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Kuznets Inverted U Hypothesis of Income Inequality: Looking Inside the Available Economic Literature

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Abstract
A dynamic shift in thinking has taken place both locally as well as globally to understand the phenomenon of rising economic inequalities and accordingly find measures to correct this state of disequilibrium. However in no way the contribution of predecessors cannot be put in vain, as their work became the base to build the ongoing recent debate on the subject of economic and income inequalities. One such contribution the literature of economics received was from the seminal work of Simon Kuznets. It was the beginning to discuss the relationship between income distribution and development which later on became popular as Kuznets inverted U hypothesis or Kuznets curve. Though with respect to findings and analysis there is no common consensus to support or reject the Inverted U Hypothesis, but in its own sphere it became the base for carrying forward the research on an important aspect of the economy. In this paper we have tried mainly to show how from different perspectives the literature flowed over the period of time, to see the reliability and the efficacy of this Hypothesis. We divided the whole literature into four categories and accordingly included some important studies within each.

Introduction

Thanks to the dynamic shift that is now extensively taking place both at the local and the Global level. It is not about warn the world with regard to damage nuclear race can inflict though it has its own relevance even today, but what we are talking is not less than a monster, "The Rising Income Inequality" affecting every part and region, individually as well as jointly . One must keep in mind that income inequality is only a part of game of "Economic Inequality" played in the whole world to maintain the wide gap between upper tail few and the bottom lot. A mere concern about the phenomenon is no way going to solve the deprivation of lot. What can be the consequences if among those who try to bring decrease in the wide gap by circulating their views and mostly policy framework also fall among the high income bracket in many countries of the world? Anew warmth in thinking with respect to development economics came on the picture with the publication of "Capital in the Twenty first Century", hard for some to taste. No matter how Piketty has tried to make his point can be inappropriate from some angles; nevertheless there can be no denial from its contribution in creating a wave of enlightenment among Northern circles both academic as well as non-academic, here we do not forget contribution from Stiglitz, Krugman, Atkinson, Saez, and many more. The subject of inequality is not new, there are number of studies in the past that have tried to bring it on the screen, either tried to support its presence to march on the blind path of growth and development with their econometrical and mathematical hegemonies; opposite there are many who have showed negative consequences if policy framework present failed to contain its path.

No way in this paper we have tried to figure out how the seminal work of Kuznets was carried forward to look how pattern of incomes moves with different macro variables especially GDP Per Capita in the economy. In fact we cannot deny the fact that real dynamics of income inequality and its variability with respect to different structures and dimensions of macro economy is not clear even today. One important reason is the unavailability of a perfect variable to measure inequality and the other is missing data, if available not of high standard needed to provide support for findings. However to date economists have tried their best to have some proof in hand to draw some base to study this phenomenon in deep. Taking Kuznets as the base to study empirically the dynamics of inequality here we will try to demonstrate how literature has flowed in this sphere taking Inverted U Hypothesis as a falsifiable experiment. Accordingly some have tried to find for some other alternatives to see the dynamics in a real manner.

In this paper first we will try to summarize some points as already raised by economists on the basis of empirical findings which can provide some antidote regarding the Question why to care about economic inequality, and then some look to Kuznets Inverted U Hypothesis will be provided as refreshment. There after we will try to divide the economic literature into certain segments which will specify how this Hypothesis has been taken from different corners. At last we will try to add some points in the conclusion.

Why Care About Inequality?

Here various big questions can be raised why to think of inequalities? What a common man has to do with this phenomenon? Why a country will prioritize inequality as a policy issues in its objectives? Why at international

level slogan is raised to look towards growing inequalities within countries and regions? Why not to put more emphasis to have high GDP per capita growth rates such that it will take care of other dimensions of the economy? The United Nations Report (2013:25) mentions that, the domination of the debate on inequalities in income, wealth and consumption is not only because they directly affect the well-being of individuals and society, they also obstruct the opportunities that people can enjoy in their future. There are many studies which talk about the merits of economic inequalities. One among them is that it provides an incentive to work hard and thereby help in pushing the growth rates upward. To look into the matter clearly regarding this shift in the concern with respect to the economic forces involved, one must be familiar with the negative consequences of the rising disparities. Better is to mention some important negative consequences that researchers have found out and which affect the social welfare from one side or the other. Inequality can generate socio-political instability (Alesina and Perroti 1999).

