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Inequality of Opportunity in Earnings in Egypt

-Rami Mikko Ahmed Galal-

Thesis submitted for the degree of PhD 2017

**Department of Economics
SOAS, University of London**

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Abstract

This thesis focuses primarily on inequality of opportunity in earnings in Egypt. It is guided by three research questions, namely: (i) What has been the level and evolution of inequality in Egypt, with a special focus on inequality of opportunity in earnings, (ii) what are its underlying causes, and (iii) what can/ought to be done to promote greater equality in society? Its main contribution lies in estimating inequality of opportunity in earnings and identifying its primary determinants. It uses labor market survey data for the years 1998, 2006 and 2012 and applies both parametric and nonparametric techniques. These findings are placed into a broader discussion of the evolution of inequality in Egypt.

In terms of the level of inequality, available measures suggest that Egypt fares reasonably well thanks in large measure to the persistence of historical socialist reforms. On inequality of opportunity in earnings, this thesis finds that conditions attributable to individuals' circumstances account for 10% to 20% inequality. The groups that suffer from the highest levels of inequality of opportunity are male youth and females and the most important determinants of opportunity inequality are parents' levels of education and area of birth.

Regarding its causes, the analysis lends support to the idea that inequality of opportunity in Egypt reflects both the policies and politics of their time and the legacies of the past. This conclusion is based on a comparative analysis of the policies adopted during the Mubarak regime with those adopted in earlier periods.

As for how to promote greater equality of opportunity in Egypt, reforms should empower disadvantaged citizens by providing better education, more equal public investment across geographic areas, and promote women's participation in the labor market in a context of inclusive political institutions.

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Chapter 1

Introduction

Abstract

This introduction provides a motivation, context and rationale for the research in this thesis. It seeks to answer two key questions. First, why worry about inequality? Second, why focus on Egypt? It further discusses the research questions and offers a broad discussion of the methodology. Finally, it provides a brief outline of the chapters.

1.1 Introduction

This thesis is concerned with the topic of inequality in general, and inequality of opportunity in Egypt in particular. Besides measuring inequality of opportunity in earnings in Egypt, it explores the policies and political economy drivers of inequality and draws some policy implications to promote a more egalitarian society in this country. All this is placed in a broader discussion of the evolution of thinking about inequality, alternative ways of measuring it, as well as its moral justifications. Two key questions arise here. First, why the concern for inequality? The second is, why the focus on Egypt?

On the first question, in 1980, Irving Kristol, the “godfather of neo-conservatism”, remarked that “the intensity with which economists work out their Gini coefficients, and the subtlety with which they measure income trends in the quintiles or deciles of the population, is matched – so far as I can see – by the utter lack of interest of the average American in their findings” (Blinder et al., 1980, p. 481). Things have changed a lot since then. More recently, the U.S. President Barack Obama (2013) called rising income inequality “the defining challenge of our time,”¹ and Christine Lagarde (2014), the Managing Director of the International Monetary Fund, spoke of “the dark shadow it casts across the global economy”.²

The concerns for inequality do not just come from politicians or social scientists, nor are their consequences discussed solely in classrooms or academic journals. They are also seen on the streets in protest movements and the demise of regimes that ignore fairness. Among the main slogans chanted in Tahrir Square, the epicentre of the Arab Spring protests in Egypt, was “Aish, horreyya, Adaala lgtmayea”, meaning, “bread, freedom and social justice”.

Beyond its political ramifications, this chapter will elaborate the link between equality and economic growth, its impact on social cohesion and its roots in moral philosophy about fairness and social justice. The point though is that, despite the growing literature on inequality in the past few decades, in terms of its evolution, causes and consequences, too many questions remain unanswered. Indeed, an intense debate continues to rage over questions like: What type of inequality should we be concerned with?

¹ President Obama delivered these remarks in a speech to The Towan Hall Education Arts Recreation Campus in Washington, D.C. on Dec. 4, 2013.

² Lagarde said this in an address on Economic Inclusion and Financial Integrity to the Conference on Inclusive Capitalism in London on May 27, 2014.

How do we measure different types of inequality? What causes inequality and what can or should we do about it? This thesis confronts these questions head on with an application to Egypt.

With respect to the second question, why the focus on Egypt, there are three reasons: (i) Egypt is an important country in the Middle East in light of its relative size and potential for having a demonstration effect on its neighbors; (ii) Egypt provides a rich case study for examination of inequality because its modern history is characterized by economic, social and ideological shifts; and (iii) the relationship between inequality and social justice is of current pertinence given the political transformations that have shaken the country since January 2011.

