MEASURING INCLUSIVE GROWTH IN EGYPT OVER A DECADE

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Abstract

Despite the many papers examining inclusive growth in relation to poverty, inequality and growth, studies measuring inclusive growth have remained relatively limited. Looking at inequality of outcome, this paper is the first published paper that measures inclusive growth in Egypt, adopting a new approach based on the social opportunity function that is analogous to the idea of a social welfare function. The paper uses the last five rounds of the Household Income, Expenditure and Consumption Surveys (HIECSs) covering the period 2004/05-2015. The paper concludes that Egyptians suffered from no welfare growth and no equity, especially during the period 2008/09-2010/11; i.e. there was no inclusive growth. Afterwards, although there was no welfare growth, equity distribution improved drastically to outweigh the negative welfare growth, resulting in high inclusive growth.

نبذة

على الرغم من كثرة الدراسات عن النمو الشامل وعلاقته بالفقر وعدم المساواة والنمو ، فقد ظلت الدراسات التي تقيس النمو الشامل محدودة نسبياً. وبالنظر إلى عدم المساواة في النتائج ، تعد هذه الورقة أول ورقة منشورة تقيس النمو الشامل في مصر، متبعة منهجية جديدة تعتمد على دالة الفرص الاجتماعية التي تشبه فكرة دالة الرعاية الاجتماعية. وتستخدم الورقة آخر خمس دورات من بحث الدخل والإنفاق والاستهلاك، والتي تغطي الفترة ٢٠٠٤/٢٠٠٥ـ ٢٠١٥. وتخلص الورقة إلى أن المصريين عانوا من عدم نمو في الرفاهية ومن عدم العدالة خلال الفترة ٢٠٠٨/٢٠٠٩ـ ٢٠١٠/٢٠١١؛ أي لم يكن هناك نمو شامل. وبعد ذلك، وعلى الرغم من عدم وجود نمو للرفاهية ، فقد تحسنت عدالة التوزيع بشكل كبير فاق النمو السلبي للرفاهية ، مما أدى إلى نمو شامل مرتفع.

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I. Introduction

A recent flurry of media and political attention toward rising inequality in Egypt as well as across the globe has generated an increasing interest on inclusive growth. Almost all international and regional institutions: e.g. the World Bank (WB), the International Monetary Fund (IMF), G20, European Commission and the UK's Department for International Development have put inclusive growth at the center of their work plans and strategies. There are many good reasons for the need to foster inclusive growth economic justice in economic institutions and economic policies, not just for humanitarian or ethical motives (fairness and kindness) but also for economic and political need. It is inclusiveness that can ensure growth sustainability and social mobility; hence fostering political stability, and social cohesion and peace (ADB 2007a and b, and ADB 2011).

The concept of inclusive growth does not have yet one clear definition. Habito (2009) defines inclusive growth as growth leading to significant poverty reduction. A more restrictive yet sufficiently broad definition of inclusive growth has been provided by Klasen (2010) who says that it is growth which benefits "all stripes of society, including the poor, the near-poor, middle income groups, and even the rich". Grinspun (2004) provides a narrower but tighter definition of inclusive growth implying that for growth to be inclusive it should benefit those with low incomes more than those with high incomes (see Rauniyar and Kanbur, 2010). This paper follows the definition of the World Bank (2009), according to which inclusive growth is defined as economic growth that benefit all but benefit more poor disadvantaged people. According to this definition, inclusive growth is very much related to pro-poor growth (Ravallion and Chen, 2003).

The main aspects characterizing inclusive growth are the pace, the pattern, the coverage and its time horizon perspective. The pace of inclusive growth must be rapid to substantially reduce poverty; while the pattern should be broad-based across sectors, and inclusive of the large part of the country's labor force for the growth to be sustainable in the long run. The inclusive growth approach takes a longer term perspective as the focus is on productive employment rather than on direct income redistribution, as a means of increasing incomes for excluded groups. Thus, inclusive growth is about raising the pace of growth and enlarging the size of the economy, while leveling the playing field for investment and increasing productive employment opportunities(WB, 2009).

140

A very large body of empirical studies tested the relationship of inequality/inequity and economic growth confirmed that inequality is a growing social problem as economic growth does not automatically reach all in all countries. Even if some inequality encourages investment in the short and medium term, excessive inequality is an obstacle to inclusive growth and it ultimately limits growth in the medium and long term (see Berg and Ostry, 2011). In fact, a recent IMF study argues that inequality can make growth more volatile and create the unstable conditions for a sudden slowdown in GDP growth (IMF, 2014). Furthermore, the study suggests that income equality has a more substantial effect on prolonging the periods of economic growth more than that of free trade, foreign investment, little government corruption, and low external debt.

