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Economic growth, inequality and efficiency

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Abstract

Over the last decades, theoretical work has come up with a significant amount of concepts how the income inequality and economic growth may affect each other. The recent literature identifies many channels through inequality may have positive, negative or even both effects on economic performance, but in different time dimensions. The relationship has been researched from the both perspective: the impact of income inequality on economic growth, and how the economic growth and efficiency are related to income inequality. Despite of the amount of theoretical and empirical work, the relationship between efficiency and equality is far from being well understood.

Keywords: income inequality, efficiency, growth

JEL codes: E6, O1

1 Introduction

The widening of differences in households' income as well as simultaneous deceleration of economic growth have brought countries in front of trade – off between promoting equality or economic development. Can development be achieved in a condition in which economic growth leads to decrease in income inequality and simultaneously more equal distribution of income can foster the growth? The answer, if this „spiral" may be achieved, is from recent theoretical and empirical work unambiguous yet. Though at the hand of using non - parametric methods in analysis of production possibility frontier and their extensions by variables measuring income inequality, and by subsequent decomposing of productivity growth on effect of catching up and the effect of change in production frontier, then we are able to estimate the changes in efficiency and productivity of individual countries in time and to look through the role of income inequality in the productivity growth.

Is there a complement or subsidiary relationship between efficiency and equity? In this paper, we provide a review of recent literature on the relationship between efficiency and equity in regards to numerous channels by which mentioned variables are influenced, and moreover they can influence each other. The paper will focus namely on efficiency, income distribution, economic growth and technological progress, and the ways they influence each other. Since the recent growth theory keeps the part of growth unexplained by factor accumulation, the total factor productivity growth in growth can be partly predicated by technological change that is endogenized, the question shift to what determines the rate of technological change. Therefore the impact of institutions on efficiency and equity cannot be omitted.

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2 Literature Overview

Economic theory has always been focusing on productivity and efficiency whilst the problem of income inequality was often neglected. The equity versus efficiency debate can be traced to thoughts of Keynes and Kaldor who saw the beneficial effects of inequality on growth through high savings by the rich and positive incentives effects. There is also further work of Sen (1960) and Lewis (1954) who developed a model in which the exploitation of cheap workers and increase in inequality lead to growth - promoting forces through the assumption that rich class is responsible for investment, savings and accumulation. On the other hand, Myrdal (1968) saw the inequality as an obstacle to growth in terms of ineffective allocations of talent and labor. But the most influential work on this topic came from Simon Kuznets (1955) who supposed that income inequality increases at first but with the higher level of development, it starts to decrease. Initial inequality arises mainly due to urban – rural disparities and urbanization whereas the inequality in urban areas is higher in comparison with rural areas. The causality of this premise lies rather from growth to distribution than in relation running in opposite direction: from income distribution to development. This theory is known as a Kuznets' hypothesis of inverted U and implies that the high inequality is only a transient state in long – run growth at midpoint levels of income.

In 1970's, more authors (Chenery, Ahluwalia, Duloy, Bell and Jolly, 1974) came up with theories claiming that more equal distribution may have positive impact on economic performance. And from during 90's, the determinants and channels were tried to be identified:

- Through credit marker imperfections, inequality is seen as a constraint to human capital investments (Bénabou, 1996; Galor and Moav, 2004), enterpreneurship (Banerjee and Newman, 1993) and intergenerational mobility (Galor and Zeira, 1993).
- Higher inequality impairs economic growth through demand after higher taxation rate, and Therefore inequality may harm growth by encouraging expensive fiscal policies. Such view was formalized in papers of political economy by Alesina and Rodrik, 1994; and Persson and Tabellini (1994); Benabou (1996) and Rodríguez (1999). In order to that, superfluous bureucracy is then intended (Acemoglu et al. 2011).
- The topic of socio – political unrest was captured in paper by Alesina and Perotti; 1996. The indication that income inequality, by facilitating social discontent, increases sociopolitical instability was stated. The latter by creating uncertainty in the politico-economic environment reduces investment may as a consequence harm growth and lead to political instability (Bénabou, 1996).

On the other hand, coming back to growth theory by Kaldor when he stated that the marginal propensity to save is higher by rich people that of the poor, than Joseph Stiglitz (1969) who worked with this premise in Solow 's model of growth showing that with a linear saving function, aggregate behaviour is independent of the distribution, and in ideas by Francois Bourguignon (1981) who went one step further and showed that with a convex savings function, aggregate output does depend on the initial distribution and is higher along the more unequal steady - state, inequality seems to be enhancing postulate to foster economic performance. Moreover, it creates incentives for innovation and enterpreneurship (Lazear and Rosen, 1981) and stimulates investments in research and development (Foellmi and Zweimüller 2004). The impact of inequality on growth may also differ within the level of development of the countries. Especialy in poorer countrie, the higher level of inequality is necessary in terms of the accumulation of minimum capital needed to start business and a chance to get a better education (Barro, 2000).

