

**Czech University of Life Sciences Prague**

**Faculty of Economics and Management**



**Examining the Growth, Inequality and Poverty triangle  
in Turkey**

**Diploma Thesis**

**Berkay Yöndemli**

Supervisor

**Ing. Zuzana Křístková, Ph.D.**

**Department of Economics**

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Faculty of Economics and Management

# **DIPLOMA THESIS ASSIGNMENT**

Yöndemli Berkay

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## **Objectives of thesis**

The diploma thesis analyses the relationship between economic growth and economic development in Turkey. The main goal of this research is to verify or reject the hypothesis that the unprecedented economic growth that occurred in Turkey between 2002 and 2011 has genuinely stimulated economic development. A partial objective of the thesis is to analyse the relationship between growth, poverty and inequality and their possible consequences in the development of the country's economy.

## **Methodology**

The thesis will be divided into two parts, theoretical and practical. The main data sources for the empirical research will be official statistic reports of the OECD, World Bank, IMF and relevant ministries and associations of Turkey. This data will provide a basis for the application of the econometric modelling which is the vital tool for the practical part as it enables to quantify the relationship between the investigated phenomena. In concrete, a simultaneous model will be constructed and a TSLS method will be applied to estimate the parameters.

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### Keywords

Turkey, Economic Growth, Economic Development, Inequality, Poverty, Analysis

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### The Diploma Thesis Supervisor

Křístková Zuzana, Ing., Ph.D.

### Last date for the submission

March 2013

prof. Ing. Miroslav Svatoš, CSc.  
Head of the Department



prof. Ing. Jan Hron, DrSc., dr.h.c.  
Dean

Prague November 19. 2012

**Declaration**

I declare that the Diploma thesis “Examining the Growth, Inequality and Poverty triangle in Turkey” was done purely by me and only the sources listed in the bibliography section were used.

Prague, 28<sup>th</sup> of March, 2013

Bc. Berkay Yöndemli

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# **Examining the Growth, Inequality and Poverty triangle in Turkey**

**Analýza vztahů ekonomického růstu,  
nerovnosti a chudoby v Turecku**

## **Summary**

This thesis examines the relationship between growth, poverty and income inequality in Turkey particularly over the period 2002-2011.

In the context of the literature review, associated economic terms that are namely growth, poverty and income inequality are studied and the relevant indicators which are used to measure them are explored. Later on, current progress of Turkey in terms of poverty and income inequality is investigated by these indicators.

Within the scope of the practical part, primarily economic growth performance of Turkey in a long run is observed by various indicators. Besides the components of the specified triangle, living standards, which are associated with economic development, in Turkey are analysed using HDI and OECD better life index criterion. Essentially, two linear regression models are constructed and OLS method is applied to analyse the growth-poverty and growth-income inequality relations.

## **Keywords**

Turkey, Economic Growth, Economic Development, Inequality, Poverty, Analysis

## **Souhrn**

Zde předkládaná diplomová práce zkoumá vztah mezi růstem, chudobou a nerovností v Turecku, se zaměřením na období let 2002-2011.

Zkoumané pojmy ekonomický růst, chudoba a nerovnost jsou v teoretické části diplomové práce zasazeny na základě diskurzu aktuální literatury do širšího kontextu a zároveň jsou podrobeny výzkumu relevantní indikátory, kterými se tyto zmiňované pojmy dají sledovat. V konečném výsledku tedy tato práce sleduje aktuální vývoj vztahu mezi chudobou a příjmovou nerovností v Turecku na základě zvolených určujících indikátorů.

V rámci praktické části se předmětem bádání stal výkon turecké ekonomiky v delším časovém horizontu, který je sledován a srovnáván na základě různých indikátorů. Vedle komponentů zvoleného trojúhelníku, hraje zásadní roli také otázka životní úrovně, úzce související se ekonomickým rozvojem země. Ke sledování této problematiky v Turecku byla zvolena kritéria z Indexu životního rozvoje a Indexu lepšího života, spadající pod OECD. Z těchto závěrů potom vznikly dva lineární regresivní modely. K analýze korelace mezi růstem-chudobou a růstem-příjmem bylo použito metody nejmenších čtverců (Ordinary Least Square).

## **Klíčová slova**

Turecko, ekonomický růst, ekonomický rozvoj, nerovnost, chudoba, analýza



## **List of Abbreviations**

TurkStat: Turkish Statistical Institute

OECD: Organisation for Economic Co-operation and Development

WTO: World Trade Organisation

BRICs: Brazil, Russia, India and China

IMF: International Monetary Fund

GDP: Gross Domestic Product

GNI: Gross National Income

GNP: Gross National Product

PPP: Purchasing Power Parity

FDI: Foreign Direct Investment

USD: United States Dollar

TL: Turkish Liras

Cidob: Barcelona Centre for International Affairs

SPO: State Planning Organization

EU: European Union

USAK: International Strategic Research Organisation

U.S.A: United States of America

TKBB: The Participation Banks Association of Turkey

HSBC: HoangKong and Shangai Banking Corporation

HDI: Human Development Index

UNDP: United Nations Development Programme

OLS: Ordinary Least Square

## Content

1	Introduction.....	1
2	Objectives and Methodology.....	3
2.1	Objectives.....	3
2.2	Methodology.....	3
3	Literature Review.....	6
3.1	Meaning of Growth and Development.....	6
3.2	Understanding inequality and its indicators.....	13
3.3	Concept of Poverty.....	18
3.4	Relationship between growth, poverty and inequality.....	20
3.5	Recent Growth Performances of Developing Countries.....	23
3.6	Current Economic Overview of Turkey.....	28
3.7	Poverty in Turkey at a glance.....	32
3.8	A great deal - Income Inequality in Turkey.....	34
3.9	Research Questions.....	39
4	Practical Part.....	40
4.1	Descriptive Analysis of Turkish economy.....	40
4.1.1	Performance of Turkey in terms of economic growth.....	40
4.1.2	Disposable Income per Household Approach.....	46
4.1.3	Overview of Human Development Index in Turkey over the period 1980-2011....	47
4.1.4	Gini index application to Turkish Economy.....	56
4.2	Examining the Growth-Poverty-Income Inequality Triangle in Turkey.....	59
4.2.1	One-Factor Regression.....	59
4.2.2	Multi-Factor Regression.....	64
4.2.3	Comparison of the results (1992-2001 versus 2002-2011).....	75
4.3	Development Policies and Reforms in Turkey regarding Poverty and Income Inequality 76	
4.4	Recommendations for fighting against poverty and income inequality.....	82
5	Conclusion.....	84
6	Bibliography.....	88
7	Supplements.....	i

## List of Figures

Figure 1 Global Income Distribution by Population Quintiles, .....	14
Figure 2 The Lorenz Curve and the equidistribution line .....	15
Figure 3 Kuznets Curve .....	17
Figure 4 Economic growth and human development.....	21
Figure 5 Worsening income inequalities in developed countries.....	22
Figure 6 Kuznets Curve and inequality over the last 100 years.....	23
Figure 7 Growth of GDP per capita, by level of development, 2000-2013 .....	26
Figure 8 Average Annual Real GDP Growth (%) 2002-2011 .....	30
Figure 9 Correlation of Inflation rate and GDP growth - The hole in the bucket.....	31
Figure 10 Household disposal income: Gap between the 10 <sup>th</sup> and 90 <sup>th</sup> centile and the Gini Index in the late 2000s .....	35
Figure 11 Gini coefficients of income inequality, mid-1980s and late 2000s .....	37
Figure 12 The link between inequality and growth in the OECD countries .....	38
Figure 13 Real GDP Growth for Turkey.....	43
Figure 14 Annual Average Real GDP Growth (%) Forecast in OECD Countries 2011-2017 .....	44
Figure 15 Export and Import in Turkey at constant 2000 US\$ .....	45
Figure 16 Disposable Income per Household at constant 1995 USD prices in Turkey .....	47
Figure 17 Human Development Index: Health, Education and Income .....	50
Figure 18 Human Development Index: Trend 1980-present.....	51
Figure 19 Relationship between growth and poverty in Turkey over the period 1992-2011.....	60
Figure 20 Relationship between growth and income inequality in Turkey over the period 1992-2011.....	62

## List of Tables

Table 1 Population percentage living under the poverty line 1.25\$.....	19
Table 2 Global Output, 2007-14 (Annual Percentage Change) .....	25
Table 3 Poverty ratios in Turkey (Based on poverty line methods).....	33
Table 4 Gross Domestic Product Results for Turkey.....	42
Table 5 Turkey`s HDI trends based on consistent time series data, new component indicators and new methodology .....	49
Table 6 Turkey`s HDI indicators for 2011 relative to selected countries and groups.....	52
Table 7 Environment-Life-Safety related development indicators - Turkey & OECD comparison	53
Table 8 Work-Income related development indicators - Turkey & OECD comparison.....	55
Table 9 Income Distribution by Household Disposable Income .....	57
Table 10 Distribution of the Conditional Cash Transfer by Regions in 2005.....	77
Table 11 Population covered by Social Insurance Programs (Number of People) .....	78
Table 12 Social Security Funds Health Expenditure, 2004-2005 (Million TL).....	79

# 1 Introduction

The global economy in today`s world continuously evolves and gains strength. During this process, almost nothing remains as it is. Some economies emerge and develop while some others shrink or even collapse. Thus, roles the particular countries undertake within the global economy may unexpectedly change or shift to somewhere else.

As a matter of course, not the ones that are collapsing, but the ones that are developing and leading the economy today, deserve the attention of all. Apparently, it is being talked about some particular developing countries that have been growing recently at unprecedented rates. Because, thanks to the positive and rapid economic performance they have caught, they now produce and export more and thus get higher shares from the world income. Thus, all the conventional ways known about economy, trade or even political relations between countries change and develop. Even, many economists argue that the first time in the modern history, it seems that the future of economy is in the hands of developing countries.

However, a very reasonable question arises “Does economic growth stimulates economic development in developing countries?” It is undeniable that economic growth enhances the potential for solving social issues and improving the standards of living, therefore it is highly expected that economic growth follows with economic development. But, as is known, economic growth does not necessarily mean economic development in all cases. History offers a number of examples where economic growth did not stimulate development, rather caused further issues as income inequality widened, unemployment numbers increased, people became poorer and even natural resources were overexploited. Such an economy, which is not fostered by economic development along the growth process, cannot be sustainable and is doomed to collapse sooner or later. In this context, two major indicators to measure economic development can be considered as poverty and income inequality. Economic growth that reduces poverty level, and is distributed equally in society particularly in developing countries enhances welfare overall and help them to maintain a sustainable economic progress in a long-run.

Turkey is an emerging country among developing countries that has been drawing attention of many economist and researches due to its remarkable economic progress in long-run since the year 2002. Turkey has grown by 5.2% on average over the period 2002-2011, leaving behind several developing as well as developed economies. Notably, some of the BRICs such as Russia and Brazil are included among these countries. With this record growth rate, the country enjoyed its tremendous economic growth except only for the year 2009 in which global financial crisis occurred.

It has been written much about Turkey and its economic growth process. Some argues it is volatile while other claims that it will continue to grow in the long run. On the other hand Turkey shall be questioned whether it has been improving on economic development progress or not. Because, economic growth can be sustainable only if reflects on standards of living. Actually, analysing poverty and income inequality Turkey is on the way becoming a better place to live in. Besides poverty and income inequality, there are a number of other social areas Turkey has been progress on. But, it is necessary to take a closer look at the relationship between economic growth and economic development in Turkey to be able to answer whether Turkey`s economy will continue to grow in a sustainable way. As a matter of fact, by doing this research it will be acknowledged that economic growth triggers economic development in one of the fastest growing developing countries. Therefore, economy of Turkey will be analysed mainly by the growth-poverty and inequality triangle as well as by other various indicators.

## **2 Objectives and Methodology**

### **2.1 Objectives**

The diploma thesis analyses the relationship between growth, poverty and income inequality in Turkey. In this context, the main goal of this research is to respond the research questions that are set to examine the specified triangle above. The first question interrogates whether the unprecedented economic growth that occurred in Turkey between 2002 and 2011 has genuinely helped reduce poverty or not. Therefore, the relationship between poverty and growth is examined in order to measure the influence of growth on poverty level. The second question investigates the relationship between growth and income inequality as increasing national income in Turkey over the period 2002-2011 has been distributed more equally or not. Lastly and necessarily, the pattern which the growth-poverty-income inequality triangle followed in the period 2002-2011 is compared with the previous ten year period that is 1992-2001. Thus, the relationship between the variables is observed in the long-period in order to have a reliable analysis from a broader perspective.

A partial objective of the thesis is to analyse the performance of Turkey`s economic development. Essentially, it questions whether economic growth stimulated economic development or not in terms of living standards. Actually, the main objective of this research by responding the researching questions, partially contributes to the results of the second objective. However, economic development is not limited to merely poverty and income inequality. For this purpose, the economic development progress Turkey has shown in the long-run, corresponding with the analysed period of the main objective, is to be analysed from other several social aspects using various kind of indicators.

### **2.2 Methodology**

The diploma thesis is divided into two main parts, theoretical and practical. Theoretical part is progressed by a comprehensive review of literature. Primarily, three main variables that are economic growth, poverty and income inequality are studied. In addition, economic growth and economic development are defined and highlighted where and how these two economic terms differs from each other. While studying each variable

individually, particular economic indicators that measure the variables are also explored to have a basis for the empirical research. Thus, income inequality is measured by Gini coefficient while poverty is measured by a poverty line that is defined by Turkish Statistical Institute. The measure is very similar to international poverty lines that are defined by the World Bank in the sense of context. It measures percentage of population who lives below 4.30\$ per day for both food and non-food expenditures. The main purpose of using this measure is because it is a more domestic indicator which is more suitable for a developing country such as Turkey.

In the context of the practical part, the performance of Turkey's economy in terms of growth is analysed by various indicators. In this respect, purchasing power parity and disposable income per household approaches are used to view both GDP and GNI changes. After the completion of the analysis of economic growth, economic development in Turkey is analysed using one of the major indicators that is "Human Development Index". The indicator allows a very comprehensive comparison on an international level that helps review of the current position of Turkey in terms of economic development. In addition to this, a number of other indicators that are chosen from each side of social aspects are used to analyse the economic development progress of Turkey with mainly the OECD countries. These indicators consists of various social aspects such as education, health, environment, and safety that enables to investigate further how the life is in Turkey comparing to other countries including developed as well as developing countries.

Empirical part follows by analysing the growth-poverty-income inequality triangle based on two regression models. First of all, one factor regression linear model is applied to examine poverty-growth and income inequality-growth relations. For this reason, scatter-plot diagrams are used. The diagram approaches the relations by four main points as direction, form, degree of correlation and outliers. Following, multi-factor linear regression model is used to have concrete and detailed results in the sense of numbers. As a method, OLS is applied to estimate the parameters. OLS is a method which intends to estimate the unknown parameters in a linear regression model. The method is formulated as follow  $\gamma = (X^T X)^{-1} \cdot X^T \cdot Y$  (1). In this formula, X represent matrix observations of exogenous variables (T x k), Y represents vector containing observations of exogenous variable (T x 1) and lastly  $\gamma$  represents vector of parameters (k x 1).

The main data sources for the empirical research are official statistic reports of TurkStat, the OECD, the World Bank, the IMF and other relevant ministries and associations of Turkey. This data provides a basis for the application of the econometric modelling which is the vital tool for the practical part. It enables quantifying the relationship between the investigated phenomena.



### 3 Literature Review

#### 3.1 Meaning of Growth and Development

*“Growth and development theory is at least as old as Adam Smith’s famous book published in 1776 entitled An Inquiry into the Nature and Causes of the Wealth of Nations. The macro issues of growth and the distribution of income between wages and profits were the major preoccupation of all the great classical economists including Adam Smith, Thomas Malthus, John Stuart Mill, David Ricardo and Karl Marx.”* (Thirlwall, 2002 p.1)

Taking growth as a theory, one of the most significant contributions of Smith is to introduce the notion of increasing returns to the literature. It is an initiative point for the economists to think more over growth in terms of economy. Although the principle of increasing returns seem to be minor in terms of economy, it is significantly important for the way of viewing economic process. Therefore, it is crucial to know increasing and diminishing returns in order to distinguish and understand real divisions in the world. For instance, the division between North and South or Rich and Poor countries can explain the divisions that are in place across the world. So, eventually increasing returns is defined by Thirlwall as *“rising labour productivity and per capita income and no limits to the employment of labour set by the wage whereas diminishing returns implies the opposite.”* (Thirlwall, 2002 p.2)

Thirlwall also takes into account each economist individually whose names are mentioned above and revises their viewpoint with regard to growth in terms of economy. In general as Thirlwall argued, that whilst diminishing returns activities are the major economic area of developing countries, developed or rich countries are mostly engaged in activities with increasing returns. (Thirlwall, 2002) To sum up the general idea of Smith by Thirlwall, the vision of Smith of growth and development as a cumulative interactive process based on division of labour and increasing returns in industry lay effectively dormant.

Allyn Young discussed the theory of Smith from another perspective. Denying that increasing returns are not restricted within an individual industry but also that the output of all industries tend to be affected highly by increasing returns. So what his observation basically says is that increasing returns must be seen as interrelated within all industries, in

a given economy. Because he believed that a factor which reduces the cost in any given industry will increase the profit in other industries that use this factor intensively. Having highlighted the importance of industrialisation from taking a wider look of history, according to him, the level of development can be categorised thanks to industrialisation level. The level of per capita income and the share of industry as well as growth and the growth of GDP are highly correlated to each other and this is apparent evidence to demonstrate strong association between the level of development and industrialisation. (Sandilands, 2009)

There are a number of other theories explaining economic growth and its components from different viewpoints. “Harrod-Domar Growth Model” is one of them that gives some insight into the dynamics of growth. This model is based on a fixed-coefficient, which are constant returns to scale function. According to the model, two production factors, capital and labour are used in a constant ratio to one another and they together, determine total output. There are three main factors explaining the economic growth ( $g$ ) in the model; saving rate ( $S$ ), capital productivity ( $a$ ) and capital depreciation ( $d$ ). Based on this, the equation is assumed to be  $Y=K/v$  where  $K$  is capital and  $Y$  is output so  $v$  represents the capital-output ratio. The ratio is significant and measures the productivity of capital or investment. Essentially, the model demonstrates that GDP growth will be proportional to the share of investment spending in GDP. Simply, the idea was to use the model in order to have short-term predictions of growth and therefore it has been mostly used in developing countries to estimate the “required” investment rate or “financing gap”. It was expected to reach a target growth rate through the required “investment rate”. The model has the advantage of being easy to use with small data requirements. (Hagemann, 2009) However it was criticised due to being too simplistic in its predictions. Besides, it was only available to be used under the full employment of both labour and capital stock. Hence, it failed to consider technological change and productivity gains in relation to long-term growth and development. Even Domar admitted that “*My model was not intended to comment on an esoteric debate on business cycles, not to derive an empirically meaningful rate of growth*”. (Easterly, 1997 p.2)

The next economic growth theory to be reviewed is “Solow (Neoclassical) Growth Model”. The model uses productivity, capital accumulation, population growth, and

technological progress as major explanatory`s. The main purpose of the theory is to address the limitations of Harrod-Domar model and make changes through them. In this context, fixed-coefficients production is replaced by a neoclassical production function which in turn enabled the use of substitution between the factors of production rather than the fixed ratios. Solow used a simple production function;  $Q = A K^a L^b$  where K and L represent capital and labour used, respectively. A is used as multifactor productivity. (Colander and Edward, 2006)

Additionally, when a plus b equals to less than 1, diminishing returns, when the value is more than 1, constant returns to scale appears. In fact, the model assumes that by means of an increase in A, higher output can be reached, even when input remains same. Since A represents technology, productive efficiency can be measured by A. Therefore, any increase will result in greater output through increase in productivity of all factors used. The term is called ``Total Factor Productivity`` and used widely in empirical papers. (Hulten, 2001)

One of another way is to explain growth by looking at capital accumulation. It uses the following equation  $\dot{K} = sY - \delta K$ . ``s`` indicates the saving rate which means a fraction of units of output saved and  $\delta$  indicates exogenous variable to the equation. The model considered the economy closed and therefore assumes gross investment equals to savings. Any additions concerning to capital stock which is meant to replace the depreciation of existing capital stock is so called ``replacement investment``. Thus the remaining part which is the difference between gross investment and replacement investment gives out net investment. (Whealan, 2005) In conclusion, it assumes that when total savings exceeds replacement investment, capital stock increases. It is important to note that the amount of investment necessary to leave the capital stock unchanged is defined by  $\delta K$  that refers to the break-even point of investment. ``Technological change`` is considered to be a factor affecting growth. Solow viewed the changes from two aspects; changes in mechanical such as developed machinery and in human capital such as better education, health or more worker skills). Taking this into consideration, the model assumed that growth can be seen when there is a positive technological change. The model is criticised to be a Razor-edge model. Because, the parameters used in the model such as capital-output ratio or growth rate of labour force are determined without depending on the model. Therefore, Dwiverdi

claims that since economy can easily deviate due to any small fraction of change in the parameters, the model does not assure the equilibrium growth rate in the long-run. (Dwivedi, 2010)

The last theory in relation to growth is called “Endogenous or New Growth Theory”. This was found by Romer and challenges the basic assumption of Solow model, Romer argued that technology plays a significant role but does not determine the long-run growth of income per capital alone. Unlike the Neoclassical Growth Model, this model also considered an imperfect market which requires innovation and technology supported by government. So, the idea that a market efficiently allocates the sources in technology was argued and the importance of government support is highlighted. On the other hand, technology is assumed to be endogenous rather than exogenous. (Sengupta, 2011) The initiation point for Romer was the distinction of goods used in production. He divided them into two parts as rival and non-rival goods. A rival good is defined as a good which can be possessed and used by more than one person at the same time whereas non-rival goods can be used only by one person. In this context, technology is classified under non-rival goods. In addition to this, he considered the excludability and said that technology is excludable, however only partially. It means that technology is a rival good and can be used by more than one party at the same however; it is still limited to free access for everybody. Besides, new technology remains as a requirement for production so therefore cannot be excluded entirely. The most significant finding of the model is a development strategy called “value chain”. This works mainly in favour of Agriculture and Rural Development. The approach says that the investment is important in technology, innovation and in business processes which are in turn key stimulators to economic growth. (Aghion and Howitt, 1998)

Although it seems that economists fail disagree on how to promote and stimulate economic development, there is a common census between them all that economic growth is required to initiate development. That can be achieved by a real increase in GDP, in per capital income. Many believed that this has to be upheld by all institutions and citizens as well in order to have a strong and sustained economic development. Logically, if the increase in population is less than the increase in final production of goods and services, then it is possible to talk about economic growth. Put simply, there must be an increase in per capita

income. Unlike economic growth, development seems to be much more comprehensive and complex. It is crucial to bear in mind that economic growth is not purely economic development because it has to include also the fundamental changes in the structure of economy. For instance, growing industrial sector as well as social aspects such as improvement in efficiency of labour, development of means of transport, increased urbanization and life expectancy of population, decrease in illiteracy, a rise in the level of living, enhancement in the standards of education; health and social security can be mentioned as some indicators of economic development. (Somashekar, 2003)

*“Development is of utmost significance to all economies. Development is necessary for underdeveloped countries because they can solve the problems of general poverty, unemployment, backwardness and low standard of living through it. Development is equally significant to developed economies as it helps them to maintain their existing growth rate and attain still higher standard of living.”*(Rohit, 2010) Thus, development can be defined as a process in which increase in per capita income brings a reduction in poverty, inequality, illiteracy and diseases. Although it is not a verity, it is an essential condition to be able to talk about development. It is extremely difficult to state any single definition of development that may be completely satisfactory to all aspects of an economy. However, it is essential to review a few viewpoints to have a better understanding in development concept. According to Prof. Meier and Baldwin; *“Economic development is a process whereby an economy’s real national income increases over a long period of time.”*(Fernando, 2011 p.174) Important to know in this definition is the meaning of determinants of development. They are as stated in the definition; process, real national income and long period, respectively. Meier and Baldwin considered the process as an operation of certain forces in which the changes lead to development. These changes are split into two categories.

- i) Changes in the supply of fundamental factors
- ii) Changes in the structure of demand for the products.