There is solid evidence for the positive effects of greater income equality on all aspects of society. More equal societies almost always do better. Wilkinson and Pickett found the outcomes for the more unequal countries (measured by the size of the gap in income between the wealthiest and poorest in society) to be substantially worse on every count (physical health, education, housing, imprisonment, mental health, drug abuse, obesity, social mobility, trust and violence) (Wilkinson and Pickett, 2009). Also, inequalities between the various groups or classes in society hamper social mobility which is one of the necessary conditions for the effective functioning of society (Ortiz, 2007).

Despite the many papers examining poverty, inequality and growth aspects related to inclusive growth (Fosu, 2011; Gaddah and Munro, 2011; and Kamgnia, 2008), etc, studies measuring inclusive growth have remained relatively limited. Adedeji et. Al. (2013), Garcia et. Al. (2011) and Ali and Son (2007) focused on how access to opportunities could help aid the participation of a larger segment of the population in the growth process, applying the concept of social opportunity function to ascertain the inclusiveness of growth episodes. Also, Anand et. Al. 2013 integrated economic growth performance and income distribution outcomes in measuring inclusive growth, applying the concept of social mobility function.

Looking at ex post inequality i.e. inequality of outcome, this paper follows Anand et. al approach in measuring inclusive growth in Egypt, using the last five Household Income, Expenditure and Consumption Surveys (HIECSs) that cover the periods 2004/05-2015. To the best of author knowledge, this paper is the first published paper measuring inclusive growth in Egypt applying an approach that integrates growth and inequality in a social opportunity function.

141

The first attempt was for Al-Shawarby and El-Laithy (preliminary draft) that is not published.

The rest of the paper is organized as follows: Section II reviews the different literature attempts on measuring inclusive growth. Section III outlays the methodology of social opportunity function. Section IV presents the empirical results from the application of social opportunity curves to Egypt, using five rounds of HIECs. Finally section V concludes.

II. Literature Review:

Many studies examined the relationship between inequality, poverty and growth. There is almost a consensus about the critical role of continued high growth in helping to reduce poverty and share prosperity, provided growth is widely shared and increases the returns to assets held by the poor and vulnerable (especially the returns to their labor) (WB, 2015). Otherwise, growth can bypass the poor or marginalized groups, resulting in increasing inequality (Aly and Son, 2007). It was shown that in order for growth to be sustainable and translated into social outcomes and wellbeing, including reducing poverty, it needs to be inclusive (Ramos and Ranieri 2013; Berg and Ostry 2011a; and Kraay, 2004).

Several studies have examined various important areas and aspects related to inclusive growth; such as assessing poverty impact of economic growth (Fosu, 2011), benefit incidence of health and education expenditure (Gaddah and Munro, 2011; Kamgnia, 2008), etc. Nonetheless, an important area that has not received as much attention as it should be is measuring inclusive growth. Studies in this area have remained relatively limited. Studies measuring inclusive growth are grouped into two groups: one group is concerned with the macro level inclusive growth using macroeconomic indicators, while the other group is more interested at the micro level using survey data at the individual/household level.

At the micro level, there are two main conceptual frameworks for measuring inclusive growth. The first focuses on how access to opportunities could help aid the participation of a larger segment of the population in the growth process, applying the concept of social opportunity function to ascertain the inclusiveness of growth episodes (Adedeji et. Al. 2013, Garcia et. Al. 2011 and Ali and Son 2007). The second attempts rather to integrate economic growth performance and income distribution outcomes in measuring inclusive growth, applying the concept of social mobility function (Anand et. Al. 2013).

142

There are also various empirical papers that measure inclusive growth using surveys. Ali and Son (2007), using his methodology of the social opportunity function, examined the inclusive growth of public service deliveries of health and education in Philippines. This operational empirical work of the methodology showed that the methodology is useful in assessing the average access to the public services available to the people, and in evaluating the equity of access to such services across different income groups. The analysis can be done at a point in time as well as overtime assessing the changes in the access and equity of opportunities. In addition, the paper revealed that growth in health and education in Philippines did not benefit poor as non-poor, which calls for government's actions to tailor public health and education services that will cater to the needs of the disadvantaged groups (or regions) in the country.

Similarly, Adedeji et. Al. (2013) investigated the social opportunity function of education and health depending on average opportunities available to the population and how opportunities are distributed in selected SSA economies (Cameroon, Ghana, Mozambique, Tanzania, Zambia) to assess inclusiveness of growth. The paper found that, across all countries, on average, average access and distribution of opportunities for education and health have increased. However, equity in the distribution of this access has varied across countries (see, also, Garcia et. Al. 2011).

