Financialization increases inequality and leads economy to a dead end

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Financialization Increases Inequality and Leads Economy to a Dead End

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Abstract
Modern capitalists multiply their income and wealth largely due to revaluation of the financial assets, which often has no roots in the real sector of the economy. The assets' market price may exceed the corresponding liabilities of their issuers. Such excessive part of the assets' value is not secured by anything; it forms an unsecured component of their owners' wealth. This unsecured component is one of the main reasons for the observed wealth-to-income growth. We have shown that the increase in unsecured wealth necessarily increases inequality. So, the large wealth-to-income ratio indicates inequality strengthening. The rising inequality leads to the impoverishment of the poorest households and inhibition of economic growth. This is facilitated by an imbalance between the total savings and investment which unsecured income causes. A part of the capitalists' huge savings is absorbed by the unsecured growth in the financial assets' value and do not materialize as capital investments. In fine, the consequence of financialization is the growth of unsecured income and wealth, which entail the rising inequality due to the outstripping growth of the largest fortunes. This causes an imbalance in economic growth and drives the economy into a dead end.

1. Introduction

Savings in the real sector of the economy are considered as the only source of capital growth in the traditional growth models (Harrod, 1939 and Domar, 1946; Solow, 1956 and Swan, 1956; Kaldor, 1957 and Pasinetti, 1962). In this case, economic growth at a constant rate with fixed propensity to save means the constancy of the capital - output ratio (see Harrod-Domar equation). Such constancy was actually observed until the 1980s and was viewed to be the one of the so-called "Kaldor (1961) stylized facts".

However, the situation has been changed later; the wealth-income ratio in developed countries has grown significantly and continues to grow (see Piketty, 2014; Piketty and Zucman, 2014), while the savings in the real sector are not enough for such growth (Stiglitz, 2015). The main sources of additional ("unearned" as we will call it) wealth[1] are the revaluation of various assets (*capital gains*), in particular land (Stiglitz, 2015).

Another source of unearned wealth is investigated in this paper, no less important from our point of view than the growing cost of land. This is the unsecured value of financial assets, which exceeds the amount of the counterpart issuers' obligations.

Every financial asset has the counterpart obligations (liabilities or equity) accounted on the financing side in the balance sheet of the issuer of this asset. The issuer of the bond undertakes to repay it at a certain date with the interest. The issuer of the shares provides their value by his own capital (corporate equity). The value of a financial asset is equal to the value of

[1] The concepts of "capital" from the Kaldor facts and of "wealth" are distinct (see Yashin, 2020). The "earned" wealth, which corresponds to Kaldor's capital, is accumulated due to savings in the real sector of the economy, that is, due to the "earned" income in terms of Hudson (2006). Unearned income and wealth (*wealth residuals* in the terminology of Stiglitz, 2015) includes capital gains and the associated financial profit.

corresponding obligations at the time of issue and primary offering. However, this equality can be violated afterwards and it is violated in fact, if the securities' prices are set on modern electronic trading platforms. In this case, the asset's market value loses its connection with the counterpart issuer's obligations. Shareholder value, for example, may not be equal to the own capital of the issuer of the equities; Tobin's (1981) Q-ratio differs from 1 in this case. Indeed, changes in stock prices are not required to be exactly equal to the results of the economic activities of the issuing corporation. It may happen that the value of the equities has increased, while the own capital of the corporation has not changed, or changed to a lesser extent. In this case the issuing corporation "does not confirm" the increase in shareholder value by increasing its obligations. As a result, a part of the financial assets' value is not secured by the corresponding obligations; we consider this unsecured part as illegitimate.

The legitimacy of the unsecured part of the financial assets' value and of the unsecured wealth is sometimes justified as a capitalization of additional rent from the use of various intangible factors: intellectual property, human capital, etc. We believe that in a competitive economy (namely, a wise government should support such an economy) the capitalization that is not secured by the issuer's obligations should not take place.[2]

Our view on the legitimacy of the unsecured part of financial assets' value is also confirmed by the statements contained in the 2008 SNA standards recommended for use by the United Nations Statistical Division for national accounts systems. In particular, according to p.2.58, "*financial asset and its liability counterpart have to be recorded for the same amount in the creditor and the debtor accounts*".

The unsecured part of financial assets' value forms unsecured component of their owners' wealth, which increases the aggregate wealth. Many economists rightly consider this component which inflates bubbles in financial markets as an illegitimate and virtual wealth negatively affecting the economy, see Bezemer & Hudson (2016); Fitoussi & Saraceno (2009).

At the same time, a widespread opinion exists that the unsecured fluctuations in the value of financial assets are temporary deviations from the norm, which associated with stock market volatility. Therefore, on average securities' prices correspond to the "fair" secured level. Some supporters of this point of view believe that such deviations do not entail long-term consequences, and therefore they can be ignored (e.g., Solow, 2014).

