Eliminating income inequality should be a key development priority.

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1. Introduction

The goal of this paper is to assess the extent to which development is effected by income inequality. Inequality has remained an important issue in academic literature, with no one theory accepted (Gagliani, 1987). Kuznets (1955) suggested that income inequality rises when development is in its early stages and declines when development reaches its later stage. Kuznets' hypothesis of a 'virtuous circle' of economic development through lower inequality, harbouring growth and in turn reducing inequality held true for a large number of OECD countries until the 1970's. However, through the 80's and 90's this trend seems to have reversed, with a significant increase in wage inequality being recorded in countries such as the US and the UK. In light of this, further analysis of the theories and mechanisms of income inequality and its relationship with economic development is necessary to begin formulating a consensus (Aghion *et al* 1999). The paper will address some of the benefits and drawbacks of income inequality for development and the viability of certain policies for reducing inequality and stimulating growth. I conclude that the elimination of income inequality should be a priority for economic growth in the long run. However, the paper provides arguments as to the level in which an economy should prioritise it over other growth strategies, given their initial wealth and other determinants.

2. Development and arguments for income inequality

2.1 Private Investment and Worker Incentives

Research undertaken by Li and Zou (1998) found that income inequality may have a positive impact on economic growth. Theoretically, a poor, egalitarian economy will find it difficult to start the growth process. Whereas an economy with a largely unequal income distribution will achieve a higher initial rate of growth. This is supported by an empirical study by Lewis (1954), which found that on average the rich in an economy save more of their income, allowing for more private investment and generating faster growth for an economy as a result. The analysis concludes that if the rich have a larger share of income - through more unequal distribution - the savings and thus the growth rate of an economy will increase.

Furthermore, considering an economy where worker effort is rewarded, this incentivises productivity and encourages risk taking. Intuitively, you can expect higher income inequality as a result of this structure, because individuals will want to take advantage of an income model which rewards talent, with highly skilled workers being in the upper end of the income brackets. Furthermore, a concentration of highly skilled, motivated individuals can lead to higher levels of technological progress and economic growth. However, Voitchovsky (2005) argues that the positive effects of worker incentives are likely to be offset by feelings of frustration from workers in lower wage brackets, which may lead to a decrease in worker productivity.

2.2 Endogenous Fiscal Policy

The "endogenous fiscal policy" theory analysed by Saint Paul and Verdier (1996) implies that economies with a more unequal income distribution structure grow faster than those with income equality, given important assumptions about redistributive taxation. The general assumption is that higher inequality leads to more redistributive taxation which can be

harmful for economic growth, however the researchers suggest that this is not always the case. For example, if this redistribution goes through public education it may increase the level of skilled workers in an economy, stimulating growth (as Galor and Zeira (1988) discuss in section 3.2). Furthermore, when considering imperfect credit markets and the idea that inequality means the rich become richer through private investment and poorer individuals struggle to accumulate capital, Saint Paul and Verdier argue that: *"If the economy is rich enough, redistribution by facilitating investment by the poor without impeding investment by the rich, might then be positively associated with growth."*

3. Development and arguments against Income Inequality

3.1 Demand for manufactured goods

Murphy *et al* (1989) analyses income inequality as a factor of demand for manufactured goods in an economy. Through their research, they theorise that income must be "*broadly enough distributed that it materialises as demand for mass-produced domestic goods*". Murphy *et al* explains this in terms of industrial markets; for these markets to expand and develop, demand must be concentrated around the consumption of domestic manufactured goods. A more equal income distribution model is important for development as middle class income earners spend the most in domestic manufactured goods, whereas conversely, very rich consumers tend to purchase imported, luxury goods even in the presence of growing domestic export and agricultural sectors.

Take for example an economy with extreme inequality across individuals, if fewer than N^* individuals own all the profits and rents (N^* is denoted by the researchers as the minimum amount of consumers needed for minimum domestic sales efficiency) then there are too few

individuals interested in the consumption of manufactured goods, meaning that industrialization of any domestic sector cannot occur as there is not enough demand to cover fixed costs. Hence income inequality is harmful for industrialisation and thus development. However, Murphy *et al* also note that extreme income equality may also be harmful for industrialisation. In the case of a poor country, if all consumers have the same level of income it may fall short of the minimum expenditure required for food and basic human necessities. With all consumers utilising their income on subsistence consumption, industrialisation and development does not occur in any sector of the economy as the demand for manufactured goods is too low.