It gives rise to economic distortions and disincentives (Alesina and Roderik 1994, Persson & Tabellini1994). It can give evolution to Rent Seeking and Corruption and can increase macroeconomic volatility (Stiglitz 2012).

Reduces overall average investment especially in human capital (Galor and Zeira, 1993). At the world level according to Kumhof and Ranciere (2010), one of the main cause behind the Great Depression of 1930's and Recession of 2007 was the uneven distribution of income with increase in the incomes of the top income group before crisis and for poor and middle income group there was increase in debt-income ratio.

The above mentioned consequences in all decrease the living standard of the bottom section of the society and which can directly hamper the growth of income over the long period of time especially in case of developing countries which contain a heavy chunk of poor population. So need of the hour is to find the cause or more specifically factors which affect the distribution of income positively or negatively to a great extent. The foundation for seeing that cause was almost laid by Kuznets (1955). Thus it is time to disclose Kuznets contribution in explaining the change in distribution of income over the period of time.

1. Kuznets Hypothesis

In his path breaking work of showing the relationship between income distribution and economic growth, Simon Kuznets started with some basic and fundamental questions , "Does inequality in the distribution of income increase or decrease in the course of a country's economic growth? What factors determine the secular level and trends of income inequalities? (Kuznets1955). In his seminal paper, which Kuznets presented while addressing American economic association, with the help of time series data for United States, England and Germany and of cross sectional data involving these three countries as well as Ceylon, India, and Puerto Rico, Simon Kuznets speculated that in the course of economic development, the level of income inequality normally rises during the early phase, levels off during the middle phase, and then declines during the later stages of development. This relationship later came to be known as Kuznets inverted U hypothesis. Though there were constraints in terms of availability of a sufficient and reliable dataset which Kuznets himself admits, but using his intellect he was successful to a great extent to be admired for carrying this great task. He used the ratio of the income of richest 20% of the population to that of the poorest 60% of the population (later on came to be known as Kuznets Ratio) as a measure of inequality. He found that this ratio (Kuznets Ratio) for India, Sri Lanka and Puerto Rica were higher as compared to United States and United Kingdom.

Also in his other paper, Quantitative Aspects of the Economic Growth of Nations, Distribution of Income by Size (1963) Kuznets got further support for his inverted U hypothesis , which involved finding wide inter-sectoral differences in per capita incomes in the less developed countries caused mainly by the disparities in income per worker between the agricultural sector and the non-agricultural one. Kuznets found that in underdeveloped and most developed countries, income within traditional agricultural sector is distributed less unequally than income within modern non-agricultural sector. There was a decrease in size distribution of income through post world war when judged by the declines in the shares of upper ordinal groups. He found that the share of the top 5% of population in the income after Second World War was 20% or less before taxes and in 1920 and 1930 the share was 30% in most of the countries. Accordingly the share of the bottom 60% population was below 30% in 1920 and 1930 and it rose above 30% in the post Second World War. A study carried out by Oshima (1962) predicted the same relationship between GDP per capita and income inequality.

Kuznets himself gave the explanation for this phenomenon, by suggesting the presence of a dualistic model which to a large extent is related to the traditional model put forward by Lewis as a model of dualism, "Unlimited supply of labor" (1954, 1983). The basic logic behind the whole process provided by Kuznets is that of urbanization and industrialization; as in most underdeveloped economies large proportion of population is involved with the traditional agricultural sector, in the beginning of the economic development, due to higher growth and high level of incomes in the modern industrial sector, the labor force shifts or migrates from the low income sector to the modern sector, which leads to increase in income inequality as large difference occurs in the mean income levels between the two sectors (Wolff; 2009). As already some degree of inequality exists within

each sector, the overall inequality will get more push if existing inequality in the modern sector is high. In the later stages of development process, when inequality reaches to its peak, the reverse process begin in where the society moves towards a more equal distribution as benefits of growth get trickle down to the left out sections of society. Actually the inverted U hypothesis defined by Kuznets was based on the thinking that with the process of development, there will be decline in the relative importance of agricultural production in total GDP and movement of population from low income traditional sector to the high income modern sector.