In terms of Egypt's relative importance in the Middle East, Egypt has one of the longest histories of any modern country arising as a nation state in the tenth millennium BC (Osman, 2010). After being on the frontier of world civilization for centuries, the country endured and survived many occupations. It was conquered by Ottoman Turks in 1517 and remained under their control until the Napoleon's invasion of 1798. The French were then in turn expelled by the British and a struggle for control of Egypt between the British, Ottoman Turks and Egyptian Mamluks ensued. In 1805, Mohammed Ali Pasha, an Albanian commander in the Ottoman military seized power and created a dynasty. Egypt was initially a distant Ottoman protectorate until the British occupation in 1882. Local dissatisfaction prompted the rise of nationalist movements and led to the independence of Egypt in 1922. Despite independence, continuing British influence and political involvement by the King culminated in a military coup led by Nasser in 1952.

Today, Egypt is the Arab World's most populous country at around 90 million people and it has a significant cultural, political and military influence on the MENA region. Egypt's economy was growing at a relatively healthy pace in the first decade of the 2000s and it is considered among the largest markets in the region for both goods and labor. Egypt is geopolitically stable in that its borders have a long history. Egypt's political role in the region is also underscored by its strong ties with the European Union and the United States. Changes in Egypt are also likely to influence nearby countries. It is true that Tunisia started the so-called Arab spring, but it is the events in January 2011 in Egypt that multiplied Tunisia's demonstration effect and helped galvanize protest movements in several Arab states (Abou-El-Fadl, 2015). The rise and fall of the Muslim Brotherhood in Egypt had a knock-on effect in the region (Chatham House, 2009).

Regarding the interest in Egypt as a case study of inequality, the country's recent history exhibits rich and varied experiences (Amin, 2012; Osman, 2010; Verme, 2014). These variations make it possible to develop a better understanding of the link between inequality, policies and politics. Before 1952, Egypt was dominated by extractive foreign powers (British) and domestic authorities (the King and a few capitalists). A major ideological shift in favor of more socialist policies came under President Nasser starting in 1952. Neoliberal economic policies were adopted under Sadat around the mid-seventies, followed by crony capitalism under Mubarak who took office in 1981.

What came under Nasser in 1952 was not a movement in the direction of inclusive political institutions, but there was a major shift in favor of a redistribution of assets and income (Verme, 2014; Amin, 2012; Waterbury, 1983). For the first time, the regime showed intense concern for egalitarianism over economic growth. The military regime embarked on a socialist model of development and nationalized much of the national assets. These included actions such as the Land Reform Act of 1952 that redistributed agricultural land to the peasant class, thereby curbing the power of the influential landowners. The state also took on a paternalistic role and was ostensibly taking care of its citizenry.

Several social security plans were developed during this period, including subsidies system, health care plans, social assistance programs, pension schemes and the like.

President Sadat, starting from 1974, embarked on an economic agenda that had the features of neoliberal economics (Waterbury, 1983). The “Open Door Policy” (infitah) was intended to attract foreign investment and pave the way for a new and growing private sector. Despite high levels of economic growth in the following decade, distribution, social services and safety nets were neglected. Opportunities for amassing wealth grew for the rich, while inflation surpassed wage increases for the poor (Amin, 2012). Coupled with this, some of the old social policies persisted.

Finally, Mubarak followed in Sadat’s footsteps. In addition, this era saw the rise of crony capitalism. This is apparent in the revolving door phenomenon, where members of the business elite often held important positions in government, the ruling party, parliament and other influential posts (Diwan, 2013; Osman, 2010). These developments had a particular impact on perceptions of inequality.

The third and final reason for the importance of focusing on inequality in Egypt right now is the attention this topic has received in the hearts and minds of Egyptians during and since the January 2011 revolution. Not only were the protesters calling for the demise of the Mubarak’s regime, they were also vying for social justice. Indeed, in analysing the grievances for the Arab spring, including that in Egypt, several analysts consider inequality as one of the main reasons why the middle class participated in the revolt.

Motivated by the importance of the topic of inequality and its application to Egypt, the value added of this thesis can be summarized as follows. The empirical analysis expands our knowledge of the prevalence of inequality of opportunity in Egypt. It does so by applying several well-established techniques including parametric and nonparametric approaches and dominance tests to sound and detailed labor market surveys from Egypt. These approaches provide measures of the magnitude of inequality of opportunity as well as the relative role of different circumstance variables. These findings are discussed in the context of Egypt’s underlying political economy. Finally, the thesis offers policy recommendations that could improve inequality of opportunity in earnings in Egypt.

The rest of the chapter is organized as follows. Section 1.2 discusses in more detail the importance of inequality in general. Section 1.3 does the same thing for Egypt. Section 1.4 will outline the research questions in this thesis. Section 1.5 offers notes on methodology and data sources to be used. Section 1.6 provides a brief account of the content of various chapters. Finally, section 1.7 concludes.

