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Income distribution and the size of the financial sector

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Abstract
The paper deals with the influence of the size of financial industry on income distribution. In opposition to Piketty's position, it argues that the wage share is influenced by changes in the size of the sectors of the economy, by the input composition of the productive structure and by the ability of the workers to capture the increases in productivity. The process of financialization experienced in the recent decades has affected these three elements. Among other things, it has enhanced the ability of the banking industry to affect the formation of monetary policy and legislation, which in turn can have had some bearing on the workers' ability to appropriate the increases in productivity. After describing Piketty's interpretation of the rise in inequality and discuss his views on the theories of distribution, the paper illustrates different representations of the financial sector proposed by the literature, underlining the relevance of considering this sector as an industry. By following these lines the paper describes how an enlarged size of the banking industry can increase inequality.

Keywords: Income distribution, growth, financial industry, financialization, multi-sectorial models.

JEL classification: D30, E10, E44, G20

1. Introduction

Discussions on income distribution have come back. For a few decades, owing to the dominance of a literature that considers the determination of distributive variables as part of the allocation process generating an efficient price system, they had even disappeared from many textbooks. Yet, the impressive increase in inequality occurred during the same decades has led several scholars to devote their attention to this subject.

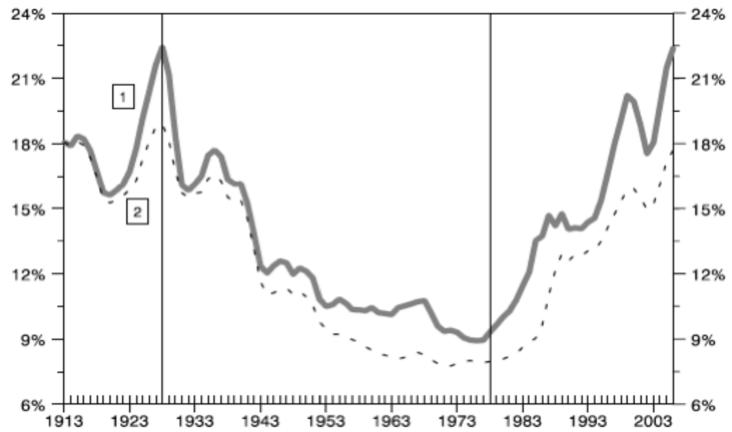
Piketty (2014) is an outstanding publication on this theme. It reconstructs long series of data on inequality and tries to establish an interpretation of the observed trends. The historical reconstruction represents a great contribution to our knowledge. The attempt to provide an interpretation of the observed trends has the merit to justify a policy proposal, but it is eclectic and sometimes loose in the use of theories. Moreover, it can lead the reader to underplay the role of the increase in the size of the financial sector, which has accompanied the rise in inequality.

This paper tries to clarify how the enlarged size of the financial sector can have contributed to raise inequality. It is so organised. Section 2 recalls some data on income distribution and the size of the financial sector. Section 3 outlines the two alternative views on income distribution. Section 4 describes Piketty's standpoint on this issue and his interpretation of the recent increase in inequality. Section 5 illustrates different representations of the financial sector proposed by the economic literature. Section 6 describes how an increase in the size of the banking industry can increase inequality. Section 7 concludes.

2. A quick look at some data

2.1 An impressive set of data on inequality and the financialization of the economy has been recently presented in the literature. Since giving an account of these data goes beyond the scope of this paper, we only recall those that can suggest hypotheses for the analysis we want to present, considering data regarding USA and starting with those proposed by Piketty on the income share of the top 1% of the U.S. population (Figure 1) and the average income of the top 1% and the bottom 90% measured in constant dollars (Figure 2).

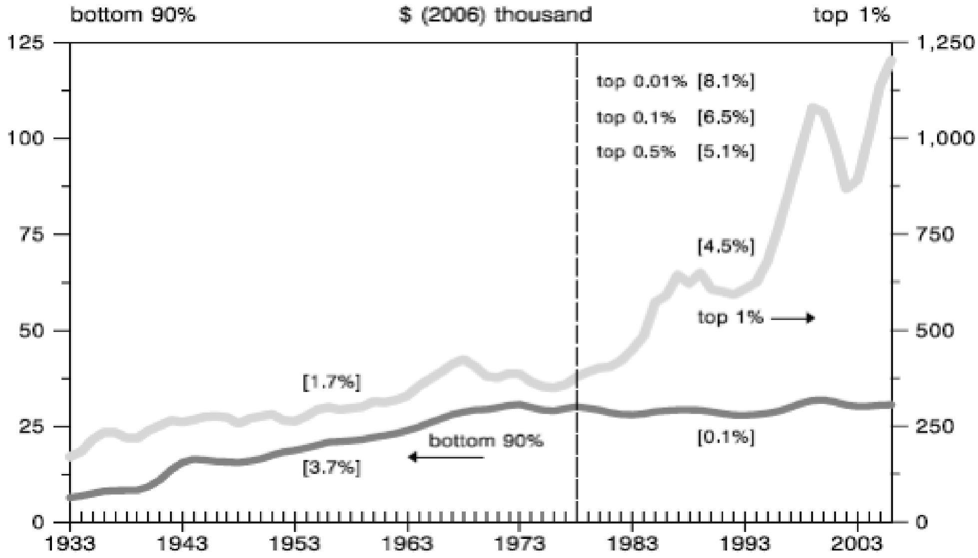
Fig. 1 – USA: income share of the top 1% of population, 1913-2006 (dotted line excludes capital gains)



Source: Palma (2009) using data of Piketty and Saez (2003; 2006)