There are several causes in operation to bring down the level of income inequality. "One of them is the heavy absorption of the labor force by the modern sector. Also because of the migration of people from agriculture to industry, there will be decrease in the pressure on land, which will lead to increase in incomes of people associated with agriculture. Moreover, within modern sector expansion of education will also result in equal distribution of skills which can help in improving the distribution of income" (Wolff; 2009).

It will be better to take account of political economy of Kuznets hypothesis as drafted by Acemoglu and Robinson (2002) to gather further understanding on the subject. Giving the political economic theory of Kuznets curve they argued that political factors and institutional transformation of the west during the 19th century are the crucial factors to understand the patterns of inequality. Defining the Kuznets process in their own words, they mentioned that, "overall our theory of the Kuznets curve is that capitalist industrialization tends to increase inequality, but this inequality contains the seed of its own destruction, because it induces a change in the political regime towards a more redistributive system." Based on their broad study, they came to the conclusion that the historical and contemporary evidence suggests that the downward segment of the curve that is decrease in inequality is driven by political reforms and their subsequent impact. These political changes are driven by rising social tension and political instability aroused from the increased inequality on the upward segment of the curve. Depicting the shortfalls of curve according to them, the curve does not characterize the all paths of development model. They suggested two paths which would not induce Kuznets curve. Firstly, when inequality is very low initially, the country would experience rapid economic development without growing inequality as was visualized in case of East Asian countries after Second World War, where rapid growth was followed by political reforms side by side. Second case is when civil society is much immobilized, even widening inequality may not be sufficient to force political reforms as recently experienced by the Sub-Saharan Africa and Philippines.

With respect to differences in methodologies, dataset, number of countries involved and set of variables used, it is better to group the literature on basis of certain kind of similarity found with respect to different dimensions.

1.1 Literature following Parametric Regression Strategy

Due to the unavailability of the time series data on any inequality measure, earlier researchers relied mostly on the cross section data to check the validity of the Kuznets hypothesis by examining the variations in the inequality across countries that are at different stages in the process of development at some point of time.

The first remarkable contribution in this sphere came from Paukert (1973), who used cross section data of GDP per capita and Gini coefficients to test inverted U hypothesis, taking sample of 56 countries, out of which 13 were developed and 43 belonged to developing group. He found Gini ratio for developing countries was 0.467 and that of developed countries was 0.392. The highest Gini coefficient found was because of the high share of 28.7% of income distributed to the 5% of population in developing countries and for same population it was 19.9% for developed countries. In case of the share of the bottom 20%, the difference between the two groups was not remarkable. Also considering shares of bottom 60%, the shares amounted 26.3% in developing and 31.7% in developed countries.

From empirical point of view a detailed and pioneered study though based on cross section data which became the base line for the future empirical work was done by Ahluwalia (1976a, b). Using multivariate regression to estimate cross country relationship for a sample of 60 countries including 40 developing, 14 develop and 6 socialist countries. Modeling two separate equations one for full sample of 60 countries controlling for socialism by introducing dummy variable in order to capture higher degree of equality observed in socialist countries and another restricted to 40 developing countries by regressing inequality measured in terms of income share of the bottom 40% and 60%, and top 20% of population on per capita GNP and other related variables he found a strong support for Kuznets hypothesis. The estimates showed that the income shares of lower income group first declines and then rises with increasing per capita GNP, while the income shares of top 20% first increased and then declined. With respect to other factors the results showed that improvement in literacy rate has a beneficial impact on the share of the lowest 40% of population and secondary school enrollment rate impacts positively the share of middle 40%. The study also found that the growth rate of population is highly significant and have adverse effect on the income shares of the lower and middle income group while having positive impact on the income share of the top 20%. The share of agriculture to GDP is positively related with income shares of middle group and negatively with top 20%. Urbanization was found

positively related with lowest income group and negatively with the income share of top 20%. Regarding this study one thing that Ahluwalia himself admitted was that, "mere use of multivariate correlation cannot capture the essential complexity of the dynamic process." Drawing attention towards the limitations of methodology and the statistical pitfalls of data, Saith (1983) totally challenged the Kuznets Hypothesis and also the work of Ahluwalia (19976a, b). According to him once sample was restricted to least developed countries (LDCs) group one finds insignificant support to Hypothesis.