On the other hand, at the macroeconomic level, a range of global financial and economic institutions – including the International Monetary Fund (IMF), European Commission, Organisation for Economic Co-operation and Development (OECD), Asian Development Bank (ADB) and World Bank – aimed at exploring, understandings, and developing frameworks to monitor, inclusive growth using a range of economic, social or environmental indicators (ADB, 2011; Cingano, 2014; European Commission, 2013; OECD, 2014). There has also been interest in measuring 'inclusive' or 'good' growth at the level of cities or sub-regions (Brookings, 2016; Greater MSP, 2015; PWC, 2013).

Existing frameworks either suggested a single indicator or headline indicators; a dashboard indicators or composite index for measuring, monitoring and tracking inclusive growth at the country or sub-national levels. Aghion et al. (2013) proposed a single indicator the "LSE Growth Commission" to measure median household income as a complementary indicator to GDP growth. The New Economics Foundation (NEF) has also proposed a set of three headline indicators to measure inequality in the UK (NEF, 2014). Meanwhile, dashboard

143

of indicators is another approach of measuring inclusive growth. ADB (2011) presented an annual dashboard of 35 inclusive growth indicators across 48 Asian and Pacific countries that cuts across a series of themes. These indicators identifies policy ingredients of inclusive growth—economic growth and employment opportunities, social inclusion, social protection, as well as good governance and institutions, on which it is based, with the key income and non-income outcomes at the top of the framework. In the United States, the Minneapolis Saint Paul Regional Economic Development Partnership (Greater MSP) has also created a Regional Indicators Dashboard which compares the performance of MSP against 11 'peer regions' across the US based on a set of 55 indicators (Greater MSP, 2015).

Also, some studies proposed a composite index to measure the growth performance with inequality. For instance, (AfDB, 2016) offered an index made up of ten dimensions covering relevant aspects of inclusive growth. They include growth; the labor force and employment; health and demography; education; safety nets; social cohesion; gender; the environment; spatial aspects and governance. The index was calculated for 153 countries for two periods in the past decade: 2001-5 and 2006-10. The paper found that, in general, North African countries underperformed internationally and appeared in the lower median of rankings for all countries. Tunisia (with scores for both periods rising over 60) overtakes the index for China, Chile, Russia, Israel and South Korea. In the wider Middle Eastern context, oil economies in general performed worst.

Finally, a new tool – the inclusive growth monitor –has been developed for the Joseph Rowntree Foundation to directly address the need to measure the relationship between growth and poverty in the UK. The report explains how the inclusive growth monitor was conceived and how it is constructed. The inclusive growth monitor is based on 18 commonly available indicators which have been grouped into two themes: prosperity and inclusion, where inclusion theme captures different aspects of poverty and related forms of disadvantage, while the prosperity theme incorporates different elements of economic performance or economic potential. Each theme contains three dimensions (three indicators in each) that reflect different aspects of prosperity— Output growth, employment and human capital—or inclusion— Income, living costs and labor market exclusion—(Beatty, Crisp and Gore, 2016) (also, see Demos-

PWC Good Growth Index by PWC (2013); and Metro Monitor by Brookings Institution)

With respect to Egypt, there was one attempt on measuring inclusive growth by Al-Shawarby and El-Laithy (2015). It is a preliminary draft that has been presented in a conference but never published. Al-Shawarby and El-Laithy (2015) measured inclusive growth using three rounds of HIECS not five like this paper. Hence, to the best of the author's knowledge, this paper is the first published attempt measuring inclusive growth in Egypt.

III. Methodology and Data

This study adopts the measure of inclusive growth proposed in a recent study (Anand et al. 2013) that adapted the approach suggested by (Ali and Son, 2007). Instead of referring inclusive growth to a social opportunity function that depends on average opportunities available to the population, and how opportunities are shared among the population; Anand et.al. refer inclusive growth to a social mobility function that depends on the pace (growth) and distribution of economic growth (equity).

As affirmed by Anand et al., their measure of inclusive growth integrates for the first time the strand of economic growth analysis with that of poverty and inequality analysis. In other words, depending on two factors: (i) income growth and (ii) income distribution, this measure makes it possible to detect via one unified indicator whether economic growth is equitable, i.e. benefited all segments of the population, especially the poor.

One more interesting aspect of this measure of inclusive growth is that it conforms only to the absolute definition of pro-poor growth, under which growth is considered to be pro-poor if poor people benefit in absolute terms, as reflected in some agreed measures of poverty (Ravallion and Chen, 2003). Whereas, the relative definition of pro-poor growth requires that incomes of poor people grow faster than those of the population as a whole; implying declined inequality (Dollar and Kraay, 2002; IMF 2011). This focus on inequality could lead to suboptimal outcomes for both poor and non-poor households. The example provided by Anand et al. is very illustrative, emphasizing that what matters are the absolute improvements in living standards of the poor, and not necessarily their relative improvements compared with the overall population. Suppose we have a society facing two options to achieve pro-poor growth, with the first favoring an outcome characterized by average income growth of 2% where the income of poor households grows by 3%, while the second favors an outcome where average

145

growth is 6%, but the incomes of poor households grow by only 4%. A strict application of the relative definition of pro-poor growth would lead to the choice of the first option, which clearly is not the optimal, at least for the poor. The poor obviously exhibit larger improvements in income in absolute term in the second option.

