Technology and distribution in managerial capitalism: The chain of historical trajectories à la Marx and countertendential traverses

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Abstract

Five phases can be distinguished in the history of technical and distributional change in U.S. capitalism since the late 19th century. Three such phases manifest the features put forward in Volume III of *Capital* governing the declining trend of the profit rate and can be denoted as "trajectories à la Marx". Two other periods (in particular 1910-1963) reveal symmetrical trends. They are the expression of the changing configurations of the dynamics of productive forces and relations of production, given the continuing transformation of relations of production in managerial capitalism. This analysis supports the hypothesis that U.S. capitalism entered a new trajectory à la Marx after 2000.

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1 Introduction

This paper is devoted to the historical profile of technology and distribution in U.S. capitalism since the late 19th century (1870-2014). The central notion is "technical change *à la Marx*", by which we mean the set of features of the transformation of technology, organization, and distribution on which Marx based his analysis of the propensity of capitalist economies to enter into phases of declining profit rates. The main such feature is a limitation—Marx's key insight—of the potential inherent in technical change, namely the observation that the progress of labor productivity must be paid for by costly additions to firms' stock of capital strongly diminishing the profitability of innovation.

Three such patterns à la Marx can be observed in the United States since 1870, interrupted by two periods during which countertendential forces had the edge. The main such countertendential period, 1910-1963, was of considerable duration, lasting about half a century. A second more ephemeral similar pattern of technical change can be identified during the 1990s, preceding the entrance of U.S. capitalism into a new trajectory à la Marx after 2000, which was not, however, the cause of the 2008 crisis (Duménil and Lévy, 2011) and did not yet materialize in a decling profit rate.

These "traverses", separating trajectories à la Marx, are the expression of the changing configurations of the dynamics of productive forces and relations of production. We distinguish between phases of "routine" interaction of productive forces and relations of production, and phases of "revolutionary" interaction (as during industrial revolutions).

The progress of relations of production is a gradual and lasting process, though not smooth, from one mode of production to the other, continued during each mode (a period of dominance of one set of relations), as manifest in the establishment of capitalist relations of production. The reference to managerial capitalism conveys the view that, since the late 19th century, relations of production were gradually altered by the rise of the new class of managers and the corresponding remodeling of economic and political mechanisms whose effects were dramatically felt during the 1910-1963 traverse but are still a key component of the dynamics of contemporary managerial capitalism.

In this study, we abstract from the effects of taxation and the separation between the wages of managers and the rest of salaried workers. The discussion of other approaches to the tendency for the profit rate to fall was the object of other studies (Duménil and Lévy, 2014a, being the latest).

2 Phases: Trajectories à la Marx and traverses

This section is devoted to the identification and broad interpretation of the three trajectories à la Marx and the two traverses since 1870.

2.1 The productivity of capital

The capital/output ratio or the "productivity of capital" is the variable in which the pattern of evolution of technical change is the most clearly expressed. It must be emphasized from the outset that it is not possible to follow Marx in his consideration of the composition of capital. A ratio between the components of capital may increase while total capital diminishes in relation to output. Under such circumstances, the rise of the composition of capital would not affect negatively the profit rate. (Obviously, the formal reference to capital "productivity" does not imply that capital creates value!)

The productivity of capital is the ratio of the Net domestic product (NDP) and the stock of fixed capital in the private nonresidential economy (Figure 1). The stock of fixed capital is the sum of equipment, structures, and intellectual property products, net of depreciation. Both variables are expressed in current dollars.

