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Some Factors Affecting US Capital Profitability over the Last Decades

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Abstract: Over the last decades the progressive decline in long-term real interest rates has not been matched by a reduction in the rate of profits. This has been seen as a puzzling phenomenon that calls for an explanation and has also questioned what has been called the "monetary theory of distribution" (MTD) which, following Sraffa (1960, §44), stresses the monetary nature of the rate of interest and its effects on income distribution. The scope of this work is to advance some remarks on this phenomenon by referring to the case of the United States. We will start by taking a closer look at what actually happened to the US real interest rates and (observed) profit rates. We will then go on to discuss the relationships between money wages, interest rates and the profit rate in the Classical-Keynesian approach, focusing on the determinants of the profits of enterprise. Finally, we will analyse the changes in some of these determinants over the last decades, among which manager remunerations and monopoly power, as well as the way in which the fruits of technical progress are distributed in the present stage of capitalism.

Keywords: Monetary theory of distribution; normal profits of enterprise; capital profitability in the United States; patents and innovations

JEL Code: B51, E11, E25, E43

INTRODUCTION

Despite some empirical results on long-run Granger causality going from the interest rate to the rate of profits (Valle Baeza and Mendieta Muñoz, 2013; Gahn, 2022), over the last two decades there has been a progressive decline in long-term real interest rates that seems not to have been matched by a reduction in the rate of profits. The *observed* or realized capital profitability has in fact remained quite stable or even increased according to different estimations. This "decoupling," on average, between the interest

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rate and the profit rate is in contrast with their long-run positive relationship usually advanced in economic theory since Adam Smith (1776) and has been seen as a puzzling phenomenon that calls for an explanation. The "monetary theory of distribution" (MTD) has also been questioned which, following Sraffa (1960, §44), stresses the monetary nature of the rate of interest and an influence of the monetary policy on income distribution when wages are above the subsistence level (see, for example, Garegnani, 1979; Panico, 1988; Pivetti, 1991).

Within the surplus approach revived by Sraffa (1960), three main explanations of this phenomenon have been advanced maintaining the monetary nature of the rate of interest. The first conceives the rate of profits as determined by "real factors", that is, the technical conditions of production and the real wages as directly set in wage bargaining. Consequently, as in Marx, it is argued that of the two components of the rate of profits, namely, the interest rate (or the opportunity cost of capital) and the normal profits of enterprise, it is the latter that eventually adjusts to any change in the rate of profits (Stirati, 2013; Zolea, 2022), given the real rate of interest. In the specific case under consideration, the weakening of workers in wage bargaining over the last decades would have led to a rise in the profit rate, implying, for the concomitant fall in the interest rates, a rise in the profits of enterprise.

The other two interpretations suggest that monetary factors have influenced income distribution. One of them refers to the widening of the financial sector and an increase in the amount of services it provides. The consequent rise in the amount of profits in the financial sector would have concurred to increase the share of profits in national income and therefore the rate of profits of the economy as a whole (Panico et al., 2012). The other interpretation focuses on "autonomous" factors that increased the normal profits of enterprise and compensated the fall in the real interest rate that has occurred over the last decades. Specifically, Pivetti (2013 and 2019) refers to an increase in depreciation allowances over the last four decades, a huge increases in top-management remunerations, the increased weight of the financial sector that has raised the share of business profit in total value added, and finally, and most importantly, a general weakening of the incentives to invest throughout the economy due to the epoch-making policy shift away from full employment that took place at the end of the 1970s. According to Pivetti, this weakening is one and the same thing as an increase in the risk of productively employing capital. Due to these changes, profit margins soared notwithstanding a markedly decreasing trend in long-term interest rates and

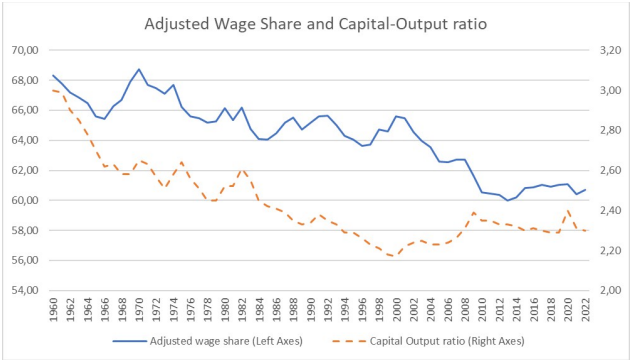
real wages stagnated in the face of rising outputs per hour.

The scope of this work is to advance some further remarks on the factors influencing the profits of enterprise referring to the United States in particular. We will start by taking a closer look at what actually happened to the US real interest rates and (observed) profit rates. We will then go on to discuss the relationships between money wages, interest rates and the profit rate in the Classical-Keynesian approach, focusing on the determinants of the profits of enterprise. Finally, we will analyse the changes in some of these determinants over the last decades, among which manager remunerations and monopoly power, as well as the way in which the fruits of technical progress are distributed in the present stage of capitalism. Comments on how these changes may help to explain the actual course of distribution in the United States will close the paper.

INTEREST RATES AND CAPITAL PROFITABILITY: SOME EMPIRICAL FACTS

Computed capital profitability gives us only a rough indication of the rate of profits expected on new investments. The profitability of a new plant cannot in fact be the same as that of a plant that is some years older and, for this reason, the general rate of profit is nothing more than a sort of average between the different profitability of these old and new plants (Shaikh, 2016, pp.65-68). Moreover, market prices can differ from normal prices due to (more or less) accidental or temporary circumstances whereas the degree of utilization of productive capacity can be different from its normal/expected value even for long periods of time (Ciccone, 1990). Therefore, there is no rational assuring that the actual rate of profit is equal to the normal rate of profits not only at any given point in time but also on average.

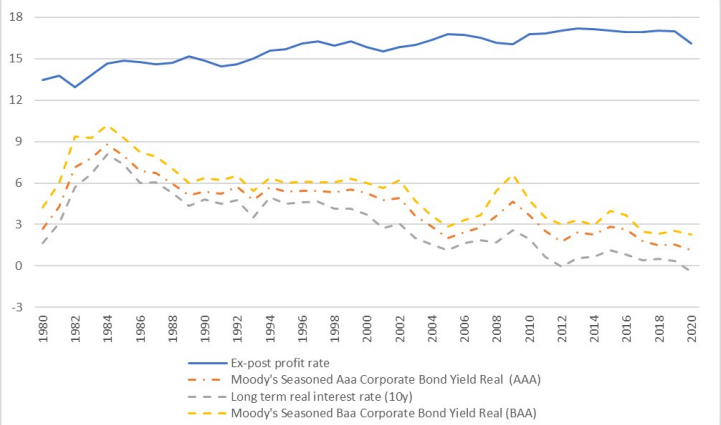
Figure 1: Adjusted wage share and capital-output ratio in US economy: 1960-2022



Source: AMECO database

Looking at the *actual* rate of profits computed as the ratio of the share of profits in value added and the actual capital-output ratio, a substantial change in income distribution has occurred over the last decades. According to the AMECO database, the adjusted wage share[1] has been declining since the mid 70s reaching a value of around 60% over the past few years (Figure 1). Specifically, a first downward shift in the wage share occurred after the mid 70s, and a second shift in the first decade of the 2000s. This fall in the wage share was accompanied by a fall in the capital output-ratio between 1980 and 2000 and a slight rise in the subsequent years.[2] Therefore, the ex post profit rate, net of depreciation, rose until 2006 and then remained approximately constant (Figure 2).[3] This rising trend of the rate of profit would have been even greater if we take into account the possible bias given by the strong increase in top managers' salaries over the last decades, a source of significant inequalities in the wage share (Piketty, 2013).[4] CEOs are in fact more similar to entrepreneurs since their income is dependent on the profit made by the firm during their supervision, especially in the presence of stock options (Glyn, 2011). Hence, their salaries should be considered as a component of the normal profits of enterprise as already suggested by Smith and Marx.