Inclusive growth may be measured using the idea of a social mobility function, which is similar to a social welfare function. Hence, it can be said that inclusive growth leads to the maximization of the social mobility function. Along the above mentioned definition of inclusive growth, and following what Ali and Son, 2007 proposed with respect to a social opportunity function, Anand et al. proposed a methodology to measure growth inclusiveness in terms of increasing the social opportunity function, which depends on two factors: (i) income growth, and (ii) income distribution among the population. This social opportunity function gives greater weight to the income growth of the poor: the poorer a person is, the greater the weight will be. Such a weighting scheme will ensure that incomes earned by the poor are more important than those earned by the non-poor, i.e., if the income earned by a person is transferred to a poorer person in society, then social opportunity must increase, thus making growth more inclusive.

The concept of opportunity is wide and comprises many things like income, consumption, basic services of education, health, sanitation, etc. This paper investigates if household welfare is inclusive; where welfare is the ratio of household's consumption and its poverty line. In other words, it examines if the poor households over time benefit from average population welfare growth more than rich. In doing so, a household is considered benefitting if its consumption is greater than its poverty line, deprived if its consumption is less than the poverty line.

In measuring inclusive growth, four steps are adopted as follows:

Step 1: Definition of a social opportunity curve^{Sc}, which is based on the concept of concentration curve, along the following:

Figure (1): Social Mobility Curve
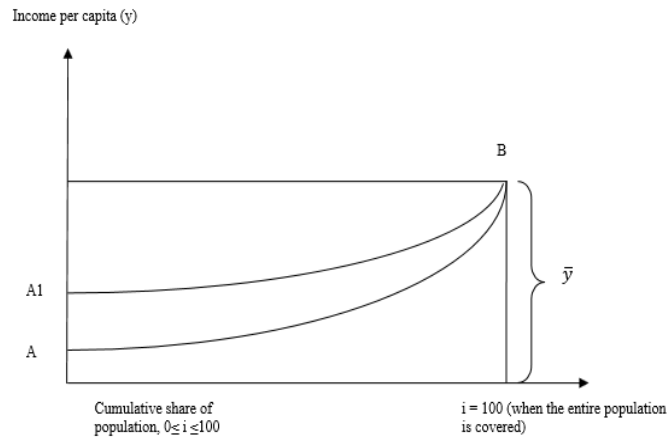
distribution have occurred over time. As such, S^c provides only partial rankings of income distributions.

Figure 2: Illustration of Social Opportunity Curves
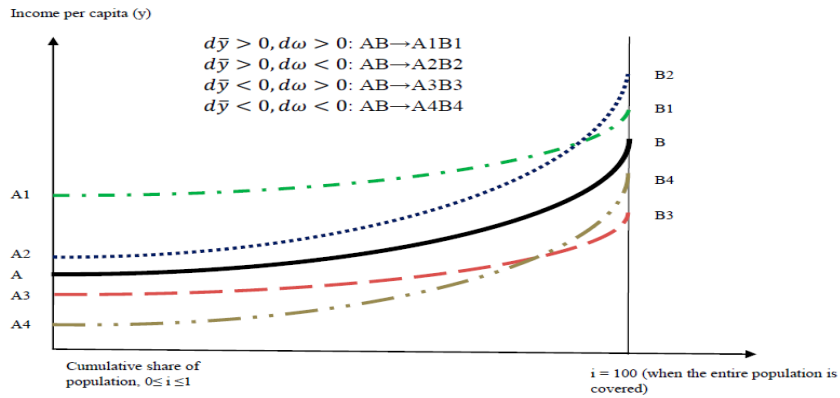
Source: Anad et al., 2013.

147

Step 3: Calculation of the social opportunity index. To capture the magnitude of the change in income distribution, a simple form of the social opportunity function by calculating an index from the area under S^c:

$$\bar{y}^* = \int_0^{100} \bar{y}_i \, di$$

(2)

The greater $\bar{y}^*$ is, the greater the measure of inclusive growth. If the welfare of everyone in the population is the same (i.e., if welfare distribution is completely equitable), then $\bar{y}^*$ will be equal to $\bar{y}$. If, instead, $\bar{y}^*$ is greater than $\bar{y}$, it implies that the distribution of welfare is equitable (pro-poor); and vice versa. As such, the deviation of $\bar{y}^*$ from $\bar{y}$, or the ratio between them, is an indication of welfare distribution equity, which is represented by ω that is called the welfare equity index (WEI):

$$\omega = \frac{\bar{y}^*}{\bar{y}}$$

(3)

For a completely equitable society, ω = 1. Thus, higher value of omega (closer to one) represents higher income equity.