3.2 Imperfect Credit Markets

Galor and Zeira (1988) consider the relationship between income distribution and output, ultimately concluding that countries with higher initial levels of income equality are likely to grow wealthier in the long run. This is explained by understanding the idea of an imperfect credit market. Ray (1998) states that the inability of the poor to gain access to credit markets - which may allow them to invest in education, start a small business and a range of other benefits - is inherently a characteristic of unequal societies. Galor and Zeira's research considers a model of an open economy with one good and two life-stage periods, where individuals can choose to either be unskilled in both periods or invest in human capital (education) when they are young and work as skilled in the second. An individual has one parent and one child, they inherit initial wealth from the parent and bequeath wealth to the child. Suppose each person has a utility function $u = c^{\alpha} b^{1-\alpha}$ where b is the amount bequeathed to the child and c is consumption. Considering y as an individual's total income;

each person wants to consume $c* = ay$ and bequest $b* = (1- \alpha)y$. Now consider that x is the amount an individual receives from their parent. Therefore the utility and bequest functions for remaining unskilled can be written as[1]:

$$u_n = e[(x + w_n)(1 + r) + w_n]$$

$$b_n = (1 - \alpha)[(x + w_n)(1 + r) + w_n]$$

And the utility and bequest functions for investing into human capital can be written as[2]:

$$u_s = \begin{cases} e[(x - h)(1 + r) + w_s] \text{ if } x \geq h \\ e[(x - h)(1 + i) + w_s] \text{ if } x < h \end{cases}$$

$$b_s = \begin{cases} (1 - \alpha)[(x - h)(1 + r) + w_s] \text{ if } x \geq h \\ (1 - \alpha)[(x - h)(1 + i) + w_s] \text{ if } x < h \end{cases}$$

Where e is a positive constant, W_s and W_n are the skilled and unskilled unemployment wages respectively, r is the lending rate, i denotes the interest rate (where in an imperfect credit market the interest rate is larger than the interest rate, $i > r$) and h is the positive cost of education.

Galor and Zeira theorise that an individual will only invest in human capital in the first period if they begin with a high enough initial wealth. With investment in human capital traditionally having a higher rate of return than remaining unskilled.

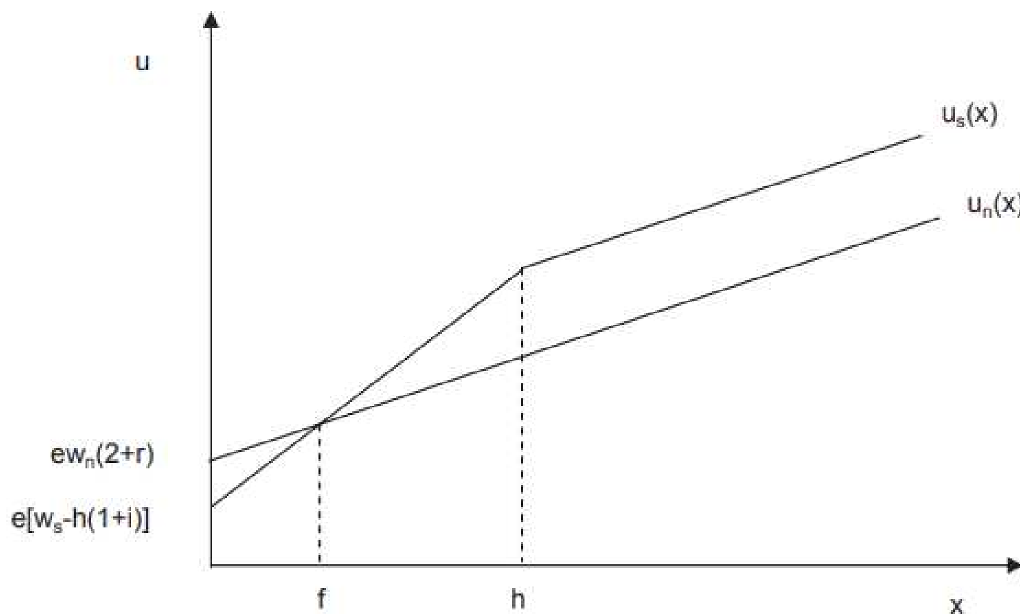
[1] Formulas and utility functions derived from lecture notes 4-5, page 36

[2] Formulas and utility functions derived from lecture notes 4-5, page 37

"*The amount an individual inherits in first period of life, therefore, fully determines his (her) decisions whether to invest in human capital or work as unskilled, and how much to consume and to bequeath to a child.*"

Thus the distribution of wealth determines the outcomes of future generations. Examine Figure 1 - which is a graph plotting the utilities of remaining unskilled $u_n(x)$ and investing in education $u_s(x)$.