Using internationally comparable dataset for 32 countries both developed as well developing on the household income distribution, Ram (1988) with the help quadratic regression model where real per capita income was put in log form, found some empirical support for the inverted U hypothesis. But once sample was restricted to developing countries only the results showed limited support to hypothesis. In another study Ram (1991) investigated the quadratic relationship between inequality and development for USA by making use of time series data and cross section data for states from 1947-1988. The estimates derived showed that time series data are unable to capture the Kuznets U curve and there actually exists an un-inverted U relationship.

Anand and Kanbur (1993a, b) studied Kuznets hypothesis and the underlying pattern followed by Kuznets process when different indices are used to measure inequality. The study was actually a total mathematical touch to provide a precise functional form to the Kuznets relation. With the help of mathematical intuition they concluded that the misspecification of the functional form can lead to derivation of wrong results and accordingly they came with six different functional forms to be used specifically with the six indices of inequality measurement. According to them the previous studies rested on the assumption that mean incomes do not change over the whole process of development, which is not a perfect assumption. Once change in mean incomes is allowed the relation between inequality and development gets altered and also altogether affecting the turning points to be realized. Using Ahluwalia's dataset they (Anand and Kanbur) did not find such type of relationship as was visualized by him, so from their results they inferred that the Kuznets relationship is missing.

Jha (1996) investigated the relevance of Kuznets hypothesis by making use of World Bank data for 76 countries. Using pooled regression framework along with OLS method it was found that inverted U hypothesis exists and is significant even when different measures of inequality were used. The relationship was seen to hold even when growth rate and schooling variables were included in the regression besides restricting sample to developing countries only, estimates showed that widespread education improves the income distribution. Also testing for the data comparability problems with cross country studies as raised by Saith (1983) and Anand and Kanbur (1993), he found that most of the variation in income distribution is due to country characteristics and not due to data comparability problems.

A lasting contribution in the area of studying development and inequality nexus came from Deininger and Squire (1996, 1998) in the form of compilation of a panel dataset for a vast majority of countries of the world which provided a new enthusiasm to the future research in this field by making use of panel and time series models to analyze the stylized hypothesis for individual countries based on almost a reliable dataset. Making use of their own dataset they failed to establish the very link that per capita income is significantly associated with changes in inequality in the vast majority of countries. They found little support for Kuznets hypothesis as either it was too flat to be noticeable or irrelevant for developing countries. Viewing with respect to individual countries Kuznets hypothesis was detected only in few countries. One important finding in their study was that initial land inequality has a significant positive impact on the incomes of bottom 20% of population.

Dustin Chambers (2007) examined the relationship how past growth impacts inequality using the fixed broad panel data set for 29. The study conducted omitted variable test, which support for the presence of a neglected nonlinear relationship between past economic growth and current inequality. The estimates derived using semi parametric functions showed that there exists a positive relationship between past short and medium term growth and current inequality and an inverted U relationship between past long run growth (period of 20 years) and current inequality. The long run relationship showed that when growth is below average there is a positive relationship between inequality and long run growth initially and a negative relationship for above average long run growth rates. Based on the findings he concluded that if the two nations are equally developed and possess equal educational attainment and terms of trade and both the nations are experiencing above average long run growth, the nation that grew more rapidly over the past 20 year will have a lower level of income inequality (relative to its mean level of inequality). On the other side if both nations are experiencing below average long run growth the nation that grew more rapidly will have a higher level of income inequality.

1.2 Use of Non-Parametric and Semi-Parametric Functions:

Because miss-specified functional form may give very misleading information regarding the welfare effects of economic development Ogwang (1994) took a shift from the earlier empirical work by making use of non-parametric regression model on the data reported by Ram (1998) for 32 countries both developed as well as developing. Using Gini coefficient, income share of bottom 20% and 40% as inequality measures and per capita

GDP, HDI[1] and PQLI[2] as development indicators he found some support for Kuznets Hypothesis. Based on his results he concluded that institutional structures and government policies are important determinants of income distribution. Mushinski (2001) with the help of non-parametric analysis found presence of inverse relationship. According to him non-parametric form suggests that a polynomial of greater degree might better capture the relationship between economic development and inequality, with hypothesis testing supports estimating a 4th degree polynomial rather than a 2nd degree. The estimates showed that all the terms in the 4thdegree polynomial were significant and support Kuznets hypothesis. The regression results cautioned about estimation of only parametric forms which produce strictly concave functions to test inverted U hypothesis.