These theories have been submitted to empirical research accompanied with supportive or conflicting results. For example:

- Perotti (1996) who on a cross – sectional data of some countries did not found significant impact of taxes and transfers on inequality, but simultaneously, that the redistribution has deleterious impact on investment and thus growth.
- Deininger and Squire (1996), based on the new data set, the authors do not find a systematic link between growth and changes in aggregate inequality. They do find a strong positive relation between growth and reduction of poverty.
- Li and Zhou (2004) tried to contribute the recent literature on topic how savings influence income distribution, using improved data by Deininger and Squire (1996), thus minimizing the methodological differences.
- Study by Robert Barro (1997) - evidence from a broad panel of countries shows little overall relation between income inequality and rates of growth and investment. However, for growth, higher inequality tends to retard growth in poor countries and encourage growth in richer places. The Kuznets curve—whereby inequality first increases and later decreases during the process of economic development—emerges as a clear empirical regularity. However, this relation does not explain the bulk of variations in inequality across countries or over time.
- Forbes (1997) uses an improved data set on income inequality which not only reduces measurement error, but also allows estimation via a panel technique. Results suggest that in the short and medium term, an increase in a country's level of income inequality has a significant positive relationship with subsequent economic growth. This relationship is highly **strong** across samples, variable definitions, and model specifications.
- As pointed out by Okun that redistribution tend to scathe growth, then higher taxes and subsidies damp the incentives from working and investing. Thus losses in efficiency are more likely an increasing function of taxes and subsidy rates. Therefore with given convexity of deadweight costs, the losses from redistribution are minimal as taxes are lower, and subsequently are higher with increasing tax or subsidy rate (Barro, 1990; Jaimovich and Rebelo, 2012). And as Milanovic (2000) found the supportive evidence of the Meltzer – Richard hypothesis, such that more unequal society is, it puts in more redistribution.

The first economist who brought the trade – off between equality and efficiency to the centre of his work, was Arthur Okun in 1975 in his famous book „Equality and Efficiency: the big trade – off" where he pointed out that the efficiency leaks arise due to efforts that would lead to the reduction of inequality. From this point of view, the equality seems to brace economic development because such efforts of fiscal policy for redistribution invoked by inequality do not contribute to growth, precisely, they harm it. Then the question is, in which way is there a possibility that positive effects of redistribution may outweigh the negative consequences of inequality, all in favor of sustainable and effective growth? But firstly, we need to answer if such inequality - lowering endeavors (interventions) actually cause losses in efficiency, as for example was stated by Arthur Okun.

On the other hand, some of recent researches (by Benabou, 2000, 2002; Bleaney, Gemmell, and Kneller, 2001) showed that some types of public expenditures, such as public investments in infrastructure, spendings on health and education systems, and social insurance provisions may be both growth and equality enhancing whilst others may likely to imply the discussion proposed by Okun. The win – win policies that have potential to promote efficiency and equality include according to IMF Report on Inequality from 2014 taxes on activities with negative externalities paid

mostly by the better-off but harmful to the poor (such as, perhaps, excessive risk-taking in the financial sector), cash transfers aimed at encouraging better attendance at primary schools in developing countries, or spending on public capital or education that benefits the poor. Such as progressive taxes distribute the part of welfare from the rich to the poor in terms of public spendings in health or education (Saint-Paul and Verdier, 1993).

As we mentioned earlier, the conclusions of relationship between economic growth and income inequality are rather confronting. This assumptions often vary due to used methodology in research. It means that in every paper where time – series variaton was used, the effect of inequality on growth was rather positive (such as Forbes, 2000) while in estimation based on cross – sectional variation, the results were likely to be negative, in favor of equality (Barro, 2000). With respect to conflicting theories of inequality and growth, the empirical evidence is in general in favor of assumptions that inequality is bad for growth. With a look on researches, this statement is at least true for medium – run and certainly supported by data of growth over longer periods of time (Perotti, 1996; Alesina and Rodrik, 1994), and any change in inequality in short period is associated with retarded growth(Banerjee and Duflo; 2003, Halter, Oechslin and Zweimueller, 2013). In 2005, Voitchovsky presented another interesting assumption, such that higher inequality coming from the top end of distribution has a possitive effect on growth, whereas the inequality from bottom end tend to hamper the growth. Moreover, empirical data affirmed that sustained growth lasts longer in more homogenous societies (Berg, Ostry and Zettelmeyer, 2012). From all the literature on this topic, from economic theories and empirical evidence, it seems that all positive effects of inequality operating in short - run are likely to be the results of economic sources, such as the market imperfections, propensity to save or innovations. Oppositely, the forces moving rather slowly, but in opposite direction, have roots in policy, socio – political unrest, educational system or institutional causes.