Talking about real national income, it is strongly related to the level of development. In other words, it is predicted to have a positive contribution to development. That means that an increase in real national income which is conventionally measured by real GDP growth works parallel with an increase in development. Briefly, higher real national income is

considered as higher economic development and vice versa. Specifically, economic development is valuable if it only shows an upward trend over a long period. Although there is no absolute restriction in measuring the long term, it is defined to be at least 25 years. So, what Meier and Baldwin highlight here is the long-term sustained development. (Fernando, 2011)

Okun and Richardson also argued that “*Economic development may be defined as a sustained secular improvement in well-being, which may be considered to be reflected in an increasing flow of goods and services.*”(Somashekar, 2003 p.3) The definition remains similar when comparing to the previous one. Nevertheless, both definitions fail to include the social, political and institutional aspects of economy. Hence, another definition has to be considered and thus brought to the discussion. What some economists like Profs. Baran; Buchanan and Ellis assumed and advocated is that economic development is more than a mere increase in national income. It is rather an enhancement in the standards of living. Profs. Bachanan and Ellis claims that “*Development means developing the real income potentialities of the under-developed areas by using investment to effect those changes and to argument those productive resources which promise to raise real income per person*”(Somashekar, 2003 p.4)

Next viewpoint that also proves the approach of Bachaman and Ellis to economic development originally comes from United Nations Expert Committee. According to the Committee, “*Development concerns not only man`s material needs but also the improvement of the social condition of his life. Development is, therefore, not only economic growth, but growth plus change- social, cultural and institutional as well as economic*”. (Suri, Budhiraja and Rajput, 2007 p.42)

Lastly, a distinct approach which adds a new dimension to the literature comes from Jain. He advocates that meaning of development differentiates according to gender, type of profession and so forth. For instance, labourers may tend to perceive it in accordance with their needs. Development for them is then most likely a stable job and perhaps higher wages. Besides these economic-related expectations, labourers may value social fairness a fruit of being developed. Considering farmers, they would take into consideration the things that are land and production-related. An efficient harvesting, fertilising at reasonable prices, regular sales trend and quality seeds could be named as a few. On the other hand, in

view of manufacturers, development may be skilled and hard-working labourers, enhanced technology, and better infrastructure. Development may be seen differently depending on sex. A woman who is usually forced to seek more freedom both economically and politically towards men shall expect economic security, safety at working place and respect at home and in society from development. (Jain, 2010)

There is a common census that development is easy to measure and attribute to the different countries by a similar perspective. Nevertheless, considering the indicators of wealth, which particularly in regards to perhaps the quantity of resources, available to a society, are not sufficient alone without the information that out lays the distribution of these resources. Therefore a crucial point to bear in mind is “equality”. Although it is easy to estimate the final amount of goods and services via Gross Domestic Product (GDP) or Gross National Product (GNP) within a certain year and then come to conclusion if the country is relatively richer or poorer, it would lack the sense to generalise the country as more or less developed. Because *“it is no wonder the countries with similar average incomes can differ substantially when it comes to people’s “quality of life”: access to education and health care, employment opportunities, availability of clean air and safe drinking water, the threat of crime and so on.”* (Soubotina, 2004 p.7)

As mentioned above, the criteria of development must take on a broader sense. Each country has different priorities in regards to their development policies. A country might target national wealth increase whilst another might pay its attention to social aspects of economy such as education or health. Therefore, it is required to define a general meaning of development and its expected achievements in order to compare countries to each other and this definition comes from the World Bank *“Qualitative change and restructuring in a country's economy in connection with technological and social progress. The main indicator of economic development is increasing GNP per capita (or GDP per capita), reflecting an increase in the economic productivity and average material wellbeing of a country's population.”* (The World Bank, 2004)<sup>1</sup>

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<sup>1</sup> The World Bank Group, Beyond Economic Growth Student Book, Glossary, 2004.

### 3.2 Understanding inequality and its indicators

*“Economic inequality is the fundamental disparity that permits one individual certain material choices, while denying another individual those very same choices”.* (Ray, 1998 p.170) There are too many areas in life in which it is possible to talk about inequality. For instance, think of a two persons who can make same amount of money. One of them is a healthy person whilst another one may be physically handicapped. Imagine one person who is richer than another but the richer is not as free as another in his country concerning human rights; particularly travelling or voting.

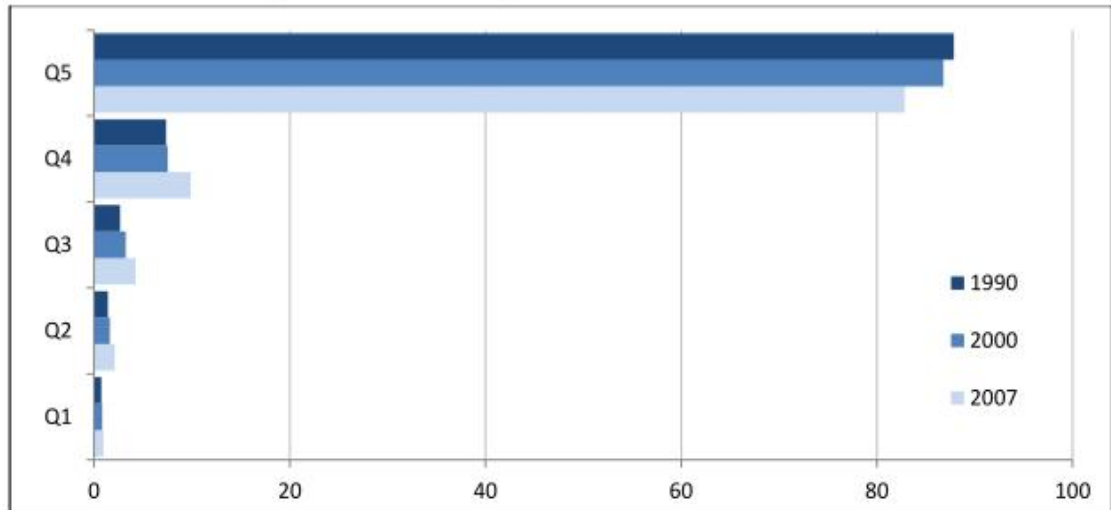
Lastly consider two persons who have the same skills and conditions. However one of them earned more until they both were forty. Thereafter, another started earning more in comparison with the first one. (Jain and Ohri, 2006) From the point of these examples of view, *“inequality is a slippery concept and is intimately linked to concepts such as lifetimes, personal capabilities, and political freedoms.”* (Raj, 1998, p.170)

Border of areas in which inequality may be seen is quite wide and analysing all these areas is neither relevant nor appropriate. Making comparison through data related inequality requires similarities and common points. Hence, studying inequality as economic disparities within a country makes more sense since borders presumably affect everyone in the same way. In particular, income and wealth inequalities provide sufficient information as they represent an important component of differences. Therefore, it shall be focused particularly on income inequality.

Knowledge of inequality is significantly important, because knowing the number of poor inhabitants in a country is not sufficient to measure development. The deeper you look the better your perspective of what life in that country will be. Even, the country`s per capita income is a restricted data since it is not possible to ensure that each inhabitant receives the same amount of income. It is important to know how equally or unequally the national income is distributed. Hence, let`s first consider the world as a simple single country and take a look at the income disparity by quintiles.



Figure 1 Global Income Distribution by Population Quintiles,  
1990-2007 in constant 2000 U.S. dollars



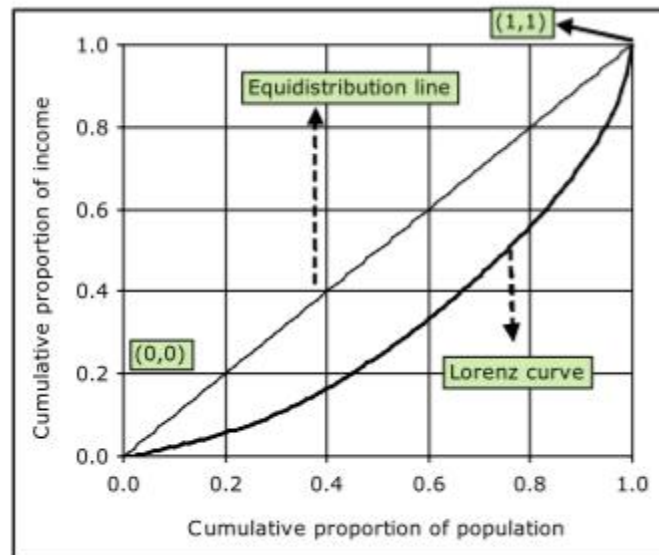
Source: Unicef, Unicef Policy and Practice, 2011

The figure 1 is prepared using market exchange rates where all national income estimates are based on comparison by constant 2000 U.S. dollars. The quintiles divide the world population into five equal shares. Q5 represents the top 20% while bottom 20% is represented by Q1. It is important to point out that the gap between the richest and poorest share is vast and continuous therefore critically important. As of 2007, 83% of total global income was enjoyed by the top 20% compared to exactly one single percentage the poorest 20% had to survive with. In fact that means; the richest people were 83 times richer than the poorest people or that the poorest people were 83 times poorer than the richest people. Under any circumstances, the gulf between rich and poor people, or the top and the rest has never closed up, only changed very slightly. Based on the data provided by the World Bank, the poorest first two quintiles defined by 40% of the population have increased its share by approximately 1% in the period 1990-2007. In this context, the fifth quintile has lost 4.5% of its share which in turn did not change the fact that the world is an implausibly unfair place. (Ortiz and Cummins, 2011)

There are several ways to measure inequality that are available to economists. However, Lorenz Curve, Gini Index and Kuznets Curve are widely used among all others. Let`s begin with Lorenz Curve as defined by Kakwani, Basically, Lorenz curve depicts the

relationship between the cumulative proportion of total income received and the cumulative proportion of recipients. (Kakwani, 1995)

Figure 2 The Lorenz Curve and the equidistribution line



Source: Bellu and Liberati, 2005

The figure 2 above illustrates the Lorenz Curve and equidistribution line. Both starting (0,0) and end point (1,1) of the curve proves the equality in income distribution. Start points indicates zero fraction of the population logically has zero fraction of income. On the other hand, as shown by the end point total income is owned by the whole of population. This is why the line is so called “*equidistribution*”. As long as the curve (Lorenz curve) of a country gets closer to the equidistribution line, the quality of distribution of income will improve as inequality will decrease and vice versa. Thus, the deeper a country’s Lorenz curve, the less equal its income distribution. To be able to measure inequality clearly, economists classify all individuals by dividing them into five or ten equal groups according to level of income. That means, each group will fall in 10% or 20% fractions. Income of each group is calculated as percentage and the share of GDP received by these groups estimated cumulatively. For instance, if the income was distributed equally, 20% of the population would have 20% of total income. (Soubotina and Sheram, 2000)

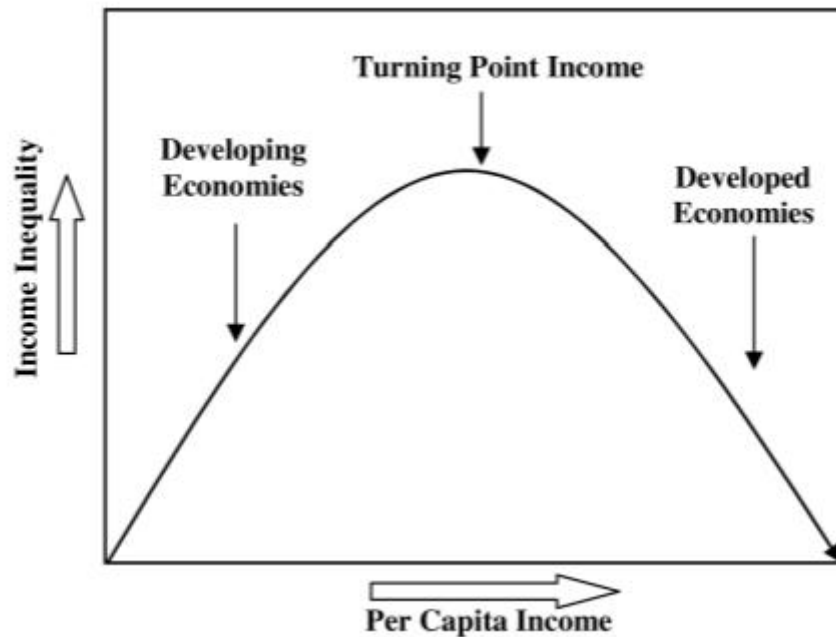
There are two issues with usage of Lorenz curve as it is not favourably quantifiable and complete in measuring inequality. It is often preferred by policy makers and researches to have more concrete and quantifiable data that can be something more than a picture. This

also reduces the comparability of economies as the curve does not provide useful inequality rankings. It leaves an open door to argue results of Lorenz curve and diminish the value of data. (Milanovic, 1998)

So, it comes out that another way of measuring inequality; Gini Index. Depending on topic of the analysis, Gini Index might be even more accurate than a Lorenz curve. Because Gini index is more effective when there are several countries subject to comparison. Data provided by Gini index simply work consistently with Lorenz curve. The main measurement of the index that is called Gini coefficient takes values between 0 and 1. The area between Lorenz curve and the absolute inequality line compose the working area of the index. Accordingly, zero (0) percentage stands for perfect equality whereas the same value means absolute equality in Lorenz curve. The same logic applies when the value is 100 percent. So, it implies perfect inequality in Gini index and absolute inequality in Lorenz curve. So, Gini index is expected to rank between 0 and 100. (Farris, 2010)

Kuznets approached the topic from a different perspective and analysed the relationship between economic growth and income inequality, in relation to industrialisation. He analysed changing trends of income inequality in long terms and assumed that economies will tend to grow by increasing industrialisation, which in turn will substantially affect the distribution of income in a society. (Angle, Nielsen and Scalas, 2009)

Figure 3 Kuznets Curve



Source: Yandle, Vijayaraghavan and Bhattarai, 2004

Kuznets explained the relationship between income inequality and economic growth by the inverted-U curve shown above. First of all, he considered preindustrial societies. In such a case, due to limited variety of professions, people would be earning comparably small amounts by conducting similar group of jobs. Thus, they would be equally poor which in fact equates to low inequality. Economy evolves and develops through time and it leads to shift of people from low-productivity agriculture, to the more productive industrial sectors. (Taylor, 2011) As average income rises and wages becomes less uniform, inequality increases up to a threshold level that is called turning point of income. After that inequality begins to lessen since majority of society reaches similar level of income. Unemployment benefits, old-age pension and other social transfers that are major social policies of developed economies play an important role in lowering inequality within a society. Basically, inequality shrinks on its own over time and takes the shape of “U” as upside-down. (Yandle, Vijayaraghavan and Bhattarai, 2004)

Kuznets uses a ratio to measure inequality, which is similar to the Gini ratio. However, it differs in the sense of being more convenient that initial shares do not necessarily cumulate. Basically it takes values between zero (0) and two (2.00), and calculates the sum

of absolute differences between income shares and percentage shares of recipients. In other words, it is the income received by the highest-earning household defined by top 20%, and the income received by the lowest-earning household which is conventionally either bottom 20% or 40%. In this context, zero implies perfect equality whereas two indicates maximum inequality. (Spicker, Leguizamon and Gordon, 2006)

### **3.3 Concept of Poverty**

Poverty is the inability to fulfil the minimum requirements of life. The minimum requirements include food, clothing, housing, education and health facilities. In case a man is not able to saturate these requirements, then he ends up with pain and suffering. Poverty keeps economies in a repetitive circle. Because, an economy that is suffering from poverty is not able to increase production, consequently is doomed to remain poor or underdeveloped. It is assumed that poverty, and low levels of output chase each other. Simply, a country remains poor because it is poor and poverty bears poverty. (Jain and Ohri, 2006)

Poverty is commonly used as synonymous with “deprivation” of well-being. Poverty traditionally stands for material deprivation. What characterises poverty is low income and low consumption and as consequences poor nutrition and poor living conditions. In today`s life, poverty means something more than what is described above. Income in terms of money is one of the basic and crucial requirements to benefit necessary health and educational services. Hence, poverty can be named as human poverty as well. Low income is either a result or a reason for poor health or education. (Soubbotina, 2004)

Poverty is also known as the most significant characteristic of underdevelopment in terms of economy. Poverty, due to lack of income, tends to drag individuals into illiteracy, under nutrition, ill health and the utter bleakness when considering the future. Economies evolve in time the same as anything else. In this context, developing countries in terms of consumption per capita grew by 32% and then 26% during the period 1965-1975 and 1975-1985. Nevertheless in 1990 there were approximately one billion people out of the world`s population of six billion that were considered as poor. The result is extremely shocking. General belief is to reduce poverty as a fundamental goal of economic

development. In this sense, it is conditional to know and consider determinants of the poor and a proper measure of poverty. (Raj, 1998)

Measuring poverty differs in each country depending upon the level of economy. From this point of view, the richer a country, the higher its poverty line should be. However, there is an international poverty line, that is defined by the World Bank to prevent possible misestimating and allowing for international comparisons. The first line definition is 1\$ a day per person in terms of purchasing power parity (PPP). Following this, some others are defined that are 1.25\$ and 2\$ in terms of PPP and they are currently available as indicators used by the World Bank. (The World Bank, 2012)<sup>2</sup>

The table 1 provides the proportional distribution of specific regions for the period 1990-2020 in relation to poverty line (1.25\$) defined by the World Bank.

Table 1 Population percentage living under the poverty line 1.25\$

<b>Region</b>	<b>1990</b>	<b>2005</b>	<b>2015*</b>	<b>2020*</b>
<b>East Asia&amp;Pacifc</b>	54.7	16.8	5.9	4.0
(China)	60.2	15.9	5.1	4.0
<b>Europe&amp;Central Asia</b>	2.0	3.7	1.7	1.2
<b>Latin America&amp;Caribbean</b>	11.3	8.2	5.0	4.3
<b>Middle East&amp;North Africa</b>	4.3	3.6	1.8	1.5
<b>South Asia</b>	51.7	40.3	22.8	19.4
(India)	51.3	42.6	23.6	20.3
<b>Sub-Saharan Africa</b>	57.6	50.9	38.0	32.8
<b>Total Average</b>	<b>41.7</b>	<b>25.2</b>	<b>15.0</b>	<b>12.8</b>

Source: The World Bank, Global Monitoring Report (2010)

Looking at the year 2005 in the table 1, in comparison with the year 1990, poverty reduced in all regions except Europe & Central Asia. Particularly, in East Asia and Pacific region reduced the poverty percentage (54.7%) nearly four times to (16.8%) thanks to the active role China committed. Moreover, considering future predictions for the year 2015 and 2020, it is expected that a downward trend will continue. While the poverty ratio was 41.7% of world population on average, it has been decreased to 25.2% in 2005 with a great

<sup>2</sup> The World Bank, Data, Poverty

accomplishment. This ratio is predicted to fall to 15.0% and 12.8%, respectively. (Tas and Ozcan, 2012)

### **3.4 Relationship between growth, poverty and inequality**

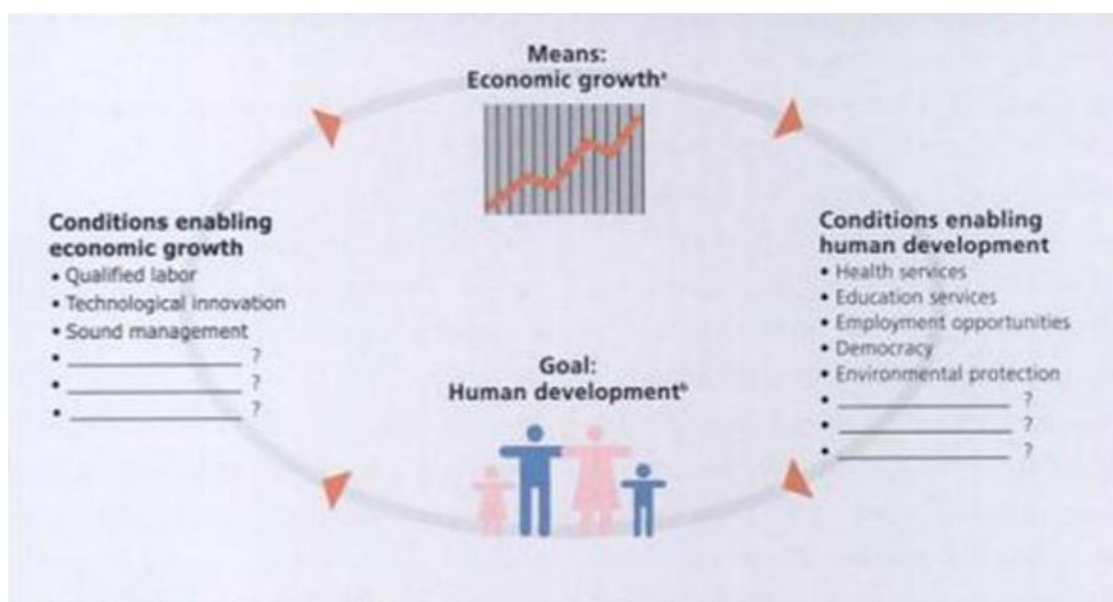
Needless to say, economic growth contributes positively to poverty reduction. Decreasing the number of people who live below the poverty line (1\$ per day) in East Asia, which accommodates the world's fastest growing economies proves this. The ratio drops to nearly 15% in 2000 from 25% in 1990. China alone reaches a significant achievement, thanks to about 150 million people who are pulled through poverty. An inverse relation is seen for Sub-Saharan Africa where negative growth of GNP per capita dominates economy and causes an increase in number of poverty from 47% to 49%.

*“It is true that economic growth, by increasing a nation's total wealth, also enhances its potential for reducing poverty and solving other social problems. But history offers a number of examples where economic growth was not followed by similar progress in human development. Instead growth was achieved at the cost of greater inequality, higher unemployment, weakened democracy, loss of cultural identity, or overconsumption of natural resources needed by future generation.”*(Soubotina, 2004 p.8)

Previous research makes it very clear that the relationship between inequality and economic development is consecutive and uneven. Contrary to expectations, not everybody benefits from growth at the same time. As the process continues irregularly, it first affects a certain group and leaves the rest to catch up. In this first phase, inequality tends to widen. After everybody starts catching up and economy becomes more stable and sustainable, inequality tends to fall as Simon Kuznets predicted. The explanation above actually leads us to the topic “unsustainable development”, thus highlighting the importance of sustainable development. Many economists who are well aware of the link between economic growth and social and environmental issues, agree that such an unsustainable development cannot go along the same way for long and is doomed to collapse one day, sooner or later. Because, the growth which is allocated unequally within the society tends to cause losses rather than gains in terms of both economic and social. To conclude, rich people will be richer, poor people will be poorer since additional income will most likely benefit rich people.