Figure 1



Source: Lecture notes 4-5, page 38

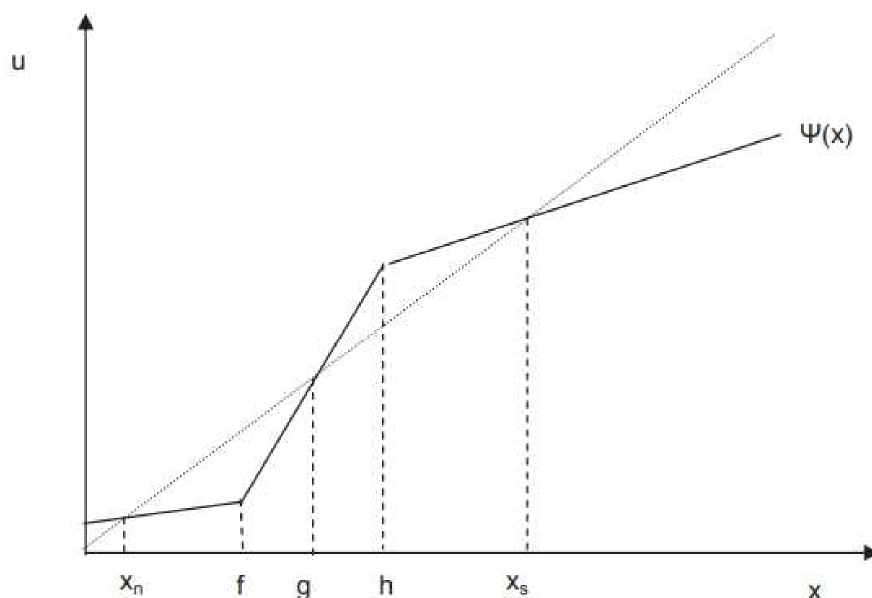
The graph shows the amount an individual receives from their parents on the x-axis (*x)* and the utility derived on the y-axis. An intersection occurs at the level of bequest *f*. Individuals who inherit less than *f* will work as unskilled, as will all their descendants. This is because the amount an individual who receives less than *f* bequests to their children will not be enough for them to sustain an investment into human capital either. This is explained by

further analysing the relationship between f and the amount an individual bequests to a child. If $x < f$ then an individual will bequest according to the function $b_n(x)$ above, if $x \geq f$ then an individual will bequest according to the function $b_s(x)$. This can be formulated as:

$$x' = \Psi(x) \begin{cases} b_n(x) & \text{if } x < f \\ b_s(x) & \text{if } x \geq f \end{cases}$$

Source: Lecture notes 4-5, page 39

Figure 2



Source: Lecture notes 4-5, page 40

In Figure 2, if per capita income y is greater than g then in an unequal society where individuals receive a bequest lower than g, y will be smaller and inequality will cause people to grow poorer in the long term. However, in a full equal society, where the amount of the population who receive a bequest below g is zero, then $y = x_s$ and thus will allow individuals to be rich in the long run. Individuals who inherit more than f but less than g will invest in education but not all their future generations will remain skilled workers.

Individuals who inherit more than g will invest in becoming skilled workers, as will all their descendants. Hence, the initial number of individuals who are bequeathed an income larger than g determine the long-run average level of wealth. This is seen in a society where per capita income $y < g$, in a fully equal income distribution every individual will be below g and thus $y = x_{\mathrm{n}}$, which means equality makes everyone poor in the long run. Therefore, given important assumptions in regard to an economy, particularly that it is initially rich and has an equal distribution of income, it will be wealthier and see positive economic development in the long run.

3.3 Private Investment Restriction, Crime and Unrest

Another theory as to why income inequality is harmful for endogenous economic growth is because it can lead to political redistributive policies which restrict property rights and stifle the level of private appropriation of returns from investment (Persson and Tabellini, 1991). The redistribution of income in the form of a lump sum tax can be difficult to do; for governments to effectively distribute income using this method they would require information on which individuals own the largest amount of wealth. Ray (1998) states: "*There exist enormous quantities of wealth that are not even subject to taxes, simply because the information base required to implement such taxes is non-existent*". As a result, in an effort to isolate the wealthy and redistribute income to the poor, governments tend to tax on private investment opportunities. Higher taxes on private investment means that there is lower incentive to accumulate wealth through private investment, hence reducing the rate of investment and thus economic growth will decline (Ray, 1998).

Income Inequality has also been associated with an increase in crime and disruption by individuals who feel they are being treated unfairly. This leads to socio-political unrest in the sense that there is an increased possibility of revolution, which can reduce the certainty and duration of new laws and policies implemented. Furthermore, poorer individuals who commit crimes are not contributing to the economy in the sense that they are not being productive. At a time of socio-political unrest, property rights are at risk which makes the idea of private investment unattractive to those who are rich enough to do so.