1.2 The importance of inequality

The importance of inequality has received attention at three levels: (i) its economic impact, particularly on growth, (ii) its societal impact, particularly on the stability and cohesion of society, and on a more normative/philosophical level: (iii) the relationship between inequality and fairness. In discussing inequality from these perspectives, it is important to note that some of these relationships are not settled and that they continue to be the subject of debate even today. What is less debated is that the study of inequality is important.

1.2.1 Inequality and growth

The relationship between inequality and growth has long been debated by economists and the debate is still ongoing.³ Historically, it was argued and widely believed that inequality provided incentives for economic growth and that there existed a tradeoff between growth and equity. On the other hand, (for example, Michael Todaro (1997)), it has been argued that greater equality in developing countries may have positive implications for sustained economic growth. He and others pointed to the dissaving and unproductive investments by the rich, low levels of human capital held by the poor, a demand pattern of the poor being biased towards local goods and political rejection by the masses.

Historically, the early empirical literature was dominated by Simon Kuznets. Using cross-country data and time series, Kuznets (1963) found an inverted U-shape relationship between income inequality and GNP per capita. His interpretation was that as an economy transitions from a rural to an industrial one, income inequality would rise during early stages of development and then plateau, and as the country becomes an advanced economy, inequality would decrease.

The traditional view that inequality is growth enhancing stems from three theoretical bases. Firstly, Nicholas Kaldor argued that the rich have a higher marginal propensity to save. If the growth rate is directly related to the proportion of national income that is saved, then greater inequality would lead to higher growth.⁴ This argument was later formalized by Stiglitz (1969) who presented a Solow growth model with a linear saving function where aggregate behavior is independent of the income distribution. This argument was then extended by Bourguignon (1981) who showed that with a convex saving function, aggregate output is both dependent on the initial distribution of income and that growth is higher at a less equal steady-state.

Another basis for the positive impact of inequality on growth relates to the concept of investment indivisibilities. Large investment projects are often associated with significant sunk costs and without substantial and well-functioning markets for investment sharing, there may not be sufficient coordination capacity or funding to invest in new industrial activities. It follows that a higher concentration of wealth could overcome these obstacles.

A third argument in favor of higher growth with greater inequality has to do with incentive considerations. Mirrlees (1971) explored what an optimal taxation model might be. A basic version of his model assumes that individuals vary in their innate abilities and efforts and that these are observable through their income, but otherwise not known separately. If the government institutes an income tax, it will discourage individuals of high ability to exert as much effort to earn that income. Taking into consideration the unobserved heterogeneity among individuals, diminishing marginal utility of consumption, and incentive effects, his model formalized the classic-tradeoff between equality and efficiency.

The incentive argument also held true in a study by Rebelo (1991). He showed that greater taxation reduced the return to saving, thus decreasing the incentives for capital accumulation and therefore the rate of growth.

These theoretical arguments have been challenged by a growing and consistent empirical literature that finds that greater inequality reduces economic growth. The increasing availability of comparable

³ Aghion et al. (1999) provides a review of the literature on the relationship between inequality and economic growth.

⁴ While trickle-down economics is more of a political term than one based in economic theory, macroeconomic models may capture this idea with the assumption that as wealthier people have higher marginal propensities to save, all else equal, more deposits in the bank would result in a lower costs of borrowing for both the corporate as well as household sector.

and large cross-section data on many countries as well as developments in endogenous growth theory have facilitated much of this empirical work.

Alesina and Rodrik (1994) regress the average rate of growth over 1960-1985 on the Gini coefficients for income and land and find that greater inequality leads to lower subsequent economic growth. Their rationale is that economies with greater inequality and large shares of the population who do not have access to productive resources will have stronger demand for redistributive policies. This in turn creates a conflict, which will diminish growth.

Another argument in favor of equality enhancing growth stems from the idea that income inequality leads to policies that do not protect property rights and hinder the appropriation of returns from investment. Persson and Tabellini (1994) use a broad cross section of developed and developing countries and regress average GDP growth rates against the income share accruing to the third quintile of the income distribution, representing the income share of the middle class. The results are also corroborated when using a narrower dataset for 9 developing economies from 1830 to 1985. Perotti (1996) conducted a similar analysis on a larger cross-section of countries using the third and fourth quintiles of the income distribution as the middle-class and found similar results.

Extending the argument to the impact of redistributive policies on growth, Easterly and Rebelo (1993) explored the impact of fiscal policy on growth. With a large cross section of developed and developing countries covering the years from 1870 to 1998 and using marginal and average tax rates as well as social spending as measures of redistribution, they found that redistribution has a positive impact on growth.