Yet is not so, at least for the US economy, as it is shown in Yashin (2020a). The unsecured part of financial assets really does experience cyclical fluctuations due to stock market volatility. However, simultaneously with the cyclical component, there is a monotonous increase in the unsecured value since the 1980s, which exceeded $11 trillion by 2016. Unidentified miscellaneous financial assets and equities are mainly responsible for such growth.

Unearned wealth is generated by the unearned income: by the capital gains and corresponding financial profit; such income is quite tangible for the owners of the assets. At the same time, the

[2] As an example, a case is suggested here that I witnessed in the early 2000s. The American venture fund has tried to sell the successful facing brick production business just created in Ukraine. Profit was high, since the quality facing bricks were not previously produced in the country, while the demand for them was high. The business-selling price was calculated by the income method and significantly exceeded the actual capital investment of the fund. The result was not the expensive sale of the existing enterprise, but the cheap creation by the potential buyer of exactly the same fabricator, increased competition in the industry and reduced return on capital. Know-how has not increased the capitalization of the enterprise. Part of the staff of the first enterprise was overbought by the second, so the "human factor" also did not work. More about the illegitimacy of the unsecured component of shareholder value is in Yashin (2020).

unearned income is not considered as a part of the aggregate income in the systems of national accounts, since it has no roots in the real sector. This automatically means an imbalance between total income and expenditures. Haig-Simons total income (Haig, 1921 and Simons, 1938), including capital gains, is not equal to the total expenditures in the real sector (consumption plus investments); total saving, respectively, is not equal to the investment in the real sector. The not reinvested saving is absorbed by the unearned growth of assets (capital gains), as shown in section 3.1.

Thus, the result of unearned income is the imbalance between total income and expenditures, which has a negative impact on economic growth and sustainability. One of the consequences is a violation of Say's law, that is, a mismatch between aggregate demand (determined by total income) and aggregate supply, which corresponds to aggregate output.

Other consequence is intuitively clear that capital gains and the growth of unearned wealth increase inequality, as initially the assets are distributed unevenly; moreover, the propensity to save is higher for wealthy households. This thesis is proved mathematically rigorously in Section 3.2: the presence of unearned wealth and its growth is a sufficient condition for the wealth inequality rising; the wealth inequality in this case significantly exceeds the inequality in wages.[3]

The increasing inequality, in turn, has a negative impact on the growth in the real sector of economy. The decrease in total consumer demand due to the lower incomes of poor households is not fully compensated by the growth in demand of the rich ones; the latter are not able to increase consumption by the rate of income growth, Stiglitz (2012). However, the large savings of capitalists do not automatically mean large capital investments in the real sector, they are absorbed partly by the increase in the unearned value of assets; the balance between savings and investments is broken due to the unearned capital gains. Inhibition of economic growth due to rising inequality is enhanced by a feedback: a decrease in the growth rate, in turn, accelerates the increase of inequality.

We consider the unlimited desire of the proprietors to maximize their profit and wealth as the initial root cause of the described phenomena. Financial assets, the value of which is determined in stock markets, are an appropriate tool to achieve these goals. The value of such financial assets is volatile, and can vary significantly (often exceed) relative to the value of the obligations securing these assets in the issuers' balance sheet. The difference between the value of financial assets and the corresponding obligations forms the unsecured wealth. Rich owners, having market power, can stimulate an unsecured increase in the value of their securities, increasing wealth in accordance with their aspirations. Therefore, we consider the growth of unsecured wealth as a direct consequence of the animal spirits (Keynes, 1936) of the capitalists. The outpace growth of the largest fortunes and the rising inequality, which are inevitable consequences of the growth of unsecured wealth, are in this case a “side effect” of the aspirations of wealthy proprietors. Thus, we believe that the desire of capitalists to maximize income and wealth through the stock markets, generating unsecured income and wealth, bears the main responsibility for the observed today inequality rising. We believe also that the 2008 crisis was triggered by the activity of these markets; Fitoussi & Saraceno (2009) claimed the same. A very important political and economic conclusion follows from the above: the functioning of the

[3] Thus, the revaluation of financial assets (similar to revaluation of land) well explains a set of new stylized facts announced by Stiglitz (2015): (a) Growing inequality; (b) Wealth is more unequally distributed than wages; (d) Significant increases in the wealth income ratio.

modern stock markets is not neutral for the economy as a whole. It is impossible to combat effectively the increase in inequality without eliminating unsecured wealth and the causes of its appearance. Moreover, the observed large and growing (at the expense of the unearned component) value of wealth-income ratio indicates the strengthening of inequality.

In fine, the consequence of financialization is the growth of unsecured income and wealth, which entail the rising inequality due to the outstripping growth of the largest fortunes. This causes the imbalance in the economy and drives it to a dead end.

