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# Institutionalist versus Neoclassical View on Income Distribution and Economic Progress: The OECD Panel Evidence

**Summary:** Institutionalist and neoclassical views on income distribution are characterized by different assumptions about the inequality - savings - economic progress relationship. By questioning the neoclassical arguments, the paper promotes the attitude that economic progress results not from savings as “abstain from current consumption” but from society’s ability to continuously develop technological arts and crafts. Empirical analysis of panel data from OECD countries using a dynamic GMM model shows a positive relationship between income concentration and aggregate savings, but there is no robust evidence of a positive relationship between aggregate savings and economic progress. Furthermore, we find robust evidence that technology and human capital are the key determinants of economic progress, implying that accumulation of physical and human capital is more important for economic progress than accumulation of financial capital.

**Key words:** Income inequality, Savings, Economic progress, Old institutionalism, Neoclassical economics.

**JEL:** D31, E21.

By viewing income inequality as an outcome of free market mechanism, the mainstream economics asserts that income inequality is inevitable. Moreover, if top income concentration generates savings, given the difference in propensity to save between the rich and the poor, unequal distribution of income might be tolerated under the circumstance in which there is a positive relationship between inequality and economic progress. However, empirical evidence on this relationship is mixed (for example, see Laura de Dominicis, Raymond J. G. M. Florax, and Henri L. F. de Groot 2008; Pedro Cunha Neves and Sandra T. Silva 2014; Neves, Óscar Afonso, and Tavares Silva 2016), suggesting that dominant theories and current redistribution policies are not the only way of thinking about and dealing with the problem of growing concentration of top income.

Opposite to the mainstream economics, the heterodox theory argues that inequality does not arise from the very nature of the market economy. As Jon D. Wisman (2017) puts it “depicting economic inequality as a product of natural economic forces is the ideology that itself has led to greater inequality”. Concentration of top income is

closely related to institutional arrangements and power relationships, which are more in favour of the rich than the poor. If economic progress depends more on accumulation of physical and human capital than on accumulation of financial capital, than more even distribution of income is not only a desirable but it is also feasible. From the heterodox point of view, the possible solution should be sought in reducing institutional frictions that are not adapted to productive potential of a modern society.

In the context of presented the orthodox/heterodox divide, the aim of this paper is to try to answer the question of whether old institutionalism offers a coherent alternative to neoclassical approach to inequality - savings - economic progress equation, based on regression results that cover OECD countries in the period from 1980 to 2015.

The paper is organized into the five sections. Section 1 reviews the literature about the differences between neoclassical and heterodox views on income distribution, particularly different approaches to the inequality - savings - economic progress equation. Section 2 presents the conceptual framework used to define the research hypothesis. Section 3 describes the dataset and econometric specification. Section 4 presents and discusses the econometric results. The paper ends with a conclusion in Section 5.

## 1. Related Literature

A large literature has examined the relationship between income inequality and economic progress from neoclassical and heterodox perspectives. Our intention is not to survey all of the existing literature and various proposed explanations of this relationship. Instead of that, we will narrow our focus to the institutionalist approach to income distribution, especially inequality - savings - economic progress equation, and how it differs from the basic neoclassical assumptions.

John Bates Clark, father of marginal productivity theory of distribution, in the preface to his book *The Distribution of Wealth from 1899* wrote that “the distribution of income of society is controlled by a natural law, and that this law, if it worked without friction, would give to every agent of production the amount of wealth”. This conclusion is drawn from a world where individuals are economic, asocial and rational, and where income is determined by the marginal productivity. The basic idea of neoclassical theory of distribution is that one’s income reflects to one’s marginal productivity or, to put in other words, income received by owners of the factors of production *via* factor market transactions accurately measures the value contributed by factors of production at the margin of production (Christopher Brown 2005).

From neoclassical perspective, income inequality generates savings and thus, stimulates economic growth. Given that savings and investment are positively related, it is possible to conclude that a certain level of inequality can be good for growth. The explanation is that unequal distribution of income diverts income from consumption to savings, as marginal propensity to save increases with an increase in income while marginal propensity to consume decreases (for review of this point, see Oded Galor 2009). If higher income inequality promotes larger savings and investments, then income concentration can be pro-growth. Moreover, for many orthodox economists, higher redistribution from the rich to the poor are likely to hurt economic growth

(Robert H. Wade 2014), since higher taxes and transfers distort incentives to work, save and invest (Arthur Okun 1975).

The division of income between savings and consumption is based on an individual's preferences and exogenous constraints. By seeing income concentration as a source of incentives for higher effort and saving, neoclassical theory delivers an ideological backing for individualism as an explanation of, and justification for, the income inequality, and support of free market solutions (Francis Green 1991). Under such conditions, income distribution is a reflection of the natural scarcity of the capacity of people to produce market values (Piet Keizer and Antoon Spithoven 2009).