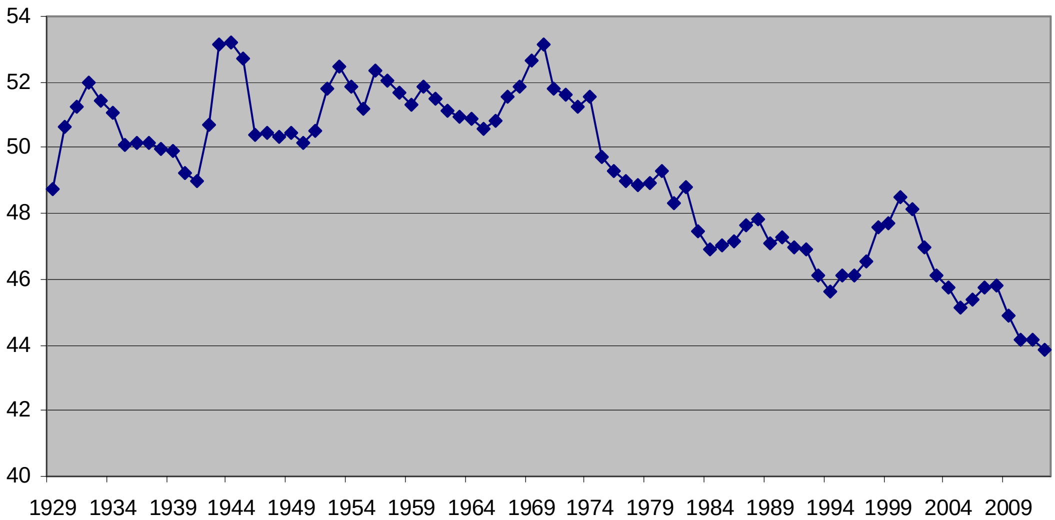
The changes occurred after 1978 are striking. The improvement in equality of the previous decades was cancelled in less than 30 years, during which 90% of the US population systematically voted against its own interests in a regime of representative democracy. The US wage share diminished (see Figure 3) and the rises in productivity were distributed to the workers in a limited degree (see Figure 4 recalled by Barba and Pivetti, 2009).

Fig. 2 – USA average income of the top 1% and the bottom 90% of the population, 1933-2006



Source: Palma (2009) using data of Piketty and Saez (2003; 2006)

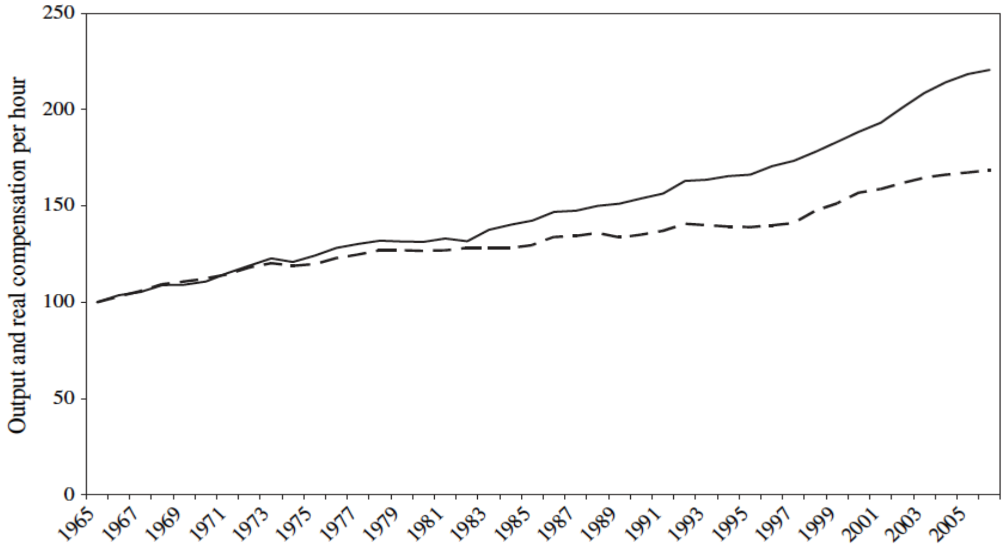
Figure 3 – USA wage share, 1929-2009 (% Wages and Salaries / GDP)



Source: Federal Reserve Economic Data. Link: http://research.stlouisfed.org/fred2. Wages and salaries = Compensation of employees, received: Wage and salary disbursements. GDP= Gross Domestic Product.

Table 1 shows that in USA the profit shares of the whole economy and of the financial sector in total output notably rose. The ratio between the profits of the financial and the non-financial sectors moved from 0.257 of 1979 to 0.432 of 2005, underlining the growing importance of financial industry. This piece of information suggests that the financial sector has grown at higher rates than the rest of the economy.

Figure 4 – Output per hour (unbroken line) and real compensation per hour (broken line for non farm business sector (1965=100)



Source: Bureau of Labor Statistics

Table 1 – USA: Profit indicators of the financial and non-financial sector

	1973	1979	1989	2000	2005
Profits of the financial sector as % of GDP	1.6%	1.8%	1.6%	2.3%	3.6%
Profits of the non-financial sector as % of GDP	6.4%	7.0%	4.6%	4.7%	8.3%
Total profits as % of GDP	8.0%	8.8%	6.2%	7.0%	11.9%
Profits of the financial sector as % of the non-financial sector	0.257	0.257	0.350	0.497	0.432

Source: Palley (2007)

2.2 The rise in inequality occurred after the 1970s has been accompanied by an acceleration of the expansion of the turnover of financial firms and of financial innovation. Several publications describe these phenomena at international and domestic level. According to the WTO, from 1977 to 2007 merchandise export increased 12.05 times. During the same years, financial transactions in the foreign exchange markets grew at a much higher rate. According to the Bank of International Settlements, traditional products and all derivative contracts, i.e. those on exchanges, interest rates, credits, equities and commodities, rose 411.55 times. Thus, between 1977 and 2007, while merchandise export grew at an average annual rate of 8.65%, financial transactions in the foreign exchange markets grew at an average annual rate of 22.22%.[1] During the same years, the world GDP grew at an average annual rate of 2.88%.