The analysis of historical trajectories is based on the identification of long-term trends abstracting from the effects of business-cycle fluctuations. (The most dramatic of these movements was the broad oscillation in the middle of the period, when output plunged into the Great Depression and culminated during World War II.) Therefore, only trend lines are here at issue. The profile in Figure 1 reveals the existence of three downward trajectories: (1) during the late 19th century up to 1910 [M1]; (2) between 1963 and 1986 [M2]; and (3) from 2004 to 2014 [M3]. For example, between 1870 and 1910, the trend of the productivity of capital

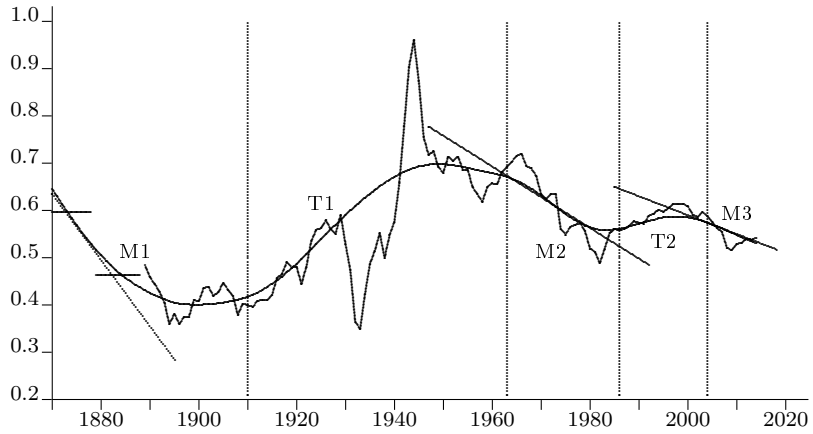

Figure 1 – The productivity of capital

Unless otherwise specified, all figures are for the private nonresidential U.S. economy. Due to the limitation of the data, only decennial averages are presented for the first two decades. The trend line has been determined using a Hodrick-Prescott filter. The three downward-sloping straight lines symbolically describe the trajectories à la Marx, and the four vertical lines in 1910, 1963, 1986, and 2004, separate the five subperiods denoted by letters (M for Marx, and T for Traverse) and numbers.

diminished by about 35 percent. The three above trends are separated by two upward trajectories: (1) from the 1910s to the 1950s [T1]; and (2) from 1986 to 2004 [T2].

2.2 The profit rate, labor productivity, the real wage rate, and the profit share

Figure 2 shows the profit rate, revealing a profile directly evocative of the course of capital productivity.

The profit rate can be expressed as the product of the profit share and the productivity of capital. With obvious notation:

$$r = \frac{\Pi}{K} = \frac{\Pi}{Y}\frac{Y}{K} = \pi P_K$$

Thus, the similar profiles in Figures 1 and 2 mirror the familiar stylized fact that the share of profits remained approximately constant since the last decades of the 19th century. This is linked to the fact that the real

wage, w, is also part of these dynamics [1]:

$$\pi = 1 - \frac{w}{P_L} \tag{1}$$

The coincidence between the secular profiles of the growth rates of the real wage rate, in the numerator of w/P_L, and labor productivity, in the denominator, is spectacular, both rates culminating during World War II at about 3 percent per year, so that the ratio remained about constant.

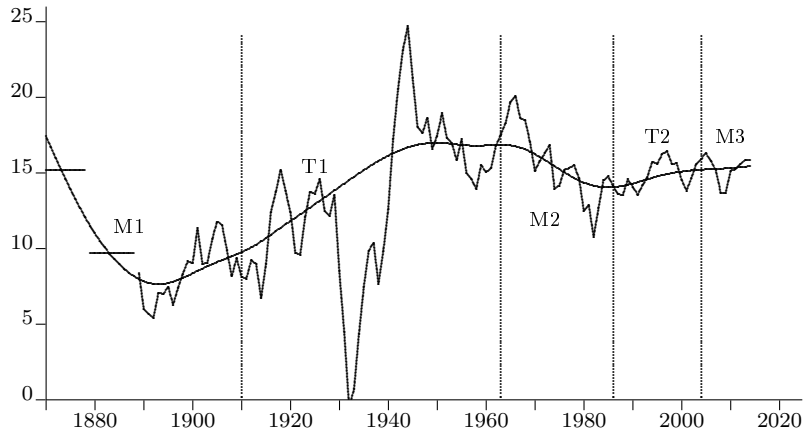

Figure 2 – The profit rate

Profits are the NDP in the private economy minus the cost of labor. (Thus, profits are gross of taxes.) The stock of capital is the total private nonresidential fixed capital at replacement cost. (We abstract from the other components of capital.)