To overcome the limitations of the estimates from cross country regressions Garth (2006) used overlapping non-parametric regressions to visualize how income inequality both within and across countries has evolved at different levels of development. Using Squire and Deininger (1996) dataset the study found a little support for Kuznets hypothesis. From his estimates there were examples of decreasing inequalities in case of low income countries like India and small relative changes in case of Taiwan and Korea despite witnessing remarkable advances in per capita GDP. One of the main finding which highlighted the merit of non-parametric analysis was the appearance of significant inverted U shaped curve for Korea when parametric regression was used but for the same country non-parametric evidence using international pooled data showed that the relationship can hardly be classified as classic Kuznets case, as inequality remained quite low throughout the process of development. With respect to high income countries, there was heterogeneity in the relationship. Also the study concluded that the evidence of Kuznets curve depends considerably on the choice of U shaped functional form to test the hypothesis and explanation of significance of coefficients of any specific functional form can lead to misleading results.

Lin et al. (2007) using parametric quantile regression model found overwhelming evidence in support of the inverted U hypothesis using cross section data on 75 countries taken from Bulir (2005). Also using the semi parametric quantile regression, the study revealed that inverted U relationship prevails in countries with mild inequality, but not for the ones with too high or too low inequality. Robustness of the model was checked with the use of different data set and conditioning variables from Iradian (2005) which also gave same evidence. The study also found that the effects of the control variables on income inequality vary significantly in different quintiles.

Making use of an alternative estimation strategy of endogenous regression without regime separation, Zhou Chen (2007) found support for Kuznets hypothesis and on the basis of estimates argued that turning point may depend on population size and openness of economy. He found that, when population size is below optimal, increasing population reduces the likelihood of being in the second regime of positive relationship between inequality and development. After reaching the threshold level any increase in population is associated with higher probability to fall in the second regime. With respect to openness, there is every time possibility of likelihood of being in the second regime on the rationale that an open economy may sustain even with a high level of income inequality.

With respect to generation and compilation of data on inequality, the work done by Galbraith and Kum (2007) under University of Texas Inequality Project (UTIP) provided a continuous time series for a number of countries which according to them were more stable and perfect than dataset by Deininger and Squire. Based on that data set Galbraith (2007) found evidence for a common global pattern in the movement of inequality, with a decline in inequality from 1970 to 1980 and a long and sharp increase from 1981 to the end of century worldwide. According to him the pattern of inequality suggests that the study of inequality is better to be associated with global macroeconomic factors like breakdown of Bretton woods in 1971-73 and onset of global debt crisis in 1981-82.

Xianbo and Li (2011) using the non-parametric and semi parametric unbalanced panel data model for group of 75 countries with fixed effects studied the validity of Kuznets hypothesis. The study showed that Kuznets hypothesis is confirmed only when the development level (per capita income is used as proxy for development) arrives at a certain threshold which is $ 1340. They also found that integrated effect of control variables in the reduction of inequality is positive with policy instruments and economic performance playing a major role in reducing inequality which is more in developed countries than in less developed economies. Their findings also showed that when the GDP (per capita) level is below $8100 the net integrated effect has no significant difference across different levels. When the GDP (per capita) level is above $22000, the control variables have a large integrated effect on inequality, implying that policy instruments and economic performance play a large role in reducing inequality, which is more in developed countries than in less developed countries

Highlighting the defects of panel modeling, Desbordes et al.(2012) while investigating the existence of

[1] Human Development Index.
[2] Physical Quality of Life Index

aggregate Kuznets curve by using Baltagi and Lis' (2002) semi parametric fixed effects regression estimator for a sample of 113 countries from 1960-2000, found that the misspecification of a functional form in a panel model with fixed effects and failure to control for endogeneity of per capita GDP can lead to dramatically different conclusions regarding impact of development on income inequality. Though they observed inverted U relationship but that does not seem causal. The estimates revealed that once endogeneity is taken care off, inequality appears to decrease monotonically with income per capita and accordingly Kuznets curve disappears.