From (3), it immediately follows that:

$$\bar{y}^* = \omega * \bar{y}$$

(4)

which shows that the social opportunity index is the product of WEI (ω) and the average welfare ($\bar{y}$). To achieve inclusive growth, we need to maximize the value of $\bar{y}^*$ increase. This can be accomplished by: (i) increasing $\bar{y}$, that is increasing average welfare (growth); (ii) increasing ω, that is increasing the equity index of welfare (equity); or (iii) a combination of both (i) and (ii). Changes in the degree of inclusive growth can be written as:

$$d\bar{y}^* = \omega * d\bar{y} + d\omega * \bar{y}$$

(5)

Where $d\bar{y}^*$ is the change in the degree of inclusive growth, $\omega * d\bar{y}$ is the contribution of increase in average welfare (keeping welfare distribution constant) and $d\omega * \bar{y}$ is the contribution of changes in the welfare distribution (keeping the average welfare unchanged). Obviously, growth, which depends

148

on the sign and the magnitude of the two terms, will be more inclusive if $d\bar{y}^* > 0.$ Figure 2 shows all possible combinations of the two terms.

Step 4: Calculation of the relative contributions of growth and equity to inclusive growth. We can rearrange (5) to get the percentage changes in $\bar{y}^*$, as follows:

$$\frac{d\bar{y}^*}{\bar{y}^*} = \frac{d\bar{y}}{\bar{y}} + \frac{d\omega}{\omega}$$

(6)

This allows us to decompose inclusive growth into welfare growth and change in equity. We use this decomposition to portray the evolution of inclusive growth and the relative contributions of growth and equity. Table (1) presents the four possible alternatives for growth and changes in opportunity distribution and inclusive growth.

Table 1: Inclusiveness Matrix

$d\bar{y} > 0$	$d\omega > 0$	Unambiguously inclusive
$d\bar{y} > 0$	$d\omega < 0$	Higher welfare at the expense of equity (could be inclusive if the percentage change in $\bar{y}$ > the percent change in ω.
$d\bar{y} < 0$	$d\omega > 0$	Equity objective is achieved at the cost of average welfare contraction
$d\bar{y} < 0$	$d\omega < 0$	Unambiguously non-inclusive

DATA

Household Income, Expenditure and Consumption Surveys (HIECS) of 2004/05, 2008/09, 2010/11, 2012/13 and 2015 were used in the analysis. All surveys are nationally representative, though different in size. The various HIECS data are used in cross-sectional analysis. The number of interviewed households is 47,095 in HIECS 2004/05; 46,857 in HIECS 2008/09; 15,500 in HIECS 2010/11, 15,000 in HIECS 2012/13; and 24,000 in HIECS 2015. The variables used in the estimation are household actual consumption, and household size. From all HIECS, the household poverty line is calculated, that helps in estimating the opportunity index and the equity opportunity index.

IV. Measurement of Inclusive Growth in Egypt

The measurement of inclusive growth outlined above is applied to analyze Egypt's inclusive growth performance during four episodes: 2004/05 to

149

2008/09, 2008/09 to 2010/2011, 2010/11 to 2012/13 and 2012/13 to 2015. Figure (3) depicts five S^cs for these five years for cross sectional analysis (see Figure A.1 in the appendix, without logarithmic transformation). From the first look, one can notice that, in general, welfare is in favor to rich than poor people, however, the equity performance improved after revolution. Also, curves of years 2010/11, 2012/13 and 2015 are far below the curves of years 2004/05 and 2008/09. This can be assigned to the relatively weak economic growth performance characterizing these periods after 2011 revolution.

Nonetheless, the curves exhibit some different degree of inclusiveness, that is, different growth and welfare distribution. As shown from figure (4), one might not see any kind of difference between the curves of 2004/05 and 2008/09. However, one can notice than the 2008/09 curve is slightly below that of 2004/05, indicating decline in welfare that is households' real consumption does not exceed the real poverty line. Also, this decline was only reflected in real consumption of poor percentiles, while almost above the 80th percentile there is no welfare reduction. Both observations suggest that the decline in real consumption was associated with decrease in equity and a worse distribution.

Although Egypt succeeded to have rapid economic growth with lower poverty rate between 2004/05-2008/09, growth did not have a trickle-down effect on people leading to higher inequality. Egypt succeeded to slightly increase its economic growth rate from 4.5% in 2004/05 to around 5% in 2008/09 even when hit by the three Fs (fuel, food and financial) global crisis and also creating new jobs of almost 800 thousand jobs per year between 2004/05- and 2009/10 leading to an overall decline of unemployment rate and poverty rate (World Bank, Social mobility, 2008).