Domestic debt also increased beyond the needs of productive activity. In USA it was relatively stable from 1950 to 1980, moving from 140% to 160% of GDP, and jumped from 160% to over 350% from 1980 to 2007 (see Palma, 2009, p. 834). The

[1] The financial crisis has slowed down the growth of the foreign exchange markets. In the years 2008-2010 the rate of growth was 6.5%. During the period 2011-2013 it was 11.5%.

USA average annual rates of growth of GDP, of domestic debt and of sectors' debts, reported in Table 2 below, indicate that after 1982 domestic debt increased much more than productive activity (Palma, 2009, p. 835).

Table 2 – Rates of growth of GDP and of the debt of some sectors of the economy. Various years

	1950-1982	1982-1998	1998-2007
GDP	3.4	3.4	2.8
Domestic debt	4.0	5.7	6.8
Financial sector's debt	10.4	10.1	9.5
Non financial sector's debt	3.6	4.7	5.5
Households' debt	5.6	5.3	7.6

Source: Palma (2009)

Low-income groups also took advantage of the offers of innovative financial firms. For Barba and Pivetti (2009, pp. 115-18), consumer credit in the USA, after remaining roughly constant from 1965 to 1982, began to expand and reached the highest level of its average annual rate of growth (8%) during the period 1992-2006. The percentage of families in the first three quintiles holding home mortgages rose from 9.9% to 13.8%, from 20.1% to 27% and from 34% to 44.4% respectively during the period 1983-2004.

2.3 Summing up, the previous data on income distribution and the size of the financial sector show that after 1978, unlike what had happened before,

- inequality and the turnover of financial firms increased;
- the profit share rose, while the wage share diminished;
- the financial sector benefited from this change more than the non-financial one;
- consumption was supported by loans to low and middle-income groups, rather than by increases in the wage rate;
- lending activities and other financial transactions to foreign and domestic sectors grew at higher rates than international trade and GDP;
- the explosion of financial services occurred through traditional and innovative instruments and offered opportunities to all income groups.

3. A brief outline of the main theoretical views on income distribution

3.1 The roles of "material constraints" (i.e., of technical knowledge and the availability of resources) and of "political agreements" have always been a central question in the theories of distribution. To what extent do distributive variables depend on material constraints? In which way can the political agreements historically prevailing affect these variables without taking into account the influence of material constraints?

All theories of distribution recognise the relevance of material constraints. The neoclassical theory considers that they determine both the relationship between distributive variables and their levels. If political agreements overlook the influence of material constraints on these levels, additional problems (like unemployment or inflation) will emerge. Other theories (e.g., those proposed by the classical economists, Marx, Keynes and Post Keynesian authors) consider that material constraints limit the relationship between distributive variables, but do not determine their levels. In these theories historical and conventional factors play an independent role in fixing the levels of distributive variables. Moreover, the rate of growth is endogenously related to the level of distributive variables.

By assuming a simplified economy, which produces one commodity by employing only labour and capital and an infinite number of techniques of production, we can derive a continuous and decreasing functional relationship between the real wage rate, *w*, and profit rate, *r*, representing the envelope (or the frontier) of the dominant (or the most convenient) techniques.

$$w = x(r) - rk(r) \tag{1}$$

where:

$$0 \le r \le R_{\max}$$

$$rk(r) < x(r) \qquad \text{if} \qquad 0 \le r \le R_{\max}$$

$$R_{\max} k(R_{\max}) = x(R_{\max})$$

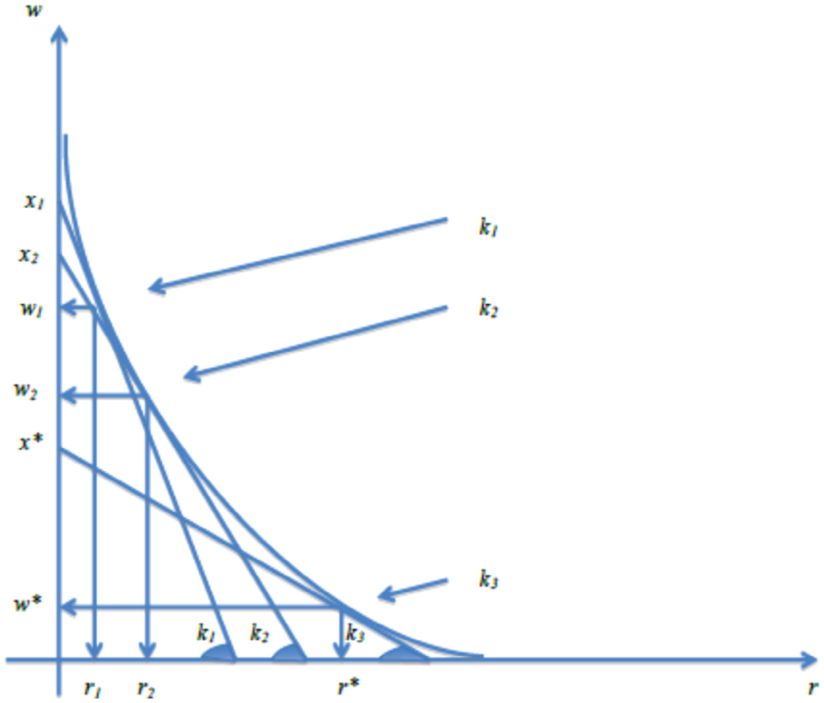
$$x'(r) \le 0$$

$$k'(r) \le 0$$

Equation (1) is reproduced in Figure 5, where a different technique of production corresponds to each point of the envelope and, if we move downwards along the frontier, we meet techniques showing lower capital-labour and capital-income ratios.