The key for understanding the process of wealth inequality rising, and the connection of this process with the growth of unearned wealth in the modern economy, is the analysis of wealth accumulation detailed down to an individual household. The formalization of the process of accumulation of individual wealth is given in the 2nd section. The subjects responsible for the unearned growth of total wealth and for the inequality rising are not all households, but only the owners of the largest fortunes ($i \epsilon C$), whose income is so great that they are not able to consume a significant part of it, so that $rs_i > g$; this relation is substantiated strictly (as Inequality 1) in 2nd section. Just such large fortunes grow at a faster pace (relatively to GDP), which is the source of the growth of total wealth-income ratio in the modern developed economies.

The individual wealth of household for which Inequality (1) is not fulfilled is growing at the same rate as GDP; it is proportional to the wages received, taking into account the propensity to save. If such an accumulation of wealth is characteristic of all households, then in the long run the level of wealth inequality would correspond to the level of inequality of wages and, hence, to the level of income inequality (taking into account the difference in individual propensities to save). Initial capital accumulations do not play any role in this case. Yet, this does not correspond to the observed data. As Piketty (2014, Ch. 7, p.175) rightly pointed out, "*inequality of wealth is always and everywhere much greater than inequality of income from labor*". That is, the existing property inequality is caused, first of all, not by the difference in the level of wages, but by the outstripping growth of the largest fortunes due to capital income, the criterion of which is the fulfillment of inequality $rs_i > g$.

Section 2 considers an example that helps to understand the mechanism of growth of the largest fortunes, and, consequently, of wealth inequality rising. We consider an economy where the savings in the real sector are exclusive source of accumulation of total wealth, that is, there are no unearned capital gains. In such an economy, the largest and exponentially growing (in units of GDP) fortunes, over time absorb a growing share of total wealth, as if a black hole sucks surrounding matter. But the volume of "surrounding matter" (of the wealth) is limited. The inevitable consequence is the impoverishment and potential bankruptcy of an increasing number of the poorest households. Such an economy can no longer function successfully. Therefore, periodic upheavals are inevitable for archaic societies existed in the pre-industrial era, zeroing out the accumulated and already overwhelming debt burden, starting with the reform of Solon in ancient Athens, and even earlier, see Hudson (2018).

Section 3 shows that in the modern economy the outstripping growth of the largest fortunes (and, consequently, the increase in wealth inequality) can occur not only due to decrease in income and wealth of other entities. The enrichment of capitalists today can take place in a more “tolerant” way. Its source may be the revaluation of assets, including land and financial ones.

However, such a relatively tolerant method does not prevent the negative consequences of increasing inequality and slowing economic growth. We have proved that the rising inequality is an inevitable consequence of the growth of unearned (including unsecured) wealth. This statement is a necessary link in the chain of relationship between the financialization of the

economy and the rising inequality. A consequence of the growth in volumes of financial markets is the growing volume of financial profit and of capital gains, some of which are not secured. The last circumstance is a sufficient condition for the wealth inequality rising.
Thus, in this paper the connection between the financialization of the economy and of the inequality rising, which is qualitatively understandable to a number of economists (see, for example, Galbraith, 2012), is mathematically formalized and therefore can be studied quantitatively.

2. Formalization of the process of individual wealth accumulation

Piketty (2014) has considered the rising inequality in detail in his famous treatise. He shows that the observed actual excess of the return on capital over the rate of growth of real output, $r>g$, may be the cause of the rising inequality in the distribution of wealth.
Strictly speaking, the inequality $r>g$ announced by Piketty is not a sufficient condition for the outstripping growth of the largest fortunes and for the rising in wealth inequality, which was noted in a number of publications (for example, Milanovic, 2015; Ray, 2014; Bernardo at all, 2014). This inequality means the excess of the capital income rK_{fi} of i-th household relative to the value of capital accumulation gK_{fi} necessary to maintain a constant level of wealth of this household in GDP units (K_{fi}/Y). However, the outpace (relative to GDP) growth of i-th household wealth K_{fi} requires the value gK_{fi} to be less than the *non-consumed* part of the household's income: $s_i rK_{fi}>gK_{fi}$, where s_i is its propensity to save. It can be written as:

$$r\, s_i > g \tag{1}$$

Since the household cannot save more than it earned, $s_i<1$, the Inequality (1) is more rigid than the condition for the growth of wealth inequality initially announced by Piketty ($r>g$),[4] and therefore absorbs the latter.
Note, that Inequality (1) is "individual": it can be fulfilled or not for each individual household, depending on its propensity to save. The dynamics of accumulation of individual fortunes in the long term depends on the fulfillment or non-fulfillment of the inequality. We show below that (1) is a condition for the outpace growth of the individual wealth.
Consider the dynamics of the accumulation of wealth K_{fi} of i-th household:

$$K_{fi}(t+\Delta t) = K_{fi}(t)+s_i H_i(t)\Delta t = K_{fi}(t)+ s_i(w_i(t)+r\, K_{fi}(t))\, \Delta t, \text{ and if } \Delta t\to 0$$

$$dK_{fi}(t)/dt = rs_i\, K_{fi}(t)+s_i w_i(t) \tag{2}$$

where w_i and H_i are wages and Haig-Simons income of the i-th household.
Let us make the change of variables $X\equiv K_{fi}(t)/Y(t)$ and differentiate the value of the $X(t)$ over time. Taking into account obvious relation $dY(t)/dt=gY(t)$ and Equation (2), we have:

$$dX/dt = (1/Y(t))\, dK_{fi}(t)/dt - (K_{fi}(t)/Y(t)^2)\, dY(t)/dt = [rs_i\, K_{fi}(t)+s_i w_i(t)]/Y(t) - gY(t)K_{fi}(t)/Y(t)^2 =$$

$$= s_i w_i(t)/Y(t)+[rs_i - g]X(t) \tag{3}$$

[4] That is, if Inequality (1) holds, then inequality $r>g$ also necessarily holds.

We assume a balanced growth of wages due to the growth of labor productivity with a constant amount of labor used:[5]

$$w_i(t)/Y(t)=const \tag{4}$$

With a constant propensity to save s_i and growth rate g of the total real output, the solution to the last differential equation is:

$$X \equiv K_{fi}(t)/Y(t) = s_i w_i(t)/[Y(t)(g-rs_i)] + const_{1i} \times exp\,(-t \times (g-rs_i)) \tag{5}$$

$$const_{1i} = [K_{fi}(0)(g-rs_i) - s_i\, w_i(0)]/[Y(0)(g-rs_i)]$$

The constant in the last equation is calculated based on the initial conditions.

Note that the first term on the right-hand side of Equation (5) does not depend on the initial value of wealth. Therefore, we shall call this term as a purely labor component in the wealth accumulation.

If the condition $rs_i>g$ is fulfilled for the i-th household, then the second term on the right-hand side of Equation (5) experiences an exponential increase in time. The own capital of the household K_{fi} will grow at a faster pace relative to GDP. In this case, the first (purely labor) term of Equation (5) can be neglected in the long run. Therefore, we say that the second (exponentially growing) term is responsible for the capital component of accumulation of the individual wealth.

On the contrary, if the inequality $rs_i < g$ is satisfied, then the exponential term on the right-hand side of Equation (5) tends to zero when $t>>1/(g-rs_i)$, and the ratio $X(t)=K_{fi}(t)/Y(t)$ asymptotically tends to a constant level:

$$K_{fi}(t)/Y(t) = s_i w_i(t)/[Y(t)\,(g-rs_i)]\,)] = const_{2i} \tag{6}$$

$$const_{2i} = s_i w_i(0)/[Y(0)\,(g-rs_i)]$$

The constant is also determined from the initial conditions.

According to Equation (6), during long-term economic growth the equilibrium value of wealth accumulated by the i-th household is directly proportional to the wages and to the propensity to save, and does not depend on the initial value of wealth. The stability of the K_{fi}/Y ratio means the possibility of a long-term scenario of economic growth with a constant level of wealth inequality. Individual households' propensities to save s_i in this case may differ from each other within wide limits. However, if all of them are constant in the long run, and satisfy the inequality $s_i<g/r$, then all corresponding individual fortunes K_{fi} will grow at the same rate g, which coincides with the growth rate of total output. Then a ratio of any two individual households' fortunes K_{fi}/K_{fj} will be a constant also, that is, the wealth inequality does not increase. In this case, the wealth inequality in the long run should be proportional to inequality in labor incomes, taking into account individual propensities to save, regardless of the original wealth inequality.

[5] A steady growth of labor at a rate n implies a decrease in the ratios $w_i(t)/Y(t)$. Then the outstripping growth of largest fortunes should take place under the lower rs_i value (in comparison with Inequality (1)): $rs_i>g-n$.

This does not correspond to the actual data, because wealth inequality is always much greater in comparison with the inequality of labor income. The obvious reason for this difference is the outpace accumulation of the largest fortunes, for which Inequality (1) holds. Indeed, the scenario of the growth of economy described above, in which the increase in wealth inequality does not occur, is impossible if one or several (rich) households save so much, that $s_i > g/r$. There will be an unlimited exponential growth of the wealth of such households relative to GDP, K_{fi}/Y, due to the second term on the right side of Equation (5). In this case the gap between the largest fortunes and the individual own capitals accumulated through labor income savings will grow, the faster the greater the difference $rs_i - g$. This difference can be especially large if a growth rate of the economy is low. It can grow additionally due to an increase in the propensity to save of the richest households, which are able to consume an ever-smaller share of their rapidly growing income.

