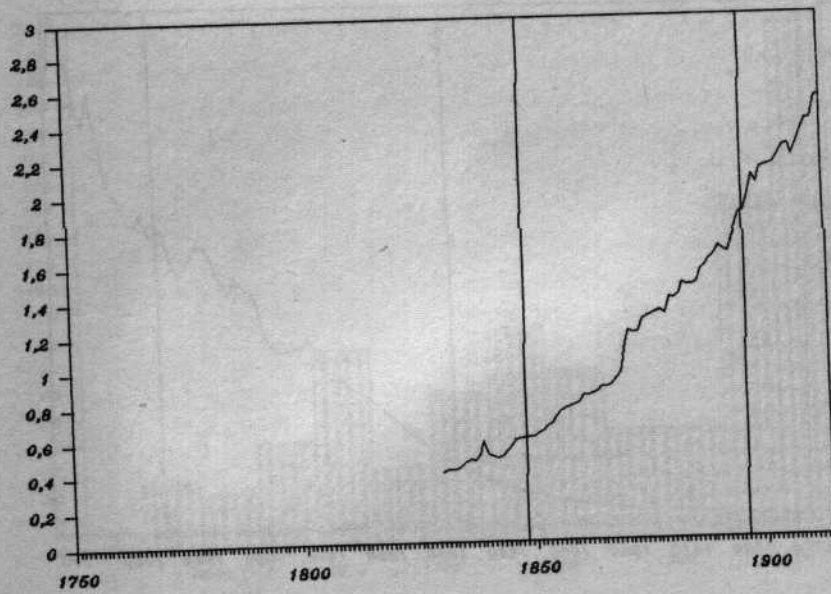
Real Wages in Industry

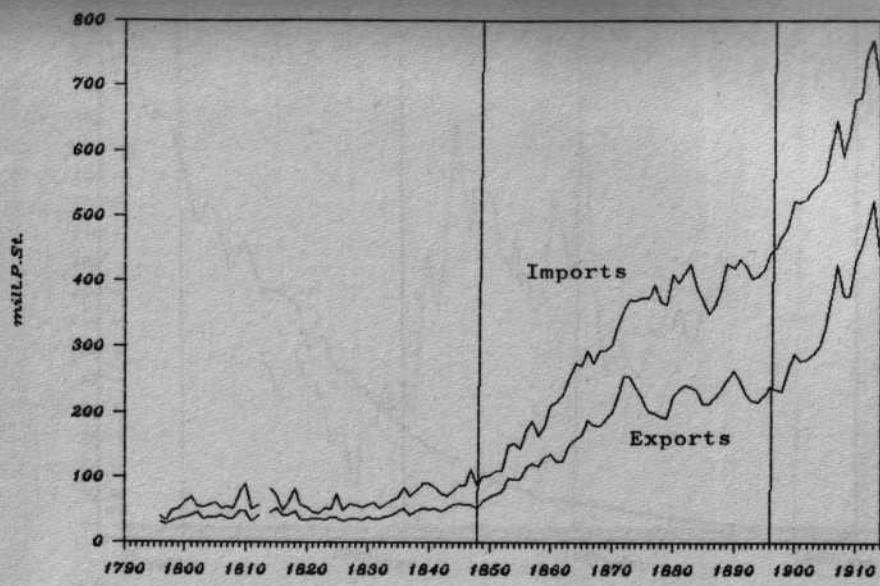


Industrial Production Index

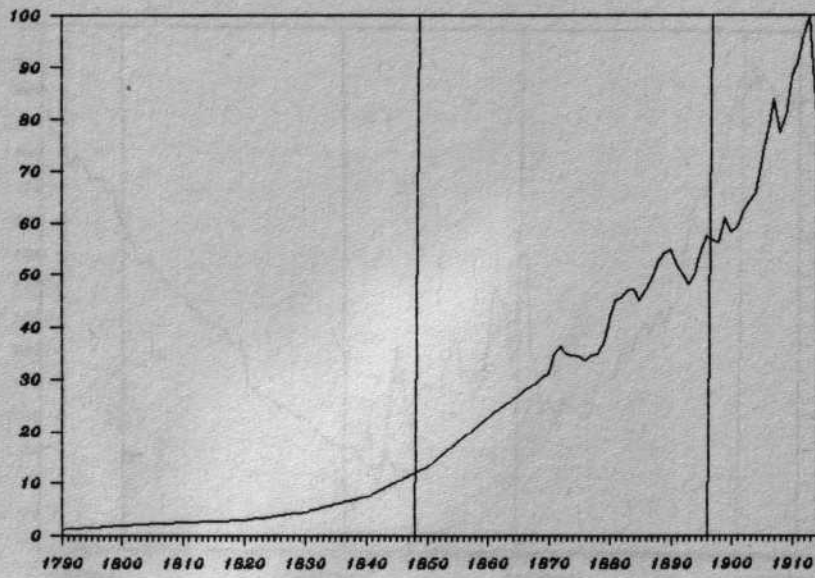


Real GNP