However, this overall positive macroeconomic and social performance did not match with some other important objective indicators. First, economic growth was characterized by energy intensive and capital intensive industries, due to high energy subsidies that diverted resources away from other more efficient or rich-job creating industries. This led to a continued decline in the share of wages in GDP from 28.4% in 2001 to around 25% in 2008. Meanwhile, the share of capital earnings in GDP increased from 46.1% in 2005 to 55.4% in 2008 before declining to 48.7% in 2010. Second, new jobs' creation and declining unemployment rate do not necessarily mean that economic growth benefits reached all or most of Egyptians. The growth decomposition analysis of the GDP data between 2005 and 2009 shows that almost half of the new jobs

during 2005 and 2009 were created in ten out of nineteen sectors that contributed with 17% only of the materialized economic growth. This probably means that those employed in these jobs have weak low-productivity, are underemployed, or/and their wage rates are lower than those employed in the new jobs created in the fast growing sectors (World Bank, withstanding- 2010). Furthermore, back home household welfare did not improve, as most of the GDP growth accrued to private enterprises and non-governmental organizations. These kinds of deficiency in direct gains from growth have increased the Gini coefficient increased by 2 percentage points, which probably fueled households' frustration and contributed to shape Egyptians' perception on income inequality (World Bank, 2014- Inside Inequality in Egypt). With the high level of inequality in Egypt, many middle-class households were exposed to significant risks of sliding into poverty. In fact, 55% of Egyptians experienced poverty or near-poverty between 2005 and 2008 (World Bank, 2009- social mobility, and Ghanem, 2014).

In brief, the growth model the government adopted with the hope that benefits will gradually trickle down the rungs of the socioeconomic ladder to improve the life of everyone did not succeed. Economic growth without social progress, i.e. inclusion, has resulted in revolutions that have been associated with social unrest and political uncertainty. This model needs thus to be replaced with a broader and more inclusive model of development.

Just before and after 2011 revolution, welfare declined and especially for poor. This is reflected in the large parallel drop of 2010/11 curve except for rich percentiles which points to deterioration in equity. The real GDP growth rate dropped from 5.1 percent to 1.8 percent in calendar years 2010 and 2011, respectively. Also, inequality increases; the Gini coefficient increases from 31.1 to 31.5 in 2008/09 and 2010/11, respectively. With a bit decline in welfare, 2012/13 curve falls, however. The bottom 50 percent of the population seems not affected by this decline as roughly the curve overlaps with the 2010/11 curve; suggesting more pro-poor distribution. But, this equitable performance is slightly affected by the highest 10 percent of the population who was not also affected by the welfare reduction. This is signified by the reduction of Gini from 31.5 in 2010/11 to 29.8 in 2012/13.

With governments' successive social economic policies, the 2015 curve shifted above both 2010/11 and 2012/13 curves. In addition, the curve shifts more in favor of poor percentiles more than rich percentiles; indicating pro-poor

151

growth. Thus, as revealed by $S^c s$, growth in consumption seems to have benefitted everyone (as reflected by upward shifts of S^c), but the gains seem to have been much greater for the rich (as depicted by and steepening of S^c).

After the Revolution of 25th January, Egypt witnessed disorderly political transition that weakened economic growth performance till mid-2014. Economic growth hovered around 2.8% during 2010/11- 2014/15 after real GDP growth rate of 5.1 percent in 2010. The recent relative political stability has offered the current government an opportunity to receive Arab and international support to overcome these challenges and to embark in an ambitious plan of boosting investment with a focus on improving infrastructure and creating jobs. Growth inches up to 4.4% in 2015. However, this economic improvement was not translated into better social outcomes. Gini coefficient increased from 29.8 in 2012/13 to 31.8 in 2015.

Also, unemployment rate peaked at 13.2% in 2014, and remained almost unchanged at 13% in 2015, but eventually decreased a bit to 12.4 percent in 2016 (WDI database, 2017). Absolute poverty continued to increase. The absolute poverty increased from 25.2% of the population in 2010/2011 to 26.3% in 2012/2013 to reach 27.8 percent in 2014/15. Yet, extreme poverty declined over the same period from 6.1% to 4.4%, with 3.7 million Egyptians do not having their basic needs of food. Given that poverty in Egypt is shallow, since large numbers of Egyptians live just at the edge of the poverty line, these numbers may have further increased with the economic slowdown persistence and high inflation rates.