4. Policies to promote growth and reduce inequality

4.1 Redistributive taxes and Human Capital Investment

Given that eliminating inequality is a top priority, one main policy tool available is through redistributive taxes and transfers. In the case of cash transfers such as pensions, child and unemployment benefits, these are shown to have a large impact in terms of redistributing income, however, the size and progressivity of tax and cash transfers vary widely given the type of mechanism and the economy. Take pensions for example, the pension scheme allows income to be redistributed across the lifetime of an individual but depends on the wealth of the individual in question. Those with poorer incomes will contribute less to their pensions than those who are wealthier, however they will receive a comparatively smaller pay out (Hoeller *et al*, 2012).

Another important policy theory takes the form of investment in human capital to foster long-term economic growth. Birdsall *et al* (1995) considers the case of East Asia and post-war investment into education. The researchers note that due to an increase in the "relative abundance" of high skilled workers, a decrease in income inequality, synonymous with

Kuznets' U shaped theory, may occur in the long run. Policies looking to reduce and eliminate income inequality by focusing on educational attainment could benefit from a "virtuous circle", where higher levels of education lead to a more productive workforce, increasing technological advancement, harbouring more prosperous trade policies which stimulate industrial exports and economic growth, hence increasing demand for skilled labour and once more increasing demand and supply of education.

4.2 Fiscal Policy

Fiscal policy, whilst not directly focused on reducing income inequality, is an important determinant for the growth of a nation's economy. Easterly and Rebelo (1999) researched the relationship between fiscal policy and economic growth and found that investment in transport and communication was strongly correlated with an increase in economic development. Furthermore, as discussed by Saint Paul and Verdier (1988), policies which raise the return of private investment, making savings and investment more attractive, contribute to an increased rate of growth. This implies that income tax, which reduces the return to investment, will lead to a decreased rate of growth. Also, the researchers find that fiscal policy is effected by the level of income inequality, in that governments whose economies have higher inequality are more likely to invest a larger portion of their GDP in public education, which adds weight to the policy theory by Birdsall *et al* (1995)

4.3 Trade Liberalisation

A recent study by the International Monetary Fund (Cerdeiro and Kamorami, 2017) suggests that developing economies who implement more inclusive trade policies benefit from a reduction in income inequality. Robbins (2003) explains that policies which promote trade liberalisation by reducing trade tariffs can lead to economic growth because these developing economies can specialise in exporting goods and encourage capital inflows and sharing of

technology from more developed countries. However, the researcher understands that a higher level of technology may consequently raise the need for a more skilled workforce and hence lead to unequal wages, but these rising relative wages are likely to be mitigated by an increase in individuals searching for educational attainment.

5. Conclusion

Given the theoretical evidence discussed, it seems that inequality should be eliminated to a certain extent to ensure economic development. The extent being that a society should be equal enough to ensure prosperous future generations in the case of imperfect credit markets (Galor and Zeira, 1988), but not too equal as to undermine the rich, lower the savings rate and deter private investment and wealth accumulation (Li and Zou, 1998). High levels of income inequality may force governments to engage with tax policies which tax private investment, which make investment unattractive to the rich, lower the savings rate and slow economic growth (Persson and Tabellini, 1991). In the case of an imperfect credit market, we see that a poor economy attempting full equal income distribution will remain poor in the long run as no individual can invest in human capital, however if it is initially unequal there will be some observable growth in the long run. Furthermore, if an economy is initially rich, then an equal income distribution means that more individuals can invest in human capital, engage more in an economy, earn a higher wage and save more, thus leading to economic growth in the long term. So there is a level of progressivity required to understand how prioritised income equality should be for a nation. A good example of this is the comparison between developed economies and less developed economies. In 2017, Sadiq Khan released his economic development strategy for London, where his main determination was to create a fairer, more inclusive economy, with his second aim being related directly with a growth in per capita

income. If we compare this with the strategies of emerging economies, Hoskisson *et al* (2000) find that many are low income, with their priority for growth being the opening up of their economies to foreign investment and capital. A strategy which sees the participating nations rapidly grow from an economic perspective. Therefore, I believe the idea of income equality is multi-faceted, of course from a social welfare standpoint raising income inequality and reducing poverty are very important, the mechanisms and policies however, which allow that to happen are quite complex and vary between economies. Ray (1998) believes that the relationship between inequality and growth remains a difficult one to observe. Whilst there is strong evidence to suggest that the initial wealth of an economy determines long run growth, whether this relationship is the result of redistributive policies or lower inequality leading to more savings and investment remains up for debate. I believe further analysis into Kuznets' U shaped theory and it's applications between capital poor/rich countries would aid in understanding the priority of income equality between nations.

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