Neoclassical presuppositions that market could, and should, play a central role in rationing scarce goods, was, and is, a subject of debate. The economists associated with the this critique - Nicholas Kaldor (1955), Joan Robinson (1959), Piero Sraffa (1960), Luigi L. Pasinetti (1969), Pierangelo Garegnani (1970), Krishna Bharadwaj (1989) - were simultaneously developing their own theories of distribution (Geoff C. Harcourt 2015). According to John Kenneth Galbraith (2001, p. 35) to make such a critique persuasive requires a clear theoretical restatement, going beyond the usual appeal to institutions, politics, and history. But it also requires a persuasive empirical substantiation that is capable of accounting for the movement of inequality through time and in different national settings.

The heterodox literature on relationship between income distribution and growth is vibrant, large, and growing and addresses many issues (such as power, unemployment and aggregate demand) that are ignored or neglected in orthodox theories (Amitava K. Dutt 2017). The number of such papers has grown exponentially, especially after the crisis from 2007 (for recent contributions to the study of interrelationship between income inequality and growth in heterodox tradition, see Heinz D. Kurz and Neri Salvadori 2010; Ricardo A. Araujo 2013; Till van Treeck 2015; Reto Foellmi and Josef Zweimüller 2017; Thomas I. Palley 2017). However, it is much harder to distinguish a clear and comprehensive view on this complicated relationship from the perspective of old institutionalism.

Thorstein Veblen (1919), Clarence E. Ayres (1944), and John R. Commons (1950) made a significant contribution to better understanding the distributional phenomenon that was different from the neoclassical perspective. Instead of a comprehensive approach to distribution issues, these economists mainly analysed related phenomena such as the nature of technology, the evolving substance of property, or the meaning of capital (Brown 2005). Although, institutionalism doesn't provide the single theory of distribution, institutionalism implacably opposes some of the presuppositions of the neoclassical distribution theory. According to Brown (2005), the institutionalist view on distribution is based on five core ideas: (1) production as a social activity; (2) assistance of folk views or belief systems in the maintenance of power relationships; (3) market outcomes being predetermined by the rules governing transacting parties; (4) the institution of property not static; (5) the ability of the pursuit of pecuniary interest to upset the delicate balance among vertically arranged activities vital to modern production and distribution methods.

Neoclassical theory abstracts the social and institutional aspect of human behaviour. In the reality, discretionary institutional arrangements, including power

relationships in the society, determine income distribution more than anything else (see Kang H. Park 1996; Charles M. A. Clark 2003; Philip Arestis and Ana Rosa Gonzalez-Martinez 2016). In contrast to neoclassical theory, institutionalism assumes that the economy is not consistent with a perfectly competitive model. Income is distributed according to the norms of the prevailing institutional arrangements (Wendell C. Gordon 1973), so that distributional arrangements are not primarily market determined (James T. Peach 1987). Distribution is an instituted process (Brown 2005) and inequality stems not from natural market forces alone, but from the way in which particular markets are instituted (Clark and Catherine Kavanagh 1996).

In the similar context, Larry M. Bartels (2008), Martin Gilens (2012), Joseph E. Stiglitz (2012), David A. Stockman (2013) argue that income inequality is associated with government policies that tend to favour the elite over the masses. This argument differs from that given by Thomas Piketty (2014), who see growing income inequality as a natural product of market forces and institutions, explained by the circumstances under which the return on capital exceeding the rate of economic growth. By examining the relationship between economic growth and income concentration in the context of the work done by Piketty and Emmanuel Saez (2006), William van Lear (2016) further argues that high inequality augments savings and speculation which, together, undermine economic growth and financial stability.

The distinguishing characteristic of the institutional approach to distribution, which makes the institutional view particularly relevant, is an emphasis on the relationship between income distribution and economic progress (Peach 1987). Income distribution is an institutional arrangement that may promote or inhibit economic progress (Park 1996). By maintaining a weak propensity to consume, the system of income distribution constantly threatens the ability of an economy to operate at full capacity (Ayres 1946; H. Gordon Hayes 1946). Peach (1987) noted that Ayres recognized the fundamental logical error in neoclassical analysis, which was the misinterpretation of savings-investments-growth equation. Instead to attribute the growth of capital to continuous development of technological arts and crafts, orthodox economists attribute the growth of capital to savings (Ayres 1944), which is in turn explained as forgone consumption.

Green (1991) noted that Veblen recognized the neoclassical fault in that it treats institutions as outside its model of development - a charge that can be leveled at the distribution theory in particular. Since an individual can not been seen in isolation from society (Galbraith 1967, 1977), the propensity to save depends on the institutional forms through which the savings process occurs (Green 1991). Consequently, current distribution of income may be among the institutional arrangements in need of change in order to promote economic progress (Peach 1987).