The average growth rates of the five variables, P_K, P_L, w, π, and r are shown in Table 1 distinguishing between the five subperiods:

1. The growth rates of capital productivity were positive during the two traverses $T1$ and $T2$, and negative during trajectories à la Marx. During the two traverses, the upward trend of capital productivity was associated with faster rises of labor productivity and the upward trend of the profit rate. Thus, such periods stand out as very favorable.

1. The more thorough interpretation of these observations lies beyond the ambition of the present study. Specific properties of innovation are also involved (see Duménil and Lévy, 2003a, in particular Section 4.1).

Table 1 – Average growth rates (percent)

	Period	Productivity of capital P_K	Productivity of labor P_L	Real wage w	Share of profits π	Rate of profits r
M1	1870-1910	−1.2	1.2	1.3	−0.3	−1.5
T1	1910-1963	1.1	2.7	2.6	0.3	1.4
M2	1963-1986	−1.5	1.0	1.1	−0.2	−1.8
T2	1986-2004	0.4	1.4	1.3	0.3	0.7
M3	2004-2014	−0.8	0.9	0.6	0.8	−0.1

2. Table 1 confirms the similar patterns of variation of P_K and r. The main exception is observed during the latter period, M3, in which the value of the profit rate manifests a growth rate close to zero, as the decline of capital productivity was paralleled by the upward trend of the share of profits. [2]

2.3 Two categories of mechanisms

What is denoted by the historians of the economy as industrial revolutions does not straightforwardly reflect the transformation of relations of production. For example, in England, capitalist relations developed much before the first industrial revolution (usually dated to 1770-1830, though with significant flexibility, and observed with some lag within other countries). Although the relationship between productive forces and relations of production is always reciprocal, the earlier establishment of the new relations of production in a first phase created the necessary preconditions for the later adjustment of productive forces (the adjustment of technology and organization to the new relations of production) in a second phase in the context of traditional techniques of production, organization, and institutions. As is well known, the main aspects of the "revolutionary phase" in England were the increasing size of manufactures and the rise of the large industry. Underlying these two phases—evocative of Marx's

2. The calculation by Joseph Phillips in the appendix to Baran and Sweezy 1966 did not refer to a profit rate but to the share of "surplus" (a form of profit) in total income. The slight upward trend of this share from 1929 to 1963 (as confirmed in Table 1 although the periods slightly differ) led Baran and Sweezy to substitute "the law of rising surplus for the law of falling profit" in their theory of monopoly capital.

formal and real subsumptions[3] — the comparative weight and sophistication of capitalist relations of production were gradually increasing, up to their generalization (when the embrionic forms of managerial relationships were already observed).

Although such transformations did not occur in one blow but in a stepwise fashion (within specific subset of enterprises, industries, places, countries, and the like), we distinguish between two categories of circumstances depending on the features of the dynamics of productive forces and relations of production, namely "routine" and revolutionary interactions:

1. *Routine interaction.* Trajectories à la Marx are typical of phases of "natural" functioning of capitalism, that is, straightforwardly conform to the natural laws of capitalism. Under such circumstances, the mechanics of technical and distributional change are governed by the broad set of reciprocal relationships described in Section 2.2. The main aspect is the high cost of the increasing use of fixed capital reflected in the downward trend of capital productivity and the profit rate.

2. *Revolutionary interaction.* Our working hypothesis is that revolutionary interaction dominates during traverses conferring their own features on the aggregate economy or broad sectors such as industry. Their effects are symmetrical to those manifest during trajectories à la Marx, establishing the superior performance of the new mode. It would be difficult to understand the forces that gave impetus to the first industrial revolution if the mechanization of production had been straightforwardly associated with lower profit rates. Despite the dearth of reliable data, one can surmise that the contrary occurred. New periods à la Marx — the Marx of the tendency for the profit rate to fall, not the Marx of the historical dynamics of productive forces and relations of production and the sequence of modes of production — came in the wake of the new steps forward accomplished during these revolutions. Under such circumstances, the overall decline is observed during the following decades. Most likely, one of these trajectories ended in the stagnation in the late 19th century in Europe.