The most influential work on inequality from recent times is Thomas Piketty's "Capital in the 21st Century" (2014). With new long-run datasets on measures of inequality and economic growth, Piketty shows that the formerly accepted orthodoxy of the *Kuznets Curve* does not hold when extending the period of observation. He argues that the period of decreasing or low inequality from the 1930s to the 1960s in the United States and Europe was due to shocks to the global economy, such as the Great Depression and the World Wars. Piketty introduces the concept that when the return on wealth is greater than economic growth in a country, there is a trend towards greater inequality and vice versa, with wealth being concentrated in the hands of the rich.

1.2.2 Inequality and social cohesion

Having reviewed some of the reasons why inequality is important for economic growth, there is also substantial evidence supporting the notion that inequality is important for social cohesion and stability.

Aristotle stated over two millennia ago that "Poverty is the parent of revolution and crime" (1920). That political and social instability can arise in a society divided between a wealthy elite and impoverished majority has been a recurring historical event. Karl Marx's theory of Historical Materialism assigns a key role in the development of inequality to class struggle. Under capitalism, Marx saw the rise of conflict between the productive and mechanized proletariat and the bourgeoisie who owned the surplus product and appropriated surplus value.

More recent theoretical literature has sought to model the contention for power and redistributive policies in society. Roemer (1985) created a game theoretic framework to observe equilibrium strategies between the ruler, the Tsar, and a revolutionary, Lenin. He showed that various tyrannical aspects of the Tsar's strategy and progressive aspects of Lenin's strategy did not stem from an ideological basis, but from rational optimizing behavior given their strategic goals in the game.

The two themes of the political economy of redistribution and social conflicts are central in a paper by Acemoglu and Robinson (2001). They create a framework where a rich elite and disenfranchised poor contest for power. The poor can threaten a revolution for democracy if the opportunity cost is low and the rich can mount a coup if the democracy propagates overly high redistributive policies. This framework highlights the role of inequality in society. Greater inequality means the rich have a higher capacity to contest for power, but the poor are also more motivated to create social unrest. This could lead to a cycle of revolution and coup with high fiscal volatility.

The link between inequality and growth has also been examined by considering the role of social instability. Using a sample of 70 countries over the period of 1960 to 1975, Alesina and Perotti (1993) found that income inequality, by promoting social discontent, can increase socio-political instability. This in turn creates uncertainty and hinders investment, which then negatively affects growth. Their measures for socio-political instability included variables that capture stability at the executive governance level as well as at the social level including mass violence or politically motivated assassinations.

Higher income concentrations have also been associated with increased humanitarian crises. Nafziger and Auvinen (1999; 2002) used data on 124 developing countries from the period 1980 to 1995 to assess the contribution of economic factors on human-made humanitarian crises (war, displacement, violence). They argue that high inequality increases the risk of political disintegration and hence crises.

1.2.3 Inequality and fairness

So far this section (1.2) has highlighted the importance of inequality with a largely methodologically positive view by recounting the impact of inequality on economic growth and on the stability and cohesion of society. However, inequality is also a highly normative issue, and social scientists have long asked and debated questions such as: what is fair or just, and what should we equalize and how? The answers to these questions have practical implications, for instance in the design of redistributive policies.

A common way of introducing some of the issues surrounding inequality and fairness is to consider the fair division problem introduced by Steinhauss (1948). In this example, two individuals need to divide a cake between them. The obvious egalitarian solution would be to divide the cake in two and give each person half. However, if we assume that the two individuals value the cake differently, then dividing the cake equally would not equalize the utilities of the two individuals. This idea of heterogeneity among individuals makes the fair allocation of the resource more complicated.

Another source of debate arises when the size of the cake is variable and there may be a trade-off between the size of the cake and the equity of its distribution. These issues were alluded to earlier in the discussion of growth and inequality. In this case, the problem can be further extended when considering the variable contributions and productivity of individuals. And beyond that, the ability of individuals to contribute may not be under the control of individuals.

Different conceptual frameworks offer ways to divide the cake fairly.⁵ Supposing two identical individuals with the same income and increasing concave utility functions, a utilitarian allocation would sum the individual utilities and lead to an optimal distribution that is perfectly egalitarian. Any other

⁵ Amartya Sen's 1980 Tanner Lecture on Human Values entitled "Equality of What?" provides an accessible introduction to various redistributive philosophical paradigms.

distribution could then be measured against this one as a measure of inequality. These frameworks were first expressed by Pigou (1912) and Dalton (1920), though not directly in the context of the fair division problem.

The utilitarian approach becomes more complicated when the individuals are heterogeneous. To maximize overall utility would require equalizing the marginal utility of each person. This becomes more complicated if individuals have increasing marginal utilities. If further considering that the size of the cake is variable, then attaining an equilibrium where transfers would be carried out until the marginal utility gain from the gainers would equal out the marginal utility loss of the losers would become more complex.