The individual serves the industrial system not by supplying it with savings and the resulting capital; he serves it by consuming its products (Galbraith 1967, p. 49). In this system, corporations have the key role in economy and control aggregate propensity to save in two ways. First, it increases the spending of individuals by the pervasive effects of advertising and salesmanship. Secondly, it increases the supply of saving by withholding profits - that is to say, by providing its own supply of savings (Green 1991). In the presented context, it is possible to recognize Thorstein Veblen's

description of conspicuous behaviours of the rich (*A Theory of the Leisure Class* [1899]) and his recognition that what is good for the vested interests and the kept classes of the nation is not necessarily good for the ordinary life of “the common man” (*The Vested Interest and the Common Man* [1919]).

Following Peach’s call (1987) for more empirical studies concerning the distribution issues within the institutionalist framework, Park (1996) developed the casual model to explain the relationship among income inequality, socio-political instability, and economic progress from the institutionalist perspective. The empirical results, based on data for 65 countries, show that the greater inequality in personal income distribution leads to the greater socio-political instability, and that the greater instability slows the economic progress. In the similar spirit, Carolyn B. Rodriguez (2000) employs a two-step causal model to test the institutionalist contention that income inequality has a negative impact on economic progress. The results, based on U.S. data from 1960 to the mid 1990’s, show that income inequality leads to social and political instability, and that there is an inverse relationship between this instability and economic growth.

When considering the relationship between income inequality and economic progress, it not only matters effect of savings or more redistribution on economic growth but also the effect of economic growth on wellbeing. In this context, David Cooper, W. David McCausland, and Ioannis Theodossiou (2013) argue, based on regression results that cover fourteen EU countries in the period from 1994 to 2001, that wellbeing in wealthier societies depends more on reducing inequality than on economic growth without redistribution.

Our contribution to the literature relies on providing the robust econometric evidence in favour of institutionalist over neoclassical view on relationship between income distribution and economic progress by questioning the widespread neoclassical assumptions about savings as abstinence from consumption and about accumulation of financial capital as a determinant of economic progress.

## 2. Conceptual Framework

The conceptual framework of the paper is based on critical discussion of the neoclassical assumptions that savings is abstinence from consumption, and that savings is a prerequisite for economic progress. In the line with the institutionalist approach, we argue that savings actually reflects insufficient consumption by the rich, and that abstinence from consumption is not necessary for economic progress. Instead of accumulation of financial capital (savings), economic progress is primarily determined by accumulation of physical capital (technology) and human capital.

According to neoclassical as well as institutionalist theory of distribution, savings arises from income inequality (Michal Kalecki 1954), but with one significant difference. From the neoclassical perspective, savings reflects alternative time-preferences for consumption. Abstinence from current consumption, through savings, generates higher income in the future. From the institutionalist perspective, the rich save more than the poor not because of the differences in preferences for consumption or savings, but because of the simple fact that the rich could not consume all their income. In other words, the poor, because of low income, are not able to save, while the rich,

due to their high income, could not avoid savings. Taking into account differences in income level, a poor individual in an absolute term saves less but also consumes less, in comparison with absolute savings and consumption of a rich individual. As a result, savings does not describe abstinence from consumption, rather it refers to insufficient consumption of the rich.

By accepting that savings describes insufficient consumption by the rich, not their abstinence from consumption, we do not only change the definition of savings in the terms of its social acceptability. At the same time, we re-examine the neoclassical viewpoint according to which income inequality is a natural outcome of market forces that generates savings and, consequently, investment-driven growth. Income inequality is actually related to institutional frictions that are not adapted to productive potential of a modern society, while savings that is not transformed into investments make unequal income distribution even worse.

Contrary to the neoclassical theory that savings creates investment, we promote the Keynesian view that savings is determined by investment. In a capitalist economy, key decisions are made by corporations, not households or individuals. Investment is an independent variable that determines aggregate employment, output, and income as dependent variables. Since savings represents the difference between income and expenditures, investment creates savings, not vice versa (see John E. King 2015).

In this light, investment is viewed as increase in physical capital, while savings refers to accumulation of financial capital. Financial capital, unlike physical capital, is not a factor of production. In other words, the measure of productive potential of the society is physical, not financial capital. Investments are the mechanism by which financial capital is transformed into physical capital. Financial capital (savings) should be understood as a source of funds that can be used to invest in physical capital (see Douglas Vickers 1995). Financial capital that is not transformed into physical capital generates income inequality, reducing the effective demand and leading to social and economic instability.

The negative impact of the accumulation of financial capital on income distribution can be explained by the fact that, under the conditions of low investment and rising inequality, the number of people who save is decreasing while the number of people who borrow is increasing. The productive industry is being gradually replaced by financial industry as a mechanism for maintaining effective demand under stagnant or declining income. The productive industry creates job-led effective demand, whereas financial industry is associated with debt-led effective demand.