Figure 2: Net returns on net capital (ex-post profit rate) and long-term real interest rates on ten year government bonds, AAA corporate bonds and BAA corporate bonds



Source: AMECO and FRED database

This estimation of the profit rate can be compared to the trend of the *real* interest rate as shown in Figure 2. Clearly, many rates of interest can be used depending on the focus of the research.[5] In our case, we refer to a long-term risk-free rate that can be imagined as the overall opportunity

cost between employing capital productively or not. Taking it as represented by the rate of interest on ten-year Treasury bonds[6] adjusted with the GDP Deflator, its trend matched the movements in the ex-post profit rate until the end of the 1990s when a clear process of divergence started to take place and continued until the end of the period under consideration.[7] More precisely, after the sharp rise in the real interest rate during Volcker's era from 1.63 in 1980 to 8.1 in 1984, it remained on average at historically high real levels until the end of the 1990s, averaging 5.4 and 4.5 respectively in the years 1980-89 and 1990-99. It then fell to an average of 2.2 in the years 2000-2009 and 0.6 in the years 2010-20.

THE COMPONENT PARTS OF THE RATE OF PROFITS AND THE DETERMINANTS OF THE PROFITS OF ENTERPRISE

In the surplus approach, different interpretations can be advanced of the evolution of the functional income distribution exposed in the previous section, all of course entailing an increase in the profits of enterprise but through different channels and for different factors. For the sake of simplicity and in order to compare them,[8] let us assume that the *normal* profits of enterprise are the same in the various sectors and write the price system under conditions of free competition. Assuming that these normal profits of enterprise are a percentage of capital, we have:

$$\boldsymbol{Bp} = \boldsymbol{Ap}\,(1+r) + \boldsymbol{l}w$$
$$r = i + npe$$

where $\boldsymbol{p}$ is the column vector of normal prices, $\boldsymbol{B}$ is the diagonal matrix of gross outputs, $\boldsymbol{A}$ is the matrix of capital requirements, $\boldsymbol{l}$ is the vector of direct labour requirements, w is the nominal wage rate and r is the profit rate that consists of the rate of interest i and the normal profits of enterprise npe.

In both the classical economists and Marx, the rate of profits is determined by the methods of production [$\mathbf{A}$, $\mathbf{l}$] and the wage rate in terms of a numeraire. However, while in Smith and Ricardo the interest rate is a real magnitude that eventually adjusts itself to changes in the profit rate given the remuneration of the "risk and trouble" to employ capital productively, Marx, like J.S. Mill (1844, p. 305) and Tooke (1826, sec. 1), recognized the monetary nature of the rate of interest[9] and considered the rate of profits as only its maximum ceiling (Hein, 2006), except in certain cases.[10] Therefore, even on average, there is no reason, according to Marx, to assume a positive long-run relationship between the profit rate and the rate of interest, and the (normal) profits of enterprise are determined by the

"excess" left in the profit rate by the independently determined interest rate.[11] The main consequence of this view is that it leads to a possible conflictual relation between the industrial and financial sectors since the overall rate of profit is given. Various Marxian authors have addressed the evolution of income distribution or the process of financialization over the last decades in these terms (see, for example, Argitis and Pitelis 2001).

However, when the real wage rate is above the subsistence level, the suggestion left open by Sraffa in *Production of Commodities by Means of Commodities* can be followed by taking as a closure of the price system the rate of profits as influenced by the "level of the money rates of interest" (Sraffa, 1960, p. 33, §44),[12] with the (surplus) real wage rate that emerges as a residual. Specifically, in what has been called the "monetary theory of distribution", the rate of interest, seen as a monetary phenomenon, is considered an autonomous determinant of the normal monetary costs of production, together with the money wages and the technique of production (Pivetti, 1991). At the same time, the spread between the rate of interest, or the 'opportunity cost of capital',[13] and the rate of profit is given by the normal profits of enterprise, a permanent phenomenon, representing the remuneration of the "risk and trouble" of productively employing capital. The rate of profit is given, thus, as the sum of these two components and, given a (relatively) stable risk's remuneration, lasting changes in the interest rate cause changes in the same direction in the profit rate, with the *real* rate of interest being the magnitude on which the power of capitalists and workers is first resolved. The final result is a relevant change in the role played by the real interest rate that becomes the magnitude that regulates the ratio of the price level to money wages given the normal profits of enterprise, at least in a fiat money economy where workers contract their *nominal* wages (Levrero, 2013).[14] However, since this real interest rate is seen to be affected not only by the monetary policy determining the *nominal* rate of interest, but also (directly or indirectly) by the course of money wages as set in wage bargaining (Pivetti, 1991; Stirati, 2001; Levrero, 2023), it does not lead to any mechanical determination of income distribution that will eventually depend on the relative strength of the parties involved.

With regard to the normal profits of enterprise, they are seen to represent some "objective" elements, or elements commonly perceived as being so, that took place for long enough to be regarded as "normal". Therefore, the possibility of different rates of profits depending on different "risks and troubles" to invest capital in the various sectors arises, and these differences will not tend to disappear but rather remain stable in a certain period of

time as long as they are within the boundaries given by the capitalists' commonly perceived habitual values.

Overall, there are a wide variety of elements that can influence the normal profits of enterprise (see Pivetti, 1990, pp. 24-26; 1991, pp. 439-440; Panico 1988; Dvoskin and Feldman, 2021). As regards the "trouble" to use capital productively, Smith and Marx included manager's wages in the profits of capital even if "they never bear any regular proportion to the capital of which he oversees the management" (Smith, 1776, I, VI, pp. 54-55; Marx, 1867-94, III, ch. 32). Moreover, the rate of profits will be different according to the risk associated with productive investment. As stated by Smith "[i]n all the different employments of stocks, the ordinary rate of profit varies more or less with the certainty or uncertainty of the returns. These are in general less uncertain in the inland than in the foreign trade and in some branches of foreign trade than in others; in the trade to North America, for example, than in that to Jamaica. The ordinary rate of profit always rises more or less with the risk. It does not, however, seem to rise in proportion to it, or so as to compensate it completely. Bankruptcies are most frequent in the most hazardous trades" (Smith, 1776, I, X, p. 124). More generally, the risk element will be higher the lower the degree of liquidity of the productive investment and the higher the intensity of fluctuations in the raw materials and finished goods markets.[15] Moreover, it is influenced by conventions and habits, and over the last decades, by the process of "institutionalization of risk" that we observed in the main industrialized countries (Aquanno, 2021).