Under these assumptions all theories of distribution hold equally well. If we use historical and conventional factors to determine the level of one distributive variable (either the wage or the profit rate), the frontier indicates the level of the other variable. If, instead, we follow the neoclassical theory and move from the value of the capital-labour ratio ($k=K/L$), taking it as an indicator of the relative scarcity of the productive factors in the economy, to each value of *k* corresponds one point of the frontier and this point indicates the levels of *w* and *r* corresponding to the exogenously given *k*. What's more, in neoclassical theory market forces working through changes in the relative prices of the factors of production make the economy tend towards the full employment. If, however, political agreements prevent the price mechanism from working, the tendency towards full employment is curbed.

Figure 5 – Relationship between the real wage rate and the profit rate



The mathematical properties attributed to equation (1) do not necessarily hold if we consider an economy producing more than one commodity. The 1960s debate on capital theory showed that, when we abandon the assumption of a one-commodity world, the marginal productivities and the demand functions of the factors of production are not necessarily decreasing, raising problems for the stability of the equilibrium solutions. The two neoclassical parables, that the relative scarcity of the factors of production determines the levels of the distributive variables and that the price mechanism leads the economy towards full employment equilibria, lose analytical support.

This conclusion was accepted by Samuelson in the Summing up of the Symposium on capital theory published in 1966 in the *Quarterly Journal of Economics.* He warned the economic profession as to the relevance of this conclusion as follows:

> If all this causes headaches for those nostalgic for the old time parables of neoclassical writing, we must remind ourselves that scholars are not born to live an easy existence. We must respect, and appraise, the facts of life. (Samuelson, 1966, p. 583)

Yet, in spite of the fact that the outstanding authors participating in the Symposium explicitly recognised the validity of the critique, these two parables still play a central role in the theories of distribution and in policy debates.

4. Piketty's theoretical views on income distribution

4.1 Piketty (2014, pp. 200; 215-216 and 231-232) fails to appreciate the content of the Symposium on capital theory in the *Quarterly Journal of Economics* and Samuelson's Summing up. He considers decreasing marginal productivities, i.e. the assumptions on the mathematical properties relative to the decreasing character of $x(r)$ and $k(r)$, as something 'natural' to accept. He does not clarify the meaning of the term "natural". He may consider this assumption "self-evident", as if it were confirmed by the direct observation of reality. Moreover, he disregards the existence of an analytical discussion, which was the main point of the 1966 Symposium on capital theory, on the validity of the mathematical properties regarding the decreasing character of $x(r)$ and $k(r)$ in an economy producing more than one commodity. As a consequence, he provides a superficial account of the debate in terms of "postcolonial behaviour".

> If one rereads the exchanges in this controversy with the benefit of hindsight, it is clear that the debate, which at times had a marked postcolonial dimension (as American economists sought to emancipate themselves from the historic tutelage of their British counterparts, who had reigned over the profession since the time of Adam Smith, while the British sought to defend the memory of Lord Keynes, which they thought the American economists had betrayed), did more to cloud economic thinking than to enlighten it (Piketty,2014, pp. 231-232).

By missing the main point of the 1960s debate on capital theory, Piketty presents a false view of that controversy and attributes validity to the main argument on which the neoclassical parables mentioned above are based.

4.2 Piketty's position on what affects income distribution is however eclectic. He admits that political factors reflecting the distribution of power in the society play an independent role in the progression of inequality.

> The history of the distribution of wealth has always been deeply political, and it cannot be reduced to purely economic mechanisms. In particular, the reduction of inequality that took place in most developed countries between 1910 and 1950 was above all a consequence of war and of policies adopted to cope with the shocks of war. Similarly, the resurgence of inequality after 1980 is due largely to the political shifts of the past several decades, especially in regard to taxation and finance. The history of inequality is shaped by the way economic, social, and political actors view what is just and what is not, as well as by the relative power of those actors and the collective choices that result. (Piketty, 2014, p. 20)

Following this line, he states that the spectacular increase in inequality of recent decades has been largely affected by the increase of the incomes of the top managers of large firms.[2] According to him, this phenomenon cannot be explained in terms of marginal productivities. It rather depends on the fact that in these years the top managers have had the power to set their own remuneration without limit and controls:

> One possible explanation of this is that the skills and productivity of these top managers rose suddenly in relation to those of other workers. Another explanation, which to me seems more plausible and turns out to be much more consistent with the evidence, is that these top managers by and large have the power to set their own remuneration, in some cases without limit and in many cases without any clear relation to their individual productivity, which in any case is very difficult to estimate in a large organization. (Piketty, 2014, p. 24; see also pp. 308; 314 and 330-333)

The rejection of the interpretation in terms of rise in the marginal productivity of certain factors of production could have led Piketty to state that what happened after 1978 was the outcome of a political process, which had been set in motion before that date and which was favoured by social and cultural elements, like changes in education and in the technology of communication, able to affect the preferences of the electorate and thus generate economic results through "apparently spontaneous" market mechanisms (for an interpretation along these lines, see Krugman, 2007).

Yet, Piketty's standpoint is that the main force changing the level of inequality is the tendency of the economy to growth at a low rate.