Only under certain circumstances, the economic growth stimulates and helps development become sustainable. These circumstances require economic growth to be fostered by developing human conditions such as qualified workers, enhanced technology and managerial activities, increased number of qualified jobs, better conditions for new business to grow and the last but not the least required democracy in all levels of decision making. (Taylor, 2011)

Figure 4 Economic growth and human development



Source: Soubbotina, 2004, The World Bank

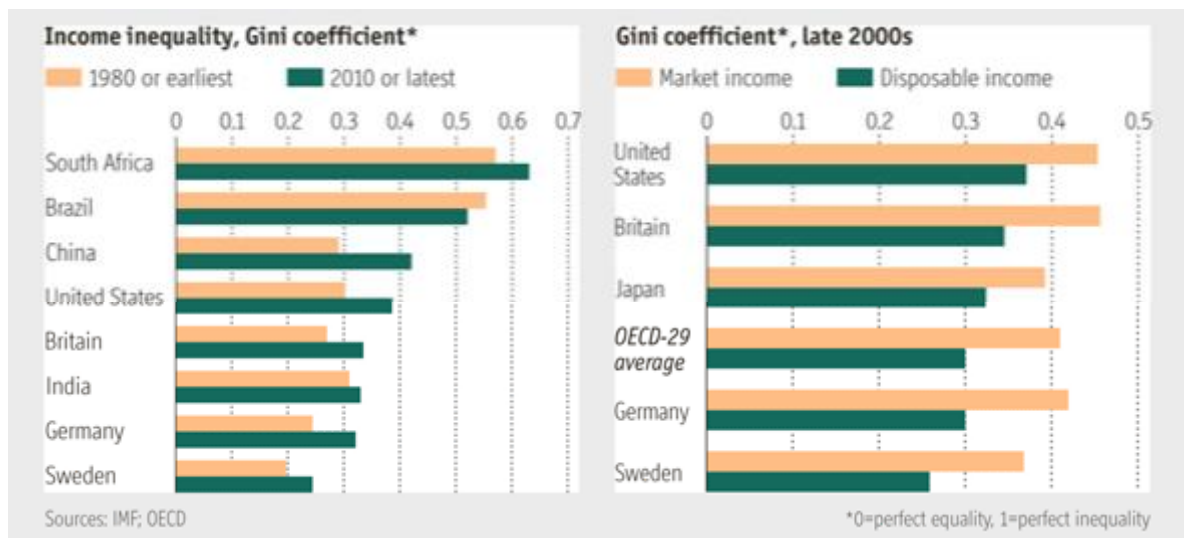
Inequality matters a great deal in relation to poverty because poverty is not a problem of production, but distribution, itself. So, economic growth especially in developing countries where poverty is seen intensively can be considered as a critical tool. By way of growth, poverty can be reduced or at least controlled and living standards can be enhanced. Yet as mentioned previously, uncontrolled growth may even cause further issues as it cause a worsening the situation. As a matter of fact, growth for an economy is a good thing in case you know what it means to you and your country. Otherwise the strong correlation between growth and poverty can turn out negative impacts as growth engenders or compounds the existing inequality, specifically income related inequality. *“High levels of inequality make it more difficult to reduce poverty. Highlighting the fact that if inequality*



*falls during a growth spell; poverty generally falls by more than it would have if growth had been distribution-neutral.”(The World Bank, 2005 p.84)<sup>3</sup>*

However, in today`s world disparities in wealth seem to be less visible especially in developed economies such U.S and EU. Now, almost everyone has televisions, cars or cell phones. Nevertheless, appearances can be deceiving.

Figure 5 Worsening income inequalities in developed countries



Source: The Economists, Special Issue 2012

The figure 5 which is provided based on Gini index changes prove the worsening situation in major developed economies, as income disparities are increasing. Except Brazil, all analysed countries are worse off in 21<sup>st</sup> century in comparison with 1980s and before. In addition to this, Gini for disposable income also has an upward trend. For instance, it has risen to 0.39 by 30% in America and to 0.42 by 50% in China. Now, let`s remember the famous Kuznets Curve prediction. Simon Kuznets assumed that developing countries mainly due to industrialization become more unequal at the early stage until a threshold, after that they get better off by decreasing income inequality. Once the country is completed with industrialization progress and becomes a developed country, income inequality decreases and remains insignificant within society.

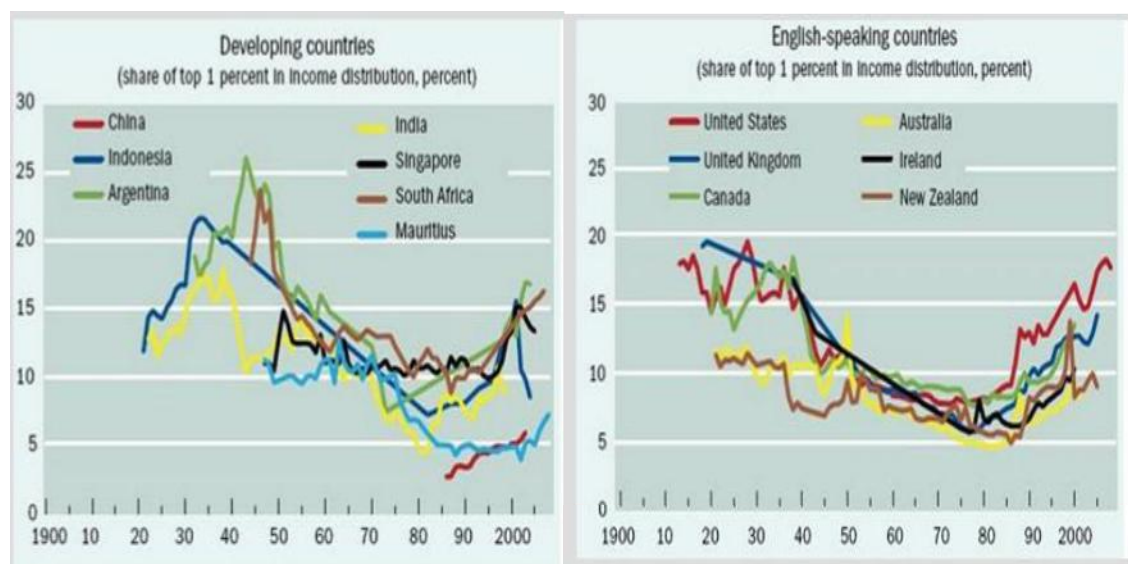
However, Kuznets Curve might have been mistaken up to some points at least in regards to developed economies. In fact, the results above do not imply the entire world has become

<sup>3</sup> The World Bank, world development report, 2005.

more unequal. Actually, the gap in terms of income inequality has been decreasing as developing countries are closing up with developed ones. Now, looking at current results of developed countries, the inverted U curve has been modified by taking a shape of an italicised N. That means that in developed countries income inequality tends to rise again some years after the completion of industrialisation. (The Economists, Special Issue 2012)

The notion that inequality declines as long as an economy grows does not seem to be sensible anymore. The evidences provided below concerning the share of total income received by top 1% say the reverse.

Figure 6 Kuznets Curve and inequality over the last 100 years



Source: Taylor, 2011

Analysing the figure 6, the disparity significantly declined until about 1980s and then began to rise again. On the contrary, developing countries show declines in inequality as catching up with richer countries. (Taylor, 2011)

### 3.5 Recent Growth Performances of Developing Countries

To have a more efficient and literal analysis of development performances of developing countries, it is necessary to take a look at the history. Not quite long before, yet looking at the last century, particularly in the middle of 1950s developing countries recorded really bad performances in terms of economy. The economic growth for those years was almost

zero for most of the developing countries. The boom in population coincides the same years. Due to the fact that developing countries have been facing rapid population growth, economic growth decreased rather than increased. In conclusion, the general situation in developing countries was catastrophic.

The term ``developing`` economies or countries evolved over time. During the Second World War, countries were distinguished and divided into three main category as first, second and third world. Through time, the usage of this term has become out the of date. Decreasing importance of political ideology and emerging countries, like China or India in terms of economy bear a need to recall the categories. Thus, the classification is replaced by developed and developing countries. After long time through the changing of a few names like underdeveloped, less developed and finally developing. Although bad economic reputation of developing countries in the past, it is now inevitable to see the reality as developing countries are developing like never before. Nevertheless, while some of them are succeeding in carrying out the growth in a long period some of them face further issues by economic expansion such increasing inequality. (Lim, 1996)

The world economy evolved and changed throughout time. There are a number of important events that have helped shape the global economy today. For instance, China opened its trade and India became more liberalised about 20 years after the Soviet Union collapsed. Also, Brazil saved and developed its economy substantially. Now looking at the performances of these four countries which are called “BRICs”, they are considered as emerging economic powers in the world. Identification of these countries brought a different perspective to economists as to how they view the global economy. The emergence of such countries changed all the things we know about economy. The conventional timeworn idea, that was lasting for centuries, that there is a hidden but discriminating line between rich and poor, powerful and weak countries and everyone else has been disproven by these emerging countries remarkable economic performances. Remember that China was one of the poorest places in the world and it was known as the “sick man of Asia” but now it is proudly ranking the second-largest economy and keep challenging U.S. for the first position.

There are still several economies developing rapidly and draw attention of the entire world. On the contrary of expectations, these countries are none of advanced nations, rather

developing countries of mostly Middle East and Africa. As it was proved the flexibility of global hierarchy in terms of economy by the rise of the BRIC`s, the sudden emergence of other countries, that have high potential, seems to be most likely. Looking at the present, some of these countries such as Turkey, Mexico, Indonesia, and Kazakhstan have already risen yet the possibility of these countries being able to change the world is still being questioned. There are certainly other emerging countries besides the ones mentioned above. Yet, one of them would be the common idea of almost everyone to analyse and discuss further: Turkey. (Fisher, 2012)

Following, analyses developing countries in general as how they managed to emerge rapidly in spite of their economic size.

Table 2 Global Output, 2007-14 (Annual Percentage Change)

Region	2007	2008	2009	2010	Projections	
					2011	2012-14
<b>World output</b>	<b>5.4</b>	<b>2.9</b>	<b>-0.5</b>	<b>5.0</b>	<b>4.4</b>	<b>4.6</b>
Advanced economies	2.7	0.2	-3.4	3.0	2.4	2.5
Emerging and developing economies	8.8	6.1	2.7	7.3	6.5	6.6
Central and Eastern Europe	5.5	3.2	-3.6	4.2	3.7	3.9
Commonwealth of Independent States	9.0	5.3	-6.4	4.6	5.0	4.6
Developing Asia	11.4	7.7	7.2	9.5	8.4	8.5
Middle East and North Africa	6.2	5.1	1.8	3.8	4.1	4.5
Sub-Saharan Africa	7.2	5.6	2.8	5.0	5.5	5.7
Western Hemisphere	5.7	4.3	-1.7	6.1	4.7	4.0
Emerging economies	9.2	6.3	2.6	7.5	6.7	6.7
Other developing economies	7.2	6.0	5.2	6.2	6.1	6.4
Least developed countries (LDCs) <sup>a</sup>	9.0	6.9	5.2	5.3	6.1	6.4

Source: IMF, World Economic Outlook 2011

The table 2 provided by IMF above shows the annual percentage change of countries and regions in terms of output. According to the table, countries are gathered under regions or titles such as emerging, developing and least developing countries. The focus shall be given to emerging and developing countries in this case. Needless to say, developing countries are fastly producing more and more even above the average world output change including all years given. Comparing with advanced (developed) economies, emerging and developing countries reaches approximately 6.5% change in total output. This is almost two times higher than average output growth of advanced economies. Another important point that draws high attention, is the extreme performance of developing and emerging countries in the year 2009. As is widely known, that year global financial crisis occurred

and affected almost the entire world. Apparently, developing and emerging countries are one of the only that still performed positive growth rate. In addition to this, the forecast for the period 2012-14 indicates that developing and emerging countries will remain with highest growth percentage rate. (IMF World Economic Outlook Report, 2011)<sup>4</sup>

Figure 7 Growth of GDP per capita, by level of development, 2000-2013



Source: United Nations, 2011

The figure 7 provided by United Nations confirms the extraordinary economic growth of developing countries. In this case, the focus shall be given to both upper middle and low middle income countries as in other words; mainly developing and emerging countries. The growth in output of developing countries works parallel with the change of GDP per capita. Albeit high income (developed) countries perform almost no substantial growth, surprisingly developing countries keeps growing well even with fluctuating rates. Currently, developing countries records approximately 5% GDP per capita growth whereas developed countries do 1.5%. (United Nations, 2011)<sup>5</sup>

According to OECD, this rapid economic growth of emerging countries most likely will lead a shift in economic power from “the West to the East” Developed economies mainly

<sup>4</sup> United Nations, World Economic Situation and Prospects 2012, Global economic outlook.

<sup>5</sup> United Nations, World Economic Situation and Prospects, 2012

G7 (US, UK, Germany, France, Japan, Italy and Canada) are currently challenged and will continue to be challenged even more strongly by developing/emerging economies such as India, China, Brazil, Mexico and Turkey. Seemingly, developing economies will surpass the aggregate economic weight of countries that make up developed economies. 1990s was a lost decade for the developing world. However, as mentioned before the economy evolved and the developing world has caught an upturn trend and a significant economic growth at the beginning of 2000s. Now, a number of developing countries begun to converge strongly, that enables them to affect the global economy easily. According to estimates by OECD, that by 2030, developing countries will account for nearly 60% of world GDP which was only 31% in 2010. (OECD, 2010)<sup>6</sup>

Perhaps, the first time in the modern history, it seems that the future of economy is in the hands of developing countries. In many aspects, the United States and Europe face financial and political hardships as they are mainly facing debt crisis and ageing population related to employment which in turn cause an unbalanced economy. They seem condemned with poor economic growth and it would likely affect social aspects in near future. Yet, then a question arises; do developing countries genuinely have the potential to carry the world economy? This is a question being discussed for a long time. Some believes that the answer lies on the kind of policies that generated the increasing economic growth of developing countries. For some of developing countries, it is freer market they have gone through by liberalization of trade, for others, it is simply better macroeconomic management and perhaps enhanced position of private sector. (Rodrik, 2011)

The reality may seem to be slightly different considering attached potential threat comes through unprecedented growth. According to the World Bank report called Global Economic Prospects 2011, there are three main threads; systemic eurozone crisis, the potential of high and volatile capital flows and risk of hunger and malnutrition which is likely to come from rising food prices. Besides, other major economic issues related to economic development such as poverty and widening income inequality shall be importantly considered to forecast the stability of developing countries. An economic growth which does not stimulate economic development will not benefit, rather worsen the current situation. (Elliot, 2011)

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<sup>6</sup> OECD, Economic Outlook, 2010

### **3.6 Current Economic Overview of Turkey**

Economic potential of Turkey has been long recognized since the liberalisation process 1980s by many parties involved in the global economy including developed nations and their giant multinational companies. However, it took quite long time for its star to shine. There were number of reasons explaining the situation. Some significant of them can be mentioned as domestic conflicts and political instability against it, high inflation and interest rate, high unemployment, unstable exchange rates and last but not the least one income inequality. (Arguden, 2007)

Turkish economy has been now growing steadily since 2002 with a downturn only in 2009. It is not a coincidence that just one year before in the year 2001 Turkey faced one of the most serious economic crises in its history. For most of us, an economic crisis is something that causes only negative results. However, it might be an opportunity if you know how to respond wisely. (Durukan, 2012)

As an historical fact, almost all important crises in Turkish history are usually followed by a great success. Simply go back and take a look at the foundation of the country. After the end of World War I, Ottoman Empire, predecessor of Turkey, collapsed leaving what could be considered a ruin behind. In spite of this fact, a new secular, modern and democratic republic has been established and managed to survive. One of the financial crises that occurred in 1970s and destroyed the Turkish economy was followed by liberalization of trade, as well. In fact, this has stimulated its economy substantially as Turkey opened up its trade and recorded as one of the most important milestones in its economy. Now, analysing Turkish economy over last 10 years, another significant coincides with the beginning of the unprecedented economic performance. (Arguden, 2007)

Even though Turkey had to pay off the cost of such a shock for many years, the crisis turned out to be a hidden blessing. Because, the reforms and regulations that have been implemented after the crisis has made the Turkish economy stronger. The new Foreign Direct Investment law introduced in 2003 helped Turkey intensify its effort for the economic development. The law changed the direction of foreign investment flow towards Turkey. (Republic of Turkey Prime Ministry Investment Support and Promotion Agency,

2012).<sup>7</sup> Total FDI inflow was approximately 9,551 USD in the period 1995-2002. This number has soared to 110,000 USD in total from only 2003 to 2011. This is only one of the many developments Turkey has gone through. As a main purpose of promoting the economy, the role of private sector has been increased. This contributed to enhance the efficiency and reliability of financial sector in Turkey. Another important reform to point out is privatisation. Within the last ten years, Turkey has dominantly focused on privatisation of public properties by aiming at renewing and enhancing the affectivity of out-dated public sector. Therefore, the value of total privatisation implemented has drastically increased from 8.0 billion USD in 1985-2002 to 47.9 billion USD in 2003-2010. By going a step further, Turkey has also amended its social security system and it became a solid foundation. (Republic of Turkey Ministry of Economy, 2012)<sup>8</sup>

Thanks to the reforms and development Turkey has gone through within the last ten years, Turkey in recent years has accelerated its position in terms of both international economics and politics. Turkey considered the tendency of changes in the global trends as the basis for its new policies. In this context, Turkey has revised and amended the relationships with the bordering countries in addition to seeking new economic partners in unusual markets such as Latin America, Sub-Sahara and Asia. In brief, Turkey began to play bigger as going beyond re-exploring its role as a bridge between Asia and Europe. (Ozturk, 2012)

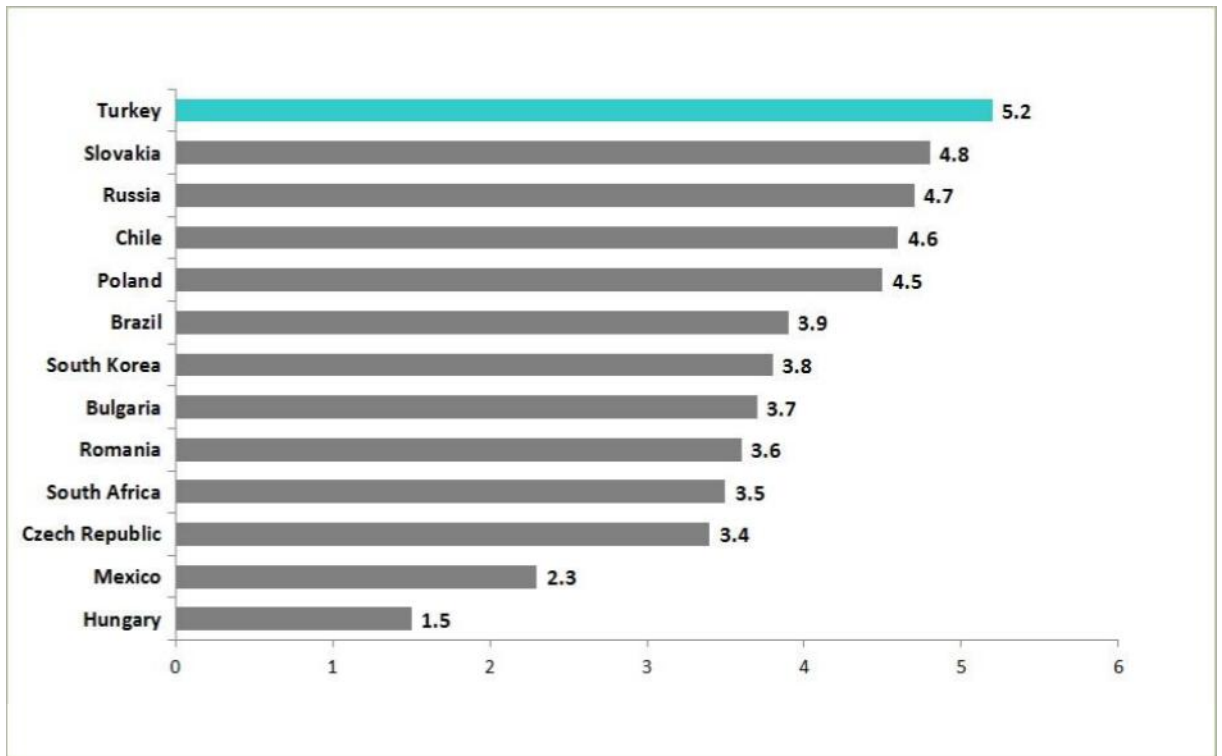
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<sup>7</sup> INVEST IN TURKEY, Turkey at a Glance, Economic Outlook, 2012.

<sup>8</sup> REPUBLIC OF TURKEY MINISTRY OF ECONOMY, Foreign Direct Investments in Turkey in 2011.



Figure 8 Average Annual Real GDP Growth (%) 2002-2011



Source: Republic of Turkey Prime Ministry Investment Support and Promotion Agency, 2013

The figure 8 simply is an evidence for the rising position of Turkey in the global economy. Turkey has shown magnificent performance within last 10 years and became the one of the fastest growing economy with an average growth rate of 5.2. Moreover, according to forecast done by OECD, Turkey is expected to be the fastest growing economy for also a six year period 2011-2017. The forecast indicates that the Turkey will be growing with an annual average growth rate of 6.7 %. That means that Turkey will stabilize its economic situation unlike some other economists foresee. (IMF World Economic Outlook, 2012)

Nowadays, much has been written about Turkey and its unprecedented economic growth. It seems that people who are concerned with economy fail to agree. One side believes optimistically that the rise of Turkey is real and it will continue, another predicts its economic growth is artificial and that collapse is likely to happen at any time. (Amarilyo, 2012) There is no doubt that the Turkish economy is in a rapid growth yet as mentioned before there is a common issue of all developing countries: “vulnerability”. The rapid recent growth comes with side-effects that can weaken the economy from other aspects.

One of the most important concerns for Turkey is still “high inflation rate”. Last March, the inflation rate was 10.4%

Figure 9 Correlation of Inflation rate and GDP growth - The hole in the bucket



Source: The Economist

As the figure 9 indicates that there is a strong correlation between inflation rate and GDP growth rate in Turkey. Apparently, Central Bank of Turkey does not meet its targets of inflation rate in long run. The matter is inflation rate is soaring as long as GDP is growing. Surprisingly, this relation repeats itself even in downturn times. So, high inflation problem is sort of chronic economic illness of Turkey. Another, yet bigger concern, is that Turkey`s economic growth seems to be highly dependent on the foreign capital which came along with FDI increase. People are worrying and economists are sceptical because the money flew through FDI can leave the country again, very quickly, and that can slow down the economy very much indeed. (The Economist, 2012)<sup>9</sup>

Turkey`s credit problem mainly concerning the private sector, is considered to be another problem. External borrowing has risen quite highly, particularly within the period 2009-2011. In total, the external debt reached 43% of GDP in 2010 and 40% in 2011 with a slight decrease. As is known, the same problem occurred in Greece and Argentina in the near past. Total debt of Greece reached the peak point 137% of GDP during the crisis and Argentina reached comparatively less, that is 50%. This shows that in fact a county can find itself in the crisis at a much earlier stage. So, important to note, Turkey may face the same issue like Greece or Argentina.