The term debt-led effective demand describes a specific financial engineering that allows additional spending, which does not have origin in additional income or property. Given that the poor are prone to emulate the rich (pecuniary emulation in the Veblen sense, see Giacomo Corneo and Olivier Jeanne 1999), preference for debt consumption is higher in the case of lower income than in the case of higher income (for more about this point, see Samuel Bowles and Yongjin Park 2005; John P. Watkins 2009; Robert H. Frank, Adam Levine, and Oege Dijk 2014; Engelbert Stockhammer and Rafael Wildauer 2015; Sung-Ha Hwang and Jungmin Lee 2017). Consequently, high inequality is related to the growth of debt-financed consumption, which in turn leads to more unequal income distribution. Namely, the flow of money is smaller in

the creditor the debtor arrangements (where the debtor takes credit), compared with flow of money in the debtor the creditor arrangements (where debtor repays credit plus interest). Job-led effective demand means an increase in demand that is based on more jobs or better jobs. Unlike debt-led effective demand, which arises from borrowing, job-led effective demand arises from investments. Consequently, between economic progress and debt-led effective demand relationship is negative, whereas job-led effective demand has a positive impact on economic progress.

Given the above considerations, we argue that a key driver of economic progress is technology, but technology that is associated with diffusion of innovations and/or diffusion of knowledge. The benefits from technology are not evenly distributed in the economy. The biggest benefits are allocated in innovation and idea intensive sectors, and the least in capital and labour intensive sectors. A characteristic of most of the innovation and idea intensive industries, is their small share in total employment and their disproportionately high share in income distribution. The reverse is true for capital and labour intensive sectors, which remain the largest employers but their opportunities to increase profit margins and wages are limited. As a result, wages increase for a relatively small number of workers, while the majority face stagnation or decline in income (Kosta Josifidis and Novica Supić 2016, 2017; Josifidis, Supić, and Emilija Beker Pucar 2017)

Diffusion of innovations requires the change of rigid institutional arrangements, such as copyrights protection and private property. As a result, the productive potential of society relies more on diffusion of knowledge than on innovations. In addition, innovations are characterised by the trend of concentration and monopolization, whereas knowledge is seen as a public good. Although capital tends to take control over innovations, at the same time capital recognizes the benefits of increasing human capital, since knowledge is necessary for implementing new technologies. Given that diffusion of knowledge facilitates the invention of alternative ways of production, dependence of economic progress on resources is reduced by diffusion of knowledge.

The confirmation of such attitudes would be in line with the institutionalist definition of economy “an instituted process for provisioning society” opposed to neo-classical definition of economy as a choices made in the face of scarcity. In the Ayres’ sense, “wants and technology do not change randomly, nor by virtue of some natural law working without human agency; they change by virtue of influences that are endogenous to the human social system” (James Ronald Stanfield 1999, p. 234).

### 3. Data and Estimation Strategy

The hypothesis, which may be derived from the presented conceptual framework, is that concentration at the top of the income distribution has a positive impact on aggregate savings, but instead of aggregate savings technological progress and human capital are key drivers of economic progress. The confirmation of this hypothesis, in the context of the comparison between the institutionalist and the neoclassical view on income distribution, may be interpreted as evidence that income inequality and abstention from consumption do not arise from the nature of the economy. Instead, they are the result of (re)distribution arrangements that are not adapted to productive potential of a modern society.

This hypothesis is tested on the sample of 35 OECD countries over the 1980-2015 period. Since some countries have many more observations than others, the panel is unbalanced.

The two models are evaluated. The first one describes the determinants of aggregate savings and the second one the determinants of economic progress. The baseline models have the following forms:

$$\text{LogSavings}_{it} = \beta_0 + \beta_1 \text{LogSavings}_{it-1} + \beta_2 \text{LogIneqDisp}_{it} + \beta_3 \text{GDPpc}_{it} + \beta_4 \text{LogEmployment}_{it} + \beta_5 \text{LogTaxes}_{it} + \beta_6 \text{LogYoung}_{it} + e_{it}, \quad (1)$$

$$\text{LogProgress}_{it} = \beta_0 + \beta_1 \text{LogProgress}_{it-1} + \beta_2 \text{LogSaveInvst}_{it} + \beta_3 \text{LogTFP}_{it} + \beta_4 \text{LogHumanCapital}_{it} + \beta_5 \text{LogEmployment}_{it} + \beta_6 \text{LogDependenceRatio}_{it} + \beta_7 \text{FDI}_{it} + \beta_8 \text{LogIneqMarket}_{it} + e_{it}. \quad (2)$$

In the first equation (1), the dependent variable is aggregate savings (**Savings<sub>it</sub>**) expressed by gross national savings as percent of GDP (Gross Domestic Product). Gross national savings is calculated as gross disposable income minus final consumption expenditure. The explanatory variables are: lagged value of aggregate savings (**Savings<sub>it-1</sub>**); disposable income inequality, measured by the post-tax and transfer Gini coefficient (**IneqDisp<sub>it</sub>**); GDP *per capita* growth (**GDPpc<sub>it</sub>**); employment to population ratio (**Employment<sub>it</sub>**); income and profit taxes on corporations and other enterprises (**Taxes<sub>it</sub>**) and young-age dependence ratio (**Young<sub>it</sub>**).