Figure 3: Social Opportunity Curves in Egypt-Log term 2004/09-2015

Source: CAPMAS HIECS 2004/05, 2008/09, 2010/11, 2012/13 and 2014/15
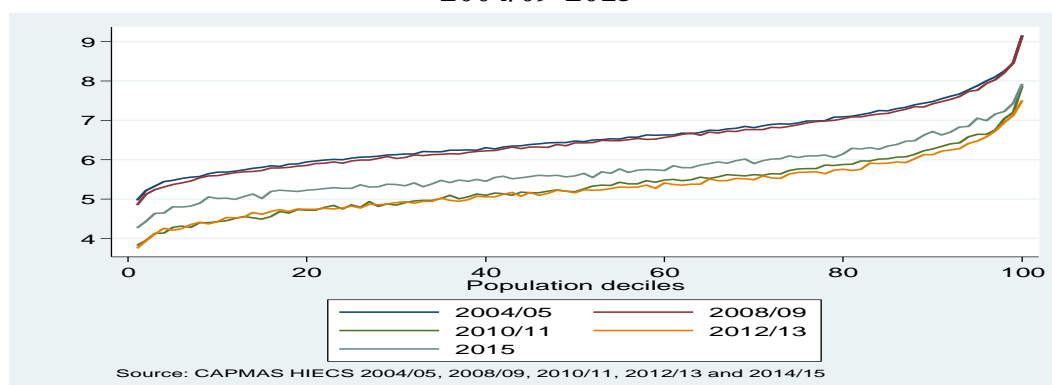
Source: Calculated by the authors.

As mentioned before, graphs are not good enough when it comes to portraying the evolution of inclusive growth and/or examining the relative contributions of growth and equity in this evolution. This drives us to the decomposition of the change in inclusive growth into welfare growth and change in equity as illustrated in equation (6).

A decomposition of inclusiveness shows that there are three patterns of inclusive growth, as demonstrated in table (2) and figure (5). The three successive periods 2005-09, 2009-11 and 2011-13 experienced no inclusive growth. The worst performance was during the period 2008/09-2010/11 with negative growth and highest inequity change. This could be attributed to the financial crisis and revolution impacts. After revolution, during the 2010/11-2012/13 period, non-inclusiveness decreased a lot. This is mainly due to drastic inequity reduction that mitigated the further reduction in welfare. In 2012/13-2015 period, a huge positive change in inclusive growth was observed, because improvement in equity eroded the relative slight deterioration in welfare. The main reason behind this general weak performance, except in the last period, is that despite real consumption positive growth, it does not outweigh the real poverty line growth (table 3).

Table (2): Inclusive Welfare Growth Portray
2008/09- 2015

	Inclusive Growth	Growth in Household Consumption	Change in
2004/05-	-1.12	-1.3	0.134
2008/09-	-44.22	-1.9	-43.13
2010/11-	-4.58	-3.2	-1.44
2012/13-2015	24.64	-0.4	25.09

Source: Authors' calculations

Figure 4: Inclusive Growth Decomposition
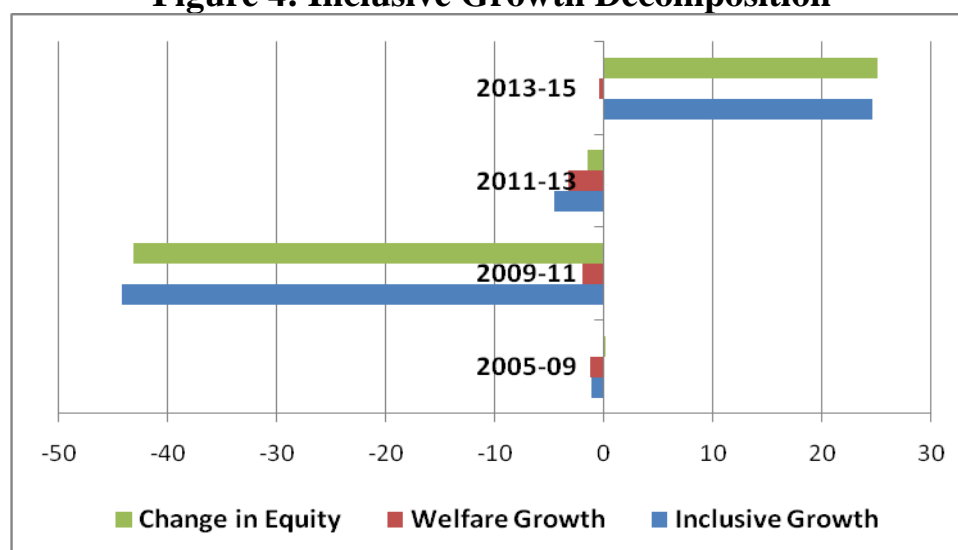
Source: Author's calculations

Table (3): Household Consumption and Poverty line Real Growth Rate, 2008/09- 2015

	Consumption	Poverty Line
2004/05-2008/09	0.4	1.8
2008/09- 2010/11	3.5	4.9
2010/11-2012/13	-2.8	-0.7
2012/13-2015	4.4	5.1

Source: Author's calculations

V.Conclusion

This paper adopts a new approach to measuring inclusive growth in Egypt over the period 2004/05-2015. The approach is based on the social opportunity function that is analogous to the idea of a social welfare function. Growth is defined as inclusive if it increases the social opportunity function that depends on two elements: (i) average opportunities available to the population and (ii) how opportunities are distributed in the population.