There are, however, also other elements that can affect the profits of enterprise. The monopoly "of a new machine granted […] to its inventor" (Smith, 1776, V, I, p. 278) or technical advantages stemming from "secrets in manufactures" (Smith, 1776, I, VII, p. 68) can ensure costs that are lower than the average or normal price[16] and therefore, for the same real wage and real interest rate, "extraordinary profits of stock". These can stem also from natural causes for which the monopolists are able to keep the market under-stocked by never fully supplying the effectual demand, as well as from other elements favoured by technical indivisibilities that fix a price ensuring "extraprofits"[17] at least to the price leader firms (see Burns, 1936; Andrews, 1949; Bain, 1956). Of course, these oligopolistic elements are fluid over time (Dumenil and Levy, 1993; Glick and Ehibor, 1990; Mueller, 1986) because they are constantly destroyed and recreated by the active force of competition[18] that stimulates substitutes for inputs and outputs, the finding of new methods of production and changes in the conditions and

structures of the markets (Crotty, 1993), while at the same time favouring, during the process of capital accumulation, the concentration (unit size) and centralization (its cohesion) of capital (Hilferding, 1910; Brancaccio et al., 2015; Foster, 2018). It is an active force that also operates with modern corporations through the mobility of capital across geographical areas and industries and through their competitive strategies (advertising, internal flow of funds towards more profitable activities, R&D and staff expenditures to find new products) (see Baran and Sweezy, 1960; Clifton 1977). However, some kind of "monopoly power" can persist that, without impairing the passing on prices of changes in money wages and interest costs,[19] ensure higher profits in various industries at the expense not only of other capitals, but also of other social groups through a price to money wage ratio that will be higher than the one that could be achieved under conditions of free competition (Okishio 1955; Nikaido 1975; D'Agata 1988; Pivetti, 1991).[20]

In this context the mechanism through which the fruits of technical progress are distributed between wages and profits can also change. Patent legislation can drastically delay the diffusion of new methods of production. Moreover, even when a new method becomes the one usually adopted, it may not lead to lower prices when taking the rate of interest as given as usually understood under the pressure of competition.[21] A rise in the real wage will occur only through an increase in money wages and will not materialise if workers are weakened in wage bargaining entailing an increase in the profits of enterprise and a fall in the wage share.[22]

PATENTS AND MONOPOLY POWER OVER THE LAST DECADES

We can now come back to the "decoupling" between the interest rate and the actual rate of profits that we have observed over the last two decades. Some changes in the above-mentioned elements affecting the profits of enterprise can be relevant in this regard, while others were already in action before the 2000s.

As regards managers' wages, labour compensation of the top-one per cent of wage distribution accounted for 60 per cent of the growth of market-based income over the period 1979 to 2007 (38% of post-tax income) (Bivens and Mishel, 2013). However, most of the increase in managers' pay compared with that of non-supervisory workers occurred between the mid 1980s and the beginning of the 2000s (Mishel and Davis, 2014). Moreover, as said before, if we include managers' wages in the profits of enterprise, the fall in the wage share would have been even stronger and therefore the

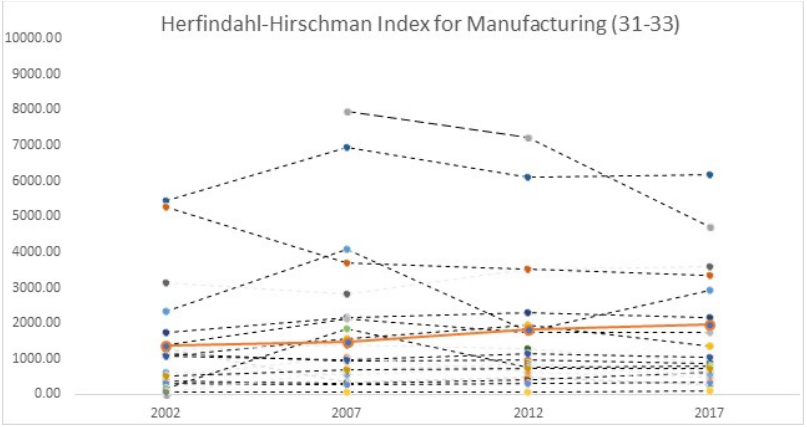
decoupling between the interest rate and the rate of profit even higher than the one showed in the previous sections.

Something similar can be said about the effect of privatization and liberalization in the sectors of public utilities (electricity, telecommunications, other public utility services), airlines and natural resources. The process of deregulation in these sectors started in the United States before 2000 (Winston, 1998) and its effects on prices were to a great extent different from other countries where the emergence of a profit component in the prices of these commodities often impaired their fall and favoured a rise in the profit share in national income (Levrero and Stirati, 2005).

There are, however, some factors affecting the profits of enterprise whose changes after 2000 may help to explain the decoupling between the interest rate and the rate of profits. First, we observe an increase in the volatility of "transitory income" and in insurance expenses through the credit market (Krueger and Perri, 2006; Van Treeck, 2014). Moreover, the strong increase in the debt-income ratio of the private sector after the collapse of the dot economy bubble at the end of the 1990s increased financial fragility and the probability of a crisis (Bibow, 2010). According to Farhi and Gourio (2018), rising risk premia can account for half of the increase in the rate of return on private capital relative to the risk-free interest rate.

Second, as stressed in several works (Barkai, 2020; Gutiérrez and Philippon, 2017; Autor et al., 2020; de Loecker et al., 2020; Akcigit and Ates, 2021), since the 1980s with a surge after 2000, the US economy has been characterized by increasing "monopoly powers" (Foster et al., 2011) and higher mark-ups in the industries where the process of capital and patent concentration has been higher and antitrust enforcement lower.[23] In *Figure 3*, the evolution of the Herfindahl-Hirschman Index (HHI) for all the three digit NAICS classifications in the Manufacturing Sector is shown in dotted lines. Even though taken in single subsectors, the trend can appear unclear, when the evolution of the average HHI, weighted by the subsector total value added, for all Manufacturing is computed, a clear increasing trend towards higher concentration appears in the last 20 years.[24]

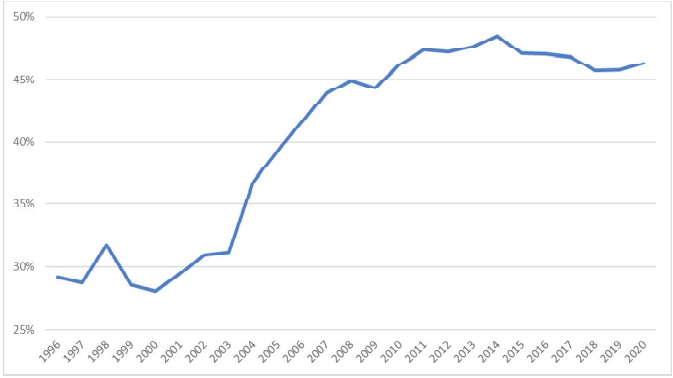
Figure 3: Herfindahl-Hirschman index for the 50 largest companies for Manufacturing (NAICS 31-33) at three digit level (dotted lines) and sectoral average (solid line) in USA, five-year data from 2002 to 2017.



Source: United States Census Bureau Table (2021).