<sup>9</sup> Turkey`s Economy, Istanbul and bears, 2012

Lastly, Turkish stock exchange data implies high possibility of volatility. Stock market index fell nearly 23% during 2011 and this caused people who invested money in stock market a lot of money. Hence, foreign investors may be discouraged. But, it is necessary to bear in mind the same year many stock exchanges encountered sharp declines. (Amarilyo, 2012)

### **3.7 Poverty in Turkey at a glance**

Poverty has been one of the most significant problems for Turkey as a developing country. Unequal income distribution on the one hand, low share of national income on the other hand, repeated economic crises, unsuccessful policies and many other failures enlarged the size of the problem and worsen the current situation. (Tas and Ozcan, 2012) 1980s was highly critical for such a country like Turkey, that was going through a structural transformation process. By the economic reform program implemented in 24 January, 1980, Turkish economy has undergone a drastic change, in both economic and social structure in terms of liberalisation. However, the economy shrank and unemployment increased comparatively due to the economic crisis occurred subsequently in 1990s. A combined effect of globalisation, neo-liberal policies and economic crises led to widening gap between social groups as poverty was increasing and inequality of income distribution was worsening. As a result, Turkey has become a country for which the differences between rich and poor can be called a “gulf” although it was previously categorised as relatively equally-distributed country. (Arpacioglu and Yildirim, 2011)

Number of research done concerning poverty in Turkey is quite limited. Unfortunately, this indicates the lack of attention given to the problem which is one of the crucial topic matters the entire economy closely. However, Turkish Statistical Institute has started to conduct studies after 2002 on regular basis due to increasing importance and intensity of the issue. TurkStat, now defines poverty lines based on variety of methods using the data from “household budget survey” held yearly and publish the results to public. (Caliskan, 2010)

Table 3 Poverty ratios in Turkey (Based on poverty line methods)

Individual Poverty Rate (%)									
Methods	2002	2003	2004	2005	2006	2007	2008	2009	2010
Food Poverty	1.35	1.29	1.29	0.87	0.74	0.48	0.54	0.48	0.40
Total Poverty (food & non-food)	26.96	28.12	25.60	20.50	17.81	17.79	17.11	18.08	17.50
Below 1 \$ per day	0.20	0.01	0.02	0.01	-	-	-	-	-
Below 2.15 \$ per day	3.04	2.39	2.49	1.55	1.41	0.52	0.47	0.22	0.21
Below 4.3 \$ per day	30.30	23.75	20.89	16.36	13.33	8.41	6.83	4.35	3.66

Source: Tas and Ozcan, 2012

The table 3 that shows profile of the poverty in Turkey, based on international comparison criteria indicates the seriousness of the situation. In fact, poverty ratio has been decreasing considering the period 2002-2010 yet the bleeding wound of poverty remains same. Looking at the issue from the positive perspective, the number of people who are unable to reach healthy and affordable food has been steadily decreasing; however in the year of 2010, one in every two hundred and fifty people were still living below this line. Considering Turkey`s current population that is around 73 million, this ratio indicates the number of people who suffers from poverty is quite considerable. Another ratio is more worrisome for Turkey according to the poverty line which is prepared considering other needs in terms of goods and services besides food. This method covers goods and services that are as essential as food for people in order to survive on normal standards; the results are shocking. Approximately 17.50% are still considered as poor upon this method. Although, it seems a downturn trend in general, there is no real change observed within last four years: 2006-2010. Total poverty considering food and other needs such as accommodation, security, health, education and so on has not changed much as it remained around 17%. (Tas and Ozcan, 2012)

On the other hand, percentage of poor based on \$2.15-a-day and \$4.30-a-day poverty lines in current PPPs has decreased to 0.14 and 2.79 in 2011, respectively. In addition to this, there has been no person left who lives under poverty line \$1-a-day in PPP since 2006. Main determinants of poverty in Turkey as age and household consumption play a major

role where children and especially families with more children are observed to be closer to poverty. According to findings of the World Bank analysis, poverty particularly in rural areas was increasing. The highest individual poverty rate is seen in agriculture for people are laboured by this particular sector. Poverty trap in Turkey particularly catches crowded families who have agriculture as mainstay and besides the least educated people. Thus, level of education can be considered to have a close relation with poverty. Statistically, an increase in the individual's level of education from illiteracy to basic education results in an approximately 39% increase in per capita consumption in urban areas. Therefore, this can be used as a macroeconomic approach to reduce poverty and promote the economy. As mentioning age as one of the main determinants of poverty in Turkey, one of every four children who are aged 14 lives in poverty in Turkey. Moreover, number of these children accounts for 40% of all the poor in the country. (Cidob, 2011)<sup>10</sup>

Regional differences are another highly noticeable factor in relation to poverty in Turkey. Eastern parts of the country are comparatively poorer or less wealthy than the rest. Share of employment in agriculture and availability of human and natural resources are mainly explanatory to regional differences. Therefore, lowest capital to land and land to labour ratios are key indicators to define poorer cities in Turkey. (The World Bank, 2005)<sup>11</sup>

### **3.8 A great deal - Income Inequality in Turkey**

The first known study concerning income distribution in Turkey is the “Household Income and Consumption Expenditure Survey” done by Ministry of Commerce in 1933. The survey covered only two biggest cities in Turkey which are Ankara and Istanbul. It was followed by another survey that covered 20 cities, conducted in 1938, and the other in 1953 which was a more scientific one. The first studies covering the whole country were done by State Planning Organization of Turkey (SPO) in 1963 and 1973, respectively. Later on, SPO has changed its name to TurkStat and it has continued to publish statistics for income distribution on regular basis after the year 2002. The four studies, conducted subsequently after 2002, helped cure a significant deficiency regarding data amount and quality in relation to the specific area. However, TurkStat gave a pause after 2005, and correspondingly it caused a difficult period to follow the developments in the area. Yet,

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<sup>10</sup> Barcelona Centre for International Affairs, Economic and Social Indicators of Turkey, 2011.

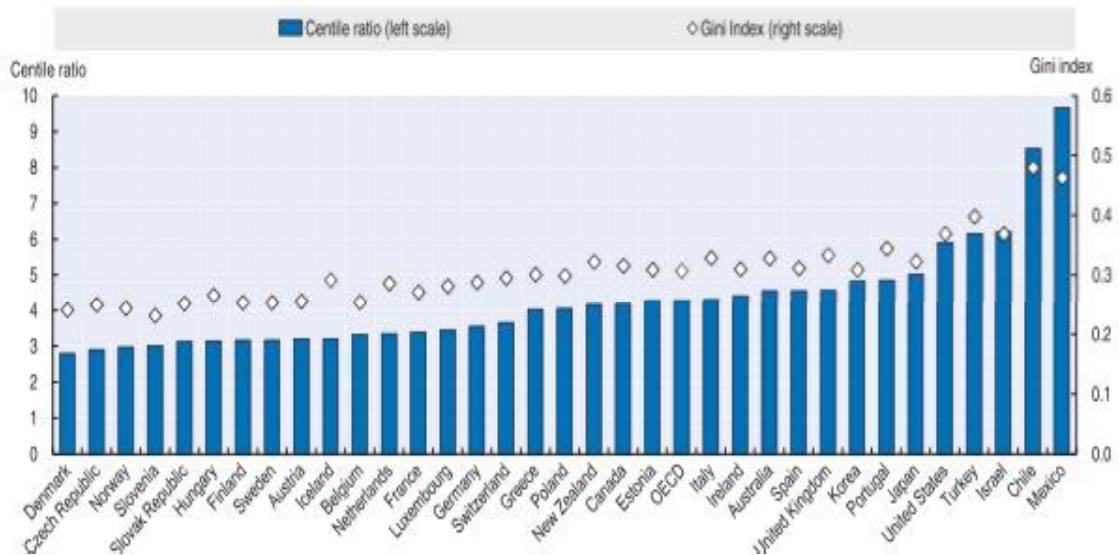
<sup>11</sup> The World Bank, world development report, 2005.

nowadays TurkStat has regained its active role and continues to publish statistics much more intensively than before. (Caliskan, 2010)

Turkey has shown considerably significant developments concerning quality of income distribution. According to the research done by SPO in 1963, the first quintile represented by bottom 20% was receiving approximately 4.3% while 57% of the total income was received by the last quintile represented by top. In 2010, the bottom quintile increased its share to 6.7%. Consequently, share of the last quintile has decreased to 46.7. The results indicate income inequality between the richest 20% and the poorest 20% has declined from 15 times to 7.5 times over a period long as 47 years. There is no doubt Turkey has shown a respectable yet insufficient progress. (Tas and Ozcan, 2012)

A cross-country research proves that disparity between the rich and the poor is quite conspicuous in some countries. The figure 10 below provided by the OECD indicates the gap between 10<sup>th</sup> and 90<sup>th</sup> centile and the Gini index are still comparatively high in Turkey.

Figure 10 Household disposal income: Gap between the 10<sup>th</sup> and 90<sup>th</sup> centile and the Gini Index in the late 2000s



Source: OECD, Economic Policy Reforms 2012, Going for Growth

Rising income inequality with regard to the difference between the top 10% and the rest can be explained by two different perspectives. First one is that assumedly contribution of economic growth was not equally distributed, and the rich has got richer and the poor has

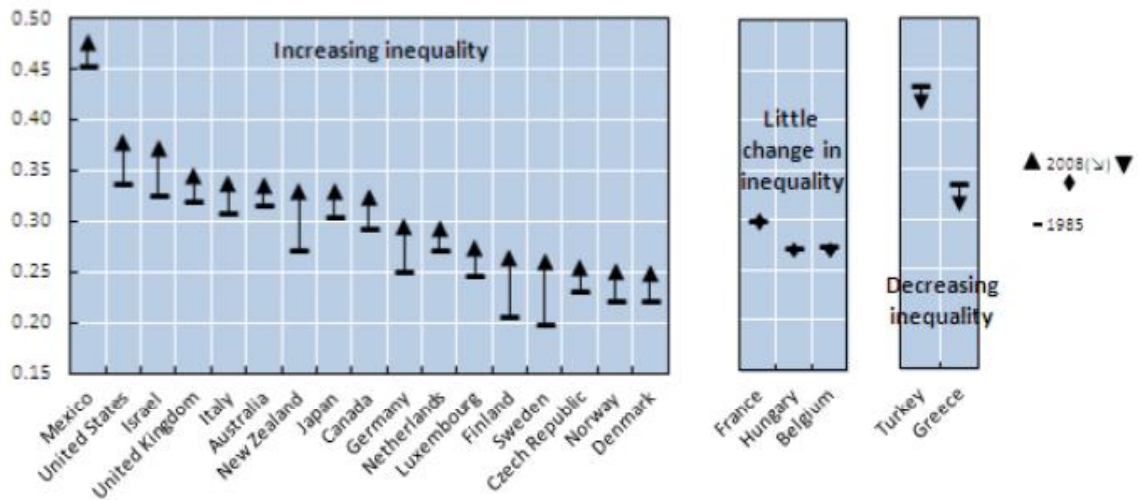
got poorer. Or the second one is that, inequality was so vast in previous years and economic growth has managed to reduce it up to one point.

Turkey reached 735 billion dollar GDP with regard to data in 2010. Considering 73 million population, each person should have received 10,067 dollars. Nevertheless, income as well as everything is not equally distributed amongst the people like almost anywhere in the world. If you divide the whole population into percentiles by 10, the unfairness is eerily vast. Because the bottom 10% defined by 7.3 million people have average 2,114 dollars per capita income while the top 10% that is same number of people have 32,400 per capita income. In other words, a 7.3 million of Turkey try to survive as Honduran, and another 7.3 million enjoy the high living standards as Europeans. As a note, Honduras is the second poorest country of South America with 8 million hungry and thirsty people and 2,100 dollars per capita income and European Union countries have on average 32,537 dollars per capital income. (Uras, 2011)

Taking into consideration the Gini coefficient, it is seen that income distribution in Turkey improved in the period of 1968 and 1987, after that it got disrupted until 1994 and finally it revealed a stable positive tendency up to present day. Talking about certain numbers, it increased from 0.43 in 1987 to 0.49 in 1994, and then declined back to 0.44 in 2002, 0.40 in 2004 and 0.38 in 2005. Although this continuous downward trend in terms of Gini coefficient can be interpreted as a positive development, the coefficient is still quite high. (Caliskan, 2010)

On the other hand, among 22 OECD countries for which data are available, only two countries that are Turkey and Greece have shown positive performance over long period. In this context, the Gini coefficient for Turkey has declined to 0.41 in the late 2000s from 0.43 in the mid-1980s while in several of the countries shown in the figure, it increased by more than 4%. In spite of the decline, Gini coefficient is still considered be high in comparison with OECD average that is 0.31 in the late 2000s.

Figure 11 Gini coefficients of income inequality, mid-1980s and late 2000s



Source: OECD, 2011, Growing Income Inequality in OECD Countries

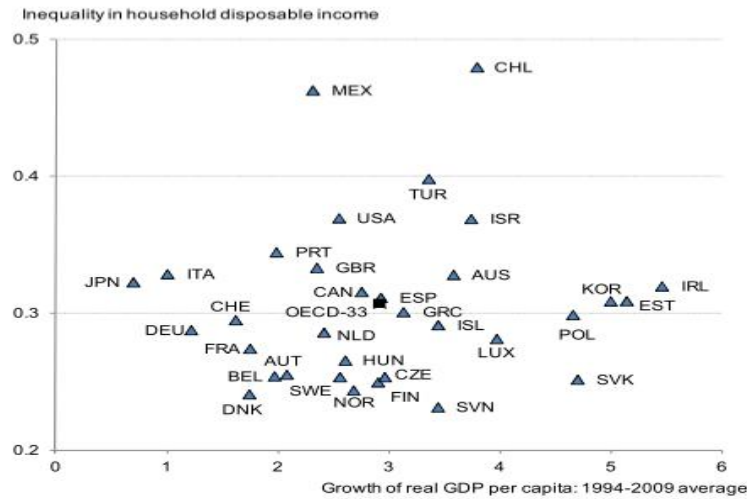
Also, the ratio between the average disposable income of 10% richest and the 10% poorest has been closed up as it decreased to 14.5 at the end of 2000s from 17.3 in the middle of 2000s and 21.9 in the middle of 1990s. (OECD, 2011)<sup>12</sup>

Another research by the OECD analyses the relationship between income inequality and growth across the OECD countries. As a member state, Turkey shows quite interesting results. Turkey ranked the third country after Mexico and Chile with the highest income inequality based on Gini coefficient.

<sup>12</sup> The OECD, An Overview of Growing Income Inequalities in OECD Countries: Main Findings, 2011.



Figure 12 The link between inequality and growth in the OECD countries



Source: OECD, Economic Policy Reforms 2012, Going for Growth

But on the other hand, the figure 12 implies positive and considerable growth in terms real GDP per capita. Thus, Turkey with an average growth rate of 3.5% achieved to pass several developed countries such as USA, Canada, OECD-33 average and majority of the EU countries including Germany, France and Netherlands. (OECD, Economic Policy Reforms, 2012) Despite the high growth rates in Turkey after 2001, the fact that recovery in inequality and poverty problem does not reveal a significant improvement; it explicitly implies that the problem cannot be dissolved itself through the market mechanism as a tool of growth. Incorrect, inefficient or unimplemented social policies may be lying under the basis of the problem. For instance, the current structure of the tax system in Turkey fails to be reformative and promoter and it is rather aggravating. Regulations of re-distribution of income in the tax system and social transfers particularly to poorest share of the population considering current situation would prevent the issue worsening. Besides, other regulations aimed at equalising opportunity of education, health and removal of restrictions on trade union rights and freedoms would help solve poverty and income inequality issue in Turkey over long-term period. (Yaşın, 2010)

### 3.9 Research Questions

As ``Tas and Ozcan`` argued based on the table 3 provided by TurkStat, Turkey has processed positive improvement concerning poverty problem over the period 2002-2010. However, ``Tas and Ozcan`` also emphasized that there was no real change in terms of poverty since 2006 up to now. Despite the fact that it is assumed the general downward trend that Turkey has caught in this particular period is not a coincidence and can be explained by growth. In this context, the first question will be “*how did growth help reduce the poverty in Turkey over the period 2002-2011?*” Additionally, it seems that decreasing income inequality numbers in terms of Gini coefficient likely follows the same pattern as poverty. Therefore income inequality will be included into the analysis as another explanatory variable. Thus, it is expected to come to conclusion with regard to relationship of growth, poverty and income inequality triangle.

A report called ``Overview of Growing Income Inequalities in OECD Countries`` that is provided by the OECD in 2011 indicates that Turkey is one of a few member countries which has performed positive development in terms of income inequality. Average disposable income gap in shares of the 10% richest and the 10% poorest has been significantly decreased. But, as Caliskan pointed out and justified by the historical numbers in relation to income inequality, the issue seems to remain unsolved. Turkey still face income inequality problem only with swinging numbers. So, the second research question in this context will be “*What was the role of growth in dissolving income inequality problem in Turkey?*” It is expected that unprecedented economic growth did not contribute much to inequality problem as expected. As supposed, income inequality and poverty cannot be dissolved only by economic growth. Hence, development policies and reforms that are in place concerning income distribution will be associated and evaluated to take a deeper look into the issue.

Essentially, Turkey has shown a positive and remarkable progress in the last decade in terms of growth, poverty and income inequality as statistics indicate. However, it is presumed that economic growth although it was higher in percentage, did not contribute to poverty and income inequality reduction as much as it is expected in the last decade. So, the third and the last question in this context will be “*What pattern economic growth-*

### ***poverty-income inequality triangle followed in the period 2002-2011 versus 1992-2001?***

The comparison between the periods will be done as analyzing the influence of growth on poverty and income inequality? It is expected that although Turkish economy grew less in the period 1992-2001, it contributed more to poverty and income inequality reduction.

## **4 Practical Part**

### **4.1 Descriptive Analysis of Turkish economy**

In this chapter, economy of Turkey is analysed primarily in terms of economic growth through several indicators such as GDP, GNI as well as specific approaches such as purchasing poverty and disposable household income. After the completion of the analysis from the economic growth perspective, economic development is analysed applying to Human Development Index that is one of the major and international indicator measuring living standards. Afterwards, for a more detailed analysis, other social aspects of life are investigated further based on criterion set by the OECD. Lastly, Gini index is applied to Turkish economy in order to observe changes in quality of income distribution.

#### **4.1.1 Performance of Turkey in terms of economic growth**

There have been three major crises that Turkish economy witnessed since the establishment of the Republic, 1923. One of the worst recessions in which the Turkish economy almost struck the bottom was caused by the financial crisis in 2001. A number of reasons, such as political instability, problems in foreign affairs, an increasing number in the jobless population and a tremendous earthquake, happened in the same year at the very centre of the industry led to emergence of the crisis jointly. Actually, Turkish economy has gone through several other economic crises in its history, yet this crisis was of unique significance, in the sense that it went onto to affect all parts and classes of the society having destructive consequences. (Arguden, 2007)

Up to 2001, Turkish economy was still progressing well in terms of growth, with the average ratio of real GDP growth that being 3.9% and 4% for the period 1980-89 and 1990-99, respectively. However, the economy crashed downwards in 2001, due to the

financial crisis, and experienced a negative growth rate of 5.7 in constant prices (TL) and 25.9 in current prices (dollar). The crashed economy consequently delivered several negative impacts on society. Inflation increased at a rapid rate, unemployment accelerated, people got poorer and poorer. Ultimately, people learned the real meaning of a financial crisis and the effects that it was to have on their life. This experience paved the way for a number of serious and radical reforms that have begun to be implemented to ensure a fast recovery. (USAK, 2008)<sup>13</sup>

There have been five major characters of the macroeconomic reforms that helped Turkey in the period from the crisis to recovery. The first being the implementation of a floating-exchange rate and thus giving up the fixed-exchange rate that was in place previously. The second character is the IMF, and its involvement as an external factor. Third is regulating and restructuring of banking sector that in turn provided more autonomy and power to control financial institutions. Consequently, fourth character followed by a commitment of the government to fiscal discipline in order to meet the balance targets. Lastly, a new law issued to guarantee operational independence of the Central Bank of Turkey. Thanks to the law the Central Bank has begun to conduct monetary policy without any political pressure. (Tiryaki, 2012)

Such reforms both in political and economic area did not only help Turkey recover from the crisis, but it also led the economy to rise. With a growing economy, Turkey has become much stronger day by day. The table 4 depicts the economic output and real growth changes in Turkey from GDP point of view in terms of both current and constant prices. One of the reasons to choose the period 2002-2011 in particular is that unprecedented economic growth of Turkey occurred in this given period. Another reason is the political situation in Turkey. It is mostly assumed that political stability which has been guaranteed since the year 2002 with the same governing party is one of fundamentals in reaching this economic success. Turkey has been continuously growing since 2001 over the period 2002-2011 with a break point in 2009. As is known, the last global economic crisis occurred in the U.S.A, which in turn affected almost the whole world very strongly. In spite of that, Turkey has had the highest growth rates among all OECD countries since 2001. Perhaps, that implies that Turkey was one of the least affected countries in the world

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<sup>13</sup> International Strategic Research Organization, From Crisis To Recovery: Quo Vadis Turkish Economy?

by the global economic crisis. During 2009, a number of developed and developing economies such as U.S.A, Germany, France, Italy, Mexico China (Hong Kong, SAR) and many others shrunk with negative GDP annual growth rate. So, it was not a surprise that Turkish economy shrunk, too. However, Turkey unlike some other countries managed to get over the second economic crisis which came just eight years after the first one.

Table 4 Gross Domestic Product Results for Turkey

Years	GDP Current Prices (Million TL)	Growth Rate %	GDP Current Prices (Million \$)	Growth Rate %	GDP Constant Prices (Million TL)	Growth Rate %
1998	70,203	-	270,947	-	70,203	-
1999	104,596	49.0	247,544	-8.6	67,841	-3.4
2000	166,658	59.3	265,384	7.2	72,436	6.8
2001	240,224	44.1	196,736	-25.9	68,309	-5.7
2002	350,476	45.9	230,494	17.2	72,520	6.2
2003	454,781	29.8	304,901	32.3	76,338	5.3
2004	559,033	22.9	390,387	28.0	83,486	9.4
2005	648,932	16.1	481,497	23.3	90,500	8.4
2006	758,391	16.9	526,429	9.3	96,738	6.9
2007	843,178	11.2	648,625	23.2	101,255	4.7
2008	950,534	12.7	742,094	14.4	101,922	0.7
2009	952,559	0.2	616,703	-16.9	97,003	-4.8
2010	1,098,799	15.4	731,608	18.6	105,886	9.2
2011	1,294,893	17.8	772,298	5.6	114,874	8.5

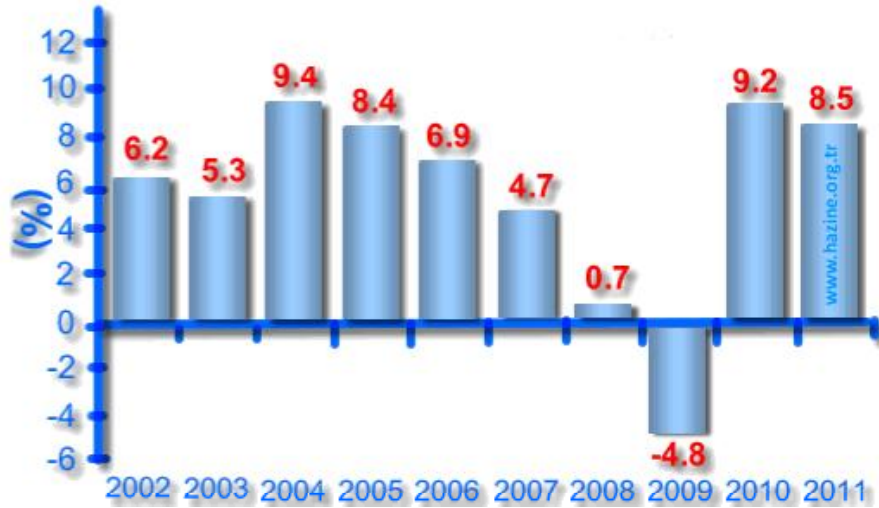
Source: Turkey, Association of Treasury Controllers, 2012<sup>14</sup>

As percentage of real GDP growth indicates, Turkey turned the crisis into opportunity and continued to grow dramatically by 9.2 and 8.5 per cents. Thus, Turkey listed among the fastest growing economies in 2011 as a second one after China. As a matter of fact Turkey left China behind in 2011 with the first quarter real GDP growth rate of 11.9%. A very

<sup>14</sup> Association of Treasury Controllers, Turkish Economy, Output & Growth.

sensible reason that makes the period 2002-2011 distinct in Turkish history is high average real GDP growth rate.

Figure 13 Real GDP Growth for Turkey



Source: Turkey, Association of Treasury Controllers, 2012

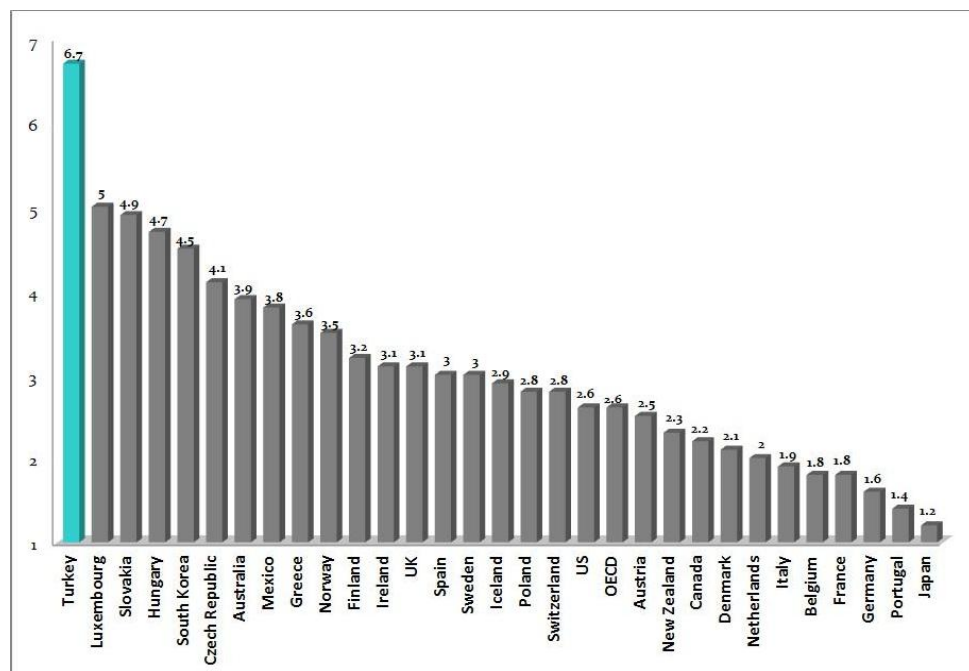
Turkish economy has grown much more by around 5.5% in comparison to previous years that mentioned above. In addition to this, the economic growth is considered to be more stable and unprecedented in this particular period. The table 4 indicates that GDP has quadrupled itself from 196,736\$ in 2001 to 772,298\$ which makes the Turkish economic performance an extreme case that shed the way for other developing countries on their own way. In this context, Turkey`s economy has begun to be seen as a pattern particularly in middle east region by its fellow countries. Perhaps, one important point to emphasize is substantial difference between current prices and constant prices of GDP which is caused by inflation. Considering the year 2001, Turkey grew in terms current prices by 49.0%. In fact, the economy shrunk most by - 5.9% which indicates the chronic and secular inflation problem Turkey used to cope with. However, narrowing differences between the constant and the current prices of GDP growth rates especially after the year 2005 points out the notable downturn trend in inflation as problem in process to be solved.