In the second equation (2), the dependent variable is economic progress expressed by GNI (Gross National Income) *per capita* (**Progress<sub>it</sub>**). **Progress<sub>it-1</sub>** is lagged value of GNI *per capita*; **SaveInvst<sub>it</sub>** - savings/investment ratio; **TFP<sub>it</sub>** - total factor productivity as a measure for technological progress; **HumanCapital<sub>it</sub>** - human capital index; **Employment<sub>it</sub>** - employment to population ratio; **DependenceRatio<sub>it</sub>** - age dependency ratio, measured by ratio of population younger than 15 or older than 64 to the working-age population; **FDI<sub>it</sub>** - net inflows of foreign direct investment; **IneqMarket<sub>it</sub>** - market income inequality, measured by the pre-tax and transfer Gini coefficient.

In both equations, subscript **i** stands for the cross-sections and **t** represents the time period, while **e<sub>it</sub>** is the idiosyncratic error term. Table 1 (Appendix) contains data sources, definitions, and descriptive statistics for all variables, including the variables that are used for robustness check.

In the first equation (1), the positive relationship between savings and the explanatory variables is expected for the all variables except for the variables: young-age dependence ratio and taxes on corporations and other enterprises. In the second equation (2), the expected sign for the variables age-dependence ratio and income inequality is negative, whereas the relationship between economic progress and the other explanatory variable is expected to be positive.

Instead of annual data, we have considered three-year averages for the three reasons. First, because it is not expected that annual changes in explanatory variables have annual effects on changes in the dependent variable. Second, by using three-year averages, the influence of economic cycles is reduced, thus permitting a focus on



structural relationships. Third, because of limited availability of annual data for some of the variables, the dataset is more balanced by using three-year averages.

**Table 2** Determinants of Aggregate Savings (3-Year Average)

Dependent variable: Savings				
Variables	(1) Baseline model (GMM)	(2) Reduced model (GMM)	(3) Alternative measures	Variables
Savings <sub>t-1</sub>	0.580*** (0.201)	0.452** (0.193)	0.462* (0.259)	Savings <sub>t-1</sub>
Inequality (disposable income)	0.695* (0.343)	0.505** (0.213)	1.486*** (0.537)	Inequality (market income)
GDP/pc growth	0.121** (0.056)	0.105*** (0.028)	0.0389* (0.0204)	GNI/pc growth
Employment ratio	0.748* (0.453)	0.619** (0.251)	-0.259** (0.104)	Unemployment ratio
Taxes on corporations and other enterprises	-0.176 (0.178)	-	0.0282 (0.139)	Taxes on income, profits, and capital gains
Young-age dependence ratio	-0.606* (0.351)	-0.512*** (0.172)	-0.639 (0.381)	Age dependence ratio
Constant	-2.337 (1.497)	-1.196 (0.912)	-1.180 (1.912)	Constant
AR(1) ( <i>p</i> -value)	0.057	0.014	0.052	AR(1) ( <i>p</i> -value)
AR(2) ( <i>p</i> -value)	0.766	0.582	0.395	AR(2) ( <i>p</i> -value)
Hansen J-test ( <i>p</i> -value)	0.234	0.182	0.749	Hansen J-test ( <i>p</i> -value)
Diff-in-Hansen test ( <i>p</i> -value)	0.955	0.158	0.796	Diff-in-Hansen test ( <i>p</i> -value)
Number of instruments	11	9	15	Number of instruments
Observations	334	343	327	Observations
Countries	35	35	35	Countries

**Notes:** All variables are expressed in logs, except for GDP/pc and GNI/pc growth. Robust (Windmeijer) two-step standard errors are in parentheses. Level of significance: \*\*\* for *p*-value < 0.01, \*\* for *p*-value < 0.05, \* for *p*-value < 0.1. AR(1): The Arellano-Bond test for the serial correlation. The null hypothesis is that there is no first-order autocorrelation in the first differences equation. AR(2): The Arellano-Bond test for the autocorrelation. The null hypothesis is that there is no second-order autocorrelation in the first differences equation. The Hansen J-test and the Diff-in-Hansen test are used to test the null hypothesis of instrument validity and the validity of the additional moment restrictions required by the system GMM, respectively. To avoid the problem of instrument proliferation, the matrix of instruments is collapsed and the number of lags is limited at 2 (the baseline model and the reduced model) and at 3 (the specification with the alternative measures).

**Source:** Authors' calculation (2018). STATA 14 software.

In selecting an estimation procedure, we try to address the two issues. First, we want to control inertia in savings and economic progress that may arise from lagged effects of the explanatory variables on the dependent variables. Second, some the explanatory variables may be endogenous. In the first equation, the three of the six variables (inequality, growth and taxes) and, in the second equation, the five of the eight variables (savings/investment ratio, technological progress, human capital,

employment and income inequality) are assumed to be endogenous. To cope with these issues, our choice of estimator is the System GMM dynamic panel data estimator developed by Manuel Arellano and Stephen Bond (1991), Arellano and Olympia Bover (1995) and Richard Blundell and Bond (1998).