A clear tendency towards capital concentration also occurred in the banking sector. In this regard, the increase in the percentage of assets held over total commercial banking assets by the five largest banks in the United States since the beginning of the 2000s (Figure 5) is astonishing - an increase that slowed down but not stopped during the global crisis. With regard to the banking system, this increase in concentration is the result of a strong process of deregulation that started in the 1980s and, rather than being driven by efficiency reasons, had the outcome of a consequent increase in profitability based on unsound and risky behaviour (Tregenna, 2009). The most visible result of this long process of increase in concentration are the so-called Megabanks (too-big-to-fail and too-complex-to-manage) that became an endogenous centre of financial instability given their speculative innovation process (Cerpa Vielma et al., 2019).

Figure 4: 5-Bank Asset Concentration for the United States [DDOI06USA156NWDB], 1996-2020.



Source: FRED (2022), Federal Reserve Bank of St. Louis.

The process of capital centralization and monopolization evolved together with the advent of globalization and free capital mobility. As stated by Harvey (2003, pp. 97-98), in this scenario capitalists had to find new ways to preserve their monopoly powers. The solution was to increase financial power through corporate control and protect technological advantages through intellectual property rights.

Despite the common belief that there is a movement towards "democratization" of finance, over 90 percent of representative U.S. public firms have a "blockholder" (Holderness. 2009) and in the U.S. they own more common stocks compared with average blockholders in other countries. Understanding who are the shareholders and the power they possess is essential to shedding some light on the relationships between the industrial and financial sectors and their reciprocal influence (Zeitlin, 1974). Since the 1970s, a process of re-concentration took place where the majority of shareholders shifted from being households to pension funds and asset management companies, with consolidation in the latter of these entities since the 2000s (Braun, 2020). A clear example is the rise in the percentage of the average SandP 500 firm owned by the "Big Three" (BlackRock, Vanguard, State Street) which reached 21% in 2017 (Backus et al., 2021).[25]

The second path used in the last decades to maintain or achieve a dominant position is the increasing use of intellectual property rights and intangible assets.[26] While knowledge is a non-rival good, meaning that the same idea can be used multiple times by different people without crowding out its value, the legal framework and tacit agreements of secrecy transform it in an "excludable" good (Pagano, 2014). The result is that when this exclusivity is made effective, a special form of asset arises.

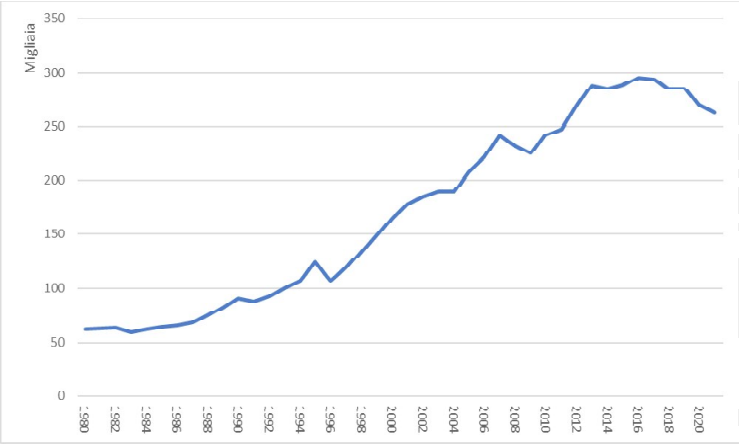
A process to enforce stronger legislation ensuring excludability has been implemented since the 1980s. Among the various steps in the U.S., the 1980 Bayh-Dole Act plays an important role in allowing the outcome of publicly funded research to be "privately" patented, as in the case of the outcomes of Universities (Dosi et al., 2023), while on a global scale, the 1994 Marrakesh Agreements, the creation of the WTO and the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreements lay down the foundations for "intellectual monopoly capitalism" (Pagano, 2014, p. 1418). This represents a capitalist mode of accumulation where legislation from the government assures the maintenance of monopolistic power through the protection of intangible assets with the related advantages of scale economies and monopolistic rents (Durand and Milberg, 2019).

It could be argued that the legislative protection related to intellectual property rights, for example in the case of patents, only gives a temporary advantage to the patenting firm where this temporarity depends on the speed with which the innovation is absorbed on the market or overcome by a new one. However, as exposed in Rikap (2021, pp.8-9), this is mostly not the case since the laggard innovator is not destroyed by the process of innovation, but rather subordinated by the first comer, with a continuous reinforcement of knowledge monopoly with the perpetuation of rentiership with time. What happens is that the dominant position, once achieved, is strengthened through scale economy and the use of the same monopolistic power achieved. This is even more so with the systematic monetization process of data and knowledge effected by GAFAM (Google, Apple, Facebook, Amazon, Microsoft) or in the case of self-innovating algorithms of data-driven technologies (Rikap, 2021, Ch. 7-8). Intellectual monopoly capitalism is also deeply integrated with global value chains and the regulatory framework can be seen as a way of keeping monopolistic power by the corporations of the "developed" countries to avoid the risk of globalization, which is confirmed by the uneven distribution of intangible assets between the "north" and the "south" of the world (Durand and Milberg, 2019).

On empirical grounds, Auvray et al. (2021), placing a threshold in 2000, found that there is a shift toward intellectual-driven monopolization. Focusing on the U.S., using patent applications from the World Bank (2022) database as a proxy for the presence of intellectual property (being aware of all the limitations of the case), Figure 5 shows how these have astonishingly increased since the end of the 1990s onwards. In some cases, for example, for the country's drug companies (Dosi et al., 2023), the increasing presence in patent activities rather than being the result of increasing innovative

behaviour of the pharmaceutical industry is contemporaneous to a decrease in R&D in private firms and an increase in public funding in riskier activities. Moreover, patenting activity seems to be a firm strategy to secure profits rather than the result of R&D efforts (Dosi et al., 2023, p. 29).

Figure 5: Patent application in the U.S. for resident firms, 1980-2021 [IP.PAT.RESD].



Source: World Bank (2022), World Development Indicators

CONCLUSIONS

Summing up, a significant increase in the presence of monopoly powers in the U.S. economy over the last decades can be seen. It has been reinforced through the process of centralization of corporate control in the hands of a few powerful financial asset managers and the intrinsic power incorporated in intangible assets. One aspect of this process is the increasing use of patents that have also affected the *normal* profits of enterprise as a reward of the greater risk associated with developing and applying new knowledge (Pivetti, 1991, p. 32). More generally, together with other factors, the increase in monopoly powers has contributed to weakening workers' strength in wage bargaining and distributing the fruits of technical progress to a greater extent to profits rather than wages, also thanks to a relatively higher downward price rigidity.

However, there are some elements that should be further investigated in order to provide an interpretation of the "decoupling" between the riskless long-term interest rate and the profit rate over the last decades. The "Greenspan's era" of low interest rates, while reinforcing the idea of the rate of interest as a monetary phenomenon, fuelled at the same time the rise in stock and house prices favouring speculation, the development of

new financial instruments and indebtedness of households and the private sector (Panico et al., 2012). In the same vein, the quantitative easing after the 2007 crisis avoided the collapse of the credit system and sustained equity market values. In this context of Central Banks pursuing near-to-zero nominal interest rates for riskless financial investments and increasing stock prices (and capital gains), the relationship between the interest rate fixed by the monetary authorities and the rate of profits may pass through mechanisms that are different from those considered so far in the monetary theory of distribution. Pivetti himself seems to recognize this possibility when noting that in these circumstances the opportunity cost of capital may (at least temporarily) be provided by the equity ratio (Pivetti, 2019).