An alternative framework to utilitarianism is *welfarism*. Broadly speaking, welfarism is the name given to normative approaches that rank social states on the sole basis of the distribution of welfare levels achieved by individuals in those states, represented by ordinal utility functions. Therefore, two social states that result in the same distribution of individual welfare are considered equivalent even if they are different in other ways. This generality however makes it difficult to draw exact conclusions on what is the optimal way to redistribute.

The idea that individuals and households differ in their characteristics and that these should be taken into consideration when considering redistributive actions is clear. However, on what basis and when should these redistributive policies apply? Suppose there are two individuals who both earn the same meager level of income. One of them is handicapped and the other lazy. Compensating the handicapped individual seems like a morally righteous act since s/he has been unlucky. However, compensating the lazy individual is at odds with our general sense of fairness. This case illustrates the idea that compensating for differences in outcomes arising from the choices of free individuals is wrong, while compensating for those that are due to circumstances beyond our control is morally just.

The distinction between heterogeneity in choices as opposed to abilities or handicaps is fundamental to the literature on economic justice. One side of the literature views the differences in preferences as resultant of individual liberty and therefore any resulting inequalities are fair. For instance, if two individuals are otherwise identical, but one exerts more effort at the expense of leisure, then any prevailing outcome inequality is morally acceptable. Extending this example to an entire economy, the allocation of goods is equitable if each individual faces the same choice set to attain a corresponding value of goods to their efforts. Even if preferences are heterogeneous, what matters for fairness is that each individual has the same capability to choose.

This shift in thinking about equality of not just the outcomes, but also of the choice sets available to individuals is the realm of much debate. One framework called the *capability* approach is posited by Amartya Sen, who was concerned with the full set of options available to an individual to *function* in a society. Others have discussed the set of opportunities available to individuals as to achieve their goals as *equality of opportunity* or *equality of resources* (Arneson, 1989; Dworkin, 1981a, 1981b). To illustrate the idea of opportunity sets, suppose two individuals who both work the same amount of time and receive the same good. Observing only the outcome one would deduce that there is perfect equality between the two. However, if one of the individuals is working as many hours as he wants and then freely allocate the rest of his time to leisure, while the other individual is working the same amount, but desiring to work more, yet unable to due to exogenous causes, then there exists inequality of opportunity.

In further pursuing this line of thinking, many questions arise. If we accept that differences in preferences are not our concern, but differences in opportunity sets are, there are still obstacles of

measurement. How do we compare the opportunity sets of different individuals? How do we capture the influence of different factors on choice sets? How much should we compensate individuals that face restricted opportunity sets due to handicaps? These types of questions will be further explored in the following chapter on inequality of opportunity.

1.3 The Importance of inequality in Egypt

As briefly discussed in the previous section, inequality is important in general for a variety of reasons. This section highlights its importance in Egypt along the same lines, making the following points: (i) recent economic growth in Egypt has not been inclusive; (ii) this may have contributed to the social and political instability evidenced by the recent political unrest; and (iii) this may have also been fueled by a growing sense of injustice arising from growing nepotism, corruption and crony capitalism.

1.3.1 The exclusive nature of growth

Despite reasonably high economic growth in Egypt over the first decade of the 2000s at just under 5%, the benefits do not seem to have been distributed widely within society. As argued by (Hakimian et al., 2014), growth had not been inclusive. While there is no consensus on exactly what inclusive growth means in the literature, some of its important features are that it is pro-poor, encompasses a broad development agenda and promotes equity. Some of the evidence for Egypt's lack of inclusive growth can be seen by looking at poverty rates, government fiscal expenditure and the labor market.

On poverty, a World Bank (2011) report revealed that despite an overall decrease in the percentage of the poor population to total population from 42.6% in 2000 to 41.2% in 2009, extreme poverty, i.e., the inability to afford basic food needs, reached its highest level during 2008/09 in the last 15 years. This means that 5.1 million Egyptians were severely deprived of basic food needs in 2008/09. Of these, 4.6 million lived in rural areas. Overall, around 16 million Egyptians were below the lower poverty line, and 30 million below the upper poverty line. More than half of the population in rural areas remains poor and near poor. The report also notes that the economic crisis in 2008 further strained the poor by decreasing the demand for labor further increasing poverty. Extreme poverty increased with as many as 5.1 million Egyptians severely food deprived in 2008/09 (double the number four years earlier).