> I will show that the return of high capital/income ratios over the past few decades can be explained in large part by the return to a regime of relatively slow growth. In slowly growing economies, past wealth naturally takes on disproportionate importance, because it takes only a small flow of new savings to increase the stock of wealth steadily and substantially. If, moreover, the rate of return on capital remains significantly above the growth rate for an extended period of time (which is more likely when the growth rate is low, though not automatic), then the risk of divergence in the distribution of wealth is very high. This fundamental inequality, which I will write as $r > g$ (where r stands for the average annual rate of return on capital, including profits, dividends, interest, rents, and other income from capital, expressed as a percentage of its total value, and g stands for the rate of growth of the economy, that is, the annual increase in income or output), will play a crucial role in this book. In a sense, it sums up the overall logic of my conclusions. (Piketty, 2014, p. 25)

[2] By referring to US data, Piketty (2014, pp. 302-303) wrote: "Recent research, based on matching declared income on tax returns with corporate compensation records, allows me to state that the vast majority (60 to 70 per cent, depending on what definitions one chooses) of the top 0.1 per cent of the income hierarchy in 2000– 2010 consists of top managers. By comparison, athletes, actors, and artists of all kinds make up less than 5 per cent of this group. In this sense, the new US inequality has much more to do with the advent of 'supermanagers' than with that of 'superstars'." See also Piketty (2014, pp. 278 and 334).

For Piketty, the return to a slow growth regime after the 1970s was inevitable. For him, "growth has in fact always been relatively slow except in exceptional periods or when catch-up is occurring" (Piketty, 2014, p. 72). When viewed in historical perspective, low growth is a characteristic of any technologically advanced economy (Piketty, 2014, pp. 96-97) and cannot be changed by policy decisions or by variations in income distribution.

> Many people think that growth ought to be at least 3 or 4 per cent per year. As noted, both history and logic show this to be illusory. (Piketty, 2014, pp. 93-94)

This conclusion, which implies that societies do not learn from previous experience, can only be justified in terms of a pessimistic attitude towards human capabilities.

4.3 Although he makes some reference to financial factors, Piketty attributes to them a minor role in the changes in income distribution. He recognises the occurrence of a process of financialization of the economy (see Piketty, 2014, pp. 193-194; some hints also on pp. 15 and 41-42) and states that "the resurgence of inequality after 1980 is due largely to the political shifts of the past several decades, especially in regard to taxation and finance" (Piketty, 2014, p. 20). He also recognises that the managers of financial firms have largely benefited of the high incomes earned by top managers during the last decades (see Piketty, 2014, pp. 302-303).[3] Finally, he acknowledges that after 1979-1980 the catch-up process in stock prices have accelerated and favoured the rise in inequality (see Piketty, 2014, pp. 149; 173; 183; 187-188). Yet, he notices that the income share of the richest part of the population, *net of capital gains*, still shows a strong tendency towards inequality (see Figure 1 above and Piketty, 2014, pp. 295-296). For him, the return to a slow growth of the economy, rather than the explosive development of the financial industry, is the major explanation of the latter tendency and of the increased inequality.[4]

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[3] Referring to USA, Piketty (2014, p. 303) wrote: "It is also interesting to note that the financial professions (including both managers of banks and other financial institutions and traders operating on the financial markets) are about twice as common in the very high income groups as in the economy overall (roughly 20 per cent of top 0.1 per cent, whereas finance accounts for less than 10 per cent of GDP)".

[4] It is interesting to notice that Piketty denies that the rise in inequality is the main cause of the recent financial crisis. After recognising that "one consequence of increasing inequality was virtual stagnation of the purchasing power of the lower and middle classes in the United States, which inevitably made it more likely that modest households would take on debt, especially since unscrupulous banks and financial intermediaries, freed from regulation and eager to earn good yields on the enormous savings injected into the system by the well-to-do, offered credit on increasingly generous terms" (Piketty, 2014, p. 297) he concludes that "it would be altogether too much to claim that the increase of inequality in the United States was the sole or even primary cause of the financial crisis of 2008 or, more generally, of the chronic instability of the global financial system" (Piketty, 2014, pp. 297-298).

4.4 To sum up, Piketty's theoretical approach is eclectic. He admits a role for historical and conventional elements, but advocates that material forces dominate. Moreover, his book fails to recognise that the rate of growth depends on income distribution and suggests that it is illusory to believe that a society can learn how to use policies to improve growth and welfare. Finally, although he recognises the occurrence of a process of financialization, he ends up by saying that the major cause of inequality is the slow growth of the economy and not the explosive development of the financial industry.

5. Different representations of the financial sector in the critical approaches to income distribution

5.1 Unlike Piketty's book, Post Keynesian literature puts financial factors in the centre of the stage and focuses on the influence of "financialization" on income distribution (see Palma, 2009 and Hein, 2009, which reviews some parts of this literature).

Several lines of development, mainly complementary among themselves, can be outlined in this literature. An important one focuses on the changes in the relations among workers, managers and shareholders, which occurred after the monetarist counter-attack to the labour movement of 1979-82. Boyer (2000) describes the new institutional forms brought about by these changes and formalises a model in which growth is finance-led, instead of wage- or profit-led, as in Bhaduri and Marglin (1990). The choice of the managers to increase dividend payments, as demanded by shareholders, plays a central role in this analysis. It increases capital gains and the earnings of financial *rentiers*. The rise in capital gains has a negative influence on investment, but a positive one on the ability of the household sector to borrow. Owing to this positive effect, consumption can increase and even counter-act the negative influence on investment, enhancing effective demand, growth and profits.

Several works have further elaborated this line of research moving within a Kaleckian (Stockhammer, 2004; Hein and van Treeck, 2008), a Steindlian (Dutt, 2005; 2006) and a stock-flow-consistent framework (Lavoie and Godley, 2001-2; Taylor, 2004; Lavoie, 2008; Hein, 2010). They have added to the "finance-led growth regime" a "profits without investment regime" and a "contractive regime" (see Hein, 2009).