Notes

1 This is calculated by imputing to the self-employed a labour income equal to that of an employee. In this way, changes in the composition of employment between the two types of work (employed/self-employed) will not affect the wage share. See Levrero and Stirati (2005).

2 Using AMECO data, we refer to the net capital stock per unit of GDP at constant market prices. Computation of the capital-output ratio based on the Dumenil and Levy database with the domestic product net of depreciation provides a similar trend.

3 A more stable trend is shown by Shaikh (2011) and Dumenil and Levy (2016). On their estimates, see Appendix 1.

4 See also Piketty and Saez (2007). On the contrary, the real hourly wages of the non-supervisory workers in the US private sector have not changed significantly from the 1980s to 2010 (Stirati, 2013) and have slightly increased in the last decade, but less than productivity per hour worked.

5 As shown by Constantini (2020), the rate of interest on several typologies of loans fell less than the federal fund rate and the 10-year Treasury bonds rate in the United States over the last two decades.

6 As stressed by Pivetti (2019), in the presence of very low or zero risk-less real interest rates, the private ownership of wealth, as distinct from ownership of productive capital, ceases to yield an income independently of the forms of its employment and the normal rate of profit could fall at a level that impairs capital accumulation unless other component parts of the profit rate increase. If for a time the low risk-less interest rate can be compensated by speculation and capital gains, and persistently higher stock prices/earnings ratios become the new opportunity cost of capital, speculative financial investment is normally risky and cannot permanently substitute investment in long-term risk-less fixed interest securities without a collapse of the credit system and a persistent tendency to hoard money.

7 As shown again in Figure 2, the divergence is lower when corporate bond

yields from Moody's classification are considered because, after the high-tech bubble burst at the end of the 1990s, the spread between the long-term interest rates on ten-year government bonds and those on corporate bonds tended to increase. See also Caballero, Fahri and Gourinchas (2017) who stressed the increase in the equity risk premium relatively to a safe asset since 2000.

8 Introducing a diagonal matrix $\boldsymbol{P}$ with elements along the main diagonal given by $(1+\rho_i)$ with $\rho_i = i + np_i$ could be in contrast with Marx's suggestion that the general rate of profits is determined by real factors but the rate of interest is a monetary phenomenon so that the "normal" profits of enterprise are a residual determined by the other two variables. While at times Marx seems to recognize that there is a different risk element in the various sectors, he did not discuss its compatibility with his assumption of a uniform rate of profits.

9 For this reason, Marx rejected in opposition to Ricardo the idea of a natural rate of interest (Marx, 1867-94, III, p. 350). According to Marx, the average rate of interest over several cycles (Marx, 1867-94, III, p. 355) can be affected by the rate of profits but is not strictly regulated by it (Marx 1867-94, III, p. 354). Autonomous elements affecting the rate of interest are due to a class of rentiers, growth of the credit system, competition between borrowers and lenders, custom and juristic traditions (Marx, 1867-94, III, pp. 354-5), and the fact that loans are not made only for productive uses.

10 We exclude pre-capitalistic economies and usurious rates.

11 Marx (1867-94, III, Ch. 23) called them Unternehmergewinn, a German term referring to the part of profits that, unlike the interest devoted to money capital, acts as remuneration of the functional capital.

12 In his unpublished manuscripts, Sraffa specified that the suggestion of the rate of profits as determined by a "controlled or conventional" rate of interest does not entail that it is determined by "ineluctabile external circumstances." He also specified that competition will ensure an influence of the rate of interest on income distribution even when investments are funded with own funds (see D3/12/111: 155).

13 For other models that introduce the bank sector to analyse the influence of monetary factors on income distribution see Panico (1988), Ciccarone (1998) and Dvoskin and Feldman (2021). For some critical remarks on these models due to their differentiation of financial costs into the price system, see Zolea (2023). It is worth noting that already in Smith, Ricardo and Marx, there are references to the structure of interest rates, (Smith, 1776, I, pp. 100, 102), the role of the Central Bank in the financial system and in funding the Treasury (Smith, 1776, II, pp. 332 and 340), and the risk-less interest rate as the opportunity cost of capital. So, according to Smith, "[i]n order to put the trade of a builder upon a level with other trades, it is necessary that this rent should be sufficient, first, to pay him the same interest which he would have got for his capital if he had lent it upon good security; and secondly, to keep the

house in constant repair, or, what come to the same thing, to replace, within a certain term of years, the capital which had been employed in building it" (Smith, 1776, V, II, p. 366. I. See also Marx, 1867-94, III, pp. 253-5). Smith also specifies that "the money which is borrowed, and which it is meant should not be repaid till after a period of several years, ought not to be borrowed of a bank, but ought to be borrowed upon bond or mortgage, of such private people as propose to live upon the interest of their money, without taking the trouble themselves to employ the capital; and who are upon that account willing to lend that capital to such people of good credit as are likely to keep it for several years" (Smith, 1776, II, 2, p. 327). This interest rate, like that to be paid to the bank system, will be higher than the interest rate on government bonds and includes an element of risk that "appropriates" a share of the normal profit of enterprise of the industrial sector. On the risk premium for firm bonds and shares, see also Steindl (1976, pp. 177 and 220).

14 For the case in which there is a money commodity, see Serrano (1993) and M. Smith (1996).

15 See also Marshall (1920, pp. 332 and 488) on the "gross interest" and competition equalizing the "net interest".

16 Given a technique that regulates the entry and exit from industry, those who possess superior techniques will earn extraprofits while others quasi rents from their plants. The superior technique will eventually become the dominant one under the pressure of competition.

17 The fixed price will avoid potential entrants (or further entry in the market) and in any industry there will always be pressure of competition. The size of the market and plant can influence the decision to start a war price, and for given effectual demands, the prevailing market form may depend on the rate of profit and the corresponding cost-minimizing technique which may happen to be known by a sole producer (Parrinello, 1983).

18 On free competition in the classical theory and its difference with perfect competition, see Eatwell (1982), Meek (1967) and McNulty (1967).

19 This is also shown by the Gibson paradox, see Cucciniello, Deleidi and Levrero (2022). Of course, international competition may influence the passing on prices of cost changes for the fear of losing market shares. It will put pressure (directly or indirectly) on keeping the course of money wages under control.

20 In this case, there may also be an effect on the level of the real wage rather than only on the wage share in national income as in the case of "secrets in manufacturing". It is worth noting that this does not mean that, for given techniques, the rate of profits is determined only by the conditions of competition which would imply zero profits in the case of free competition. For a criticism of this view, see Pivetti (1991) and Steedman (1992). It is also worth noting that outside free competition, there is a lower degree of generality of the analysis (Sweezy, 1942; Eatwell, 1982; Baumol et al., 1982) and sectoral mark-ups can also be influenced by the size of the markets (Sylos Labini,

1962).

21 See J. Robinson (1956) and Sylos Labini (1962) on the effects on prices of technical progress in oligopolistic markets.

22 In the case of a continuous increase in labour productivity, considering that $(1+r)=\frac{(1+i)(1+npe)}{(1+w)/(1+j)}$ where r is the rate of profits, i and npe are respectively the nominal rate of interest and the profits of enterprise, w is the growth rate of money wages and j is the growth rate of labour of productivity, taken as given w, i and npe, an increase in labour productivity at the rate j would lead to a rise in both the profit rate and the real wages due to a lower increase in prices than when $j = 0$. The increase in the real wage would not occur only if the nominal profits of enterprise grew at the same rate j of labour productivity. We thank Prof. Serrano for this suggestion.