On the contrary, if the rate of economic growth will become higher, then the difference $rs_i - g$ will decrease. It means that the value of the second exponential term on the right-hand side of Equation (5) will slow down with respect to the first term, which is responsible for labor income accumulation. Labor income accumulations will get a larger share. Therefore, the wealth inequality should decrease in the case of a sharp acceleration of economic growth (and vice versa). This is exactly what the actual data demonstrate, see for example, Piketty (2014, Ch. 10). The period from 1910 to 1980 shows high output growth rate and softening of wealth inequality. Later the inequality starts to rise again, amid a slowdown in the economy.

Thus, the nature of wealth inequality and of its growth is determined by the presence or absence of very large fortunes, for owners of which Inequality (1) holds. Further, we will consider economies where such large fortunes exist, which are growing faster than GDP. At the same time, the wealth of other, less affluent households will grow at the same rate as the GDP, if their propensities to save remain unchanged.

Let us divide all households into two groups, with the different dynamics of wealth accumulation; we will call them capitalists and workers. The division is made so, that for all capitalist households Inequality (1) is fulfilled, while for all households-workers it is not. Then the aggregate wealth of K_f can be divided into two pieces: the total wealth of workers K_f^w and the total wealth of capitalists K_f^c, more convenient in units of GDP:

$$K_f(t)/Y(t) = K_f^w(t)/Y(t) + K_f^c(t)/Y(t) \tag{7}$$

The total wealth of workers ($i \epsilon W$) in units of GDP will be equal in the long run $t >> 1/(g - rs_i)$, in accordance with Equation (6), to:

$$K_f^w(t)/Y(t) = \sum_{i \in w} K_{fi}(t)/Y(t) = \sum_{i \in w} s_i w_i(t)/[Y(t)(g - rs_i)] = const \tag{8}$$

The total wealth of capitalists ($i \epsilon C$) in units of GDP can be expressed in the long run ($t >> 1/(rs_i - g)$), in accordance with Equation (5) as:

$$K_f^c(t)/Y(t) = \sum_{i \in c} K_{fi}(t)/Y(t) = \sum_{i \in c} \{s_i w_i(t)/[Y(t)(rs_i - g)] + (const_{2i} \times exp\,(t \times (rs_i - g))\} =$$

$$= \sum_{i \in c} \{s_i w_i(t)/[Y(t)(rs_i - g)]\} + \sum_{i \in c} const_{2i} \times exp\,(t \times (rs_i - g)) \tag{9}$$

The first sum on the right side of the last equation which is responsible for the labor part of capitalists' accumulation is constant, while we consider $s_i w_i / Y = const$ for all households. Simultaneously, the all terms of the second sum grow exponentially, which means that the whole

sum grows unlimitedly. Consequently, the total wealth of capitalists in units of GDP K_f^c/Y is also growing without limits. What are the sources of such growth? We begin the study of this issue with a simple case, discussed below.

Imagine a hypothetical closed economy, the real sector of which is experiencing a steady balanced growth at a constant rate, so that the capital-output ratio is fixed, $K_n/Y=const$, where K_n is the earned wealth accumulated through savings in the real sector. We will call such an economy "archaic," since it was characteristic of the pre-industrial era. There is no unearned wealth in such economy, so $K_f=K_n$.

The constancy of the wealth - output ratio for the archaic economy, $K_f/Y=const$, means according to Equation (7) that the exponential growth of K_f^c/Y value cannot take place simultaneously with the constancy of K_f^w/Y. That is, the outstripping growth of capitalists' fortunes according to Equation (9) is incompatible with the balanced growth of workers' wealth according to Equation (8). Therefore, if the outstripping growth of the largest fortunes takes place, then the wealth of workers in units of GDP should decrease in a closed archaic economy.

So, over certain time the source of outpace growth of the largest fortunes will be already not only the not consumed part of the value added created in the real sector, but also the direct flow of wealth from other entities, in particular, from the less affluent households-workers. The inevitable long run consequence of such a mechanism is the increase in wealth inequality accompanied by the impoverishment and bankruptcy of the poor households.

The aggregate wealth in an archaic economy grows solely due to the not consumed part of the value added, that is, due to the savings in the real sector. Aggregated values of wealth and saving in such an economy grow at a rate of GDP growth. However, if the largest fortunes grow faster, this means that capitalists withdraw a larger and larger share from a fixed (in units of GDP) volume of aggregate saving. Accordingly, the employees are left with a smaller and smaller share. At a certain point in time, the savings of the rich will absorb and then exceed all the cumulative savings in the real sector, and the total savings of workers will become negative. This means that the huge capitalists' savings will be reinvested in the real sector only partially, and the rest (the capitalists' positive net lending) will be compensated by the decrease of the poor households' wealth (workers' negative net lending).