A significant degree of complexity is created by the heterogeneous features of these historical developments. The downward trend of the profit rate may be manifested from the first steps of its implementation within

3. *Results of the Direct Production Process. https://www.marxists.org/archive /marx/works/1864/economic/*

the new economy, while the average profit rate for the aggregate economy may still be rising as an effect of the gradual substitution of the new more profitable sector for the traditional sector.

3 Trajectories à la Marx: The mechanics of technico-organizational and distributional change

This section attends to the mechanisms governing trajectories à la Marx (while Section 4 discusses traverses).

3.1 A system of relationships

As symbolically expressed by the diagram of Figure 3, a broad system of relationships is involved:

1. Four basic sets of factors are listed in the left of the diagram, namely the pattern of innovation (with, to various degrees, their features à la Marx), capital accumulation, the conditions determining the available labor force (such as demography, immigration, the participation of women), and workers' struggle (for wages, the duration of labor, and the like).

2. The core chain governing straightforward overaccumulation (with respect to the availability of labor) is marked by darker arrows. Large rates of accumulation stimulate [1] employment and [2] real wages. Other things being equal, a profit squeeze would follow, pushing [3] the profit rate downward and possibly resulting [4] in a profitability crisis.

3. This chain is first impacted by the available labor force [5] and the degrees [6] of the struggle of workers for real wages and conditions of labor.

4. A second sequence of determinants is described in the upper part of the diagram. The pattern of innovation determines [7] the availability of new techniques of production. The technique adopted impacts [8] employment (besides the rate of accumulation) and, thus, the remaining links in the chain. This potential impact of innovation is a key mechanism susceptible of relaxing the pressure of overaccumulation.

5. The profit rate has three main potential feedback effects: (a) Firms select the most profitable techniques of production, substituting machin-

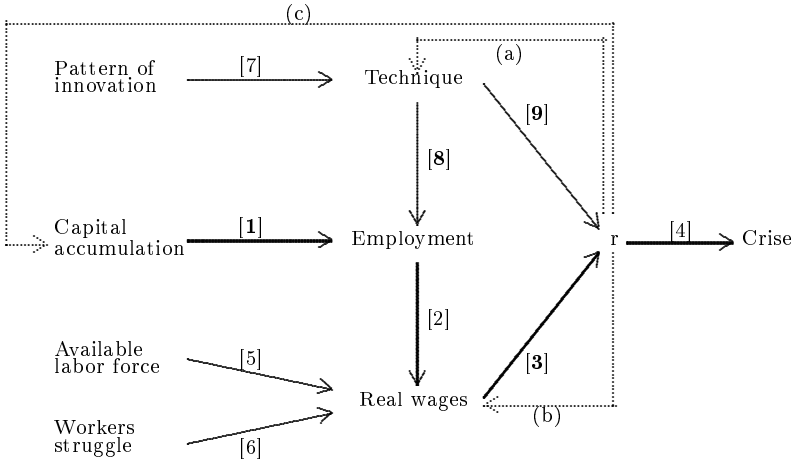

Figure 3 – A system of relationships

The relationships denoted with number in boldface are computational:

$$r = (1 - \frac{w}{P_L})P_K, \quad \textit{and} \quad L = K\frac{P_K}{P_L}$$

Other numbers point to more complex sets of determinations. The letters and doted lines describe the three feedback effects of the profit rate. The darker arrows mark the sequence supporting overaccumulation.

ery for labor for larger wage rates; (b) Lower or diminishing profit rates strengthen the resistance of employers to the demands of workers concerning wages; (c) Such profit rates also diminish the rate accumulation. The three relationships alleviate the pressure on real wages and, hence, on profit rates. (Higher profit rates have symmetrical effects.)