According to Sapir et al.(2003), economic system of the European Union is failing to deliver a convenient development activity. In the report *„An Agenda for a Growing Europe"* (2003), they assumed that European incentives need to take economic and social reforms in favor of promoting an innovation-based economy, focused on R&D, technology and human capital. In other words, policy makers should take steps that would increase the efficiency. On the other hand, they use a mix of tools of social protection spending and taxation in redistributive policies. In member states of the EU, the structure and size of welfare state vary in individual economics, depended mostly on the level of development or traditions. According to European statistics database, in 2011, the highest share of welfare state size across all memebers of the European Union have traditionally the Scandinavian states (i.e. Denmark - 34% of GDP, Sweden and Finland - around 30% of GDP) and some continental states (i.e. France, Netherland, Belgium). Oppositely, the less developed members, particularly in Central and East Europe have the share of social protection expenditures of GDP only around 18%.

2.1. Efficiency as a source of economic growth

In recent period, the efficiency has become very important part of governments' decisions, and the main reason are financial contstraints that public finance need to face in setting of the financial crisis. We can say that public expenditures on social protection have lately faced both increasing and decreasing trends. While many governments were forced to cut down their public expenditures, also countries with social pension systems – „pay as you go" – adopted many unpopular miscellanoeus

reforms (such as the increase of old age dependency ratio), thus during the periods of economic recessions, some social security public expenditures are functioning as automatic stabilizers. So in given financial constraints, the efficiency of public spending plays quite significant role.

The empirical studies engaging the technique of non – parametric method Data Envelopment Analysis use the production function that combine various types of public expenditures as inputs, and outputs given by some public objectives, and thus to calculate the countries'efficiency scores. But such studies have not been much. The DEA was proposed in 1957 by Farrell to calculate the economic efficiency of a company by decomposing the overall efficincy into allocative efficiency, that measure an organizational's ability to combine the inputs in optimal way in order to obtain their appropriate prices, and technical efficiency, that is given by an organizational's ability to obtain max output from given set of inputs. In following years, some models were formalized:

- An input oriented model with constant returns to scale in production technology (Charnes, 1978)
- Input and output oriented model with variable returns to scale in production tchnology (Banker, 1984)
- Introduction of the use of Malmquist indexes in order to calculate the efficiency dynamics and its decomposition into technical change and technical efficiency change (Färe, 1994)

However, the use of DEA has been mostly engaged in assessing the efficiency in individual economic sectors (i.e.banking, health care and education in multi – country settings: Afonso and St. Aubyn, 2005; Gupta and Verhoeven, 2001;in individual country: Lavado and Cabanda,2009,   ), education, banking...), the growing literature has been introduced also on ist application in public sphere.

- Afonso, Schucknecht, Tanzi (2007) - examine the impact of public spending, education, and institutions on income distribution for a set of OECD countries, and later (2010) for emerging economies – new members of the EU.
- Hauner (2008) – for the set of Russian regions, the efficiency of public expenditures at lower levels of government.
- Rao&Coelli (2002) – used DEA for assessing the economic performance of selected Asian countries in regards with productivity and inequality, and in order to examine the role of inequality, they used the set of determinants of labour productivity growth and its components.

3   Conclusion

The World Bank 2006 World Development Report says in its introduction: "We now have considerable evidence that equity is also instrumental to the pursuit of long-term prosperity in aggregate terms for society as a whole." In spite of this belief, the debate around increasing inequality and its effects on economic performance is now eagerly discussed by economists and policy makers. And the presented overview of literature about the relationship between equality and efficiency has also showed that the economic theory is still far from the end, and some further research need to be done. The first group of economists argued that the inequality may have contributing effect on growth by concentrating the income in capital – making group, the new wave claim just the opposite impact. In this settings, the objectives of further research lie in estimating the changes in efficiency and productivity and therefore to reveal the role of income inequalities in the productivity growth.

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