23 The effect on the rate of profits of monopolistic elements were already noted by Mueller (1986, p. 222) when analysing "the speed with which the normal competitive process brings profit rates back to competitive levels, and the causes of any persistent deviations from normality". Through two different econometric models, one based on industries and one on firms, the author finds that the differentials in profits are determined by various factors such as industry identity (three-digit industry breakdown), industrial concentration, advertising, and patent intensity. The topic is also addressed in mainstream theoretical ground, for example with ad hoc DSGE models. See, for example, Eggertsson et al. (2021).

24 The time span analysed covers only the last 20 years because unfortunately the United States Census Bureau Tables (2021) used are not compatible with the previous ones given the changes in classification. However, other studies, previously mentioned, show similar results also in a larger time spam.

25 On the process of concentration and centralisation of capital, see also Brancaccio et al. (2018).

26 Following the definition in the WTO (2022) website, "Intellectual property rights are the rights given to persons over the creations of their minds. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time". More broadly, according to the OECD (2011, p.1), intangible assets are "computerized information (such as software and databases), innovative property (such as scientific and non-scientific R&D, copyrights, designs, trademarks) and economic competencies (including brand equity, firm-specific human capital, networks joining people and institutions, organizational know-how that increases enterprise efficiency, and aspects of advertising and marketing)."

References

Akcigit, U., and Ates, S. T. (2021) 'Ten Facts on Declining Business Dynamism and

Lessons from Endogenous Growth Theory', *American Economic Journal: Macroeconomics* 13 (1), pp. 257-298.

Andrews, P. W. S. (1949) *Manufacturing Business*, London: Macmillan

Aquanno, S.M. (2021) *The Crisis of Risk. Subprime Debt and US Financial Power from 1944 to Present*, Cheltenham: Edward Elgar.

Argitis, G., and Pitelis, C. (2001) 'Monetary Policy and the Distribution of Income: Evidence for the United States and the United Kingdom', *Journal of Post Keynesian Economics* 23 (4), pp. 617–638.

Autor, D., Dorn, D., Katz, L. F., Patterson, C., and Van Reenen, J. (2020) 'The Fall of the Labor Share and the Rise of Superstar firms', *The Quarterly Journal of Economics* 135 (2), pp. 645-709.

Auvray, T., Durand, C., Rabinovich, J., and Rikap, C. (2021) 'Corporate Financialization's Conservation and Transformation: From Mark I to Mark II', *Review of Evolutionary Political Economy* 2 (3), pp. 431–457.

Backus, M., Conlon, C., and Sinkinson, M. (2021) 'Common Ownership in America: 1980–2017', *American Economic Journal: Microeconomics* 13 (3), pp. 273–308.

Bain, J. (1956) *Barriers to New Competition*. Boston: Harvard University Press.

Baran, P.A. and Sweezy, P.M. (1956) *Monopoly Capital*, New York: Monthly Review Press.

Barkai, S. (2020) 'Declining Labor and Capital Shares', *The Journal of Finance* 75(5), pp. 2421-2463.

Baumol, W.J., Panzar J.C. and Willig R.D. (1982) *Contestable Markets and the Theory of Industrial Structure*, New York: Harcourt Brace Jovanovich Inc.

Bibow, J. (2010) 'Financialization of the US Household Sector: The 'Subprime Mortgage Crisis' in US and Global Perspective', *IMK Study n. 3*.

Bivens, J., and Mishel, L. (2013) 'The Pay of Corporate Executives and Financial Professionals as Evidence of Rents in Top 1 Percent Incomes', *Journal of Economic Perspectives* 27 (3), pp. 57-78.

Brancaccio, E., Costantini, O., and Lucarelli, S. (2015) 'Crisi e centralizzazione del capitale finanziario', *Moneta e Credito* 68 (269), pp. 53–79.

Brancaccio, E., Giammetti, R., Lopreite, M., and Puliga, M. (2018) 'Centralization of capital and financial crisis: A global network analysis of corporate control', *Structural Change and Economic Dynamics* 45, pp. 94–104.

Braun, B. (2020) 'American Asset Manager Capitalism', *SocArxiv Papers* Available at: Https://Osf. Io/Preprints/Socarxiv/V6gue.

Burns, A. R. (1936) *The Decline of Competition*, New York: McGraw Hill Co.

Caballero, R. J., Farhi, E., and Gourinchas, P. O. (2017) 'Rents, Technical Change, and Risk Premia Accounting for Secular Trends in Interest Rates, Returns on Capital, Earning Yields, and Factor Shares', *American Economic Review* 107 (5), pp. 614-620.

Cerpa Vielma, N., Cömert, H., D'Avino, C., Dymski, G., Kaltenbrunner, A., Petratou, E., and Shabani, M. (2019) 'Too Big to Manage: US Megabanks' Competition by Innovation and the Microfoundations of Financialization', *Cambridge Journal of Economics* 43 (4), pp. 1103–1121.

Ciccarone, G. (1998) 'Prices and Distribution in a Sraffian Credit Economy', *Review of Political Economy* 10 (4), pp. 399–413.

Ciccone, R. (1990) 'Accumulation and Capacity Utilization: Some Critical Considerations on Joan Robinson's Theory of Distribution', in Bharadwaj, K. and Schefold, B. (eds.), *Essays on Piero Sraffa - Critical Perspectives on the Revival of Classical Theory*, London: Unwin Hyman.

Clifton, J.A. (1977) 'Competition and Evolution of Capitalist Modes of Production', *Cambridge Journal of Economics* 1, pp. 137-51.

Costantini, O. (2020) 'Household Debt and the Rentier Share of Income', in Bougrine, H. and Rochon, L. P. (eds.), *Economic Growth and Macroeconomic Stabilization Policies in Post-Keynesian Economics*, Cheltenham: Edward Elgar

Crotty, J. (1993) 'Rethinking Marxian Investment Theory: Keynes-Minsky Instability, Competitive Regime Shifts and Coerced Investment', *Review of Radical Political Economics* 25 (1), pp. 1-26.

Cucciniello, M. C., Deleidi, M., and Levrero, E. S. (2022) 'The Cost Channel of Monetary Policy: The Case of the United States in the Period 1959–2018', *Structural Change and Economic Dynamics* 61, pp. 409-433.

D'Agata, A. (1988) 'Minimun Plant Size and Oligopolistic Markets in a Classical Multisectoral Model', *Australian Economic Papers* 27, pp. 298-312.

De Loecker, J., Eeckhout, J., and Unger, G. (2020) 'The rise of Market Power and the Macroeconomic Implications', *The Quarterly Journal of Economics* 135 (2), pp. 561–644.

Dosi, G., Marengo, L., Staccioli, J., and Virgillito, M. E. (2023) 'Big Pharma and Monopoly Capitalism: a Long-term View', *Structural Change and Economic Dynamics* 65, pp. 15-35.

Dumenil, G. and Levy, D. (1993) *The Economics of the Profit Rate: Competition, Crises and Historical Tendencies in Capitalism*, Aldershot: Edward Elgar.

Duménil, G., and Lévy, D. (2002b) 'The Profit rate: Where and How Much Did it Fall? Did it recover? (USA 1948-2000)' *Review of Radical Political Economics* 34 (4), pp. 437–461.