We get a paradoxical conclusion: having a market power, wealthy capitalists can force poor workers to consume an increasing share of their income, reducing their propensity to save, down to negative values.[6] That is, the propensity to save of the poor households is no longer completely their "personal affair", it can be influenced from the outside. Therefore it becomes clear that the outpace growth of capitalists' wealth in an archaic economy requires growing casualties from workers (or from the government and the outside world if they are included in consideration). Sooner or later, such an economy will come to a dead end; if nothing is changed, then the richest owners will appropriate all the available wealth to them and will start an internecine struggle, having driven the rest of society into debt slavery.

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[6] There are various methods used by capitalists, having market power, to redistribute aggregate income and wealth to their advantage. For example, they can set monopolistically high prices, implying high profits, for goods and services, especially for vital necessities - medicines, medical insurance and public services. In addition, the workers' propensity to save can be reduced by contributing to the growth of their loans (consumer, mortgage, education, etc.).

The described here scenario shows that an archaic economy cannot act long and well off if the largest fortunes grow at a faster pace than GDP. In our opinion, this is the cause of periodic turbulence, which results in the cancellation of accumulated private and state debts and the redistribution of property in the direction of reducing inequality (from the destruction of Solon's debt pillars to bankruptcies of states, uprisings and wars).

In the general case, the conclusion can be formulated for an arbitrary (not necessarily archaic) economy as follows: If the wealth of capitalists in units of GDP K_f^c/Y grows, then either the ratio K_f^w/Y should decrease or (and) the ratio K_f/Y should increase. The increase in the K_f/Y ratio when K_f/Y is constant means an increase in unearned wealth, including its unsecured component. The latter case is considered in the next section.

3. Growth of the capitalists' unearned wealth in the modern economy

In contrast to the archaic economy discussed above, in a modern economy the outstripping growth of the largest fortunes (and therefore the growth of the K_f^c/Y ratio) does not necessarily mean a decrease in the share of workers' wealth, K_f^c/Y, see Equation (7), since the value of total wealth in units of GDP K_f/Y can grow. K_f does not necessarily equal to K_n because total wealth K_f can increase not only due to savings in the real sector, but also due to revaluation of assets (capital gains) that we call unearned income.

The national accounts take into consideration only earned in the real sector income (without capital gains and financial profit); the total of such earned income is equal to total expenditures. However, the unearned income is quite tangible for the recipients; it forms a part of the total Haig-Simons income, although it has no root in the real sector. The total income, consisting of both earned and unearned parts, will no longer necessarily be equal to total expenditures in the real sector. Then the total saving (not consumed part of Haig-Simons income) is no longer necessarily equal to the investment in the real sector. The surplus savings of capitalist households, exceeding their investment in the real sector (positive net lending of these households), can be absorbed by the increase in the unearned value of their assets, without a decrease in net lending of other economic subjects. We show below, that such absorption occurs automatically: the not reinvested saving is equal to the unearned income, which in turn corresponds to the unearned increase in the value of assets and wealth.

3.1 Formalization of the process of generating of unearned income

The emergence of unearned income and unearned wealth can be formalized mathematically; it is shown below in this section.

Unearned wealth is the difference between total wealth and its earned part; it is formed and accumulated due to the difference between the total Haig-Simons savings S_f (including capital gains) and the savings in the real sector S_n:

$$\Delta[K_f(t) - K_n(t)] = \Delta K_f(t) - \Delta K_n(t) = S_f(t) - S_n(t) \qquad (10)$$

The index n is used to denote the values associated with the earned wealth (corresponds to nonfinancial production capital), and with the real sector of economy; analogues of these quantities associated with the financial sector are labeled by the index f.

Saving is the difference between income and consumption C. For calculating saving value S_n in the real sector, national income which is equal to the total net output Y_{net}[7] acts as income; for calculating the Haig-Simons savings S_f, the total Haig-Simons income H is used:

$$S_n(t) \equiv Y_{net}(t) - C(t) \tag{11}$$

$$S_f(t) \equiv H(t) - C(t) \tag{12}$$

Total Haig-Simons income and national income which is equal to the total net output can be calculated as:

$$Y_{net}(t) = w(t)L(t) + r_n K_n(t) \tag{13}$$

$$H(t) = w(t)L(t) + r_f K_f(t) \tag{14}$$

where wL is the total wages, $r_n K_n$ is the capital income in the real sector (profit), and $r_f K_f$ is the total capital income of the eventual proprietors - households.