1.3 Review of an Alternative or Augmented Look:

For decades, empirical work on cross-country differences in the distribution of income consists of various tests of the inverted U hypothesis in the form of regressing inequality especially Gini coefficients or income shares of population on the level of GDP per capita and its square. A good amount of literature proposes a modified Kuznets hypothesis or suggests alternative hypothesis.

A new conformation of Kuznets inverted U hypothesis was proposed by Galor and Tsiddon (1996) by developing a general equilibrium model which presented a new endogenous mechanism that generates inverted U relationship between income inequality and per capita income. The empirical justification provided was that output growth in initial stages of development is accompanied by a widening wage differential between skilled and unskilled labor, whereas in later stages of development due to generation of enough externalities and incentives for the poor, the wage differential declines.

List and Gallet (1999) with the help of pooled ordinary least squares, fixed effect panel data and random effects panel data models for a panel of 71 countries, using data from Squire and Deininger (1996), found that there exists inverted U curve for lower developed and middle developed countries however, for higher developed countries the relationship between income inequality and per capita GDP becomes positive again. Also in other study using only the high quality dataset available for 96 countries from the compiled dataset of Deininger and Squire (1996) in a panel study, Thorton (2001) found support for Kuznets hypothesis even when besides Ginis coefficient, the sum of quartile first and second was used as a dependent variable. The estimates showed that the turning point on the inverted curve occurs at a relatively low level of income.

Daudey and Gracia-Penalosa (2007) taking a diversion from the previous studies, analyzed how the factor shares or rewards affect the personal distribution of income. Regressing Gini coefficient on the labor share for a sample of developed and developing countries, the cross country and panel evidence showed that a larger labor share is associated with a lower inequality. The negative relationship is robust to control for different factors accepted as the major determinants of income inequality. The results indicated that policies that raise the share of capital have a substantial cost in terms of inequality. Higgins and Williamson (1999) found strong support for cohort size (population with age between 40-59 years) effect on inequality throughout world. Using Deininger and Squire (1996) dataset for inequality, they found that large mature working age cohorts are negatively and large young adult cohorts are positively associated with higher aggregate inequality. Though support for Kuznets U curve was admitted when conditioned on other variables, but the relationship was not unequivocal. No significant impact of trade openness on inequality was noticed.

Luis (2010) taking a new direction, used employment outside agriculture as an independent variable instead of GDP per capita to test the Kuznets hypothesis. According to him, the justification of using employment outside agriculture comes from the insight provided by Kuznets seminal paper with respect to the shift of labor from agriculture towards modern sectors of the economy with the process of development. Using the panel data, he doesn't find any support for Kuznets hypothesis. Also conducting regression analysis at individual countries the results were insignificant. The number of countries where a statistically significant inverted U is detected is small relative to the number of countries considered. The study also concluded that neither employment outside agriculture nor the related measures of urban population are related to inequality in any systematic way.

1.4 Country specific review of Kuznets Hypothesis:

Based on surveys from 1975 to 1998 analyzing increasing inequality in Thailand Motonishi (2006) detected a limited evidence that agricultural, nonagricultural and household income play a significant role in explaining inequality, however limited support for education level disparities and financial development was also admitted. In case of South Korea between 1975 and 1995 Sato et al. (2009) using Gini coefficient for income and expenditure, no support for Kuznets hypothesis was realized and estimates showed that opening of goods market reduces inequality in both short run (Gini based on income) and long run (Gini based on expenditure), and opening of capital market increases income inequality in the short run and insignificantly in the long run. Ho-chuan et al (2012) reassessed the validity of the Kuznets hypothesis with the help of alternative test strategy of Lind and Mehlum (2010) using annual US data over the period 1971 to 2007. The empirical results overwhelmingly reject the inverted U relationship between income inequality and economic development. They found the results to be robust to changes in inequality measures and functional specifications.