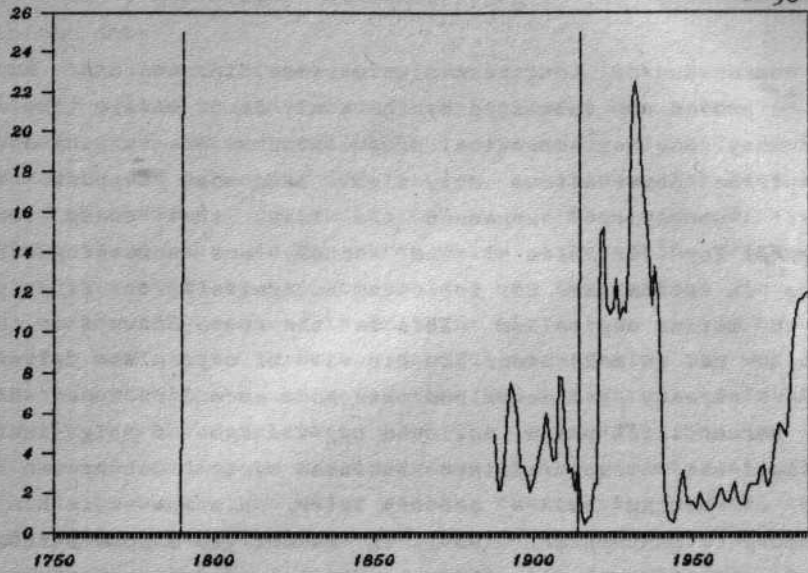


Volume of Exports

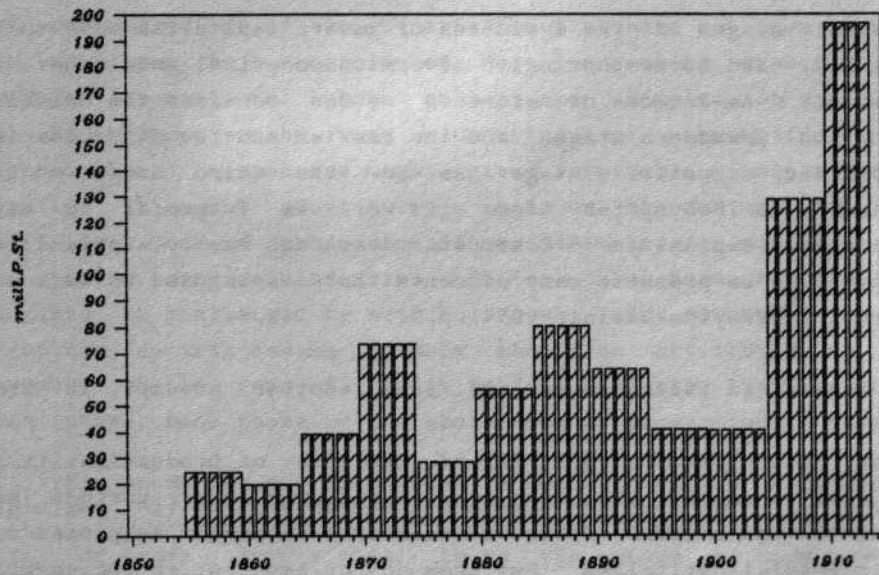


Unemployment Rate

- 30 -



Nominal Capital Exports  
(net of capital imports)