The value of aggregate household Haig-Simons income H in Equation (14) includes the revaluation of assets (capital gains), and therefore may not coincide with the national income in the real sector, which is equal to the total net value added Y_{net}, see Equation (13). The difference ΔH between aggregate Haig–Simons income and national income we call the unearned income. By comparing Equations (14) and (13), we have:

$$\Delta H(t) \equiv H(t) - Y_{net}(t) = [wN(t) + r_f K_f(t)] - [wN(t) + r_n K_n(t)] = r_f K_f(t) - r_n K_n(t) \tag{15}$$

Last relation shows that the unearned income ΔH is formed due to the difference between the total households' capital income $r_f K_f$ and capital income in the real sector $r_n K_n$. Obviously, this difference corresponds to the unearned capital gains. For example, shareholder value in the stock market has surged by $r_f K_f$ due to capital gains, which exceeds the actual corporation's profit $r_n K_n$. So, the unearned income is generated by the unearned profit.

On the other hand, it turns out by comparing Equations (11) and (12), that the unearned income ΔH is equal to the difference between the households' Haig-Simons savings S_f and the savings in the real sector S_n, while this difference, in turn, provides an increase in unsecured wealth according to Equation (10):

$$\Delta H(t) \equiv H(t) - Y_{net}(t) = S_f(t) - S_n(t) = \Delta[K_f(t) - K_n(t)] \tag{16}$$

Given the obvious equality between saving and investment in the real sector,

$$S_n(t) = I_{net}(t) \tag{17}$$

Equation (16) can be rewritten:

$$\Delta H(t) = S_f(t) - I_{net}(t) \tag{18}$$

[7] Difference between the net and gross product is depreciation δK_n, where δ is the depreciation coefficient

A comparison of the last equation and Equation (16) suggests that the not reinvested savings S_f–I_{net}, which are equal to the unearned income, can also be considered as a source of accumulation of the unsecured wealth K_f–K_n. The enormous savings of the capitalists, arising from the inability of the latter to consume their huge capital income, mainly do not turn into capital investment, but are absorbed by an unearned increase in the value of their assets.

The inequality between total saving and investment, as well as between total income and expenditures seems paradoxical and needs to be clarified. The reason for the paradox is that the values of income and expenditures are calculated according to different methods. When calculating the total value of households' savings S_f in Equation (12), the total income of the ultimate proprietors (households) there is the Haig–Simons income H, which includes the capital gains. At the same time, consumption C refers exclusively to the real sector. In order for savings and investments to match, it is necessary to calculate expenditures according to the same method as the income. The volume of investment then should include an additional amount of savings absorbed by an unsecured increase in the value of assets. Today this additional value is often (and in my opinion unreasonably) called as "investment" also. We do not believe that such "investments" are real and that they increase the actual wealth of the nation.

Equations (15) and (18) demonstrate two views from different sides on the same event: the emergence of unearned income (and of unearned wealth). On the one hand (Equation 15), the unearned income ΔH arises because the capital income of ultimate proprietors exceeds the profit in the real sector, $r_fK_f > r_nK_n$. On the other hand (Equation 18), the unsecured income arises due to "under-consumption" or "under-investment", when household savings exceed investments in the real sector, $S_f > I_{net}$. The rich households are not able to completely consume and reinvest all of their huge income.

Equality $\Delta H = r_fK_f - r_nK_n$ leads to another interesting conclusion. If the returns on financial and nonfinancial assets are equal, $r_f = r_n$, in the presence of unearned wealth, $K_f > K_n$, then the available unearned wealth should grow further, since $r_fK_f > r_nK_n$ will occur, and therefore $\Delta H > 0$. Unearned wealth reproduces itself extensively.

3.2. Rising in wealth inequality is a consequence of the unearned wealth

We have shown above that the outstripping growth of the largest fortunes in the modern economy is ensured by the growing unearned income due to capital gains. This avoids the tough scenario for an archaic economy, when such outpace growth was provided by direct redistribution in their favor of the workers' wealth. Nevertheless it is not possible to avoid the inequality rising. Balanced economic growth is impracticable. Nor the impoverishment and bankruptcy of the poorest households can be avoided, as shown by modeling possible scenarios in Yashin (2020). The increase in unsecured wealth drives the economy to a dead end.

It is proven below (from the converse) that the growth of unsecured wealth is directly related to the outpace growth of the largest fortunes (the first is a sufficient condition for the second).

Theorem 1: If in the balanced constantly growing (in real sector) economy all individual fortunes have a "labor" character ($rs_i < g$ for all households), then in the long run ($t >> 1/(g - rs_i)$) the unsecured wealth $K_f - K_n$ should tend to zero.