Duménil, G., and Lévy, D. (2016) 'The Historical Trends of Technology and Distribution in the US economy since 1869. Data and Figures', *Centre Pour la Reserche Économique et Ses Applications (CEPREMAP) Document*.

Duménil, G., and Lévy, D. (2002a) 'The Field of Capital Mobility and the Gravitation of Profit Rates (USA 1948-2000)' *Review of Radical Political Economics* 34 (4), pp. 417–436.

Durand, C., and Milberg, W. (2019) 'Intellectual Monopoly in Global Value Chains',

Review of International Political Economy 27 (2), pp. 404–429.

Dvoskin, A., and Feldman, G. D. (2021) 'On the Role of Finance in the Sraffian System', *Review of Political Economy* 33 (2), pp. 261–277.

Eatwell, J. (1982) 'Competition', in Bradley I. and Howard M. (eds), *Classical and Marxian Political Economy*, London and Basingstoke: The MacMillan Ltd Press.

Eggertsson, G. B., Robbins, J. A., and Wold, E. G. (2021) 'Kaldor and Piketty's Facts: The Rise of Monopoly Power in the United States', *Journal of Monetary Economics* 124, pp. S19–S38.

Farhi, E. and Gourio, F. (2018) 'Accounting for Macro-Finance Trends: Market Power, Intangibles, and Risk Premia', *Brookings Papers on Economic Activity* (Fall).

Foster, J. B. (2018) 'What Is Monopoly Capital?' *Monthly Review* 69 (8), pp. 56–62.

Foster, J. B., McChesney, R. W., and Jonna, R. J. (2011) 'Monopoly and Competition in Twenty-First Century Capitalism', *Monthly Review* 62 (11), pp. 1–39.

Gahn, S. J. (2022) 'Interest and Profit: An Empirical Assessment of the Monetary Theory of Distribution for the Euro Area', *Review of Political Economy*, pp. 1–17.

Garegnani, P. (1979) 'Notes on consumption, investment and effective demand: a Reply to Joan Robinson', *Cambridge Journal of Economics* 3 (2), pp. 181-187

Glick, M. and Ehrbar, H. (1990) 'Long-run Equilibrium in the Empirical Study of Monopoly and Competition', *Economic Inquiry* 28 (1), pp. 151-162.

Glyn, A. (2011) 'Functional Distribution and Inequality' in Nolan, B., Salverda, W. and Smeeding, T. M. (eds.) *The Oxford Handbook of Economic Inequality*, Oxfrod: Oxford University Press.

Gutiérrez, G., and Philippon, T. (2017) 'Declining Competition and Investment in the US', *National Bureau of Economic Research*.

Harvey, D. (2003) *The New Imperialism*, Oxford: Oxford University Press.

Hein, E. (2006) 'Money, Interest and Capital Accumulation in Karl Marx's Economics: A Monetary Interpretation and Some Similarities to post-Keynesian Approaches', *The European Journal of the History of Economic Thought* 13 (1), pp. 113–140.

Hilferding, R. ([1910], 2011) *Il capitale finanziario*, Sesto San Giovanni: Mimesis Edizioni.

Holderness, C. G. (2009) 'The Myth of Diffuse Ownership in the United States', *Review of Financial Studies* 22 (4), pp. 1377–1408.

Krueger, D., and Perri, F. (2006) 'Does Income Inequality Lead to Consumption Inequality? Evidence and theory', *The Review of Economic Studies* 73 (1), pp. 163-193.

Levrero, E. S. (2013) 'Marx's Theory of Wages and the Revival of the Surplus Approach', in Stirati, A., Levrero, E. S. and Palumbo, A. (eds.), *Sraffa and the*

Reconstruction of Economic Theory: Volume One, Houndmills: Palgrave Macmillan.

Levrero, E. S. (2023) 'The Taylor Rule and its Aftermath: An Interpretation along Classical-Keynesian Lines', *Review of Political Economy*, pp. 1-19.

Levrero, E. S., and Stirati, A. (2005) 'Distribuzione del reddito e prezzi relativi in Italia 1970-2002', *Politica economica* 21 (3), pp. 401-434.

Marshall, A. ([1920] 1959) *Principles of Economics*, Eight Edition, London: Macmillan and Co Ltd.

Marx, K. ([1867"94] 1961-63) *Capital: A Critique of Political Economy*, Volumes I"III, Moscow: Foreign Languages Publishing House.

McNulty, P.J. (1967) 'A Note on the History of Perfect Competition', *Journal of Political Economy* 4 (1), pp. 395-399.

Meek, R. L. (1967), *Economics and Ideology and Other Essays*, Chapman and Hall: London

Mill J. S. ([1844] 1967), Essays on Some Unsettled Questions of Political Economy, in The Collected Works of John Stuart Mill - Essays on Economics and Society Part I, vol. IV, pp. 229-340, Toronto: University of Toronto Press - Routledge & Kegan Paul; edizione originale Londra: Parker

Mishel, L., and Davis, A. (2014) 'CEO Pay Continues to Rise as Typical workers are Paid Less', *Issue Brief* 380.

Mueller, D. C. (1986) *Profits in the Long Run*, Cambridge: Cambridge University Press.

Nikaido, H. (1975) *Monopolistic Competition and Effective Demand*, Princeton: Princeton University Press.

OECD (2011) *New Sources of Growth: Intangible Assets*, OECD Publishing.

Okishio, N. (1955) 'Monopoly and the Rates of Profit', *Kobe University Economic Review* 1, pp. 71-88.

Pagano, U. (2014) 'The Crisis of Intellectual Monopoly Capitalism', *Cambridge Journal of Economics* 38 (6), pp. 1409–1429.

Panico, C. (1988) *Interest and Profit in the Theories of Value and Distribution*, Houndmills and London: the Macmillan Press LDT.

Panico, C., Pinto, A., and Puchet, M. A. (2012) 'Income Distribution and the Size of the Financial Sector: A Sraffian Analysis', *Cambridge Journal of Economics* 36 (6), pp. 1455–1477.

Parrinello. S. (1983) 'Exhaustible Natural Resources and the Classical Method of Long-Period Equilibrium', in Kregel, J. (ed), *Distribution, Effective Demand and International Economic Relations*, London: Macmillan.

Piketty, T. (2013) *Capital in the 21st Century*, Cambridge, MA: Harvard University Press.

Piketty, T., and Saez, E. (2007) 'Income and Wage Inequality in the United States, 1913-2002' in Atkinson, A. B. and Piketty, T. (eds.) *Top Incomes over the*

Twentieth Century: A Contrast Between Continental European and English-Speaking Countries, Oxford: Oxford University Press.

Pivetti, M. (1990) 'On the Monetary Explanation of Distribution', in Bharadwaj, K. and Schefold, B. (eds.), *Essays on Piero Sraffa - Critical Perspectives on the Revival of Classical Theory*: Routledge.

Pivetti, M. (1991) *An Essay on Money and Distribution*, Houndmills and London: Macmillan Academic and Professional LTD.

Pivetti, M. (2013) 'On Advanced Capitalism and the Determinants of the Change in Income Distribution: A Classical Interpretation' in Levrero, E.S., Stirati, A. and Palumbo, A. (eds.), *Sraffa and the Reconstruction of Economic Theory: Volume One*, Houndmills: Palgrave Macmillan.