Turkey now ranks 17<sup>th</sup> position among the biggest economies in the world by its current GDP of 742,094 \$. Turkey has an outstanding target with regard to its position. As declared by some Turkish officials such as Ministry for Industry and Trade Zafer

Caglayan, the goal of Turkey is to list among the top 10 economies in the world by 2023, when Turkey celebrate the 100<sup>th</sup> anniversary of the establishment of the republic. Although it may sound frantic and unlikely, the achievement Turkey has had as jumping up to 17<sup>th</sup> position from 26<sup>th</sup> within merely five years that shows the ambitious and eager of Turkey. (TKBB, 2008)<sup>15</sup> On the other hand, there are many predictions concerning the change of economic position of Turkey. For instance, a report that has published by the global research department of HSBC predicts that Turkey will become the 12<sup>th</sup> largest economy rising by approximately five or six spots in 2050. At the same time, many advanced economies such in Europe such as Denmark, Norway, Sweden and Finland will fall significantly and lose their positions. (Voigt, 2012)

In this context future of Turkish economy has been questioned by many parties. One of the forecasts supports the idea that Turkey will continue to grow is published by OECD.

Figure 14 Annual Average Real GDP Growth (%) Forecast in OECD Countries  
2011-2017



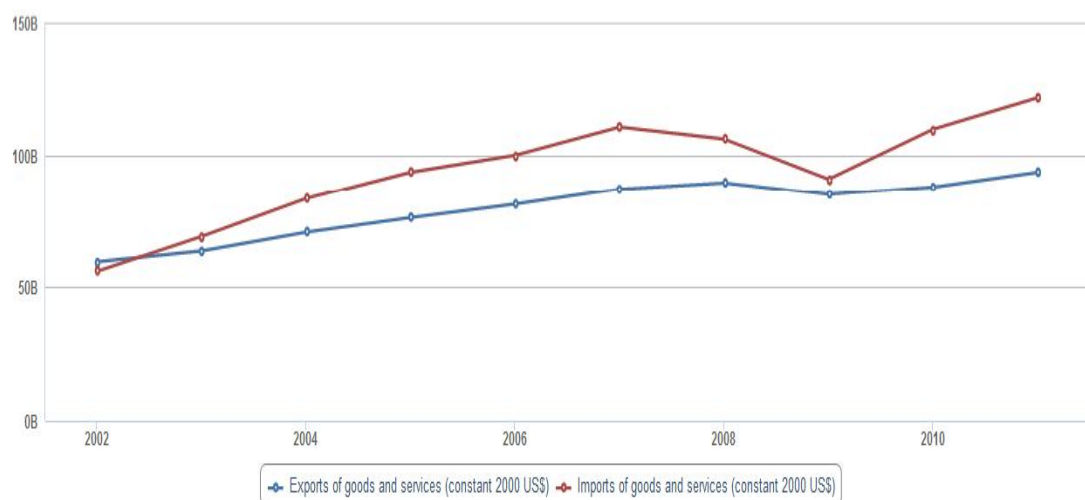
Source: Republic of Turkey Prime Ministry Investment Support and Promotion Agency, 2012<sup>16</sup>

<sup>15</sup> The Participation Banks Association of Turkey, 2008.

<sup>16</sup> INVEST IN TURKEY, Turkey at a Glance, Economic Outlook, 2012. Available from: <http://www.invest.gov.tr/en-US/turkey/factsandfigures/pages/economy.aspx>

The figure 14 shows that economic growth in Turkey will continue even with higher average ratios. Among 31 OECD countries, it is expected that Turkey will grow more and it will become the fastest growing economy of the OECD members with 6.7% of real GDP growth in the period 2011-2017. On the other side, the World Bank said that Turkish economy is expected to grow by 4% in 2013 and 4.5% in 2014. (CNBC, 2013) In fact, that is Turkish economy will continue to grow in a long-run is proving the unprecedented economic growth that occurred in that period is not a fake but rather real. In addition, it also shows that is a stable and extraordinary growth scenario which is written by a ruins economy just right after it passed through a misfortune earthquake and the biggest economic crisis of its history. Turkey seems to continue to be one of the fastest emerging countries in the world. In addition to this economic growth success, Turkey has also managed to balance its public finances. Within 10 years period, government nominal debt stock has been reduced by almost half from 74 % to 39.4%. Similarly, budget deficit declined to 3% from 10%. Such improvements followed by a very considerable increase in foreign trade as exports as well as imports and tourism revenues have increased. Tourism revenues in Turkish economy have reached 23 billion USD by the end of 2011 from 8.5 billion USD in 2002.

Figure 15 Export and Import in Turkey at constant 2000 US\$



Data Source: The World Bank, 2013 [Own Elaboration]<sup>17</sup>

<sup>17</sup> The World Bank, Data, Countries, Turkey.



According to the figure 15 which is made based on the data provided by the World Bank, export numbers has increased from 60 billion USD in 2002 to approximately 94 billion USD by the end of 2011. But on the other hand, import numbers in Turkey has risen more significantly. While it was 56 billion in 2002, it has soared to nearly 122 billion by the end of 2011. Thus, the foreign trade surplus which used to exist is replaced by foreign trade deficit. Actually, as the figure 15 indicates Turkish economy has never managed to reach foreign trade surplus since 2002. Presumably, due to the global financial crisis imports in 2009 decreased to 91 billion and the gap between import and export narrowed. But, after 2009, import has again begun to increase and the foreign trade balance again deteriorated.

Since 2001, Turkey has accomplished a fabulous job through impressive structural reforms in both economic and social areas which evaluated by the IMF as a success story. This also withdrew attention of some organisations such as OECD, WTO and most importantly EU. Eventually, EU was convinced to open negotiations for full membership. On the other hand, Turkey gained representation and voice and begun to play a key role in the organisations it is a member of. (The IMF, 2012)<sup>18</sup>

#### **4.1.2 Disposable Income per Household Approach**

One of the major indicators of economic development is considered as GDP per capita. It measures changes in share of each individual from the national income. Naturally, GDP per capita income in Turkey has increased quite significantly in parallel with high growth rates. However, to analyse the progress of living standards in Turkey in a more transparent way, another indicator called “disposable income per household” is used.

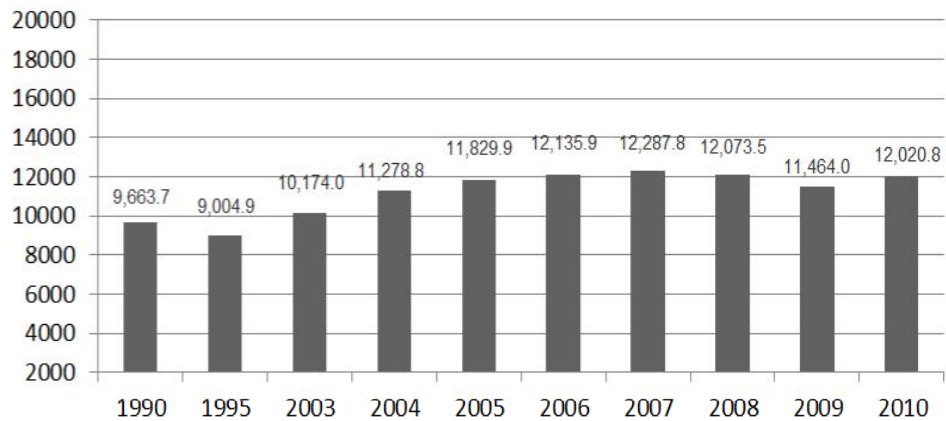
The indicator accounts for the amount of money that is available for use of a household after income taxes. It represents real spending of a household and used to gauge the overall state of the economy therefore it is quite important and considerable. The data for Turkey in terms of disposable income per household is quite restricted.

However, a research that is done by “Euromonitor International” shows the progress of Turkey in terms of disposable income per household for the period 1990-2010.

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<sup>18</sup> The IMF, World Economic Outlook 2012, Growth Resuming, Dangers Remain.

Figure 16 Disposable Income per Household at constant 1995 USD prices in Turkey



Data Source: Euromonitor, 2012 [Own Elaboration]<sup>19</sup>

Disposable income per household at constant 1995 prices in Turkey has increased to 12,020.8 from 9,663.7 over 20 years. Based on the numbers, growth in disposable income per household is calculated to be 33.5% that is much less in comparison to the growth in GDP per capita. Moreover the growth trend is not steady considering each year individually. In addition, Turkey ranks below average growth rate that is around 60% taking into account other provided developing countries such as Brazil, Egypt, Tunisia, Mexico, Vietnam and China. Moreover, there is a considerable gap between the OECD average household net-adjusted disposable income of 22,387 USD and 10,997 USD in Turkey. In conclusion, it shows a real and trustworthy measure implies that Turkey did not show much progress in living standards in terms of disposable income per household unlike GDP growth rate shows. (Euromonitor, 2012)

#### 4.1.3 Overview of Human Development Index in Turkey over the period 1980-2011

The Human Development Index (HDI) can be described as a summary measure of human development structured into three basic indicators. In this context, progress of a country in a long and healthy life, access to knowledge and a decent standard of living can be assessed within the context of HDI. These indicators are respectively measured by life expectancy, mean years of adult education in other words average number of years of

<sup>19</sup> World Consumer Income and Expenditure Patterns 2012.

education received in a life-time and expected years of schooling that is the total number of years of schooling a child at the school entrance age would expect to receive in case the prevailing pattern of age-specific enrolment rates remains same throughout the child's life and lastly Gross National Income (GNI) per capita in terms of constant 2005 PPP\$. In addition to this, number of countries and especially methods used in estimating the HDI indicators have changed in 2011. Therefore, it is essential to mention minimum and maximum values the individual indicator ranks between. In this context, 20 years is set as minimum value for life expectancy, 0 years for both education variables and finally 100\$ for per capita income of GNI. However, actual observed maximum values from the analysed countries over the period 1980-2010 are used to set maximum limit of the indicators. The HDI varies between 0 and 1 hence the values above are set accordingly in order to be able to transform the indicators into indices between 0 and 1.

The table 5 indicates the progress of Turkey in human development since 1980s till 2011. As known, Turkey has gone through an important economic reform by opening its trade to international markets which was expected to reflect in economic indicators of the country significantly. Considering five-year periods since 1980s, Turkey has been steadily increasing its HDI value. Looking at the value of HDI 0.463 in 1980, Turkey has shown a significant progress by an increase of 51.0% until 2011. Notwithstanding fluctuating trend of HDI in the given period, Turkey has managed to reach a positive annual increase of around 1.3%. Turkey has also raised its position to 92<sup>nd</sup> out of 187 countries with a HDI value of 0.699 in 2011 from 95<sup>th</sup> country in 2010.

Table 5 Turkey`s HDI trends based on consistent time series data, new component indicators and new methodology

	Life expectancy at birth	Expected years of schooling	Means years of schooling	GNI per capita (2005 PPP\$)	HDI value
1980	56.5	7.0	2.9	5,595	0.463
1985	60.1	7.8	4.0	6,332	0.518
1990	63.1	8.4	4.5	7,683	0.558
1995	66.1	9.2	4.8	8,210	0.588
2000	69.5	10.3	5.5	9,260	0.634
2005	72.1	11.2	6.1	10,840	0.671
2010	73.7	11.8	6.5	11,841	0.696
2011	74.0	11.8	6.5	12,246	0.699

Source: (UNDP, Human Development Report, 2011)<sup>20</sup>

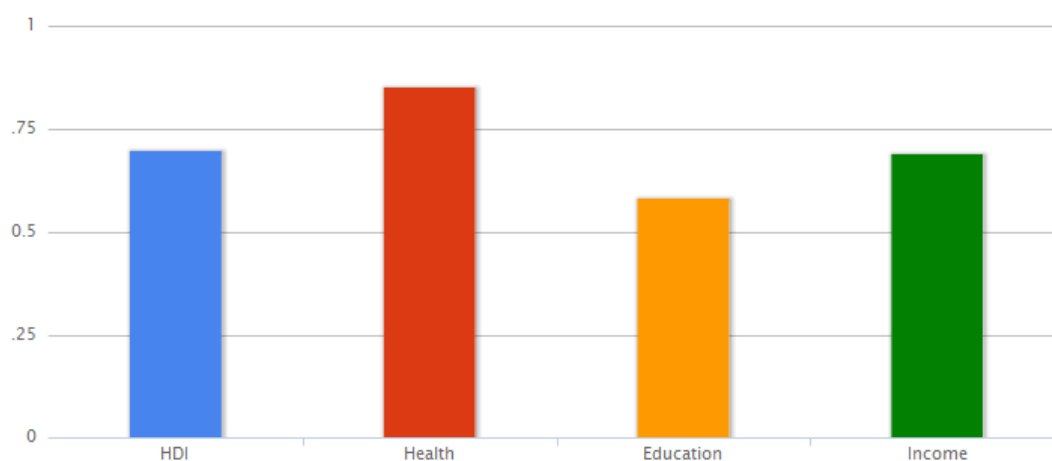
The table 5 also shows the progress in Turkey in each of other HD indicators. Life expectancy at birth has been enhanced from 56.5 to 74.0. Turkey has caught Europe`s average, even passed with 17.4 years increase. Now, upon the statistics it seems that the country has become a place in which the life is much longer and healthier. Turkey issued several laws as a reform in relation to education. One of the most important is that the laws introduced with regards to year of compulsory education. The compulsory education which was only five years until the year of 1997 increased to eight years, subsequently to 12 years in 2012. Thanks to the reforms Turkey has gone through particularly in terms of compulsory education, the expected years of schooling has been increased to 11.8 years from 7 years in 1980. Therefore, it has affected positively the means years of schooling, as well. Now, looking at the number a person aged 25 or older has 6.5 years which are spent by education on average in a total life-time cycle. As known, the more years spent by education, the more developed a country is expected to be. Finally, it is necessary to analyse the last indicator of the HDI. According to GNI per capita in constant 2005\$ PPP, apparently Turkey has shown a significant performance as it increased to 12,246\$ from 5,595\$. This means 119.0% increase over the period 1980-2011. This works almost in parallel with GDP per capita in constant 2005\$ PPP taking into consideration the overall progress as it has increased from 5,694\$ to 13,468\$ within the same period. However, the slight difference to note is that although GNP and GDP had similar value in the year 1980s, the difference has been increased as GDP per capita increased comparatively more

<sup>20</sup> Human Development Report 2011, Sustainability and Equity: A Better Future for All, Turkey, HDI value and rank changes in the 2011 Human Development Report.

than GNP has done in following years. This can be explained by either lessening amount of production of Turkish originated firms that run abroad or expanding volume of foreign direct investment in Turkey. As it has been mentioned before, foreign direct investment has significantly increased in a particular period 2002-2010 therefore higher GDP than GNI per capita most likely to be explained by the increase in foreign direct investment and increasing number of international firms running in Turkey. (UNDP, Human Development Report, 2011)

The figure 17 analyses each major components of human development index individually. Each component varies 0 - 1 and 1 shows the highest possible value whereas 0 shows the lowest possible value a country can reach.

Figure 17 Human Development Index: Health, Education and Income



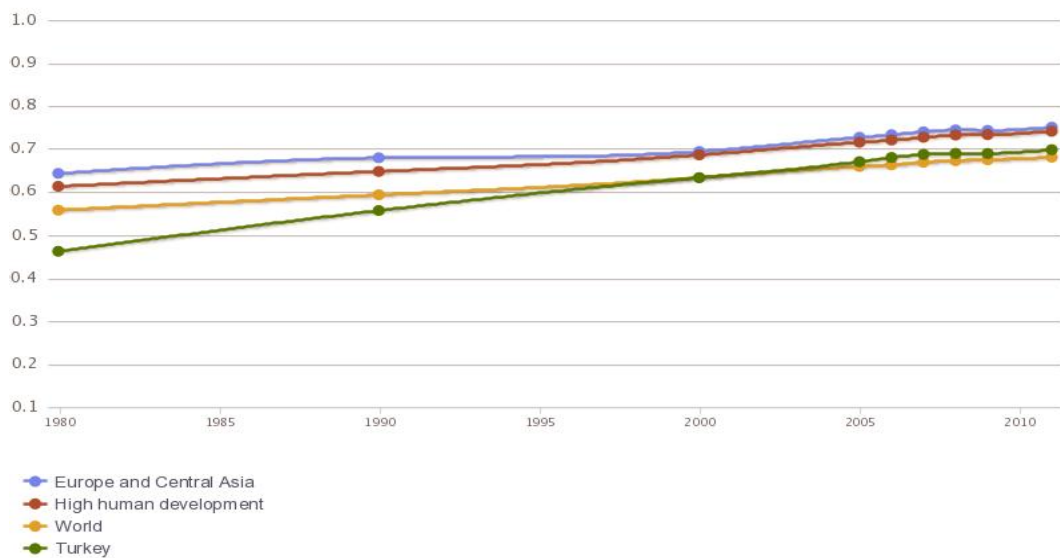
Source: United Nations Development Programme, 2012<sup>21</sup>

Based on the report published by UNDP, health ranks the highest with 0.851 in Turkey where HDI and Income components follow by 0.699 and 0.689, respectively. Apparently, Turkey has one of the lowest education values in its own category with 0.583. There are other values explaining each indicator, particularly. For instance, public expenditure on health in terms of percentage of GDP and under-five mortality (per 1,000 live births) can be considered as a measurement for health. Turkey currently spends 3.4% of its GDP on

<sup>21</sup> National Human Development Reports for Turkey, Countries, Turkey, Country Profile: Human Development Indicators.

health services that is average value in its category. In the same manner, education index has following explanatory values; public expenditure on education (% of GDP), adult literacy rate, both sexes (% aged 15 and above). Although numbers for a regular comparison are missing, obviously values for Turkey are much less. For instance, Turkey spent 2.0% of GDP while high human development countries used 4.4% of their GDP. On the contrary, Turkey has a good progress in regards to adult literacy rate as it increased to 90.8 by 2009 from 65.7 in 1990. Lastly, income index includes GDP and GNI per capita numbers. As explained before, both numbers indicates the positive economic development of Turkey. Yet, it is not possible to say the same based on other indexes since there is no periodic data for long-term comparison. However, Turkey`s economic development progress in the long run is undeniable.

Figure 18 Human Development Index: Trend 1980-present



Source: United Nations Development Programme, 2012<sup>22</sup>

HDI indicator groups the countries under four main categories as follows; very high, high, medium and low human development. Turkey is currently considered be among the countries with high human development. Comparing the Turkey to other countries which have very high human development index, Turkey almost reached the average ratio of life

<sup>22</sup> National Human Development Reports for Turkey, Countries, Turkey, Country Profile: Human Development Indicators.

expectancy which is 80.0 years. This means that average survival time of a new-born individual in Turkey is only six years less in other countries with very high human development value. As an overview, it seems that Turkey has closed up with highly developed countries more in terms of health yet on the other hand, it is still much worse off in education. From the point of both means and expected years of schooling, Turkey still remains far behind despite the positive progress. Means year of schooling is 11.3 years on average in very high human development countries while it is only 6.5 years in Turkey. Lastly, a very important point to emphasize is the growth trend Turkey has caught particularly after the year 2000. Until the year 2000, Turkey ranked below the ``world average`` and ``far below`` Europe and Central Asia region. In 2000, Turkey caught the world average and left behind between years 2005-2011 thanks to continuous development trend. Now, it seems Turkey may close up in following decades with Europe and Central Asia taking into account Turkey`s HDI jumped to 0.699 in current from 0.463 in 1980 whereas Europe and Central Asia caught a slight increase from 0.644 to 0.751. (United Nations Development Programme, 2012)

Lastly, it is important to make a comparison of Turkey with some relative countries and groups in a more detailed approach by HDI indices and data.

Table 6 Turkey`s HDI indicators for 2011 relative to selected countries and groups

	HDI value	HDI rank	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (PPP US\$)
Turkey	0.699	92	74.0	11.8	6.5	12,246
Serbia	0.766	59	74.5	13.7	10.2	10,236
Azerbaijan	0.700	91	70.7	11.8	8.6	8,666
Europe and Central Asia	0.751	-	71.3	13.4	9.7	12,004
High HDI	0.741	-	73.1	13.6	8.5	11,579

Source: (UNDP, Human Development Report, 2011)<sup>23</sup>

As it is seen from the table 6, Turkey is compared with Serbia, Azerbaijan, Europe and Central Asia as well as the average of the countries with High HDI. Turkey has the highest GNI per capita numbers among all the chosen countries and groups. Yet, surprisingly it does not rank the best in terms of HDI. Looking at the table 6, Turkey ranks 92<sup>th</sup> position

<sup>23</sup> Human Development Report 2011, Sustainability and Equity: A Better Future for All, Turkey, HDI value and rank changes in the 2011 Human Development Report.

with 12,246\$ GNI per capita whereas Serbia and Azerbaijan ranks higher positions with lower GNI per capita. This trend goes parallel with expected years of schooling ratios. Both Serbia and Azerbaijan has better numbers in terms of schooling although Turkey has a higher GNI per capita. Nevertheless, it seems that Turkey has caught only with life expectancy at birth in comparison with others.

It is essential to take a look at current performance of Turkey in terms of living standards by other various indicators in order to see it in a bigger picture. For, this reason Turkey can be compared to the OECD average as a member. Needless to say, Turkey has shown significant progress over the last decade as the quality of life has been improved in many fields. In spite of that, Turkey still ranks much lower among the OECD countries in number of topics as shown below by chosen development indicators.

The table 7 provides a comparison between Turkey and OECD average in three major social fields. The first one which is ‘‘water quality’’ represent the percentage of population that is satisfied with quality of water. The measurement is quite important just like any other environmental indicators since it has a direct impact on our health.

Table 7 Environment-Life-Safety related development indicators - Turkey & OECD comparison

	Water Quality	Life Satisfaction	Assault Rate
OECD average	65%	5.3	5.09%
Turkey	85%	6.7	4.0%

Data Source: OECD Better Life Index, 2011<sup>24</sup> [Own Elaboration]

According to the OECD Better Life Index, only 65% of people are satisfied with water in terms of quality whereas this number reaches a high average around 85%. Turkey ranks 33th position out of 36 countries only ahead of Russian Federation, Israel and Greece. On the other hand, Turkey has worse results considering another environmental indicator which is ‘‘air pollution’’. Main measure of air quality is ‘‘PM10’’ that is defined as ‘‘tiny particulate matter small enough to be inhaled into the deepest part of the lung’’ and set to maximum level of 20 micrograms per cubic meter by the World Health Organisation. Thanks to national and international interventions, several OECD countries showed

<sup>24</sup> OECD Better Life Index, Countries, Turkey.



improvements and it became 22 micrograms per cubic meter on average. Nevertheless, it still remains to be slightly higher than the limit of 20 micrograms per cubic meter. But looking at Turkey, the situation is much more critical. Turkey ranks the last position among all OECD countries just ahead of Chile. It is highly assumed that is caused by mainly growing traffic jams problem in big urban areas such as Istanbul. In this regard, Turkey now has many projects in order to reduce local air pollution and ease the life for its people. One of them is the world's major transport infrastructure projects called "Bosphorus Project" aimed to upgrade commuter rail system length of 63km. it will inarguably help solving chronic traffic problem in Turkey yet apparently Turkey needs to work harder to catch up with other OECD countries.