Proof: If all individual fortunes have "labor" character and grow at the same rate g (which is equal to the GDP growth rate), according to Equation (6), the same can be said for their sum — the total wealth K_f:

$$K_f(t)/Y(t) = s_f w(t)L/[Y(t)\,(g - rs_f)] = const \quad (19)$$

where the averaged propensity to save s_f can be expressed as

$$s_f = S_f(t)/H(t) = (w(t)L + rK_f(t) - C(t))/(w(t)L + rK_f(t)) \quad (20)$$

Substituting s_f into Equation (19), we obtain:

$$gK_f(t) = w(t)L + rK_f(t) - C(t) \quad (21)$$

The last relation is intuitive: in order for wealth K_f to grow at the rate of g, the necessary saving (the difference between income $wL+rK_f$ and consumption C) must be equal to gK_f.
A similar formula can be derived for the earned (nonfinancial) capital K_n accumulated in the real sector of the economy.

$$gK_n(t) = w(t)L + rK_n(t) - C(t) \quad (22)$$

Subtracting Equation (22) from Equation (21) we get:

$$g[K_f(t) - K_n(t)] = r[K_f(t) - K_n(t)] \quad (23)$$

The last equation has two solutions. First is $r=g$; such a hypothetical scenario from our point of view does not have a deep meaning. The second solution has real meaning, $K_f(t) = K_n(t)$: the unearned wealth is absent.
Thus, if the growth of the own capital of all households is due to labor income and savings, in accordance with Equation (6), then in the long run the total wealth and the total value of nonfinancial assets (earned wealth) will inevitably become equal to each other. This means that the unearned wealth should escape over time. However, if the unearned wealth is large and has a tendency to increase, as it is actually observed, this indicates the existence of growing faster-paced fortunes, and hence the increase in wealth inequality (which we want to prove). ■

4. Concluding remarks

Unearned income contributes to increasing inequality and negatively impacts the economy, as it was shown above. The unearned income is formed due to revaluation of assets, both nonfinancial and financial. We believe that the main destructive factor for the economy is the overvaluation of *financial* assets, which has no roots in the real sector of the economy. Such revaluation is not secured by the corresponding increase in obligations of issuers of the financial assets; so it is unsecured income.
Of course, the revaluation of *nonfinancial* assets, primarily land and real estate, is also the unearned income which increases unearned wealth. Yet, firstly, such income is more difficult to use for consumption and reinvestment, since nonfinancial assets, as a rule, are much less liquid than financial ones. Secondly, the value of nonfinancial assets is much more difficult to manipulate than the value of securities.
Indeed, financial assets are much more attractive instruments than nonfinancial ones to maximize profit and wealth. The cost of some of them can be easily varied. Options-owning management can distort corporations reporting, which affects their shareholder value; audit firms are not

completely impartial also; the largest funds that accumulate tens of trillions of dollars of financial assets are interconnected, which allows them to coordinate the process of trading in securities.

Real estate and land speculation has always taken place, but this did not lead to crises. The mortgage crisis of 2008 made possible due to a "bright idea" of the issue and circulation of mortgage securities in the financial markets.

The society has long realized the danger of uncontrolled emission of fiat money, and imposed a number of tough restrictions on such emission. However, at the same time many other financial assets that are practically not inferior to money in terms of liquidity are being issued today at an increasing rate. The consequence is a financialization of modern economy.

The financialization provides capitalists with the opportunity to receive additional profit due to unsecured revaluation of financial assets. Then the unsecured wealth is accumulating. A direct consequence of the growth of unsecured wealth is the inflating of financial bubbles and the instability of stock markets. A side effect is the rising inequality (see Theorem 1) due to the outpace growth of the largest fortunes, Increasing in inequality, in turn, is the reason for the inhibition of economic growth. The decline in consumer demand of workers is not fully offset by the growth in capitalists' consumption. At the same time, a significant part of the huge savings of the latter are not reinvested in the real sector, as they are absorbed by the unsecured increase in the value of their financial assets. Total savings are not equal to capital investments, since Haig – Simons total income is not equal to expenditures in the real sector. Balanced growth of such an economy is impossible.

Moreover, the process of “growth of inequality → economic slowdown” has a feedback. Inhibition of economic growth, in turn, entails an increase in the exponent $rs_i–g$ in Equation (5), which determines the growth dynamics of the largest fortunes. That is, a decrease in g means an acceleration of the outstripping growth of the largest fortunes and further inequality strengthening. The exponent can increase additionally for the largest fortunes due to the increasing propensity to save s_i of the owners of these fortunes, as, for example, noted by Milanovic (2013).

Thus, a direct consequence of the unlimited financialization is an unsecured revaluation of financial assets and financial profit, that is, an increase in unsecured income and wealth. The consequence of this is the increase of inequality dampening the economy growth, which in turn strengthens the inequality rising; the feedback forms a vicious circle and enhances the negative effect. Along with rising inequality, the impoverishment and bankruptcy of poor households exacerbates the situation. Such a path leads to a dead end and crisis.

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