Pivetti, M. (2019) 'On Interest as a Monetary Phenomenon and the 'Best' Interest-rate Policy', *Bulletin of Political Economy* 13 (2), pp. 167-187.

Rikap, C. (2021) *Capitalism, Power and Innovation: Intellectual Monopoly Capitalism Uncovered*, London and New York: Routledge.

Robinson, J. (1956) *The Accumulation of Capital*, Houndmills: Palgrave Macmillan.

Serrano, F. (1993), Review of M. Pivetti's Essay on Money and Distribution, *Contributions to Political Economy*, 12, pp. 117-123

Shaikh, A. (2011) 'The First Great Depression of the 21st Century', *Socialist Register* 47 (Fall), pp. 44-63.

Shaikh, A. (2016) *Capitalism: Competition, Conflict, crises*, New York: Oxford University Press.

Smith A. (1776, 1976) *An Inquiry into the Nature and Causes of the Wealth of Nations*, edited by E. Cannan, Chicago: The University of Chicago Press.

Smith, M. (1996) 'A Monetary Explanation of Distribution in a 'Gold Money Economy'', *Contributions to Political Economy* 15 (1), pp. 33-61.

Sraffa, P. (1960) *Production of Commodities by Means of Commodities. Prelude to a Critique of Economic Theory*, Cambridge: Cambridge University Press.

Steedman, I. (1992) 'Questions for Kaleckians', *Review of Political Economy* 4 (2), pp. 125-151.

Steindl, J. (1976) *Maturity and Stagnation in American Capitalism*, New York and London: Monthly review Press.

Stirati A. (2001), 'Inflation, Unemployment and Hysteresis: an Alternative View', *Review of Political Economy*, 13(4), pp. 427-451.

Stirati, A. (2013) 'Alternative 'Closures' to Sraffa's System: Some Reflections in the Light of the Changes in Functional Income Distribution in the United States' in Levrero, E. S., Stirati, A. and Palumbo, A. (eds.), *Sraffa and the Reconstruction of Economic Theory: Volume One*, Houndmills: Palgrave Macmillan.

Sweezy, P.M. (1942) *The Theory of Capitalist Development*, Oxford: Oxford University Press.

Sylos Labini, P. (1962) *Oligopoly and Technical Progress*, Harvard University Press: Cambridge (italian version, Oligopolio e progresso tecnico, Einaudi: Torino, 1975).

Tooke, T. (1826, 2010) *Considerations On The State Of The Currency*, Whitefish: Kessinger Publishing.

Tregenna, F. (2009) 'The Fat Years: The Structure and Profitability of the US Banking Sector in the Pre-Crisis Period', *Cambridge Journal of Economics* 33 (4), pp. 609–632.

Valle Baeza, A., and Mendieta Muñoz, I. (2013) 'What is the Relationship Between the Rates of Interest and Profit? An Empirical Note for the U.S. Economy, 1869-2009', *Investigación Económica* 71 (280), pp. 163-183.

Van Treeck, T. (2014) 'Did Inequality Cause the US Financial Crisis?', *Journal of Economic Surveys* 28 (3), pp. 421-448.

Winston, C. (1998) 'US Industry Adjustment to Economic Deregulation', *Journal of Economic Perspectives* 12 (3), pp. 89-110.

Zeitlin, M. (1974) 'Corporate Ownership and Control: The Large Corporation and the Capitalist Class', *American Journal of Sociology* 79 (5), pp. 1073–1119.

Zolea, R. (2022) 'A History of the Relationship Between Interest Rate and Profit Rate in Heterodox Approaches', *International Journal of Political Economy* 51 (2), pp. 121–136.

Zolea, R. (2023) 'Saggio dell'Interesse e Profittabilità dell'Industria Bancaria: Analisi Teorica e Verifiche Empiriche', *PhD Thesis XXXV Ciclo*, University of Roma Tre.

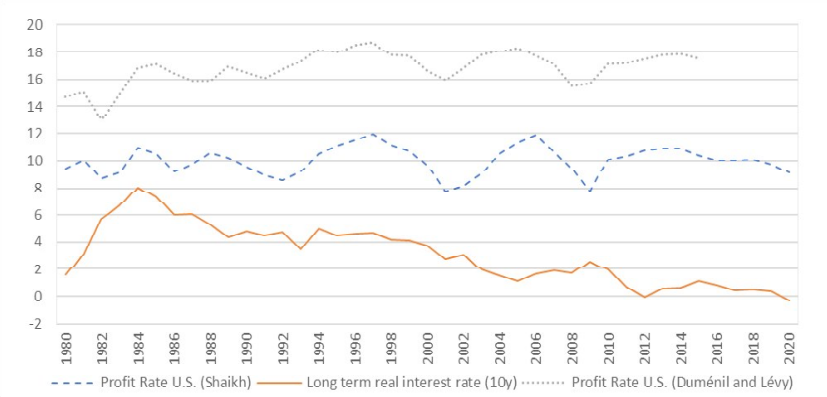
Appendix 1

Over the last decades decoupling between the profit rate and the rate of interest is also confirmed when applying the methodologies employed by Shaikh (2011) and Duménil and Lévy (2016). Both their analyses rely on certain assumptions. Regarding Duménil and Lévy (2002a; 2002b), they do not refer to the economy as a whole. Some sectors are excluded *a priori*, such as "Finance" for its low capital-output ratio and "Government" and "Individual Business" for their "non-capitalistic behaviour." Other sectors are excluded *ex-post* such as the Highly Capital-Intensive ones, for example, Mining, Energy, and Transportation, since their profit rates do not actually seem to gravitate towards an average profit rate like the others. In Figure 6, we compute the profit rate of the U.S. private non-residential economy according to Dumenil and Levy's methodology using their database https://www.cepremap.fr/membres/dlevy/uslt.txt. As regards Shaikh's (2011) methodology, he calculates the rate of profit for the non-financial corporate sector using the US Bureau of Economics National Income and Product Account (NIPA) and Fixed Assets Tables (FA) according to the formula

$$r^{Shaikh} = \frac{CP + i_P - i_R}{FA_{t-1}}$$

where *CP* = Corporate profits with IVA (Inventory Valuation Adjustment) and CCAdj (Capital Consumption Adjustment) [NIPA Tab 1.14, Line 27]; i_P = Monetary Interests Paid (Non-financial) [NIPA Tab 7.11, Line 7]; i_R = Monetary Interests Received (Non-financial) [NIPA Tab 7.11, Line 29]; FA_{t-1} = Non-financial Fix assets [FA Tab 6.1, Line 4] of the previous period. Using Shaikh's methodology, the profit rate has been mainly flat since the 1970s whereas, using Duménil and Lévy's one, the profit rate has experienced a modest recovery since the drop at the beginning of the '80s. Nonetheless, in both cases, we observe stationarity in the rate of profits whereas the risk-less long-term interest rate has fallen since the mid Eighties.

Figure 6: Profit rate of the U.S. non-financial corporate sector [Shaikh (2011)'s methodology], profit rate of the U.S. private non-residential economy [Duménil and Lévy (2016)'s methodology] and long-term government real interest rate (10y), from 1980 to 2020



Source: US Bureau of Economic Analysis (2022); Duménil and Lévy (2016); AMECO (2022).