The continuing erosion of publicly provided services has also represented the exclusive nature of growth. Akin and Diwan (2015) review the historical trends of fiscal expenditure in the MENA region and find that for Egypt, since structural adjustment programs in the 1990s, government expenditure has become more regressive. Public investment was slashed and has not recovered since, hurting both the growth process and social measures of wellbeing, namely health and education expenditure were too low to sustain continued progress on human indicators. Meanwhile, expenditures on energy subsidies and security remained high and tax revenues were low. During the 2000s, health expenditure as a percentage of total government expenditure consistently declined from 7.7% in 2000 to 5.6% in 2010 and for education declined from 14% in 2003 to 10.4% in 2008. The fiscal regime also seemed to become more pro-rich as indicated by the flat corporate tax rate of 20% instituted in the late 1990s.

In the labor market, the diminishing role played by the public sector and the inability of the formal private sector to absorb new entrants, has resulted in a growth of the informal sector (Assaad, 2014). Data from the Egypt Labor Market Panel Survey shows that informal private sector employment has increased between 1998 and 2012 from 30.7% in to 40.0%. As discussed in Assaad (2014), the

significant size of employment in the informal sector can be attributed to several factors. One is that the economy is not growing fast enough to create sufficient jobs in the formal sector to absorb the growing number of new entrants into the labor market. Formal private employment has only increased from 13.0% to 13.5% over the same period while public sector employment has declined from 34.0% to 27.1%. Another explanation is that individuals who cannot afford to be unemployed must have decided to join this sector, despite the shortcoming of the working conditions therein. Finally, joining the formal sector is too costly for very small entrepreneurs because of the restrictive conditions for entry, operation and exit, which leads them to endure the cost and limited opportunities of being informal, including access to credit, markets and government contracts. Irrespective of the explanation, the fact remains that a large segment of the population live and operate in the shadow under adverse conditions of no contracts, no social insurance, no reasonable working hours and no specific allowances for annual and sick leaves.

1.3.2 Growing social unrest

The political stagnation (with Mubarak staying in power for some 30 years) coupled with the exclusive nature of economic growth were not without consequence. The first decade of the 2000s saw the formation of a number of resistance movements including strikes and grassroots campaigns that had a strong impact on the political landscape. At the root of dissatisfaction were economic and political grievances where the benefits of growth were only felt by the rich and political power was entirely in the hands of a narrow elite with the middle class and poor increasingly disenfranchised (Diwan, 2013; Shahin, 2012).

The nature and impact of the newly emerging resistance movements in the period leading up to the 2011 revolution has been analyzed by Shahin (2012). He argues that the new reform movements brought energy to the long stagnant political arena in Egypt and came from a variety of background. These included advocacy groups, public figures, critical journalists, independent judges and other activists. While the background of these groups were varied, in 2004 and 2005 they united in opposition to the renewal of Mubarak's presidency to a fifth term. Many of the new reform movements, such as Kifaya, the National Rally for Democratic Change, Journalists for Change, Doctors for Change, Intellectuals for Change, Writers for Change and Youth for Change all engaged in protests. While these actions did not bring about immediate political reforms, they established the foundations of grassroots activism and challenged the barriers of free political expression.

One of the most notable challenges to the regime came with the rise of the Ghad Party (Lawson, 2010). The young and charismatic Ayman Nour formed this new liberal party in 2004 amid the newly sparked opposition movements. The party campaigned on a platform to challenge the hegemony of Mubarak's National Democratic Party and to amend the existing institutional set-up that greatly limited the capacity of opposition movements to organize. The party also provided a platform for liberal youth, activists and even members of the Wafd Party, an old nationalist liberal party. With the rise of Nour's popularity, he was arrested on charges relating to the formation of his party. Thanks to political pressure, he was soon released on bail and ran for President garnering 8% of the vote. However, after the elections, he was arrested again and sentenced to 5 years in jail. Overall, the case of the Ghad Party and Nour further pushed the limits of opposition against the regime.

Another important group in the opposition movement that emerged closer to the revolution was the April 6th movement, which was formed in 2008 (Laremont, 2014). It was originally formed in support of

a workers' strike in the city of al-Mahalla al-Kubra, a major industrial city in the Nile Delta. The movement sought to help and draw attention to the struggle of the striking workers who had met with severe repression from the government. April 6th used its social media network to organize a general strike, but overall its influence and capacity to gather people to large-scale protests was limited.

1.3.3 Growing sense of injustice

The issue of inequality is an important one for Egypt as social justice was among the chief demands of the Arab Spring protest movements (Verme, 2014). Throughout the Arab Spring uprisings, inequality was among the main grievances of protesters. The exclusive nature of economic growth and the oppression of political opposition did not go unnoticed and there was a general sense of social injustice in that the distribution of resources was unfair. People saw that effort was not rewarded and corruption was wide spread, as revealed in perceptions surveys.