Broad sets of collateral mechanisms are implied in the above mechanisms. For example, the relevant profit rate in relation [2] is not the profit rate shown in Figure 2 but the "retained profit rate", that is, the profit rate after the payment of taxes and interest, the distribution of dividends, and the repurchase of their own shares by corporations. Tensions on employment may stimulate the alleviation of the restriction to immigration (and symmetrically).

Trajectories à la Marx are highly dependent on the pattern of innovation. A new technique allowing for the simultaneous rise of capital and labor productivities has favorable effects and will be retained by firms, since it necessarily improves the profit rate. A key hypothesis is that the appearance of such techniques is rare during periods à la Marx, while it is a key feature of traverses. Another weaker and very relevant formulation

of the malediction weighing down the potential effects of innovation is that the profile of innovation is "biased", meaning that potential increases in labor productivity (saving on labor and thus wages) is paid for by large additions to the stocks of fixed capital so that substitution will only be used as a reply to the pressure of rising wages (Duménil and Lévy, 1993, 2003b).

The basic patterns of variations observed in the U.S. economy (Table 1) are rather well in line with the analytical scheme of Figure 3. The main exception is the third feedback effect (c) of the profit rate on capital accumulation and the corresponding impact on employment. In the United States, the upward trend of the profit rate during T1 paradoxically coincided with comparatively slow rates of accumulation and a stagnating employment. Paralleling workers' struggle for wages, the available labor force was subject to dramatic waves of immigration and the arrival of women on the so-called labor market. In addition, the second feedback (b) of the profit rate apparently played a significant role during T1. Disentangling the entire set of relationships lies, however, beyond the scope of the present study.

3.2 Marx's analysis

Marx's understanding of these relationships — primarily the insight regarding the features of innovation — was outstanding (actually unique). The analysis begins at the end of Volume I in the analysis of the *Law of capitalist accumulation*. The rythm of accumulation may pushes employment to the limit of the available labor force (overaccumulation), thus stimulating the rise of wages. The reaction of employers is the substitution of capital for labor. (The chain of events unfolds through the sequence of crises and recoveries.) This analysis fully abstracts from the cost of additional capital, which obviously conditions the efficiency of the remedy. Although Marx did not establish the link explicitly, this is the object of the analysis of historical tendencies in Volume III: the substitution of capital for labor is expensive in terms of capital and subject to the criterion of profitability. There is, therefore, no panacea curing the tensions on employment, and the overall set of tendencies is, thus, generated.

A technical difficulty met by Marx is the absence of explicit consideration of the real wage rate. First, under the assumption of a given real

wage rate, the mechanism described by Marx concerning the adoption by a set of capitalists of new techniques of production on account of their high profitability cannot lead to a decline in the aggregate profit rate when their use is generalized (Okishio, 1961). Second, denoting total wages as W, and total profits as Π, the share, $\pi = \Pi/(W + \Pi)$, of profits in total income (equivalently, the ratio, $\Pi/W = \pi/(1 - \pi)$, of profits to wages)—be it called the rate of surplus value or not—is not an appropriate substitute for the real wage rate due to the variation of labor productivity: Marx temporary assumption of a constant rate of surplus-value (or a constant share of profits) implies that the real wage rate grows at the same rate as labor productivity (Equation 1). In Marx's analysis, the real wage rate is anything but constant, though this property remains implicit.

It should be acknowledged that, for obvious reasons, Marx was never able to ensure the consistency of his general framework. We already mentioned the lack of consideration of the relationship between the law of capitalist accumulation and the law of the falling profit rate. In a similar fashion, one can regret that Marx never established the link between the dynamics of technico-organizational change in his analysis of the manufacture and large industry, and his analysis of historical tendencies; or abandoned his exploration of the dynamics of the formal and real subsumptions of production to capitalist relations of production. The main limitation is the absence of explicit treatment of the link between the historical tendencies of capitalism and the dynamics of productive forces and relations of production.