This approach considers the financial sector as a set of individual *rentiers*, whose income depends on interest revenues and capital gains, rather than as an industry earning profits. It can be complemented by other analyses studying the financial sector as an industry and pointing out that financialization can influence effective demand, growth and distribution through mechanisms, which are different from those operating through the increase in capital gains.[5]

5.2 Marx highlighted the role of the financial industry in the analysis of prices and distribution (see Panico, 1980, pp. 371-75; Panico, 1988a). He noticed that the first credit system, operating to solve the cash-flow problems of the productive sectors and to finance investment, was created in England at the beginning of the XIX century. Its commercial banks developed along the lines set by the activities of the money dealers operating in the XVII century market fairs of the Hanseatic League.

At the beginning of the XIX century there was in England a "financial revolution", which came after the "industrial revolution". The creation of a credit system, centred in London, was necessary to continue to carry on the process of development of the industrial revolution. Local money capitalists, who used as guarantee the knowledge of the personal reputation of the borrowers, could not be the main providers of funds to the economy of the industrial districts anymore. The enlarged size of this economy imposed that financial intermediation had to be carried out at national level, using as guarantees real collaterals and orderly information on the administration of the firms. A law approved in 1830 by the Parliament, which set up the "clearing room" in the Bank of England and allowed banks to be corporations, formalised the occurrence of these changes (see Fetter, 1965).

The birth of the credit system provided England with a powerful instrument to accelerate its development. It proved effective, but also very risky. From 1823 to 1866 five systemic and destructive financial crises occurred in that country, leading the literature to investigate what had to be done to reduce the probability of these events. According to Marx, these writings were the best part of the economic literature after 1830. Examining these publications he noticed that in the first half of the XIX century the banking industry rapidly became a powerful pressure group able to affect customs and legislation in order to increase its profits (see Marx, 1972, pp. 363-364; 560; 558-559).

Part IV of Volume 3 of *Capital*, which extends the analysis of the transformation of values into prices by considering the existence of merchants and of money dealing capitalists, examines how the presence of an industry providing financial services affects the costs of production of commodities and the levels of distributive variables. Part V describes how the pressures of the banking industry affected monetary legislation (see Panico, 1980; 1988a). From these writings one can derive the following characterisation of the activities of the financial industry. We will make use of this characterisation in what follows.

[5] Piketty (2014, pp. 295-296) too reminds that it is necessary to identify different influences from the increase in capital gains. His data show that after 1970s the rise in inequality also manifests itself when we consider the trend of the income share of the top 1% of the population *net of capital gains* (see Figure 1). For him, the increasing character of the latter trend depends on the main force affecting inequality, i.e. the slow growth of the economy. By considering the financial sector as an industry one can outline influences on inequality, which are different from those envisaged by Piketty.

Firstly, the financial industry intermediates between those having financial surpluses and those having financial deficits in their balance sheets. It receives deposits from those spending less than they earn and provides loans to those spending more than they earn.

Secondly, the financial industry provides the other industries with services (loans or other financial products), which are necessary to carry out production. They solve the cash-flow problems that firms encounter to manufacture and sell their product. In this case, the financial industry provides the other industries with "intermediate" services, whose revenues do not enter the added value.

Thirdly, the financial industry, like any other industry, has to bear some material costs to produce its services. These costs also depend on the norms of financial regulation.

Fourthly, the financial industry can provide firms, capitalists and workers with loans that finance their investment and consumption activity. In this case the financial industry provides "final" services that enter the added value of the economy.

Fifthly, the financial industry, as any other, is organized to make pressure on the political bodies in order to affect legislation and increase its earnings.

5.3 Sraffa too referred to the financial sector as an industry in the parts of his writings dealing with monetary problems. In his earlier empirical work he focused on the formation of monetary policy and legislation by proposing a historical and materialistic approach (see Panico, 1988b and 2001; Panico, Pinto and Puchet, 2012). The ability of the banking industry to influence policy decisions and the instruments they use to affect the public opinion were at the centre of the stage, as shown by this passage of the essay he published in 1922 in the *Economic Journal*.

> The general tendency seems to be towards the … formation of large "groups" of companies of the most varied kinds concentrated around one or more banks, mutually related by the exchange of shares and by the appointments of Directors common to them. Within these "groups" the various interests are all equally subject to the interests of a few individuals who control the whole group … Very little is known … about these groups … What the public knows and feels … is the enormous financial and political power which they have and the frequent use they make of it to influence both the foreign and home policy of the government in favour of their own interests. Each group keeps several press organs which support its policy, and some of the accusations made against certain Ministries of being actuated by the interests not of a class, but of private concerns, and of favouring one financial group against another, have no doubt a basis of truth (Sraffa, 1922, p. 196).[6]

[6] Sraffa used this approach when discussing the meaning of his hint on a monetary theory of distribution in *Production of Commodities* (see Panico, 1988b and 2001).

In some recent essays (see Panico, Pinto and Puchet, 2012; Panico, Pinto, Puchet and Suarez Vazquez, 2013) we presented an analysis of the evolution of financial regulation in the USA along the lines set by Sraffa’s approach. We contended that the lobbying activities of the financial industry played a role in the formation of the administrative decisions and legislation regarding the organization of financial regulation, which moved, after 1970, from a regime based on the discretional powers of the authorities over the managers of financial firms to a regime based on fixed rules and capital. According to White (2009, pp. 36-37), the roots of the recent financial crisis can be found in the shift to the rules-based regime. It generated a financial industry that grew in scale, scope and complexity while weakening the ability of the authorities to control the management of the financial firms and the rise of systemic risk. The “explosive” expansion of the financial industry was accompanied by alterations in income distribution and by a decelerating growth of the economy that was eventually disrupted by the recession caused by the financial crisis.

6. The distribution of income and the size of the financial industry

6.1 Is it possible to regard the “explosive” growth of the financial industry as a major cause of the rise in inequality? Can we contend that the increased ability of the financial industry to affect politics and legislation has enhanced its expansion and the consequent changes in income distribution? Can we consequently maintain, in opposition to what Piketty states, that low growth and high inequality are avoidable and that we can get round them by making the different sectors of the economy grow in a more balanced way than in recent decades?