According to opinion survey data, people felt that they had been getting poorer and belonged to a lower social class. This could be due to the increased awareness of the affluence of others as gated communities and compounds were becoming more common. People knew that GDP growth was reasonably high, but average household income remained stagnant. According to a Pew (2011) report on attitudes in Egypt, in the spring of 2011, 53% of Egyptians put corruption and lack of democracy each as their top concerns in recent years; lack of economic prosperity came up at 44%. Among low-income Egyptians, 60% stated lack of democracy as among their primary concerns and 59% stated the same about corruption.

As individuals become more aware that inequality results from corrupt practices, inequality is perceived as morally unjust. Egypt, like the rest of the MENA region, has been characterized by rampant corruption among senior state officials and politicians (Leenders and Sfakianakis, 2002). Transparency International (2011) noted that nepotism is so pervasive in MENA countries, such as Egypt and Morocco, that it has become a widely accepted part of life. These corrupt practices and absence of accountability had not gone unnoticed. Transparency International's Corruption Perceptions Index saw Egypt's rank fall from 63rd in 2000 to 112th in 2011.

These worsening perceptions and deteriorating rankings are not surprising given the direction the regime seemed to be headed in. Shahin (2012) argued that starting in 2002, the state-business nexus became stronger as Mubarak's son Gamal was being prepared for becoming the next president. Gamal was closely tied with the business elites and enforced his own power base by granting economic benefits through the privatization of state-owned enterprises, real estate, loans, price incentives and so on. While this new class of businessmen became richer, the poor and middle classes faced increasingly worse economic challenges with rising inflation and limited earnings opportunities.

The rise of corruption and crony capitalism reduced the opportunities for non-connected firms. Diwan and Chekir (2015) examined the nature of business privileges in Egypt looking at differences between politically connected and non-politically connected firms. They found that connected firms consistently had a larger market share, more access to credit and lower return on capital than non-connected firms. Some of the consequences of this favoritism are issues of misallocation of resources, limited growth of non-connected firms and hence diminished job creation and lower competition which reduces investments in innovation.

1.4 Research questions

So far, a case has been made for the importance of inequality and the pertinence of applied work on this subject in Egypt. This section discusses the research questions which this thesis addresses. These questions can be broadly classified under three headings: (1) what has happened to inequality and inequality of opportunity in Egypt over time? (2) What may have caused these shifts in inequality in Egypt? And (3) what can be done to promote greater equality in Egypt?

1.4.1 What has happened to inequality and inequality of opportunity in Egypt over time?

The literature on inequality is vast and has been steadily expanding in the past few decades, bringing new ideas, methodologies and dimensions to the measurement of inequality. This literature will be reviewed as a prelude to answering the question posed above. But it is known that most income inequality studies make use of household income, expenditure and consumption surveys to estimate inequality using well-established indicators such as the Gini coefficient, the Theil index, etc. The problem is that Gini coefficients rely on household surveys of expenditures rather than incomes and that these surveys usually miss top income groups (Atkinson and Bourguignon, 2000; 2015). In addition, Gini coefficients leave out wealth distribution altogether and fail to decompose variations in both income and wealth to those related to individual effort or their capacities/handicaps.

Therefore, to see what happened to inequality in Egypt over time, this thesis will rely on measures of inequality from three different angles. First, a distinction is made between equality of income/assets and equality of *opportunity*. Equality of income/assets refers to the distribution of income/assets within the population at large. Measures of income typically draw on household surveys and can be compared over time in the form of Gini coefficients. Equality of assets is related to the distribution of education, health outcomes, land or other assets. It can also be measured by Gini coefficients or by the proportion of top to bottom deciles. Equality of opportunity, on the other hand, refers to the extent to which variations in income/assets can be traced to the individual's initial conditions (such as parental background, gender, race, location) as opposed to his/her effort.

Second, inequality will be traced from the perspectives of gender as well as geographical location. Typically, inequality in different forms tends to favor males over females. At the same time, inequality within a given country tends to be biased against certain regions at the expense of others. Southern parts of Egypt, for example, tend to be worse-off than the northern parts of the two countries.

Finally, an attempt is made to draw on existing surveys to see if there is a gap between facts on the ground and the perceptions of inequality. The gap between reality and perception can be traced to inflated aspirations or a desire to keep up with the "Joneses" or neighbors.

The above evidence will rely on existing studies. The main contribution of this lies in presenting new evidence in terms of estimating the level of inequality of opportunity in earnings in Egypt using three rounds of labor market surveys in 1998, 2006 and 2012. It further uses various econometric techniques to decompose the share of inequality of opportunity into factors related to circumstances and others related to effort. The analysis is conducted for the full sample as well as for subgroups, including males and females, urban and rural populations, and male youth.