The second indicator that is "life satisfaction" mirrors an evaluation ratio with a scale from 0 to 10. When it is asked to Turkish people to assess their life as a whole rather as objectively as possible, the people on average gave it a 5.3 grade that is lower in comparison to OECD average of 6.7. Surprisingly, Turkey with this ratio leaves some EU countries such as Hungary and Portugal behind and ranks 33th position. In spite of the fact, Turkey is still considered to be one of the unhappiest countries in the OECD.

Talking about the last indicator that is one of the major tools in relation to safety measurement, Turkey ranks a better position than it does by other indicators. Personal security is one of the fundamentals for well-being of individuals. It can be talked about better life standards only when people feel safer in any stage of life. Assault rate is one of indicators measuring "safety" and in Turkey, 5.09 % of people reported as they become victim to assault within the year 2011. The same ratio accounts for 4% of people on OECD average. Another indicator with regard to safety is the homicide rate. It is considered to be more reliable measure because each murder unlike other crimes is generally reported to the police. Turkey has shown a significant performance in terms of homicide rate as decreasing it from 5.6 to 3.3 per 100,000 inhabitants and now it is only slightly higher than the OECD average of 2.1. There is a considerable difference in terms of homicide rate considering male and female. As it seems, in Turkey men are murdered much more with a 5.3 compared with 1.2 for women.

Table 8 Work-Income related development indicators - Turkey & OECD comparison

	Working Hours per year	Household Financial Wealth	Long-term unemployment Rate
OECD average	1749 hours	36,238 USD	3.00%
Turkey	1877 hours	10,187 USD	3.40%

Data Source: OECD Better Life Index, 2011<sup>25</sup> [Own Elaboration]

The table 8 shows another comparison between Turkey and OECD countries involving work and income related indicators. It is necessary to start with total number of people who have a paid job. According to the survey called “How’s life?” and published by the OECD, 46% of people in Turkey aged between 15 and 64 have a paid job where as OECD employment average is much higher with 66%. If working hours as a measure of working standards is reckoned, Turkey remains comparatively worse off. Because, people in Turkey work 1877 hours per year that is more than majority of the OECD people who work around 1749 hours per year. With regard to number of people that work long hours, Turkey is considered to be a country working for very long hours with its 43% of employees whereas the OECD average indicates quite low percentage of employees with 9%.

Although “wealth” cannot buy happiness, it is strongly considered to be a measure of well-being for individuals as it improves access to a quality service in terms of education, healthcare and security. As shown before by both GNI and GDP per capita numbers, Turkish economy is substantially growing and therefore people are getting better off. “Household financial wealth is the total value of a household’s financial worth.” Ideally, such an indicator should also include real assets like land and dwellings, but due to the statistical limitation it is only available for a few OECD countries in which Turkey is not included. Despite the unprecedented economic growth Turkey has caught in the last decade, it seems the OECD average of household financial wealth is still three times higher than Turkey’s average of 10,187 USD.

Last indicator that is chosen as one of work related development indicators is long-term unemployment rate. It is defined as “the percentage of the labour force that has been unemployed for a year or longer” but is “willing to work and actively searching for work.”

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<sup>25</sup> OECD Better Life Index, Countries, Turkey.

(OECD, 2011) Based on this measure long-term unemployment rate in Turkey is at 3.4% which is very close to the OECD average of 3.0%. However, the difference, when it comes to men and women, is relatively unlike the OECD average. The long-term unemployment rate is 4.8% for women whereas the same rate for men is 2.8%. (The OECD Better Life Index, 2011)

Because “The OECD Life Index” provides a report concerning current development situation of the member countries and allows country comparison based on several major indicators, it is notably and highly important. However, it is very difficult to demonstrate the progress Turkey has shown within the last decade through the report since it does not allow a comparison over time. Nevertheless, it is very possible to say that Turkey is developing in a number of fields according to the indicators introduced in earlier chapters. One of the most important indicators used to analyse the development progress in Turkey were poverty and income inequality that already revealed the improvements Turkey has gone through in the last decade. In addition, “Human Development Index” results also prove that Turkey has enhanced the living standards overall. However, Turkey as a member of the OECD still ranks mostly last in several fields as previously analysed.

#### **4.1.4 Gini index application to Turkish Economy**

The table 9 depicts the overall progress regarding income distribution in Turkey. According to the data obtained over the years, the share of the bottom 20% has risen to 6.5% in 2011 from 4.5% in 1963 whereas the share of top 20% has declined from 57% to 45%. In addition, the share of second, third and fourth quintile which can be defined as middle-income group has followed an upward trend in the given period. However, increase in the share of second and third quintile remains slightly less in comparison with the increase in the fourth quintile. This implies the development in income distribution is still unequal among quintiles.

Table 9 Income Distribution by Household Disposable Income

<b>Years</b>	<b>First Quantile</b>	<b>Second Quantile</b>	<b>Third Quantile</b>	<b>Fourth Quantile</b>	<b>Fifth Quantile</b>	<b>Gini Coefficient</b>
<b>1963</b>	4.5	8.5	11.5	18.5	57.0	0.55
<b>1968</b>	3.0	7.0	10.0	20.0	60.0	0.56
<b>1973</b>	3.5	8.0	12.5	19.5	56.5	0.51
<b>1978</b>	2.9	7.4	13.0	22.1	54.7	0.51
<b>1983</b>	2.7	7.0	12.6	21.9	55.8	0.52
<b>1986</b>	3.9	8.4	12.6	19.2	55.9	0.50
<b>1987</b>	5.2	9.6	14.1	21.2	49.9	0.43
<b>1994</b>	4.9	8.6	12.6	19.0	54.9	0.49
<b>2002</b>	5.3	9.8	14.0	20.8	50.1	0.44
<b>2003</b>	6.0	10.3	14.5	20.9	48.3	0.42
<b>2004</b>	6.0	10.7	15.2	21.9	46.2	0.40
<b>2005</b>	6.1	11.1	15.8	22.6	44.4	0.38
<b>2006</b>	5.8	10.5	15.2	22.1	46.5	0.40
<b>2007</b>	6.4	10.9	15.4	21.8	45.5	0.39
<b>2008</b>	6.4	10.9	15.4	22.0	45.3	0.39
<b>2009</b>	6.2	10.7	15.3	21.9	46.0	0.39
<b>2010</b>	6.5	11.1	15.6	21.9	44.9	0.38
<b>2011</b>	6.5	11.3	15.7	22.0	45.0	0.38

Data Source: TurkStat, 2012 and Kurtipek, 2011[Own Elaboration]

Undeniably, Turkey had positive performance in the period 2002-2005 by decreasing the coefficient to 0.38 from 0.44. Apparently, it was not a sustained progress as it did not last for long years and after the year 2005, Gini coefficient in Turkey has begun to swing between 0.38 and 0.39. This unstable positive progress in income distribution might be explained by the economic crisis that occurred in 2001. The reason is because crises affects high income groups more intensively, the share of the fifth quintile decreased. And essentially, this decline in the share of richest 20% helped narrow the gap between the quintiles. However, when impacts of the crisis started to disappear, income distribution problem has re-emerged. In the same manner, slight improvement in the year 2009 and

2010 might be considered as effect of the global economic crisis that coincides with the same years.

In accordance with the foregoing and the table 9, inequality of income distribution generally followed a downward trend particularly over the period 1994-2007. As mentioned before, this can be easily seen by the narrowing gap in shares of the bottom and the top. The share of the poorest groups or in other words the first four quintiles increased its shares by 2.3 points on average. However, this increase affected the first quintile less in comparison with other three quintiles. In the same period, the fifth quintile which represents the share of top 20% declined by 9.4 points which is equivalent to the share gained by the other quintiles. This progress reflected on the Gini coefficient and it decreased to 0.39 from 0.49 over the period. On the other hand, the change in 2006 is a noteworthy point. Because, exceptionally only in this year within the period 1994-2007 the share of first, second, third and fourth income groups decreased while the share of the top income group increased. The main reason of this situation is presumed to be the “cost inflation” which was caused by the increase in the cost of imported goods. Initially, it was started by the upward movement in exchange rates. Even though that, the period 1994-2007 as a whole seems to be the golden age of Turkey in terms of income distribution progress. Significantly decreasing Gini coefficients confirm it. Nevertheless, after the year 2007, the progress stopped and almost no change was recorded. According to the table 9, the shares of quintiles remained very much same. Only a slight decrease in the share of the fifth quintile with 0.5 points was redistributed among the remaining four quintiles. Unfortunately, it cannot be considered as a real change therefore it is very likely to say that Turkish economy has not shown a progress with regard to quality of income distribution.

Examining both the changes in shares of the income groups and in the Gini coefficients, it can be said that Gini coefficient has decreased in the long-run. Despite the overall positive improvement, Turkey is still far behind in terms of income distribution quality in comparison with the EU countries. As of 2005, average Gini coefficient for the EU is 0.305 which is much lower. The gap with the North Europe, where level of justice of income distribution is the best in the world, is more obvious. For instance, Gini coefficient is 0.244 in Sweden and 0.258 in Finland by 2010. Germany can be another example with 0.28 of Gini coefficient among the most developed economies. Both on the other hand,

Turkey is slightly better than the U.S.A (0.41), Mexico (0.48) and lastly Chile (0.50). (Egilmez, 2012)

According to the latest estimation, the Gini coefficient in Turkey is roughly 0.38. This ratio points out that income distribution is still quite unfair within the society as there is considerable amount of people who lives under and above the average income. That is true the gap between the shares of top 20% and bottom 20% has been getting closer over the years, yet it still remains quite high. Comparing the share of the top that is 45% of total national income with the share of the bottom that is only 6.5%, it can be called “gulf” with 7:1 ratio.

## **4.2 Examining the Growth-Poverty-Income Inequality Triangle in Turkey**

In this chapter, the pattern growth-poverty and income inequality triangle follows over the period 1992-2011, is primarily analysed through one-factor regression. For the analysis, two separate scatter plot diagrams that are examining the relations for poverty-growth and income inequality-growth are used as a method. In addition to the analysis for the general trend, the periods 1992-2001 and 2002-2011 are compared to each other with regard to influence of growth on poverty and income inequality. At the end of each analysis, a brief conclusion is given in order to summarise the findings.

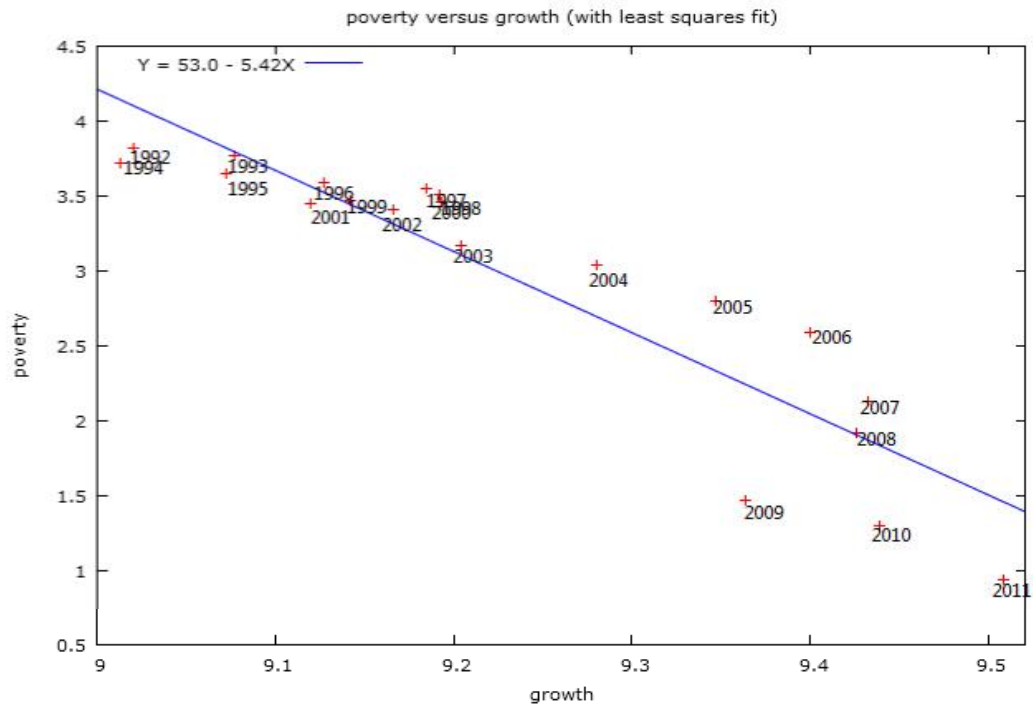
In the second part of this chapter, under multi-factor regression, two separate linear regression models are constructed. In this context, OLS method is used to estimate the parameters. After the estimation of the parameters, this time Chow test is applied to compare the analysed periods with a structural break at the year 2002.

### **4.2.1 One-Factor Regression**

#### **The relationship between poverty and growth**

The scatter plot below is drawn to analyse the relationship between the economic factors that are poverty and growth. Poverty as in the parallel of the applied econometric model is represented by the percentage of population who lives below 4.30 USD per day and the growth is represented by GNI per capita in PPP terms (constant 2005 international \$).

Figure 19 Relationship between growth and poverty in Turkey over the period 1992-2011



Source: Gretl (Based on Data Set 1 & .2)

In this context, growth is placed in the X-axis as an independent variable and the poverty is in the Y-axis as a dependent variable. The relationship will be analysed by four crucial points as follows; direction, form, strength and outliers.

### Negative direction

The relation is demonstrated by the equation “ $Y = 53.0 - 5.42 X$ ” whereas -5.42 represents the slope of the best fitting line. The number indicates that there is a negative relationship between the variables whereas regression line or in other words the best fitting line goes down to centre from left to right. It marks that due to the negative correlation, dependent variable will decrease as long as the independent variable increases, and vice versa.

### Linear form

The form talks about whether the shape follows a linear pattern or not. Considering the trend that is shown by the observed years in the diagram, it can be said that the relation follows a fairly straight line pattern. However, after the year 2004, slight deviations from the trend are observed, but they do not affect the general trend so the relationship is linear.

### **Partially strong, partially moderate correlation**

It is also possible to talk about the strength of the correlation between variables through the distribution of the observed years which are shown in the diagram. If the years are distributed closely and tightly to each other as sort of line a shaped, then the relation is considered as strong. If they are distributed dispersedly, then it represents a weak correlation. Lastly, if distribution is very spread out and not all close in tight to a line, it indicates a moderate relationship. Since the variables in this case are poverty and economic growth, it is expected to meet a strong association between them. Looking at the diagram above, it can be assumed that there is a strong correlation between poverty and growth in Turkey within the period 1992-2003 because the distribution is very tight to the line therefore the trend is consistent. Besides, the R-square that is found for this model is 0.839150, which indicates a quite strong correlation between the variables. Predictably, the changes in the dependent variable can be explained by the independent variable at 84% approximately. It seems that the relation between the variables weakened over the period 2004-2011. Because the distribution does not seem to be bunched together, it might be considered to be both moderate and weak. However, it is very difficult to say it is either weak or moderate due to limited number of observations. In conclusion, economic growth influenced poverty more over 1992-2003 in comparison to the period 2004-2011.

### **No Outliers**

To be able to find out the outliers in a relationship, it is again necessary to take a look at the distribution. Essentially, the outliers will be the observed years that deviate very much from the best fit line. Since there is no point which spoils the general trend in deed, there is no outlier which should be omitted from the model.

### **Brief Conclusion**

Based on the analysis by the scatter-plot above, the relationship between economic growth and poverty in Turkey is defined as a linear that follows the trend. Growth as the independent value is increasing while the dependent variable is decreasing which means it is a negative relationship. At first glance it seems that it is a strong association. They all seem to fall pretty well a long a line goes down to centre except the fact that the values after 2003 has deviated from the line and missed the trend. Therefore, the correlation is

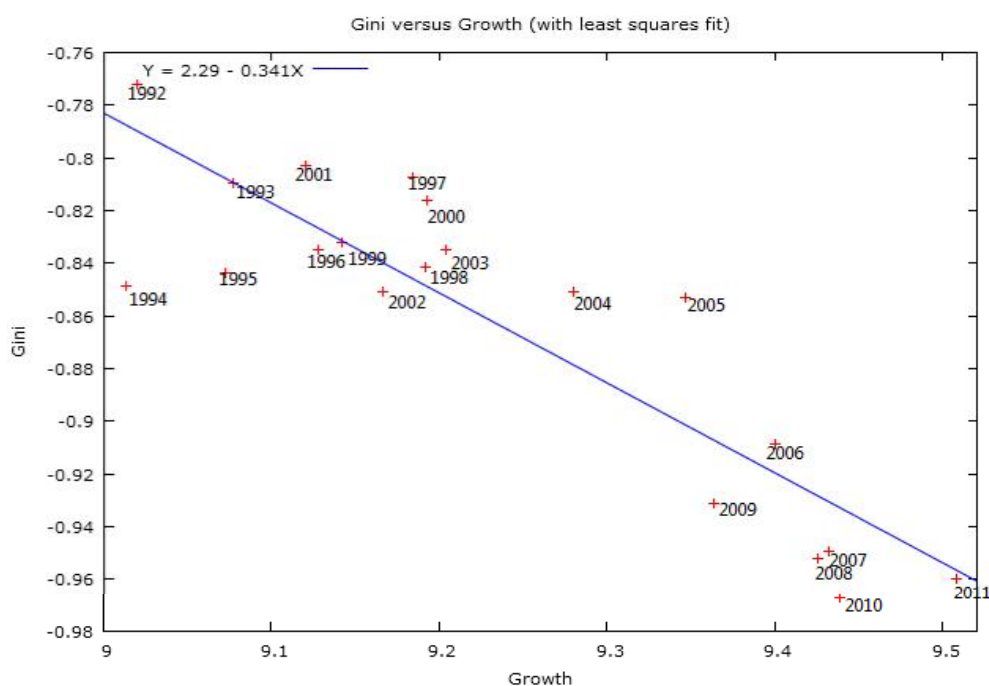


partially strong and partially moderate. In this context, it is presumed that the economic growth in Turkey contribute more to reduction of poverty over the period 1992-2001 versus 2002-2011. However, it is observed that a perfect relationship was caught up again in the year 2007-2008. Thus, it can be said that there is no outlier detected which spoils the trend.

### The relationship between income inequality and growth

The second scatter plot below analyses the relationship between growth and income inequality in Turkey over the period 1992-2011. Growth just like in the previous scatter-plot is represented by GNI per capita in PPP terms (constant 2005 international \$) while income inequality is represented by Gini coefficient.

Figure 20 Relationship between growth and income inequality in Turkey over the period 1992-2011



Source: Gretl (Based on Data Set 1&.2)

In context of the analysis, growth is considered to be the independent variable and placed in the X-axis whereas income inequality is considered to be the dependent variable and placed in the Y-axis. T

### **Negative Direction**

The relationship is explained by the equation “ $Y = 2.29 - 0.341 X$ ” in which -0.341 represent the slope of the best fitting line. Although there are disturbances in some particular years, the diagram above shows a general decline. Therefore, it is considered as a negative relationship between growth and income inequality. This means if growth as independent variable increases, income inequality will tend to decrease, and vice versa.

### **Weakly linear form**

Considering the trend above, it can be said that the relationship does not follow an absolute linear form. After the first two years, the trend sheer away from the pattern and does not follow a shape which can be interpreted clearly. Due to the random distribution of the observed years, it is assumed that during the period 1994-2001 there was no correlation or almost no correlation between the variables. However, after this period, the relationship catches a more linear form except the year 2009. In this year, the relation moves backwards which disturbs the form again. Because of all disturbances and deviations from the general trend, the relationship can be called weakly linear form if it is required to define it.

### **Weak correlation**

There is some association between the dependent and independent variable. But, it is not nearly as strong as a correlation. As the independent variable increases, the dependent variable decreases so there is an association, however it is very weak due to the disturbances particularly seen between the years 1994-2001. But taking into account the R-squared that is found 0.77633 for this relationship, it shows an almost strong correlation. It is assumed that the general trend that is caught after 2002-2011 contributed much more to the relation. Hence, the R-square value is still high.

### **A few Outliers**

There are a few outliers detected. Particularly, the years 1994 and 2005 deviates pretty much from the best fitting line. Therefore, it is assumed that the relationship between growth and income inequality was disturbed due to inconsistent fall or rise in values. So,

looking at the real numbers, it can be seen that the trend in these respective years turned the other way around or lost its linearity. Actually, the linear trend was disturbed several times during 1994-2002 therefore it is not appropriate to call this relationship absolutely linear.

### **Brief Conclusion**

Based on the analysis, the relationship between economic growth and income inequality in Turkey is defined as weakly linear. That mostly does not follow a straight line, however in general follows a sort of trend. Dependent value in general keeps decreasing while independent value increasing although there are exceptions in some particular years. At first glance, it seems that the association between growth and income inequality is quite weak. The relationship begins with a linear form in 1992 and 1993 but afterwards it loses its linearity and the trend follows a pattern which cannot be explained or interpreted easily. Firstly, it follows a curve and then makes a cycle route around with rises and falls. After the year 2002, it somehow follows a linear pattern. Considering the overall trend, the relationship can be still called negative. There are several disturbances which do not fit to the pattern, however only the years 1994 and 2005 are considered to be outliers. Because, they are the points that significantly deviate from the best fitting line.

### **4.2.2 Multi-Factor Regression**

#### **The relationship between poverty and growth**

##### **Assumptions**

The following econometric model intends to explain the economic relationship in regards to the influence of income inequality, GNI, and education on poverty in Turkey. The data is provided by various sources such as TurkStat (Turkish Statistical Institute), the World Bank and the OECD. The model is initiated to answer the first research question which is *“how growth helped reduce the poverty in Turkey over the period 1992-2011?”* Although this particular period is not the main focus of the research, time-series has been prolonged for the sake of modelling. In this context, the model will now analyse the relationship over the period 1992-2011 in Turkey and make a necessary comparison between 10 year periods as 1992-2001 and 2002-2011. Besides growth, some other variables such as Gini,

and education are highly assumed to influence on changing poverty numbers. Therefore, they are also included into model as explanatory variables. Besides these two variables, time vector is included into the model in order to capture the changes in variables that are explained by time. The time vector will also partially deal with the problem of spurious regression.

### **Econometric Model**

*Power Function:*  $y_{1t} = \gamma_{11} \cdot x_{2t}^{\gamma_{12}} \cdot x_{3t}^{\gamma_{13}} \cdot x_{4t}^{\gamma_{14}} \cdot \gamma_{15} \cdot x_{5t}$

$$\ln y_{1t} = \ln \gamma_{11} + \gamma_{12} \ln x_{2t} + \gamma_{13} \ln x_{3t} + \gamma_{14} \ln x_{4t} + \gamma_{15} x_{5t} + \ln u_{1t}$$

In this model, there will be 1 endogenous variable:  $y_{1t}$  and five exogenous variables including unit and time vector:  $x_{1t}$ ,  $x_{2t}$ ,  $x_{3t}$ ,  $x_{4t}$ ,  $x_{5t}$ .