There is a long tradition among Marxist economists (in particular in the analysis of long waves) acknowledging the ups and downs in the historical movement of the profit rate (instead of the search for a ahistorical steadily declining trend). This is notably Ernest Mandel's viewpoint (1980). The difference with our own analysis lies in the nature of the mechanims accounting for the recurrent upward trends of the profit rate.[4]

4. There is unquestionably a Schumpeterian flavor in the reference to sequences of bursts of profitability and trajectories à la Marx (Schumpeter, 1926).

4 Traverses: Rising managerial features

The present section suggests interpretations of the two traverses T1 and T2 as expressions of the progress of the managerial relations of production during the 20th century, as reflected in the rise of the new class of managers and the corresponding advance of management.

Section 4.1 establishes the link with the framework put forward in the previous sections regarding the mechanics of technical and distributinal change in a routine configuration of the interaction between productive forces and relations of production. Sections 4.2 and 4.3 elaborate on the parallel drawn in Section 2.3 between the first industrial revolution and T1 and T2. *Mutatis mutandis*, the continuing transformation of relations of production, and the sequence of routine and revolutionary phases are key components in both instances.

4.1 Traverses as upward shifts in the downward trend capital productivity

As symbolically expressed in the diagram in Figure 4, the degrees and speeds of variations of the variables are the determinants of the separation between trajectories à la Marx and traverses. Panel (a) shows how capital productivity declines at a given speed as time passes in a routine environment of productive forces and relations of production. The two other panels combine this movement with the shift created by the revolutionary interaction of productive forces and relations of production under the alternative assumptions of, either, a slow shift in Panel (b), or a rapid shift in Panel (c). In Panel (b), the speed of the decline of capital productivity is diminished when the potential inherent in the new relations of production materializes, while the downward trend is temporarily inverted in Panel (c).

This is the theoretical underpinning of our separation between trajectories à la Marx (hence the notation M in Figure 1) to refer to the relationships put forward by Marx as natural laws of motion of capitalism, and traverses (T in the figure) to account for episodes in which the effects of such laws are temporarily superseded.

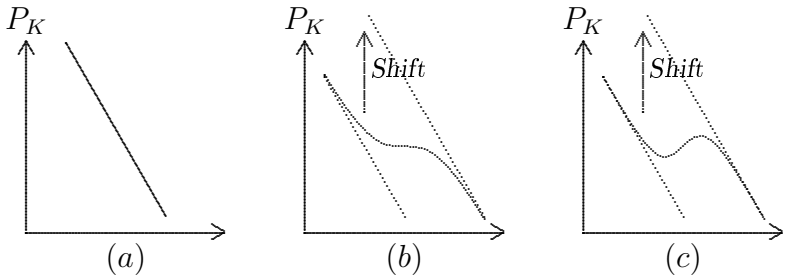

Figure 4 – Trajectories à la Marx and traverses

Each straight line describes a trajectory à la Marx. The three diagrams show that, depending on the degree of the shifts in each traverse, the downward trend of capital productivity may be alleviated or inverted.

4.2 The managerial revolution (T1)

The interruption of the decline of capital productivity at the end of the 19th century (marking the end of M1) and the new upward trend after 1910 (the beginning of T1) were the expressions of a revolution in technology and organization. Two basic achievements of the period are familiar, namely the Taylorist workshop ("scientific management") and the Fordist assembly line. It is impossible to assess the quantitative impacts of these reforms. But it might be not merely coincidental that the Taylorist organization of production is dated to the last decades of the 19th century, when the slope of the downward trend of capital productivity was reduced prior to the full inversion of the downward trend. Similarly, Ford's promotion of the assembly line occurred around World War I, that is, precisely when the growth rate of labor productivity entered its ascending phase that drew it from the previous average values of 1.25 percent to its peak at 3 percent in 1941. Simultaneously, capital productivity began to rise.

The assembly line is often viewed as a paroxystic form of mechanization. The investment in fixed capital was, however, paralleled by such dramatic increases in the pace of production that both productivities rose in tandem. In this profile of technical change, one will precisely recognize the favorable features of the pattern of innovation described as "rare" in Section 3. Simultaneously, real wages—more exactly, labor costs—grew at an unusual rate (Table 1) while the profit rate was nonetheless increasing.