The analysis of the relationship between the size of the financial sector and income distribution has been scarcely developed in the literature. To discuss it in what follows we elaborate on a linear production model proposed in 2010 to celebrate the fiftieth anniversary of the publication of Sraffa’s Production of Commodities (see Panico, Pinto, Puchet, 2012). This article focuses on bank loans to consumers and suggests that the provision of all final financial services should be analytically developed too.

These elaborations we propose in what follows can apply to all final financial services. They make it possible to examine how the input and output compositions of an economy, where more than one sector operates, can affect income distribution and whether we can consider relevant for the rise in inequality some conditions that have been prevailing since the 1980s, i.e., the high growth of the financial industry, the acceleration of financial innovation and the reduced ability of the workers to appropriate the increases in productivity.

The analytical model presented in Panico, Pinto, Puchet (2012) assumes that rents, the government deficit and the trade balance are equal to zero. Moreover, it assumes that workers do not save and capitalists do not consume, so that personal and functional distributions coincide, and that the banking industry collects deposits and gives loans representing “intermediate” and “final” financial services on which the interest rates i_d and i are respectively paid. The two rates are linked by the expression: $i_d = \phi i$, with $0 \leq \phi \leq 1$ and, to simplify the inquiry, the model also assumes that $\phi = 0$. Furthermore, the article supposes that the banking industry is able:

- to persuade workers to increase their debt position in order to increase consumption;
- either to find new ways to distribute the risk generated by the loans to the workers or to make pressure on the parliament in order to obtain changes in financial regulation that allow it to increase its risk position;
- to obtain from the central bank, under the existing procedures of monetary policy, the reserves that are required to increase its loans to the workers.

The intuitive description of the results of that paper can be so presented. The rise in bank loans to the workers increases their expenditure, the output of the economy, the capital invested in the industrial and the banking sectors, and the profits earned on this capital. It thus generates an increase in total profits. The effect of a change in the debt position of the workers on the profit share is however uncertain because the increase in output raises total wages too. If, however, total wages grow at a lower rate than the debt position of the workers, we obtain that an increase in the latter raises the profit share.

With respect to the model presented in Panico, Pinto, Puchet (2012) we introduce in what follows the assumption that three groups of persons participate in the distribution of income: workers, capitalists (or shareholders) and managers. Workers receive the money wage rate, $w_€$, capitalists the rate of profit, r, and managers the rate of remuneration, m, which, like the rate of profit, is calculated on the capital invested. Owing to this assumption, the overall rate of remuneration of capital is $R = r + m$. The corresponding shares of GDP are ω, ρ and μ, where $\rho + \mu = \pi$, which is the share of the overall remuneration of capital. As a consequence,

$$\omega + \rho + \mu = \omega + \pi = 1 \tag{2}$$

We introduce the latter assumption to take account of Piketty’s (2014, pp. 278; 302-303 and 334) claim that the spectacular increase in inequality of recent decades has been largely affected by the increase of the incomes of the top managers of large firms. The French economist considers the earnings of the top managers as labour compensation. We instead associate their remuneration with that of capital.

Following Piketty (2014, pp. 24 and 330-33), we also accept that the managers have the power to fix their remunerations. As a consequence, we consider that the managers decide them by taking into account the rate of growth of productivity.[7]

[7] From a theoretical point of view, the managers’ remuneration can so be seen as a form of rent.

To further clarify the meaning of this assumption, we assume that the managers pay:

- to the workers a money wage rate, which varies over time at the rate g_w, related to the rate of change of productivity in the industrial sector, γ_x, as follows:

$$g_w = \beta \gamma_x$$

  with $0 \leq \beta < 1$;
- to the capitalists (or shareholders) a rate of profit, r, which is related to the rate of interest according to the conditions prevailing in the financial markets;
- to themselves what remains of the income produced after paying wages to the workers and profits to the shareholders.

In the extreme case in which $\beta = 0$ and $\gamma_x > 0$, the managers appropriate the entire increases in productivity and are able to fix their rate of remuneration in such a way as to keep constant the prices of commodities and the rate of interest on bank loans.

To elaborate on the linear production model proposed in Panico, Pinto and Puchet (2012) and examine how the growth of the financial industry can contribute to the rise in inequality, let's introduce the following equalities, where all variables are measured in monetary terms and which state that total output, Y, is composed of that of the industrial sector, Y_x, and of the banking sector, $Y_b = Qi$, where Q is the amount of loans as "final" services that the banking industry provides to the different subjects of the economy, and is equal to distributed income, which is the sum of wages, W, and of profits and managers' earnings, P:

$$Y = Y_x + Y_b = W + P \tag{3}$$

Let's also define the output composition of the economy

$$y_x = Y_x / Y \tag{4}$$

$$y_b = Y_b / Y \tag{5}$$

where $y_x + y_b = 1$, and the input composition of the industrial and the banking sectors as the inverse of labour productivity in the two sectors:

$$l_x = L_x / Y_x \tag{6}$$

$$l_b = L_x / Y_b \tag{7}$$

where l_x and l_b are the inverse of the labour productivity in the industrial and the banking sectors.