$y_{1t}$  – Percentage of population who lives below 4.30 USD per day

$x_{1t}$  -Unit vector

$x_{2t}$  -Gini coefficient (Quality of income distribution within society, %)

$x_{3t}$  - GNI per capita in PPP terms (constant 2005 international \$)

$x_{4t}$  - Net Schooling Ratio by level of education, (%) (Including Primary, Secondary and Higher Education)

$x_{5t}$  – Time vector

### **Assumptions for the influence of each exogenous variable on the indigenous variable**

$\gamma_{12}$  -Gini coefficient: It is assumed that with decreasing Gini coefficient, poverty level will decrease. Because if income distributes more equally, it will logically increase the share of poorest income group so the poverty level will decrease. ( $\gamma_{12} > 0$ )

$\gamma_{13}$  - GNI per capita: It is assumed that with increasing GNI per capita, poverty level will decrease. However, as already approached in the chapter of the relationship between growth, poverty and income inequality, poverty is not a problem of production, but distribution, itself. Therefore, it is assumed that if Gini coefficient decreases, poverty will decrease, too along with economic growth. ( $\gamma_{13} < 0$ )

$\gamma_{14}$  - Net Schooling Ratio by level of education, (%): As already approached in the chapter of poverty in Turkey, it is strongly assumed schooling ratio in Turkey will have positive

influence on decreasing poverty level. Thus, with increasing number of schooling ratio, poverty level will decrease. ( $\gamma_{14} < 0$ )

### Estimation of Parameters using OLSM in Gretl

Model 1: OLS, using observations 1992-2011 (T = 20)

Dependent variable: y1t

Omitted because all values were zero (perfect collinearity): x1t

	coefficient	std. error	t-ratio	p-value	
const	81.6347	21.0838	3.872	0.0015	***
x2t	5.05102	1.97784	2.554	0.0220	**
x3t	-3.36882	1.35762	-2.481	0.0254	**
x4t	-11.7844	3.44946	-3.416	0.0038	***
x5t	0.301540	0.107657	2.801	0.0134	**
Mean dependent var	2.936277		S.D. dependent var	0.902407	
Sum squared resid	0.732375		S.E. of regression	0.220964	
R-squared	0.952666		Adjusted R-squared	0.940043	
F(4, 15)	75.47385		P-value(F)	9.43e-10	
Log-likelihood	4.693180		Akaike criterion	0.613639	
Schwarz criterion	5.592300		Hannan-Quinn	1.585526	
rho	0.134593		Durbin-Watson	1.481073	
Log-likelihood for POVERTY = -54.0324					

Source: Gretl

### Economic Verification of the model

$$\ln y_{1t} = 81.6 + 5.05 \ln x_{2t} - 3.37 \ln x_{3t} - 11.8 \ln x_{4t} + 0.302 x_{5t} + \ln u_{1t}$$

(21.1) (1.98) (1.36) (3.45) (0.108)

T = 20, R-squared = 0.953  
(standard errors in parentheses)

*The relationship between two economic factors that are poverty and income inequality is explained by following:*

$$\gamma_{12} = 5.05$$

This indicates that each change in the Gini coefficient which measures quality of income distribution can reflect on the change of poverty numbers. In other words, if by some reasons Gini coefficient decreases by 1 percentage, then poverty would decrease by 5.05 percentage. This relationship appears to be logically right because when national income

begins to be distributed more equally in a society, Gini coefficient would declines as it would get closer to “0” and this would reduce the poverty numbers in the society. In conclusion, if a country gets better off in terms of income distribution, it would contribute to poverty reduction as percentage of population who lives under 4.30 dollars per day decreases, and vice versa.

*Relationship between poverty and GNI per capita (growth) is explained by following:*

$$\gamma_{13} = -3.37$$

Gross national income (GNI) represents the sum value of final products and services that are produced by the citizens of a country in terms of a particular currency. GDP and GNI differentiate in one point which is that GDP also includes the final goods and services produced by the foreign citizens. The model has been already tested with both of the values for Turkey and no substantial change was seen. Therefore, it is decided to use GNI per capita values, optionally and growth is represented by GNI per capita in the model.

Unlike the relationship above, variables in this form have negative influence towards each other as they move in opposite. This simply means while GNI per capita increases, poverty follows a downward trend. According to the parameter estimated for  $x_{3t}$ , it can be said that the variable stands logical and consistent with economic theory. But, as increasing GNI per capita numbers implies that Turkish economy is growing, it is highly expected that growth will have positive impact on poverty. Actually, the minus parameter confirms this. Based on this, 1 percentage change in GNI per capita will reflect a -3.37 percentage change in poverty. Since the value is less than minus 1, which is the divider to decide whether it is elastic or inelastic, poverty is considered to be considerably elastic to changes in GNI per capita.

*Relationship between poverty and schooling ratio is explained by following:*

$$\gamma_{14} = -11.8$$

In this relation, schooling ratio is taken into account as a representative indicator of education to explain the poverty. The variable is an average ratio calculated by involving primary, secondary and higher educational data. Therefore, it is considered to be a summary value of schooling ratio and helps analyse the general trend in education. Talking

about the economic verification of the model through the variable  $x_{4t}$ , the parameter estimated for the variable which indicates negative relationship approves it. Because, it is very much expected to meet reducing poverty numbers as long as more and more people in society are educated. These people who are educated would have better job opportunity which in turn will increase the overall public wealth. The variable has the highest coefficient among explanatory variables. Thus it can be claimed that education is the most influential explanatory variable on poverty level (explained variable) in the model. Upon the parameter estimated for  $x_{4t}$ , 1 percentage change in schooling ratio reflects a 11.8 percentage change in poverty. Looking at the real numbers of schooling, it has always followed an upward trend over the period 1992-2011. Thus, it is expected that increasing ratio of schooling in general has had positive impacts on poverty reduction in Turkey.

### **Statistical – Econometric Verification**

#### Testing for Normality

Test for null hypothesis of normal distribution:

Chi-square (2) = 0.597, with p-value 0.7421 Critical value = 5.99146

Critical value = 5.99146 > P-value 0.7421 > 0.05 (Significance level) → *residuals in this model are normality distributed*

#### Testing for Autocorrelation

Using Breusch-Godfrey Test:

*Test statistic:* LMF = 0.327062, with p-value =  $P(F(1, 14) > 0.327062) = 0.576$

*Alternative statistic:*  $TR^2 = 0.456565$ , with p-value =  $P(\text{Chi-square}(1) > 0.456565) = 0.499$

Observed R-squared (0.456565) and corresponding p-value (0.499) are greater than significance level (0.05) → *No Autocorrelation*

Right-tail probability = 0.05, complementary probability = 0.95 Critical value = 3.84146

Observed R-squared (0.456565) < Critical value = 3.84146 → *No Autocorrelation*

According to the results given above, no serial correlation detected

Using Durbin-Watson Test:

5% critical values for Durbin-Watson statistic,  $n = 20$ ,  $k = 4$   $dL = 0.8943$   $dU = 1.8283$

Durbin-Watson value estimated in Gretl for the model: 1.077746

$dL < 1.481073 < 4-dU \rightarrow 0.8943 < 1.481073 < 2.1717 \rightarrow$  *No Autocorrelation*

Testing for Multicollinearity

Correlation Matrix

	$y1t$	$x1t$	$x2t$	$x3t$	$x4t$	$x5t$
$y1t$	1					
$x1t$	-	1				
$x2t$	0.9260	-	1			
$x3t$	-0.9161	-	-0.8811	1		
$x4t$	-0.9277	-	-0.8551	0.9235	1	
$x5t$	-0.9147	-	-0.8540	0.9454	0.9938	1

Source: Gretl

Correlation Coefficients, using the observations 1992 - 2011

5% critical value (two-tailed) = 0.4438 for  $n = 20$

High multicollinearity is detected between the explanatory variables  $x3t$  and  $x4t$ . Hence why, it is expected to meet high standard error numbers. If the standard error numbers for the explanatory variables were quite high, the coefficients would not be unique and therefore would not precisely help explain the change in the dependent variable. This is why standard errors associated with coefficients are checked to be able to ignore the multicollinearity detected.



### Testing for Heteroscedasticity

Using Breusch-Pagan Test:

Explained sum of squares = 16.9895

Test statistic:  $LM = 8.494735$ , with p-value =  $P(\text{Chi-square}(4) > 8.494735) = 0.075047$

Chi-square (4) right-tail probability = 0.05 complementary probability = 0.95

Critical value = 9.48773

Null hypothesis ACCEPTED  $\rightarrow$  *heteroskedasticity NOT present*

Using White`s Test:

Unadjusted R-squared = 0.898474

Test statistic:  $TR^2 = 17.969482$ , with p-value =  $P(\text{Chi-square}(14) > 17.969482) = 0.208174$

Critical value = 23.6848 Null hypothesis ACCEPTED  $\rightarrow$  *heteroskedasticity NOT present*

### **The relationship between income inequality and growth**

#### **Assumptions**

The following econometric model wants to explain the economic relationship in regards to the influence of GNI and employment on quality of income distribution in Turkey. A different explanatory variable which is employment ratio to population for women is included into the model. Because, it is assumed that one of the main reasons for existing high income inequality numbers in Turkey is the gap in employment numbers between men and women. The data is provided by various sources such as TurkStat (Turkish Statistical Institute) and the World Bank. The model is initiated to answer the second research question which is “*What was the role of the growth in dissolving income inequality problem in Turkey over the period 1992-2011?*” Although this particular period is not the main focus of the research, it has been prolonged for the sake of modelling. In this context, the model will now analyse the relationship over the period 1992-2011 in Turkey and make a necessary comparison between 10 year periods as 1992-2001 and

2002-2011. In parallel with the first modelling, time vector is again included into the model in order to capture the changes in the variables that are explained by time.

### **Econometric Model**

$$\text{Power Function: } y_{1t} = \gamma_{11} \cdot x_{2t}^{\gamma_{12}} \cdot x_{3t}^{\gamma_{13}} \cdot \gamma_{14} x_{4t}$$

$$\ln y_{1t} = \ln \gamma_{11} + \gamma_{12} \ln x_{2t} + \gamma_{13} \ln x_{3t} + \gamma_{14} \ln x_{4t} + \gamma_{15} x_{5t} + \ln u_{1t}$$

In this model, there will be 1 endogenous variable:  $y_{1t}$  and 4 exogenous variables including unit and time vector:  $x_{1t}$ ,  $x_{2t}$ ,  $x_{3t}$ ,  $x_{4t}$

$y_{1t}$  – Gini coefficient (Quality of income distribution within society, %)

$x_{1t}$  - Unit vector

$x_{2t}$  - GNI per capita in PPP terms (constant 2005 international \$)

$x_{3t}$  - Employment Ratio to Population for women, (%) (proportion of a country's women population that is employed (aged 15 and over))

$x_{4t}$  - Time vector

### **Assumptions for the influence of each exogenous variable on the indigenous variable**

$\gamma_{12}$  - GNI per capita: It is assumed that with increasing GNI per capita, Gini coefficient might increase or decrease as referring to the Kuznetz U-shape curve that confirms both situation. ( $\gamma_{12} < 0$ )

$\gamma_{13}$  - Employment Ratio to Population for women, (%): it is assumed decreasing women employment ratio will have negative impact on the quality of income distribution. With decreasing employment ratio for women, Gini coefficient will increase as income gap between genders in society will widen. Because, women employment ratio towards men employment ratio in Turkey is relatively low. ( $\gamma_{13} < 0$ )

## Estimation of Parameters using OLSM in Gretl

Model 2: OLS, using observations 1992-2011 (T = 20)

Dependent variable:  $y_{1t}$  Omitted because all values were zero:  $x_{1t}$

	coefficient	std. error	t-ratio	p-value
const	2.47633	1.24069	1.996	0.0633 *
x2t	-0.310351	0.129723	-2.392	0.0294 **
x3t	-0.137199	0.0782844	-1.753	0.0988 *
x4t	-0.00305667	0.00334575	-0.9136	0.3745
Mean dependent var	-0.863441		S.D. dependent var	0.059080
Sum squared resid	0.012213		S.E. of regression	0.027629
R-squared	0.815838		Adjusted R-squared	0.781307
F(4, 15)	23.62665		P-value(F)	4.04e-06
Log-likelihood	45.63070		Akaike criterion	-83.26141
Schwarz criterion	-79.27848		Hannan-Quinn	-82.48390
rho	0.440028		Durbin-Watson	1.065233
Log-likelihood for POVERTY = 62.8995				

Source: Gretl

## Economic Verification of the model

$$\ln y_{1t} = 2.48 - 0.310 \ln x_{2t} - 0.137 \ln x_{3t} - 0.00306 \ln x_{4t} + \ln u_{1t}$$

(1.24) (0.130) (0.0783) (0.00335)

T = 20, R-squared = 0.816  
(standard errors in parentheses)

*The relationship between two economic factors that are income inequality and growth is explained by following:*

$$\gamma_{12} = -0.310$$

Increasing national income is not necessarily distributed equally within a society, especially in developing countries. Usually, rich people gets richer and poor people gets poorer and the gap between income groups continue to widen. However, it is presumed that this situation might work vice versa in some cases. The negative parameter of  $x_{2t}$  is what is expected to meet due to declining number of Gini coefficient in Turkey. Therefore, the variable is considered as consistent with the theory and the model itself. As shown above, increasing GNI per capita numbers have positive impact on the quality of income

distribution. This means that if an economy grows for any reason, it will contribute to increase the quality of income distribution as Gini coefficient will decrease, will get closer to zero (0). This contribution is indicated by the parameter. According to the parameter, if any reason the economy grows and GNI per capita increases by 1 percentage, Gini coefficient will decrease by 0.310 percentage. As the number is between -1 and 1, it is considered to be inelastic to changes. Although growth would help improve the quality of income distribution, it cannot be said that Gini coefficient is sensitive to changes in growth.

*The relationship between two economic factors that are income inequality and women employment is explained by following:*

$$\gamma_{13} = 0.137$$

By the function above, the relationship between Gini coefficient and women employment ratio is examined. As it is seen, estimated parameter is negative for the variable  $x_{3t}$ . The negative parameter indicates an inverse relationship between the factors. As explained previously, this is considered to be correct for Turkey due to the gap between women and men employment. In other words, if employment ratio for women increases, the gap in terms of employment will decrease. Thus it will help increase the quality of income distribution in the society because the Gini coefficient will decrease. As a result, if any reason employment ratio for women decreases by one percentage, Gini coefficient will increase by 0.137 percentage. Declining women employment ratio in Turkey confirms the results. However, the estimated parameter again indicates inelasticity between the factors. So, Gini coefficient is not very sensitive in this model to the changes in employment ratio for women.

### **Statistical – Econometric Verification**

#### Testing for Normality

Test for null hypothesis of normal distribution:

Chi-square (2) = 1.082 with p-value 0.58209

Critical value = 5.99146 > P-value 0.58209 > 0.05 (Significance level) → *residuals in this model are normality distributed*

### Testing for Autocorrelation

Using Breusch-Godfrey Test:

Unadjusted R-squared = 0.246606

Test statistic: LMF = 2.940841, with p-value =  $P(F(1, 15) > 2.940841) = 0.0761$

Alternative statistic:  $TR^2 = 3.504270$ , with p-value =  $P(\text{Chi-square}(1) > 3.504270) = 0.0572$

Critical value = 3.84146 right-tail probability = 0.05 complementary probability = 0.95

Observed R-squared (3.504270) and corresponding p-value (0.0572) are greater than significance level (0.05)  $\rightarrow$  *No Autocorrelation*

Observed R-squared (3.504270) < Critical value = 3.84146  $\rightarrow$  *No Autocorrelation*

According to the results given above, no serial correlation detected.

Using Durbin-Watson Test:

5% critical values for Durbin-Watson statistic,  $n = 20, k = 3$   $dL = 0.9976$   $dU = 1.6763$

Durbin-Watson value estimated in Gretl for the model: 1.065233

$dL < 1.065233 < 4 - dU \rightarrow 0.9976 < 1.065233 < 2.3237 \rightarrow$  *No Autocorrelation*

### Testing for Multicollinearity

	$y1t$	$x1t$	$x2t$	$x3t$	$x4t$
$y1t$	1				
$x1t$	-	1			
$x2t$	-0.8811	-	1		
$x3t$	0.5340	-	-0.7384	1	
$x4t$	-0.8540	-	0.9454	-0.7387	1

Source: Gretl

There is no high multicollinearity detected.

### Testing for Heteroscedasticity

Using Breusch-Pagan Test:

Explained sum of squares = 2.89287

Test statistic: LM = 1.446435, with p-value =  $P(\text{Chi-square}(3) > 1.446435) = 0.694687$

Right-tail probability = 0.05 complementary probability = 0.95 Critical value = 7.81473

Null hypothesis ACCEPTED  $\rightarrow$  *heteroskedasticity NOT present*

Using White's Test:

Unadjusted R-squared = 0.548280

Test statistic:  $TR^2 = 10.965602$ , with p-value =  $P(\text{Chi-square}(9) > 10.965602) = 0.278074$

Right-tail probability = 0.05 complementary probability = 0.95 Critical value = 23.6848

Null hypothesis ACCEPTED  $\rightarrow$  *heteroskedasticity NOT present*

### **4.2.3 Comparison of the results (1992-2001 versus 2002-2011)**

#### **The relationship between poverty-growth-income inequality-education**

Referring to the first model established as a multi factor regression, the results will be compared concerning 1992-2001 versus 2002-2011 using the Chow Test. Because, the research focuses on the particular period 2002-2011, the year 2002 is defined as the observation at which the sample is split.

Null Hypothesis: There is no structural break between the periods

Alternative Hypothesis: There is a structural break between the periods

Referring to the appendix 9, the results for Chow test for structural break at observation 2002 is as follows; Test statistic:  $F(5, 10) = 63.7363$  with p-value =  $P(F(5, 10) > 63.7363) = 2.94249e-007$

As the p-value is very lower than significance level (0.05), null hypothesis is rejected. That means there is a structural break between the analysed periods as the response of the explanatory variables to the explained variable was different after 2002 than it was before.

According to the appendix 9, it is realised that the parameters for the explanatory variables differ slightly after the break point which is called “splitdum”. Based on the results, it is assumed that growth ( $x_{3t}$ ) reflected on poverty ( $y_{1t}$ ) with a slightly higher coefficient over the period 1992-2001. On the contrary, income inequality ( $x_{2t}$ ) influenced poverty with higher coefficient in the second period over 2002-2011. There are actually no significant changes in the responses of the variables on poverty over the periods. However, the coefficient of  $x_{4t}$  as an explanatory variable indicates a significant change. As it highly increased with its coefficient in the period 2002-2011, it is assumed that it is the reason causes structural break between the analysed periods.

### **The relationship between income inequality-growth-women employment**

Null Hypothesis: There is no structural break between the periods

Alternative Hypothesis: There is a structural break between the periods

Referring to the appendix 10, the results for Chow test for structural break at observation 2002 is as follows; Test statistic  $F(4, 12) = 1.43661$  with p-value 0.2813

As the p-value is greater than significance level (0.05), null hypothesis cannot be rejected. Therefore, it is concluded that there is no structural break over the periods. This means, the parameters are stable in time and the response of the explanatory variables on the explained variable remains similar.

## **4.3 Development Policies and Reforms in Turkey regarding Poverty and Income Inequality**

### **Social Risk Mitigation Project:**

The main purpose of this project is to develop effective policies for fighting against poverty and also strengthen the instructional capacity of public institutions that implement such policies. The project includes several components as follows; Quick Help, Conditional Cash Transfer, Local Initiatives and Institutional Developments. Within the scope of the “Conditional Cash Transfer” component, the families who are not able to provide their children with necessary education and regular health services are financially supported. Besides, it is aimed to set up a regular cash social assistance system through the

transfers. On the other side, the local initiatives intend to make Turkish citizens more productive and thus they can earn sufficient amount of money for surviving.

Table 10 Distribution of the Conditional Cash Transfer by Regions in 2005

Region	Number of families applied	Number of families benefited	Number of beneficiaries received educational allowances	Number of beneficiaries received health allowances
Mediterranean	123,716	67,510	120,987	54,845
East Anatolia	208,968	158,079	262,677	197,899
Aegean	85,277	36,335	63,530	23,953
South-eastern Anatolia	303,315	249,536	483,220	300,403
Central Anatolia	131,156	64,111	114,562	51,269
Black Sea	163,624	82,807	144,809	76,530
Marmara	101,091	39,526	76,467	26,797
Total	1,117,147	697,904	1,266,252	731,696

Source: State Planning Organisation, 2007<sup>26</sup>

Detailed context of the Conditional Cash Transfer is as follows;

- Educational Allowances: 22 TL for primary school girl, 18 TL for primary school boy. For secondary education, this number increased to 28 TL and 39 TL, respectively. The amount is subject to increase yearly.
- Health Allowances: Support for maternal and child health, support for 0-6 age group and support for pregnant women.

According to the table 10, more than one million people applied for conditional cash transfer whereas 700,000 people are accepted and deserved to benefit from the assistance. Thanks to conditional cash transfer assistance, approximately 1,300,000 people received educational allowances and 730,000 received health allowances. Considering the distribution of the transfer by regions, south-eastern received the most as the poorest region and Marmara received the least as the richest region.

<sup>26</sup> The Republic of Turkey Prime Ministry, State Planning Organisation, 9.Development Plan (2007-2013)



## Micro-credit Applications

The first implementation of micro-credit application in Turkey has been realized under the name “Maya Micro Unit”. The association was established in 2002 within the scope of the project “Fighting against Poverty”. The purpose of the economic unit is to provide women with micro-credit in order to support women in society. It was initiated with two pilot cities which are Istanbul and Kocaeli. The association has provided credit at 403.000 TL in total to 356 women by statistics of the year 2003. Average credit amount is 450 TL. Another application of micro-credit assistance in Turkey was initiated by the support of a bank from Bangladesh called Grameen Bank. A city called Diyarbakir which is situated in South-Eastern region of Turkey was chosen for this project. Lastly, “the Foundation of Development of Turkey” provides micro-credit in South-Eastern region to people who intend to set up business. The credits vary between 300\$ - 3000\$ and have long-term payment options.

## Social Security

Social security system in Turkey is mainly based on social insurance; however social services and social assistances constitute a small part of the system. Because the poor part of society is not able to afford to be covered by a social insurance system, they are supported by social services and assistance.

Table 11 Population covered by Social Insurance Programs (Number of People)

Foundation	2001	2002	2003	2004	2005
Social security institution (SSK)	31,089	33,089	35,065	37,626	41,167
Social Security Institution of Tradesmen and Artisans and Other Self Employees (Bag-Kur)	15,282	15,548	15,582	16,234	15,990
Pension Fund	8,572	9,038	9,238	9,270	9,271
Private Funds	323	324	296	301	306
Total	55,266	57,999	60,481	63,432	66,734
Insured Population Ratio (%)	80.3	83.1	85.6	88.6	92.0

Source: State Planning Organisation, 2007<sup>27</sup>

<sup>27</sup> The Republic of Turkey Prime Ministry, State Planning Organisation, 9.Development Plan (2007-2013)

As it can be seen by the table 11, the population covered by social insurance programs is increasing, year by year. The percentage of the population that is covered by social insurance programs increased 92% by 2005 from 80.3% in 2001.

However, the system diverged over time from providing effective and fair social security function to needy. There are five different insurance regimes within the scope of Turkish Social Security System. Each regime has different criteria. One of the major problems of the system in fact is that it does not cover all employed people. According to the labour force survey done by TurkStat in 2005, only 11.05 million people out of 22 million were covered by a social insurance system. This indicates that nearly 50% of employed people remained uncovered by a social insurance system. The main reason explains this situation is lack of information and control.

Table 12 Social Security Funds Health Expenditure, 2004-2005 (Million TL)

Foundation	2004	2005
Social security institution (SSK)	6,206	7,457
Social Security Institution of Tradesmen and Artisans and Other Self Employees (Bag-Kur)	3,719	3,626
Pension Fund	2,796	2,917
Health Expenditure from Consolidated Budget	2,462	2,196
Green Card	1,062	1,809
>General Budget	614	-
>Social Assistance and Solidarity General Directorate	448	-
Total	16,245	18,005
Share of GNI	3,8	3,7

Source: State Planning Organisation, 2007<sup>28</sup>

Expenditures on health services, for those who are registered by any social security system mentioned in the table 12 are also covered by state budget. According to the statistics in the year 2005, total expenditure for health services constitutes 3.7% of GNI.

### **Unemployment Insurance Fund**

The fund was established jointly by contributions of workers, employers and the state and has been operating since the year 2000. Within the scope of unemployment insurance fund,

<sup>28</sup> The Republic of Turkey Prime Ministry, State Planning Organisation, 9.Development Plan (2007-2013)

another fund called “Wage Guarantee” was established in order to meet the worker`s wage claims for last three months. This fund has become obligatory in 2006 and now supports the workers who lose their jobs against their own will. The fund paid approximately 27 million TL in 2006 to 97,000 people. In addition, 635,000 people applied for unemployment benefit, however 570,000 unemployed who have no insurance were entitled to receive payments approximately at 700 million TL.

### **Social Services and Assistances**

Social assistance includes; free medical health care and assistance, family allowances, elderly and disabled pension, and unemployment benefits. Social assistance can have a one-off basis as well as a continuum upon particular situation.