In presenting this idea empirically, two tools are used: the opportunity curve and the opportunity index. The opportunity curve is a one-to-one relationship with the social opportunity function: the higher the opportunity curve is, the

154

greater will be the social opportunity function. Also, the higher the opportunity curve for the poor more than the entire population, the more inclusive is growth. This curve enables tracking inclusive growth over time, which helps in dynamic analysis. Moreover, from the curve, an opportunity index can be computed to check for opportunity growth and its equity change.

Empirically, this paper uses this approach to measure and track inclusive growth in Egypt before and after revolution. It uses the data of the latest five HIECS; 2004/05, 2008/09, 2010/11, 2012/13 and 2015. It analyzes the welfare of Egyptians; that is consumption relative to poverty line, in real terms. The paper concludes that, before revolution, Egyptians suffered from no welfare growth and no equity, especially during the period 2008/09-2010/11 (just before and after revolution). Hence, there was no inclusive growth. After revolution, though there was no welfare growth, equity distribution improved drastically that even outweighed the negative welfare growth and result in high inclusive growth. The main reason behind the general negative welfare growth is that though consumption might increase in some years, it cannot outweigh the increase of poverty line that could be attributed to the various economic reforms that have been undertaken.

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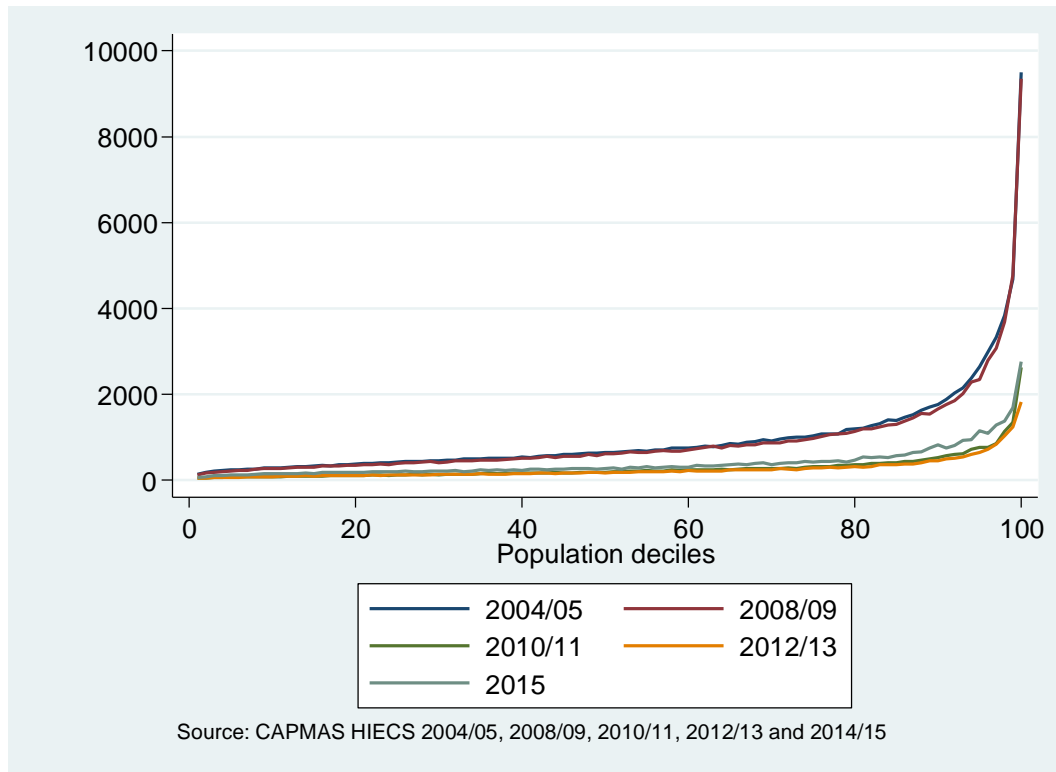Mitra, Siddhartha, A Note on Measuring Inclusive Growth and the Inclusiveness of Growth (June 11, 2017). Available at SSRN: https://ssrn.com/abstract=2984408 or http://dx.doi.org/10.2139/ssrn.2984408

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Appendix:

**Figure A.1: Social Opportunity Curves in Egypt
2004/09-2015**

Source: CAPMAS HIECS 2004/05, 2008/09, 2010/11, 2012/13 and 2014/15

Source: Calculated by the authors