**Table 3** Determinants of Economic Progress (3-Year Average)

Variables	Dependent variable: GNI <i>per capita</i>			Dependent variable: HDI	
	(1) Baseline model (GMM)	(2) Reduced model (GMM)	(3) Alternative estimator POLS	(4) Alternative measures	Variables
GNI/pc <sub>t-1</sub>	0.696*** (0.053)	0.648*** (0.052)	-	0.817*** (0.028)	HDI <sub>t-1</sub>
Savings/investment	0.130 (0.134)	0.076 (0.136)	-0.096* (0.051)	0.001 (0.003)	Savings/investment
Total factor productivity	0.913*** (0.238)	0.918*** (0.177)	0.948*** (0.125)	0.027** (0.012)	Total factor productivity
Human capital	0.775** (0.365)	0.993** (0.185)	1.643*** (0.368)	0.059** (0.025)	Human capital
FDI inflow	0.003* (0.002)	0.004*** (0.001)	-	0.001 (0.0001)	FDI inflow
Age dependence ratio	-0.049 (0.452)	-	-0.864*** (0.133)	-0.006 (0.009)	Age dependende ratio
Inequality (market income)	-0.283 (0.490)	-	-0.592*** (0.197)	-0.016* (0.010)	Inequality (market income)
Employment ratio	0.887*** (0.297)	0.616*** (0.106)	0.237** (0.118)		
AR(1) ( <i>p</i> -value)	0.014	0.022	-	0.081	AR(1) ( <i>p</i> -value)
AR(2) ( <i>p</i> -value)	0.853	0.897	-	0.131	AR(2) ( <i>p</i> -value)
Hansen J-test ( <i>p</i> -value)	0.153	0.129	-	0.093	Hansen J-test ( <i>p</i> -value)
Diff-in-Hansen test ( <i>p</i> -value)	0.775	0.270	-	0.394	Diff-in-Hansen test ( <i>p</i> -value)
Observations	326	327	359	269	Observations
Number of instruments	32	31	-	19	Number of instruments
Countries	35	35	35	35	Countries

**Notes:** All variables are expressed in logs, except for FDI inflow, because FDI inflow data can be negative. Robust (Windmeijer) two-step standard errors are in parentheses. Level of significance: \*\*\* for *p*-value < 0.01, \*\* for *p*-value < 0.05, \* for *p*-value *p* < 0.1. AR(1): The Arellano-Bond test for the serial correlation. The null hypothesis is that there is no first-order autocorrelation in the first differences equation. AR(2): The Arellano-Bond test for the autocorrelation. The null hypothesis is that there is no second-order autocorrelation in the first differences equation. The Hansen J-test and the Diff-in-Hansen test are used to test the null hypothesis of instrument validity and the validity of the additional moment restrictions required by the system GMM, respectively. To avoid the problem of instrument proliferation, the matrix of instruments is collapsed and the number of lags is limited at 5 (the baseline model) and at 6 (the reduced form). POLS - Pooled Ordinary Least Squares model with robust standard errors. Country and year effects are included in the POLS model.

**Source:** Authors' calculation (2018). STATA 14 software.

In both equations, the results of the Wooldridge test for autocorrelation in panel data indicate the significant autocorrelation problem ( $F(1, 34) = 85.770$ ;  $F(1, 34) = 337.247$  for the first and the second specification, respectively). In addition, the modified Wald test for groupwise heteroskedasticity suggests that the models suffer from

the problem of heteroskedasticity ( $\chi^2(35) = 971.64$ ;  $\chi^2(35) = 2758.36$  for the first and the second specification, respectively). To account for autocorrelation and heteroskedasticity problems in the models, we use the two-step estimation with the Windmeijer correction (Frank Windmeijer 2005).

The robustness of the obtained results is checked by using several tests. First, we reduce both models to the parsimonious forms (Tables 2 and 3, column 2), consisting only the primary variable and variables with statistically significant coefficients. Hence, we exclude the variable describing tax effects on aggregate savings (in the first equation) and the variables income inequality and age dependence ratio (in the second equation). In terms of sign and significance, the estimates of the reduced models are identical to the baseline models.

The second test is based on the idea of using alternative measures for the dependent and the explanatory variables. In the first equation (Table 2, column 3), we keep only the same measure for dependent variable, while the measures for all explanatory variables are replaced as follows: post-tax and transfer with pre-tax and transfer Gini coefficient, young-age dependence ratio with age dependence ratio, GDP *per capita* growth with GNI (gross national income) growth, employment ratio with unemployment ratio, taxes on corporations and other enterprises with taxes on income, profits, and capital gains. In the second equation (Table 3, column 4), we change only proxy for the dependent variable, while the measures for all explanatory variables remained unchanged. As an alternative measure of economic progress, we use Human Development Index (HDI) instead of GNI *per capita*. The repeated analysis shows very similar results across all measures.