The use of electric engines was certainly an important component of

this transformation. But these developments cannot be separated from the remodeling of management in a broad sense (of which Taylorism and Fordism are two aspects), allowing for the new capital saving course of innovation in the workshop.[5] A broader set of institutional transformations is, however, involved. For example, in trade, the rise of department stores allowed for a dramatic reduction of commercial costs and acceleration of the turnover of capital. The three revolutions (the corporate, financial, and managerial revolutions) at the transition between the 19th and 20th centuries played a key role in the introduction of the new course of managerial capitalism, marking a dramatic institutional step forward in the historical transformation of relations of production.

An important property is that the shift described in the diagram of Figure 4 was not uniform throughout the economy, but concentrated within specific sectors, typically the sector of the new large corporations, with the staffs of managers and the backing of the financial sector. The sector of smaller traditional firms survived in parallel, though under increasingly difficult conditions (despite the protection of antitrust laws). Thus, the substitution of the new technico-organizational paradigm for the old was a several-decade long process at the origin of the heterogeneity between the two categories of firms. The profiles of the aggregate variables in Figures 1 and 2 account for average values between coexisting technico-organizational paradigms, with the comparative weight of the new relations of production gradually increasing, up to their generalization. (This heterogenous features were a determinant of the Great Depression, which played an important role in the elimination of the backward sector, Duménil and Lévy 2011, 272.)

The new favorable features acquired during the first half of the century are permanent, but what is involved in the course of the two productivities is not only "levels" but also "variations". At some point, during the 1950s or 1960s, the margin of progress had been exhausted, and a new trajectory à la Marx was initiated, with a continuing rising cost of labor and a return, during period M2, to the traditional features of innovation after the exceptionally favorable phase T1.

T1 was the most dramatic historical relaxation of the limitations in-

5. Alexander J. Field interpreted the capital-saving innovation along similar lines as an effect of the rise of "managers" in the "modern business enterprise" (Field, 1987).

herent in the potential of technical change since the late 19th century in the United States. More research would be necessary to determine to what extent it was also typical of the profiles observed in other countries.

4.3 A revolution in management: Information and communication technologies (T2)

The complex of organizational and, finally, class determinants put forward in the previous section obviously rests on a set of more strictly technical developments concerning energy, primarily electricity, and all forms of mechanization. The overall transformation was the combined outcome of sequences of potentially heterogeneous such mechanisms.

The rise of information and communication technologies is often put forward as a new development contributing to the rise of technical and managerial efficiency. Its first forms are as old as the telegraph and telephone. These early developments were also part of the first traverse, but their expansion reached unprecedented degrees after World War II, with a peak during the 1990s in the context of the boom of new technologies (sometimes emphatically described as a "new economy"). The key components are now softwares and internet. The link with the specifically managerial aspect of the previous traverse is all the too obvious since information and communication are crucial management technologies.

Simultaneously, managerial social relationships reached new degrees, notably in the financial sector, nationally and internationally, with the acute concentration of income at the top of the hierarchy of wages in the United States (Duménil and Lévy, 2015). The central institutions during T1 were the large corporations already exporting capital in the world but still anchored nationally, whereas the new financial structures of ownership and management in contemporary managerial capitalism are the nucleus of transnational financial institutions controling the network of transnational corporations under managerial leadership (Duménil and Lévy, 2014b, Ch. 7).