Employing pooled mean group estimator of Pesaran et al. (1999) over the data from 1945 to 2004 for 48 states of USA, Kim et al. (2011) rejected Kuznets hypothesis and found U shaped relationship, with results being robust to a variety of sensitivity tests. To analyze the effect of urbanization on expenditure inequality in Indonesia, Sagala et al. (2013) performed panel data regression analysis in case of 33 provinces of Indonesia form 2000 to 2009. They found that there exists an inverted U relationship between inequality and urbanization whether Gini coefficient or Thiel's index is used. Besides, GDP per capita was also used as a control variable in the model.

A more recent trend in economic literature has seen the use of time series autoregressive distributed lag modeling (ARDL) which helps in distinguishing between the short run and long run effects influencing a relationship. Taking a stand Bahmani-Oskoee and Gelan (2008) by using time series data from 1957 to 2002 for US with the help of Cointegration and Error Correction modeling techniques found that in short run economic growth worsens income inequality and in long run it leads to reduction in income inequality. Considering different variables they found that population has a negative significant impact both in the short run and in the long run and depreciation has a negative impact on the inequality in short-run but in long run it is negligible though significant. Using CUSUM and CUSUMSQ the estimates were found stable both in the long run as well as in the short run.

Shahbaz (2010) investigated the relationship between income inequality and economic growth considering other factors also for Pakistan over the period 1971 to 2005 with the help autoregressive distributed lag model (ARDL) and error correction model (ECM). The study revealed that there exist support for Kuznets curve and when cubic term was used for lnGDP per capita the results confirmed the occurrence of inverted S-shaped curve. For other variables related to inequality measured in terms of Gini coefficient found that HDI and unemployment seem to increase inequality, and urbanization decreases inequality in the long run. Similarly literacy rate, life expectancy and FDI showed a worsening impact on the distribution of income. Investigating Chinese economy from 1978 to 2011 Cheng and Wu (2014) employed ARDL technique of Pesaran (1997) and Pesaran and Smith (1998) and identified an inverted relationship between economic development and overall income inequality in terms of both Theils index as well as Gini coefficient as a measure of inequality. They found urbanization as the main driving force behind the relation which was captured by way of including square term for urbanization in the model. After urbanization, duality in terms of low productivity in agriculture relative to whole economy was identified as an important factor contributing to income inequality. Besides that inflation and expansion of higher education had also effect on widening inequality, but only inflation was found to be robust.

In a panel of 31 countries divided into three groups, lower middle, upper middle and higher income countries covering period from 1990 to 2011, employing General Method of Moments (GMM) Lim and Kun Sek (2014) found that there exists only a one way relationship between inequality and growth. And it is growth that affects inequality positively and significantly with respect to high income countries, no effect from the results was seen of inequality for all the groups. Concerning other factors like primary education, openness and price level of investment, the results showed no significant impact on inequality, though they influence growth but the impact vary across countries.

In general, the literature on Kuznets Inverted U Hypothesis can be put among any of the above given categories.

CONCLUSION

A dynamic shift in thinking has taken place both locally as well as globally to understand the phenomenon of rising economic inequalities and accordingly find measures to correct this state of disequilibrium. However in no way the contribution of predecessors cannot be put in vain, as their work became the base to build the ongoing recent debate on the subject of economic and income inequalities. One such contribution the literature of economics received was from the seminal work of Simon Kuznets. It was the beginning to discuss the relationship between income distribution and development which later on became popular as Kuznets' inverted U hypothesis. Though with respect to findings and analysis there is no common consensus to support or reject the Inverted U Hypothesis, but in its own sphere it became the base for carrying forward the research on an important aspect of the economy. In this paper we have tried mainly to show how from different perspectives the literature flowed over the period of time, to analyse the reliability and the efficacy of this Hypothesis. We divided literature into four categories. One common movement we saw was the effect of the advancement in econometric techniques; from time to time researchers have tried to check the principle of falsifiability on the basis of available new economic techniques. A clear shift is seen from cross section studies to time-series and panel data analysis. Here a line we want to add is that, even today we do not have totally overcome the problem of data measurement. A lot of noise in the analysis is due to unreliable data. Mere application of econometric tools will not serve the purpose if we fail to collect the right figures. There remains much scope to conduct field surveys both extensively and intensively to get the right dimension about the relationship between income or

more appropriately economic inequality and development.

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