Third, we report the results of the regression for aggregate savings by using alternative estimator (Table 3, column 3). Instead of the system GMM estimator, we employ POLS (Pooled Ordinary Least Squares) estimator with robust standard errors. The POLS model is static and does not account for the issue of endogeneity.

In the end, in order to check whether the results depends on one particular country or time period, the coefficients of both equations have been re-estimated by excluding one country/time period after another. Generally, the estimates are stable, suggesting that no single country or time period in the sample is driving the results<sup>1</sup>.

#### 4. Econometric Results and Discussion

The obtained results are consistent with the research hypothesis. In both tables (Table 2 and Table 3), the first column reports estimates of the baseline regression, while the remaining columns are used to verify the robustness of the baseline model.

Table 2 presents the coefficients from the system GMM regression of aggregate savings on the six respective variables. The lagged savings coefficient (the first row) is highly statistically significant and positive in direction. This can be interpreted as a confirmation that current savings depends on past savings as it captures the effects of habit formation (see, Rob Alessie and Annamaria Lusardi 1997; Abdur Chowdhury 2015). As expected, the concentration of income at the top of distribution (the second row) has a positive impact on aggregate savings, reflecting the standard Kaleckian

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<sup>1</sup> The results of last two robustness tests would be made available by the authors upon request.

hypothesis (Kalecki 1954) that rising income inequality leads to lower consumption since the poor have a higher consumption propensity than the rich. The third and the fourth rows indicate that as GDP *per capita* and employment rises, aggregate savings also tend to rise since aggregate saving results from income. In turn, the sixth row shows that young-age dependence ratio has a negative impact on aggregate savings. The possible explanation is that different age cohorts have different effect on aggregate savings. This is in the line with life cycle hypothesis (Franco Modigliani and Richard Brumberg 1954) according to which propensity to save depends on age in a way that the peak of savings is reached at the working age, while young age and retirement is associated with dissaving. All effects are statistically significant, except for the impact of taxes on savings (the fifth row). Although of the expected sign, the estimated coefficient of taxes is not statistically significant.

Table 3 shows the system GMM results for the second equation that describes the determinants of economic progress measured by GNI *per capita*. The lagged GNI/pc coefficient (the first row) is highly statistically significant and has the predicted positive sign. The implication is that past income can be treated as a factor that determines current income and also influences future income. As can be seen from the second row, GNI/pc is positively linked to saving/investment ratio. However, this estimate is not statistically significant at conventional levels. Technological progress (the third row) has a strong positive impact on GNI/pc. For example, holding all other variables constant, ten percent increase in the total factor productivity index is associated with about nine percent increase in GNI/pc. Similar is the effect of human capital (the fourth row). Thus, controlling for other factors, a 10 percent increase in human capital index raises GNI/pc by 8 percent. FDI inflows tend to increase GNI/pc (the fifth row) but did so less than in proportion to the other determinants of economic progress. Furthermore, analysis of economic significance based on standardized coefficients (Appendix, Table 4) shows that, besides employment, technology and human capital are the factors with the most pronounced effect on economic progress. The effects of age dependence ratio (the sixth row) and income inequality measured by the Gini coefficient before taxes and transfers (the seventh row) on GNI/pc are in the predicted negative direction but are not statistically significant. Finally, the effect of employment (the eighth row) is clear. Higher employment to population ratio tended to increase GNI/pc and this effect is similar to the impact of technological progress and human capital on economic progress.

Generally, the econometric findings reflect the research hypothesis of the paper. Although it is confirmed that income inequality creates savings, there is no clear evidence of positive effects of savings on economic progress. Specifically, these findings can be related to the institutional view on the link: inequality - savings - economic progress. It may be argued that, under condition in which accumulation of financial capital (savings) exceeds increase in physical capital (investment), there is no statistically significant positive effect of savings on economic progress. Instead of financial capital, technological progress and human capital are recognized as key determinants of economic progress. Such results can be seen as a confirmation of Ayres, as well as Veblen, approach that the origin of physical capital, as a main mover of economic

progress, should be attributed to the continuous development of technological arts and crafts, not to accumulation of financial capital.

## 5. Conclusion

Institutionalist and neoclassical theory offer two different views on income distribution. Differences become particularly noticeable when considering the equation: inequality - savings - economic progress, and, based on this equation, when explaining the causes and consequences of income inequality. If income concentration is an outcome of market mechanism and source of incentives for effort and creativity, then inequality, from the neoclassical perspective, is not only inevitable but also, to a certain degree, socially justified. However, if concentration of income reflects institutional arrangements and power relationship in the society, then, according to institutionalist theory, a more even distribution of income is not only a desirable but it is also feasible.

In a conceptual sense, the paper promotes the attitude that savings does not describe, according to neoclassical view, the abstinence from consumption. Instead, savings represents insufficient consumption by the rich, which is in the line with institutionalist view on income distribution. The accumulation of financial capital is not a prerequisite for investment in the terms of increase in physical capital. The key determinant of investment and economic progress is technology, but technology that is related to diffusion of innovations and/or knowledge. Financial capital that is not transformed into physical capital creates income inequality, reducing effective demand and causing social and economic instability.