### *III. Conclusion: Do Kondratieff Cycles Exist ?*

The existence of long-term fluctuations in economic life can neither be proved nor falsified by the analysis of single time series. It is in any case a theoretical proposition we are talking about, to which empirical observations only might lend some support. It was Kondratieff who first expressed the idea, that these long-term movements of key variables of the economy are something that is endogenous in capitalism. So, following Kondratieff, our first problem must be to define capitalism. This is the route Schumpeter took. In doing so he had to make clear how his view of capitalism differs from Marx'. Marx already had described this mode as a structured entity: a prenatal mercantilist phase followed by the age of "big industry", which itself was structured into business cycles. Schumpeter had the advantage of writing have a century later. His answer is his famous cycle theory [J.Schumpeter, 1939]. In recent years some authors have challenged these two classics by the proposal of a richer structure of the capitalist mode of production. At least they suggested to use different models for different subperiods:

"Several stages in the evolution of modern capitalism have to be distinguished, and correspondingly, several theoretical models have to be worked out. As frames of reference we can consider the Smithian model for the premodern stage, and the Marxian and the Schumpeterian models for the competitive stage. As for the third stage - the "trustified" as Schumpeter terms it, or, as I prefer to say, "oligopolistic" capitalism - Schumpeter does not really supply a new model, but ... he presents many elements that can be used to work out such a model." [P.Sylos-Labini, 1984, p.XI].

The ideas in this paper are just another attempt in that direction<sup>20</sup>.

Given this richer structuring of the mode of production, it is evident that variables that can be observed over longer periods, say over a whole phase might follow a wave-like pattern, as prices did during industrial capitalism. But they do not have to, as for example export volumes show. Moreover they might show some divergent behavior as soon as the phase is over, as did the series for banknote circulation. It really should not be the task to find any wavelike

20) What Sylos-Labini calls "stages" I have called "phases".

movements in whatever series available, but rather to construct a coherent theory explaining at least roughly the major developments found in the data<sup>21</sup>.

From this point of view, my conclusion is that there are no Kondratieff cycles "to be found" in the history of capitalism. What is to be found is a structured whole, consisting of different strata, each one with an inherent dynamic, or, as it once has been labelled, with a "processing contradiction". In the case of industrial capitalism there seem to be three major interacting processes that have been initiated by the conditions at the outset in the last quarter of the 18<sup>th</sup> century in Britain: the nation states as a product of medieval societies, merchant capital dominating the world economy in coalition with these nation states, and the thrust to technological productivity growth initiated by the contradictions of merchant capitalism and leading to the emergence of the proletariat. The latter turning out to be the the major element confronting capital in its new phase of industrial capitalism.

Long-term cycles might exist in variables reflecting epiphenomena, but these regularities cannot be used neither for explanation nor for prediction, if they are not integrated in a greater theoretical framework. This framework usually will contain non-observables or at least variables that have not been reported for the time span to be considered, data concerning expectations<sup>22</sup> or average international labour content are examples. So while the work of Neo-schumpetereans on clustering of innovations from a technological perspective might give invaluable insight into many details, it cannot substitute a broader theoretical view on the capitalist mode of production. Indeed this broader view has also been Schumpeters original intention. On the other hand the creativity of marxists is challenged by a twofold task. First to depict the level of structure certain issues of Marx should be attributed to: is the tendency of the rate of profit to fall something that happens during each stage, each phase or the whole mode of production, what about the

21) This seems to be so obvious a point, that it rather should be explained why it has become necessary to make it. The search for mechanic principles inherent in "economic man" and applicable to the total of human history still is on the agenda of many contemporary economists (see for example [W.Krelle, 1985]). Marx dismissed this project long ago when he said that for them "there has been history, but (since capitalism) there is not".

22) "Part of the explanation of the quickening of the pace of innovation in the 1760s and early 1770s must have been the state of business expectations. Markets had been expanding at home and abroad since the 1740s. There was every prospect for continued expansion." [P.Deane, 1969, p.178]

tendency to pauperisation of the proletariat, etc. Second this more detailed framework enriched by our experience of the last hundred years of capitalism could be used to evaluate our current situation. Are we arriving at the end of a stage of the phase of integrated capitalism, at the end of this phase itself, at the end of the whole mode of production or even at the end of commodity producing societies? Equipped in that way our theories might be put to their final test of usefulness: political practice.

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Data sources used for the diagrams:

[Maddison A., 1982] for historical capital stock estimations,

[Mitchell B.R., 1971, 1978] as major source,

[OECD, 1983, 1986] for data after 1970 and for current capital stock,

[Roth B., 1984] for net capital exports.