Figure 5 shows the percentage of investment in information and communication technologies in the total investment in equipment and software in the U.S. economy since the 1910s. The rising share of this category of investment since World War II was spectacular. The percentage reached

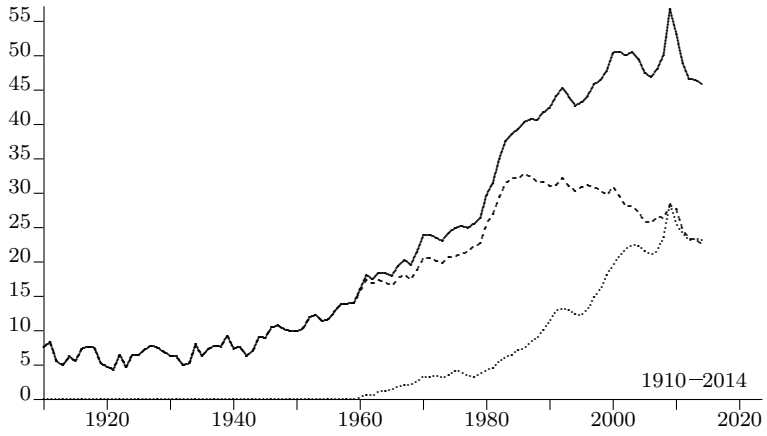

Figure 5 – The share of investment in information technologies in total investment in equipment and software (percent)

Information technologies are the sum of Information processing equipment (one component of equipment) and Software (one component of Intellectual property products). Information processing equipment can be broken down into Computers and peripheral equipment, Communication equipment, and Other.

50 percent in 2000, that is, at the end of the boom of the new technologies during the 1990s and, then, fluctuated around this value. Thus, investment in information and communication is as important as the sum of investment in Industrial equipment, Transportation equipment (Trucks, buses, autos, aircraft), Other equipment (Construction machinery, Mining and Oilfield machinery). It is also well known that the comparative price of such equipments diminished sharply hiding even faster growth rates in real terms. (An important difference is that the service life of information and communication equipment is comparatively short.)

Figure 5 illustrates the gradual introduction of the new technologies since World War II. It is not possible, however, to assess to what extent these trends contributed to the alleviation of the downward trend of capital productivity during M2 (assuming that this decline would have been steeper in the absence of the underlying new wave of innovation), but the ensuing benefits finally superceded what might have remained of the downward trend of capital productivity between 1986 and 2004, giving to

T2 its specific features.[6] A spectacular aspect of this second traverse was the sharp rise of Softwares.

4.4 Is the revolution of information and communication technologies over (M3)?

The plateau observed in Figure 5 after 2004 and the new decline of the productivity of capital as in Figure 1 suggest the entrance of U.S. capitalism into a new trajectory à la Marx, M3, even if no downward trend of the profit rate is apparent in Figure 2 as an effect of the rise of the share of profits compensating for the declining productivity of capital.

The issue is rather widely discussed in the United States in the context of the debate about secular stagnation. (The title of this section is borrowed from Byrne, Oliner, and Sichel 2013, where other references will be found.) Not coincidentally[7], the treatment by Robert Gordon of the historical pattern of technical change—the "One big wave" in the profile of labor productivity—is the closest to our own analysis. In his 2012 paper, Gordon describes the second industrial revolution ("electricity, internal combustion engine, running water, indoor toilets, communications, entertainment, chemicals, petroleum", quoted from the Abstract), and contends that this second revolution "was more important than the others and was largely responsible for 80 years of relatively rapid productivity growth between 1890 and 1972". To the contrary, the revolution of information and communication "created only a short-lived growth revival [of labor productivity] between 1996 and 2004". A shortened version of this analysis was published in 2015 as a "supply-side view", but there is now a broad "Keynesian" component to the debate about the prospects for growth of the U.S. economy in which Gordon himself denies the relevance of his own reference to technological developments (See Teuling and Baldwin, 2014).

Obviously, the entrance of U.S. capitalism into a new trajectory à la

6. The relationship with the so-called "Solow paradox" (1987) is obvious. Prior to the 1990s, the downward dynamics typical of M2 were dominant. This does not prove, however, that the rise of the technologies of communication and information had no underlying favorable impact. Only a few years after Solow's quip, computers (and softwares) did show up in the data.

7. In the footnote 9 of his 2000 paper, Gordon was fair enough to acknowledge: "My attention to the big wave was drawn by Duménil and Lévy 1990".

Marx would be a development of major historical importance and a strong motivation to further investigate trajectories à la Marx whose potential explanatory power is certainly not exhausted.

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