In an empirical sense, the paper provides robust econometric findings that confirms the research hypothesis according to which concentration at the upper end of income distribution has a positive impact on aggregate savings, but instead of aggregate savings, technological progress and human capital are identified as key factors in determining economic progress. Such findings may be interpreted as evidence that income inequality and abstinence from consumption do not arises from the nature of economy, rather they are the result of institutional (re)distribution arrangements that are not adapted to the production potential of a modern society.

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## Appendix

**Table 1** Description of Variables (3-Year Average)

Name	Source	Description	Obs.	Mean	Std. dev.	Min.	Max.
Inequality (disposable income)	The Standardized World Income Inequality Database, Version 6.2.	Post-tax and transfer Gini coefficient	405	30.18	6.53	18.6	51.03
Inequality (market income)	The Standardized World Income Inequality Database, Version 6.2.	Pre-tax and transfer Gini coefficient	405	45.41	5.3	29.03	60.3
Savings	International Monetary Fund, 2017.	Gross national savings (percent of GDP)	396	22.89	5.57	4.82	38.87
Young-age dependence ratio	The World Bank Group, 2017.	Population ages 0-14 (% of total)	398	20.33	5.44	13.06	44.78
Age dependence ratio	The World Bank Group, 2017.	Age dependency ratio (% of working-age population)	398	51.27	7.05	36.49	94.69
GDP/pc growth	The World Bank Group, 2017.	GDP <i>per capita</i> growth (annual %)	387	2.09	2.38	-7.34	11.45
GNI/pc growth	The World Bank Group, 2017.	GNI <i>per capita</i> growth (annual %)	358				
Employment ratio	The World Bank Group, 2017.	Employment to population ratio, 15+, total (%)	371	54.99	7.79	31.92	80.68
Unemployment ratio	The World Bank Group, 2017.	Unemployment, total (% of total labour force)	388	7.56	4.11	0.27	26.29
Taxes on corporations and other enterprises	International Centre for Tax and Development.	Total income and profit taxes on corporations and other enterprises	377	2.87	1.52	0.62	11.27
Taxes on income, profits, and capital gains	International Centre for Tax and Development.	Total taxes on income, profits and capital gains	391	11.67	5.21	2.69	29.7
GNI <i>per capita</i>	The World Bank Group, 2017.	GNI <i>per capita</i> , atlas method (current US dollar)	384	23747.08	17590.43	1340	100866.7
Savings/investment	International Monetary Fund, 2017.	Gross national savings (percent of GDP) / total investment (percent of GDP)	395	0.97	0.21	0.31	1.66
Total factor productivity	Penn World Table 8.1.	Total factor productivity (constant national prices)	398	0.94	0.12	0.50	1.50
Human capital	Penn World Table 8.1.	Human capital index	398	3.03	0.44	1.51	3.73
FDI inflow	The World Bank Group, 2017.	Foreign direct investment, net inflows (% of GDP)	373	3.63	7.84	-4.55	113.53
HDI	UNDP: Human Development Data.	Human development index	311	0.83	0.07	0.58	0.95

**Table 4** Determinants of Economic Progress: Analysis of Economic Significance

	Baseline model (GMM)			Reduced model (GMM)		
	Original	Centered	Standardized	Original	Centered	Standardized
GNI/pc <sub>t-1</sub>	0.696*** (0.053)	0.454*** (0.121)	0.454*** (0.121)	.648*** (0.052)	0.493*** (0.079)	0.493*** (0.079)
Savings/investment	0.130 (0.134)	0.052 (0.225)	0.014 (0.061)	0.076 (0.136)	-0.071 (0.188)	-0.019 (0.051)
Total factor productivity	0.913*** (0.238)	0.867*** (0.284)	0.110*** (0.036)	0.918*** (0.185)	1.353*** (0.288)	0.171*** (0.036)
Human capital	0.775** (0.365)	0.561 (0.647)	0.102 (0.117)	0.993** (0.505)	1.182* (0.632)	0.216* (0.115)
Employment ratio	0.887*** (0.297)	1.540*** (0.596)	0.267*** (0.103)	0.616*** (0.106)	0.329 (0.531)	0.057 (0.092)
FDI inflow	0.003* (0.002)	0.003 (0.005)	0.028 (0.048)	0.004*** (0.001)	0.005** (0.002)	0.025 (0.029)
Inequality (market income)	-0.283 (0.490)	2.220* (1.242)	0.328* (0.183)			
Age dependence ratio	-0.049 (0.452)	-1.009* (0.574)	-0.144* (0.082)			

**Notes:** Standard errors in parentheses: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Standardized coefficients are calculated by using StdBeta program version 1.7 (Doug Hemken 2016).

**Source:** Authors' calculation (2018). STATA 14 software.