In Turkey, social assistance programs are conducted by following institutions;

- i. Republic of Turkey Pension Fund
- ii. Ministry of Health (Green Card)
- iii. General Directorate of Foundations
- iv. Social Services and Child Protection Agency (in kind and cash benefits)
- v. Social Assistance and Solidarity General Directorate
- vi. Municipalities
- vii. Provincial Special Administrations

The amount of total public social assistance excluding the municipalities and provincial special administrations was 807 million in 2001. Subsequently, it increased to 2,839 million TL in 2004 and 4,174 million TL in 2005. In this regards, total social benefits to GDP ratio rose to 0.86% in 2004 and to 1.05% in 2005 from 0.45% in 2001.

“Republic of Turkey Pension Fund” provides monthly payments to those who are at age of 65 and/or older and needy. In this context, 664.5 million TL as age pension, 88.1 million TL as incapacity of earning one`s living and 251.2 million TL to 245,000 people as disability allowance were provided by the Fund. The monthly payment which was 24.48 TL in 2002 tripled in 2005 by a new law for those are disabled. Apparently, this amount still seems to be insufficient for surviving.

Talking about “Social Services and Child Protection Agency”, it paid around 15 million TL benefits in-cash by the year 2005. Monthly salary which was 76.19 TL in 2004 was increased to 158.08 TL in 2005. As of January 1<sup>st</sup>, 2005 it is decided by a new law that outpatient treatment and medication costs of “Green Card holders” will be reimbursed by the “Ministry of Health”. In this context, 499.6 million TL was transferred from the budget of the Ministry in 2004 and approximately 6 million people benefited from it. In 2005, the amount of transfer was dramatically decreased to 141 million TL so the number of people benefitted from it decreased to 1,993 million, as well.

“Social Assistance and Solidarity General Directorate” provides study grants to those who are not able to progress their educational life on their own. Since the year 1989, scholarships and/or education loans have been provided to higher education students whose families are in low-income group. This assistance has been conducted by “Higher Education Credit and Hostels Institution” since the year 2003. The scholarship and the education loan which was 45TL per month in 2001-2002 academic year was increased to 260TL in 2011-2012. Besides, projects which are aimed at generating income and employment are supported by “Social Assistance and Solidarity General Directorate”. In this context, social support projects in rural areas, small-scale income generating projects, employment-oriented skills trainings, temporary employment for community benefit, and some other projects in various fields are conducted and supported. It is seen that all kind of social assistance and services provided do not reach all needy people and therefore do not meet the real need on an adequate level. The capacity and the accessibility of social services need to be improved in order to prevent social exclusion in society. (State Planning Organization, 2000 & 2007)<sup>29</sup>

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<sup>29</sup> State Planning Organisation, 8. Five Year Development Plan, 2000. And 9. Five Year Development Plan, 2007

#### **4.4 Recommendations for fighting against poverty and income inequality**

- It is not possible to fight against poverty without knowing what part of society in what extent is poor. Therefore, primarily the target population should be determined. In this context the research done by Turkstat since 2002 is really important and valuable, however not sufficient. This kind of research should be developed further and ultimately they shall be conducted regularly on city, village and neighbourhood level.
- Looking at the recent GDP growth numbers, Turkey is considered to be among the fastest growing economies. However, because of injustices in the distribution of income, not every segment of society can benefit from this economic growth equally. The fact that growth is necessary in dissolving poverty problem, however it is not sufficient alone, should be admitted. Policies that can work as a balancing function in improving income inequality as well as in alleviating poverty should be followed.
- It seems that another problem in fighting against poverty in Turkey is dispersed structure and inadequate level of organisation. Affiliates of the central administration, local governments and non-governmental organisations work uncooperatively most of the time. It is even difficult to say that the affiliates of the central administration have an efficient structure inside the organisation. The most prominent example of it is the following two affiliates; General Directorate of Social Assistance and Solidarity Fund which controls a huge budget at 700 million USD approximately according to 2010 statistics and it is organised under the Prime Ministry, on the other side Ministry of Labour and Social Security which conducts main activities in regards to social security. Therefore, the organisation of the public administration in fighting against poverty and income inequality should be integrated. In addition, all non-governmental organisations should gather under a federative organisation and work jointly. There is no doubt such an improvement would be very much beneficial for the progress.
- An institutional mechanism for monitoring the cash and in-kind assistance that are provided by all kind of organisations should be established. Only in this way, the real progress can be tracked.

- The largest part of poor people in Turkey is the ones who are living in rural areas and participate in agricultural activities for living. In this context, first of all minimum income level should be determined in accordance with the goal of overcoming poverty. Second of all, necessary financial and technical support to replace traditional farming techniques by modern ones should be provided.
- The importance of employment in fighting against poverty and income inequality should not be overlooked. However, quality of jobs should be significantly considered while trying to increase employment in society. The principle of decent work which is defined by ILO should be targeted for all newly created jobs. Thus, it can be achieved to long-term employment and permanent solutions. A quick gateway from agriculture in Turkey results in a shift of labour force. In this context, the labour force that lacks sufficient professional knowledge and equipment but want to enter the labour market is shifted to the informal sector. The biggest obstacle in reaching the decent work is informal employment. Increasing number of labour force in informal sector recently caused low productivity, low wages and adverse working conditions. On the other hand, recent acceleration of the industrialisation process and the industrial output that shows a structural change towards high-value added sectors can create an employment with high productivity. This approach should be taken into consideration as an important social goal in dissolving poverty and income inequality in Turkey.
- The policies concerning employment problem should be developed for each individual in society. However, the policies that give priority to women employment would increase the chance of success in poverty reduction as well income inequality improvement. As for the reasons of this, majority of people who are either unemployed or employed with a low-skilled, insecure and non-unionised job in Turkey are women. Therefore, employment policies for women are more likely to reduce poverty and income inequality. Another reason put forward in this regard is that increasing income level of women will contribute to the welfare of a family.

- In Turkey, regional differences matter very much. Some particular parts such as South Eastern and East Anatolia remain relatively poor in comparison with other regions. The regional differences tend to trigger the internal migration and this way the poor move to the big cities. Therefore, it must be focused on policies which can solve regional imbalances.

## 5 Conclusion

Based on review of literature, it has been primarily found and pointed out that development does not necessarily mean growth in all cases. Although growth is conventionally used as synonym with growth in many cases, history offers a number of evidences which prove the opposite. Undeniably, growth and development are highly likely correlated to each other and in long-term economic growth can stimulate development in any given society. However, an economy which is growing should be managed wisely in order to maintain it in a sustainable manner. In this context, it has been stressed that a sustainable economic growth is required to be penetrated into society as a whole and benefit everyone in an equal way. Therefore, poverty and income inequality have been examined comprehensively. In this regards, it has been found that income inequality and poverty in the world, particularly in developing economies continue to remain as a chronic disease. When it has been looked from a closer and broader perspective as why poverty and income inequality remains unchanged in some developing countries, despite their high economic growth rates, it has been realised that the fundamental reason is relatively low quality of income distribution. On the other hand, as statistics proved emerging developing countries in general considerably and consistently developing in terms of living standards along with economic growth process. As the results have shown, one of these countries with its noteworthy economic performance is Turkey.

The research that has analysed the relationship of economic development and economic growth in Turkey has been based on three main questions. The first question intended to response the following question “**how growth helped reduce the poverty in Turkey over the period 2002-2011?**” Taking into account the different type of poverty lines, it has been realised that poverty as a social matter in Turkey has been following a continuous

downward trend. This means Turkey has been apparently improving on the reduction of poverty numbers. According to results provided by one-factor as well as multi-factor regression, it has been found that there is a strong correlation between poverty and growth in Turkey. This means that poverty level has decreased as long as Turkish economy has been growing. Furthermore and more surprisingly, it has been confirmed that schooling ratio as a representative of education has the highest impact amongst the variables on poverty reduction. Besides growth and schooling ratio, it is examined that poverty is relatively sensitive also to changes on income inequality. It has been approved that if Turkey shows positive performance on income inequality, like Gini coefficient decreases, poverty level keeps decreasing at much higher percentages. Essentially, all the parameters estimated for the variables showed that they are jointly contributing to decline poverty level with high elasticity degree. All in all, the results show that Turkey can dissolve poverty problem in near future if it continues to grow at high rates.

The second question followed by asking “**What was the role of growth in dissolving income inequality problem in Turkey?**” Although decreasing Gini coefficient in long-term is prosperous, the results from the second model does not reveal a strong association between income inequality and growth. Income inequality is relatively insensitive to growing economy. This means, increasing national income is still being distributed unfairly or in other words, economic growth does not reflect on income inequality problem, notably. Therefore, it cannot be said that growth played a significant role in solving the income inequality. But, as Gini coefficient that has been decreasing in long-run confirms the opposite, it has been figured out that current development policies play an important role in dissolving of the problem. Turkey has implemented many solid reforms in several social areas such as social security programs. However, the economy should continue to progress on its reforms and policies by a more unified system. The other variable which is represented by employment ratio for women, with its results, drew attention to the considerable difference between women and men engagement in society. It has been proved that if women employment ratio in Turkey increases, income inequality will decline as average income of both gender will close up to each other. However, women employment ratio has been decreased in Turkey in long-run, therefore Turkey should work on increasing the women engagement in society. Thus, it can partially solve income inequality problem in future.



The third and the last question investigated “What pattern economic growth-poverty-income inequality triangle followed in the period 2002-2011 versus 1992-2001? Based on the results of the Chow test, it has been found that there was no structural break, using the year 2002 as determinant, in growth-income inequality relation. This means, the variables have been stable in time and they have responded to the investigated phenomena in the same manner in long-run. However, the results indicated that there was a structural break in the relationship between growth and poverty relation. It has been found out that the break was caused by the variable “schooling ratio”. The variable has shown substantially different response to poverty problem. While it had almost no influence on poverty changes in the period 1992-2001, its parameter significantly increased and it influenced on poverty very considerably in the period 2002-2011.

Analysing development progress of Turkey by “Human Development Index”, it has been concluded that Turkey has been accelerating its position in the world rank as continuously improving in three main areas; education, health and income. Therefore, its HDI value has been increasing in long-run. However, the results prove that Turkey has shown better performance after the year 2002. On the other hand, it has still comparatively worse off according to schooling related indicators in comparison with the economies with lower GNI per capita. In the same context, Turkey has been compared with the OECD average by other indicators measuring living standards. It appeared that Turkey is still worse in many social aspects such as security, employment and work-life balance. Certainly, it does not mean Turkey has not been developing. But, it means that Turkey needs to work harder on its development progress to be able to catch up with the other member countries constituted by developing as well as developed countries.

The thesis has contribution to both theoretical and practical purposes. The literature has been enriched by approaching distinct views for a topic that highly matters to the entire world economy. In this context, fundamental economic terms such as development and growth as well as poverty and income inequality have been explored. Additionally, several up-to date reports of prestigious organisations such as the World Bank, the OECD and the United Nations have been reviewed for future researches.

This thesis found out that the surveys that are done for research of poverty and income inequality in Turkey is irregular and limited. However, it has been realised that Turkish

Statistical Institute which is a state organisation has been conducting research on a more regular basis since the year 2002. The practical part of thesis has collected the necessary data by different sources such as TurkStat, the World Bank, the OECD and some other relevant ministries of Turkey. Thus, it provides complete and reliable data from various resources for the use of future research. Its analysis can be also used to lead on-going discussions concerning the current development and growth performance that Turkey has been showing. Lastly, it has examined a very important topic for Turkey which has not been studied as comprehensive as by this thesis.

However, the research can be considered as limited due to the period it has analysed. Longer time-series would give more concrete results. As explained previously, this is caused by the limited accessibility of data to public. Furthermore, the variables in the models that are explaining poverty and income inequality can be considered as restricted. Therefore, it can be taken into account as points which can be improved in the concept of future research.

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## List of Supplements

Supplement 1: Data Set 1 .....	i
Supplement 2: Data Set 1 (Variables in logarithmic values).....	ii
Supplement 3: Data Set 2 .....	ii
Supplement 4: Data Set 2 (Variables in logarithmic values).....	iii
Supplement 5: Normality Test 1 .....	iii
Supplement 6: Normality Test 2.....	iv
Supplement 7: Summary Statistics for the Variables Model 1 .....	iv
Supplement 8: Summary Statistics for the Variables Model 2.....	v
Supplement 9: Augmented regression for Chow test OLS, (Model 1).....	vi
Supplement 10 Augmented regression for Chow test OLS, (Model 2).....	vii

## 7 Supplements

### Supplement 1: Data Set 1

$Y_{1t}$	$X_{1t}$	$X_{2t}$	$X_{3t}$	$X_{4t}$	$X_{5t}$
45.50	1	0.462	8269	40.20	1
43.20	1	0.445	8754	41.18	2
41.35	1	0.428	8208	42.26	3
38.30	1	0.430	8711	43.09	4
36.00	1	0.434	9205	43.70	5
34.70	1	0.446	9745	44.29	6
33.40	1	0.431	9815	46.30	7
32.10	1	0.435	9341	48.51	8
31.80	1	0.442	9828	50.50	9
31.50	1	0.448	9136	51.16	10
30.30	1	0.427	9566	52.07	11
23.75	1	0.434	9934	52.96	12
20.89	1	0.427	10719	53.71	13
16.36	1	0.426	11465	55.09	14
13.33	1	0.403	12092	55.59	15
8.41	1	0.387	12488	59.00	16
6.83	1	0.386	12406	60.90	17
4.35	1	0.394	11655	64.51	18
3.66	1	0.380	12564	65.76	19
2.55	1	0.383	13468	66.69	20

Source: TurkSTAT, OECD and World Bank

Supplement 2: Data Set 1 (Variables in logarithmic values)

$Y_{1t}$	$X_{1t}$	$X_{2t}$	$X_{3t}$	$X_{4t}$
3.817712	0	-0.7721904	9.020269	3.693867
3.765840	0	-0.8096810	9.077266	3.717953
3.722072	0	-0.8486321	9.012865	3.743841
3.645450	0	-0.8439701	9.072342	3.763291
3.583519	0	-0.8347107	9.127502	3.777348
3.546740	0	-0.8074363	9.184510	3.790759
3.508556	0	-0.8416472	9.191667	3.835142
3.468856	0	-0.8324092	9.142169	3.881770
3.459466	0	-0.8164454	9.192991	3.921973
3.449988	0	-0.8029620	9.119978	3.934958
3.411148	0	-0.8509713	9.165970	3.952589
3.167583	0	-0.8347107	9.203718	3.969537
3.039271	0	-0.8509713	9.279773	3.983599
2.794839	0	-0.8533159	9.347054	4.008968
2.590017	0	-0.9088187	9.400299	4.018003
2.129421	0	-0.9493306	9.432523	4.077537
1.921325	0	-0.9519179	9.425936	4.109233
1.470176	0	-0.9314044	9.363491	4.166820
1.297463	0	-0.9675840	9.438591	4.186012
0.936093	0	-0.9597203	9.508072	4.200055

Supplement 3: Data Set 2

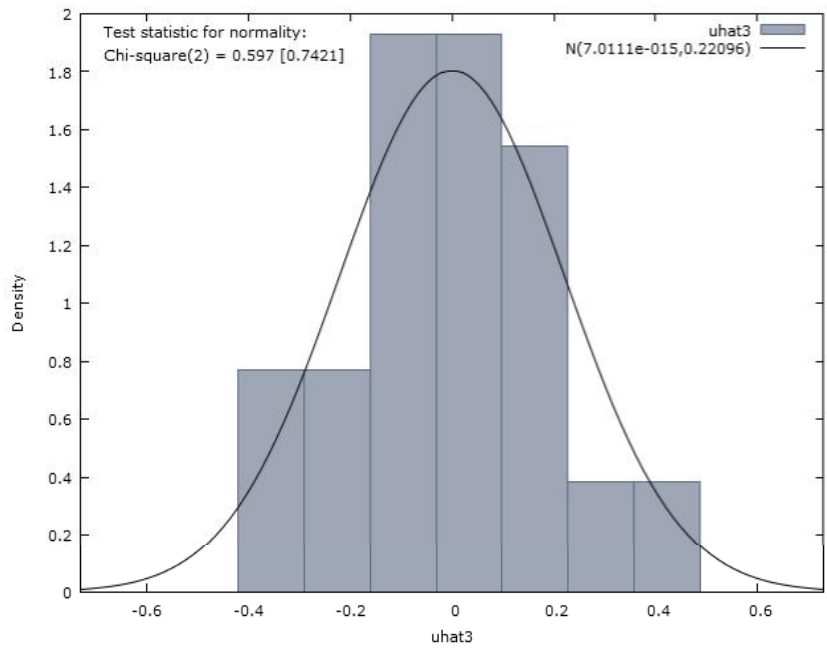
$Y_{1t}$	$X_{1t}$	$X_{2t}$	$X_{3t}$	$X_{4t}$
0.462	1	8269	31	1
0.445	1	8754	25	2
0.428	1	8208	29	3
0.430	1	8711	29	4
0.434	1	9205	29	5
0.446	1	9745	27	6
0.431	1	9815	27	7
0.435	1	9341	28	8
0.442	1	9828	25	9
0.448	1	9136	25	10
0.427	1	9566	25	11
0.434	1	9934	24	12
0.427	1	10719	21	13
0.426	1	11465	21	14
0.403	1	12092	21	15
0.387	1	12488	21	16
0.386	1	12406	22	17
0.394	1	11655	23	18
0.380	1	12564	25	19
0.383	1	13468	25	20

Source: TurkSTAT and World Bank

Supplement 4: Data Set 2 (Variables in logarithmic values)

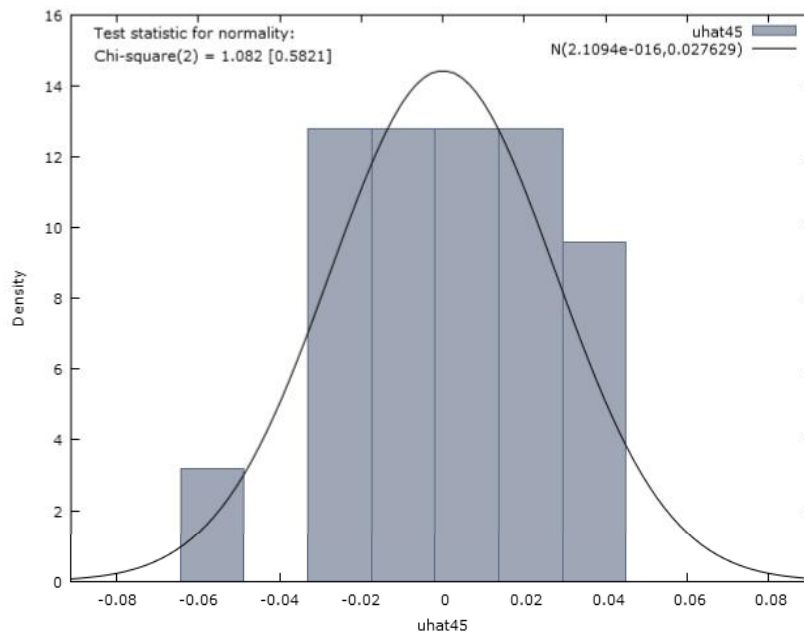
$Y_{1t}$	$X_{1t}$	$X_{2t}$	$X_{3t}$
-0.7721904	0	9.020269	3.433987
-0.8096810	0	9.077266	3.218876
-0.8486321	0	9.012865	3.367296
-0.8439701	0	9.072342	3.367296
-0.8347107	0	9.127502	3.367296
-0.8074363	0	9.184510	3.295837
-0.8416472	0	9.191667	3.295837
-0.8324092	0	9.142169	3.332205
-0.8164454	0	9.192991	3.218876
-0.8029620	0	9.119978	3.218876
-0.8509713	0	9.165970	3.218876
-0.8347107	0	9.203718	3.178054
-0.8509713	0	9.279773	3.044522
-0.8533159	0	9.347054	3.044522
-0.9088187	0	9.400299	3.044522
-0.9493306	0	9.432523	3.044522
-0.9519179	0	9.425936	3.091042
-0.9314044	0	9.363491	3.135494
-0.9675840	0	9.438591	3.218876
-0.9597203	0	9.508072	3.218876

Supplement 5: Normality Test 1



Source: Gretl

### Supplement 6: Normality Test 2



Source: Gretl

### Supplement 7: Summary Statistics for the Variables Model 1

Variables	Mean	Median	Minimum	Maximum	Standard Deviation	C.V	Skewness	Ex. kurtosis
$y_{1t}$ - Poverty	2.9363	3.4306	0.93609	3.8177	0.90241	0.30733	-1.0167	-0.34743
$x_{2t}$ - Gini coefficient	0.86344	0.84630	-0.96758	-0.77219	0.059080	0.068424	-0.58561	-0.93837
$x_{3t}$ - GNI per capita	9.2353	9.1923	9.0129	9.5081	0.15252	0.016515	0.27153	-1.1999
$x_{4t}$ - Net Schooling Ratio	3.9367	3.9438	3.6939	4.2001	0.15957	0.040533	0.12551	-1.1109

Source: Gretl

Supplement 8: Summary Statistics for the Variables Model 2

Variables	Mean	Median	Minimum	Maximum	Standard Deviation	C.V	Skewness	Ex. kurtosis
$y_{1t}$ – Gini coefficient	0.86344	0.84630	-0.96758	-0.77219	0.059080	0.068424	-0.58561	0.93837
$x_{2t}$ - GNI per capita	9.2353	9.1923	9.0129	9.5081	0.15252	0.016515	0.27153	1.1999
$x_{3t}$ - Women Employment ratio	3.2178	3.2189	3.0445	3.4340	0.12217	0.037967	0.026045	1.0500

Source: Gretl

Supplement 9: Augmented regression for Chow test OLS, (Model 1)

Using observations 1992-2011 (T = 20) Dependent variable: y1t				
	coefficient	std. error	t-ratio	p-value
const	4.49766	8.01910	0.5609	0.5872
x2t	0.524497	0.692972	0.7569	0.4666
x3t	-0.298366	0.439472	-0.6789	0.5126
x4t	0.672095	1.34315	0.5004	0.6276
x5t	-0.0561667	0.0419652	-1.338	0.2104
splitdum	26.0307	18.3508	1.419	0.1864
sd_x2t	-1.00366	1.17402	-0.8549	0.4126
sd_x3t	-0.0621279	1.05239	-0.05904	0.9541
sd_x4t	-6.52038	2.77338	-2.351	0.0406 **
sd_x5t	-0.0423713	0.104385	-0.4059	0.6934
Mean dependent var	2.936277	S.D. dependent var	0.902407	
Sum squared resid	0.022282	S.E. of regression	0.047204	
R-squared	0.998560	Adjusted R-squared	0.997264	
F(9, 10)	770.4266	P-value(F)	5.27e-13	
Log-likelihood	39.61821	Akaike criterion	-59.23643	
Schwarz criterion	-49.27911	Hannan-Quinn	-57.29265	
rho	-0.355321	Durbin-Watson	2.075538	

Source: Gretl

Supplement 10: Augmented regression for Chow test OLS, (Model 2)

Using observations 1992-2011 (T = 20) Dependent variable: y1t				
	coefficient	std. error	t-ratio	p-value
const	-0.275428	2.00467	-0.1374	0.8930
x2t	-0.0312315	0.204618	-0.1526	0.8812
x3t	-0.0757324	0.146090	-0.5184	0.6136
x4t	-0.00184250	0.00466147	-0.3953	0.6996
splitdum	1.80609	3.47111	0.5203	0.6123
sd_x2t	-0.192347	0.344036	-0.5591	0.5864
sd_x3t	0.00682708	0.220226	0.03100	0.9758
sd_x4t	-0.00650309	0.0111675	-0.5823	0.5711
Mean dependent var	-0.863441	S.D. dependent var	0.059080	
Sum squared resid	0.008259	S.E. of regression	0.026234	
R-squared	0.875471	Adjusted R-squared	0.802829	
F(7, 12)	12.05187	P-value(F)	0.000140	
Log-likelihood	49.54348	Akaike criterion	-83.08696	
Schwarz criterion	-75.12110	Hannan-Quinn	-81.53194	
rho	0.129839	Durbin-Watson	1.422237	

Source: Gretl