While Piketty (2014) examines the evolution of income inequality by focusing on the share of the profit earned by shareholders in GDP

$$\rho = r\, s/g \tag{8}$$

where s is the propensity to save and g the rate of growth of the economy, we focus on the evolution of the wage share, ω, taking into account the influence of the input and the output composition.

$$\omega = w_{€} \, (l_x y_x + l_b y_b) \tag{9}$$

By differentiating equation (9) with respect to time and re-organising, we get:

$$g_\omega = g_w - (\lambda_x \gamma_x + \lambda_b \gamma_b) + y_b \, g_{yb} \, (l_b - l_x)/l \tag{10}$$

where:

g_ω is the rate of variation through time of the wage share,

g_{yb} is the rate of variation of the share of the banking sector in GDP,

λ_x is the share of the labour employed in the industrial sector, L_x, in the total labour employed in the economy, L, that is, $\lambda_x = L_x / L$,

λ_b is the share of the labour employed in the banking sector, L_b, in the total labour employed in the economy, that is, $\lambda_b = L_b / L$,

γ_x is the rate of variation of productivity in the industrial sectors,

γ_b is the rate of variation of productivity in the banking sector,

l is the inverse of the labour productivity in the whole economy, $l = L/Y$.

Equation (10) shows that the wage share in GDP depends on:

- the difference between the rate of change of the money wage rate and the rate of change of productivity rates, $g_w - (\lambda_x\gamma_x + \lambda_b\gamma_b)$;
- the output and the input compositions of the economy, i.e. y_b, l_b, l_x, l;
- the rate of change of the share of the banking sector in GDP, g_{yb}.

By making reference to the conditions that have been prevailing in recent decades, we can assume that the difference between the rates of change of wage and productivity rates is negative, so that $g_w - (\lambda_x\gamma_x + \lambda_b\gamma_b) < 0$. Moreover, the rate of change of the share of the banking sector in GDP is positive, $g_{yb} > 0$. Finally, we can notice that the difference between the input coefficients of the two sectors (l_b - l_x) can be positive, negative or equal to zero. Yet, owing to the acceleration of financial innovation observed in recent decades, which implies that the productivity in the banking sector has grown at a higher rate than in the industrial sector, we can state that this difference will tend to become negative as time goes by.

In conclusion, by assuming that ability of the workers to appropriate the increases in productivity has diminished and that the banking sector has grown at higher rates than the industrial sector and has also innovated at a higher speed, we can derive from equation (10) that the wage share tends to decrease, worsening income inequality.

We can finally try to integrate the previous analysis with that of Piketty. By differentiating with respect to time the previous equation (8) and assuming that r and s are constant over time, as Piketty does without proposing a theoretical model dealing with this point, we can derive the following results:

$$d\rho/dt = -\rho dg/dt\ 1/g \qquad (11)$$

$$d\pi/dt = d\rho/dt + d\mu/dt = -\rho dg/dt\ 1/g + d\mu/dt \qquad (12)$$

Equation (11) confirms Piketty's conclusion that the share of the profit earned by shareholders in GDP increases in the presence of a reduction of the rate of growth of the economy. Moreover, by considering equation (12) and recalling that $\omega + \pi = 1$, we can derive that

$$g_\omega = -1/\omega\,(-\rho dg/dt\ 1/g + d\mu/dt) \qquad (13)$$

By substituting equation (13) into (10), we get:

$$g_w - (\lambda_x\gamma_x + \lambda_b\gamma_b) + y_b g_{yb}\,(l_b - l_x)/l = -1/\omega\,(-\rho dg/dt\ 1/g + d\mu/dt) \qquad (14)$$

We can now argue that Piketty finds the main cause of the increase in inequality in the right hand side of equation (14), i.e. in the fall of the rate of growth of GDP, $dg/dt < 0$. For him, the elements recalled by the left hand side of this equation, i.e. the reduced capacity of the workers to appropriate the increases in productivity, the increase in the size of the banking sector and the acceleration of financial innovation, should be seen as a consequence of the fall in the rate of growth of GDP.

On the contrary, in the analysis we propose the main causes of the rise in inequality are described by the left hand side of equation (14), $g_w - (\lambda_x\gamma_x + \lambda_b\gamma_b) + y_b g_{yb} (l_b - l_x)/l$. They are the reduced workers' capacity to appropriate the increase in productivity, the increase in the size of the banking sector and the acceleration of financial innovation, while the fall in the rate of growth of GDP is a consequence of the previous elements.

To sum up, in opposition to Piketty, who considers the exogenous and inevitable reduction of the rate of growth, g, as the element that has generated the recent increase in inequality, in the analysis we have presented the increased ability of the banking industry to obtain legislation that affects the output and input compositions of the economy according to their interests and the reduced ability of the workers to appropriate the increases in productivity are the two main causes of the recent trends in income distribution.

7. Conclusions

The analysis proposed in the previous pages can justify the view that changes in the power relations within the society are the main cause of the rise in inequality occurred after 1978. The process leading to these changes may have started in previous years, as Krugman (2007) suggests. It brought about significant modifications in culture and politics, progressively increased the ability of the financial industry to affect the formation of monetary legislation, and reduced the capacity of the workers to capture the rises in productivity occurred.

The analysis has put at the centre of the stage the conception of the financial sector as an industry. The relevance of this way of examining the financial sector was underlined by Marx, who noticed that the creation of the credit system in England in the first half of the XIX century changed the relations of power among the different social groups and affected the formation of legislation and income distribution.

The analysis of the financial sector as an industry can allow one to hint at the following interpretation of the changes in inequality and of the recent financial crisis. After 1970 the banking sector has become progressively able to obtain changes in financial regulations. The transformation of financial regulation, generated by the changes in the power relations among the different social groups, has allowed the turnover of the financial industry to increase at higher rates than the rest of the economy. The output composition of the economy has been varying together with income distribution. These changes have interacted with those originated by the alteration in the relations among managers, shareholders and workers of large corporations and by the slow growth of the economy, generating further changes in the power relations among social groups, in the output composition of the economy and in income distribution.

Several elements of this interpretation are perceived as important by the public opinion. Yet, the tendency of the literature to underplay the role of the financial industry in the theory of distribution makes it difficult to analytically support for what the public opinion perceives.

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