1.4.2 What might have caused these shifts in inequality in Egypt?

Often in discussions of the drivers of inequality, the primary area of debate is over what kind of tax policy the government should implement or where should the government target fiscal expenditure. A government that wants to foster a more egalitarian income distribution could opt for a progressive tax regime where the rich pay a relatively larger share of their income than low-wage earners. Similarly, taxes can also be used to target incomes from sources that disproportionately accrue to those better off, such as stock market returns, capital gains or inheritance.

The same is true of fiscal expenditures and transfers. A government seeking to equalize outcomes may well seek to allocate a greater share of its budget to target human capital enhancing services that are available to all members of society. These include investments in public education and health care. Alternatively, enhancing social safety nets by offering different kinds of transfers available to the more economically at-risk groups in society like the poor, handicapped or elderly is a viable policy avenue to enhancing equality.

Other than fiscal policy, the government could also impact distribution through other policies. The list includes industrial policies, trade policy, technology policy and even anti-competitive behavior. In each of these areas, the distributional impact could be in favor of the poor, with low skills in geographic regions where poverty is concentrated or vice versa. These policies could also encourage rent seeking behavior or hard work.

The point is that governments have at their disposal a menu of policies that impact equality or inequality in different ways. But who actually chooses what type of policies to undertake, if any? And what determines the attitude of governments' vis-à-vis redistribution? Policies are not formed randomly, rather, they are representative of the nature of the political set-up and institutional setting in a country. Therefore, answering the question of what has caused shifts in inequality in Egypt, demands an analysis of the politics of policies.

Different countries have different types of social, economic and institutional set-ups and structural characteristics. There is no single policy formula that can be applied across countries to achieve the same outcome. A political economy analysis is thus more concerned with the processes that shape the formulation of policies, carry them towards implementation and sustain them over time. These processes are at least as important as the content of the policies themselves.

This thesis will explore both dimensions: the policies adopted and their underlying political reality in Egypt over time. The fact that Egypt has experienced ideological shifts as well as shifts in policies provide a fertile arena for exploring at least the association between various measures of inequality and variations in the socio-economic and political contexts.

1.4.3 What can be done to promote equality in Egypt?

The two previous research questions were intended to highlight some of the issues surrounding the measurement of inequality as well as understanding its causes. Having some ideas about the possible answers to these questions, naturally lead one to ask: what can be done to improve equality in Egypt?

The broad answer to this question is that it takes appropriate policies and pro-equality politics to bring about more egalitarian outcomes. Beyond this broad answer, two further questions emerge. Firstly, what are the appropriate set of policies that would enhance equality of opportunity in earnings

based on the empirical findings. Secondly, what are some important features of the political environment that Egypt needs to have in order to ensure that recommended policies are adopted.

To answer to the first question, the chapter will lay out a conceptual framework for the design of equal opportunity policies, drawing on existing literature (Pignataro, 2012). It will then make a number of suggestions to policymakers in Egypt to equalize opportunities facing citizens, specifically for the circumstance variables that will turn out to be significant from the empirical analysis. These variables could potentially include parents' education and occupation, area of birth and gender. In addition, there will be a discussion of any biases against equality of opportunity in earnings, along with possible remedies to enhance equality of opportunity in the labor market.

With respect to the political economy of policy making, the discussion in this part of the thesis will explore what Egypt could/should do to make the recommended policies politically more desirable and even sustainable. This discussion constitutes a shift from policies to politics, but will remain normative rather than positive in nature. The focus here will be on identifying the political reforms that will persuade politicians in Egypt to adopt pro-equality of opportunity measures, building on the positive analysis on the nature of the political regime and its evolution. The two critical areas will be how to make the political regime more inclusive and how to encourage the participation of different stakeholders in society in the decision making process.

1.5 Notes on methodology and data sources

The choice of earnings data caters more specifically to measuring the level of inequality for individuals, as opposed to a more general definition of income that would better suit analysis of households. Total income can come from a variety of non-labor sources, for which data is unavailable. These include returns from capital and property from which receipts can also be irregular. For these reasons and others, information on the distribution of capital is rare.

Focusing solely on earnings avoids some of these problems, but there are still challenges. For instance, labor and property can be hard to distinguish, for example in cases of self-employment in agrarian households in developing countries. Since wages are not determined in a labor market, knowing their values can lead to ambiguities. Another challenge arises when considering the time-dimension of income data. Wages can be measured by day, month or year and the shorter the duration, the more likely the impact of transitory shocks. A further issue is related to the comparison of income distribution data across age groups. Are the labor markets of those 65-year-olds comparable to those aged 20?

One can measure the influence of circumstance factors on any variety of outcomes such as those in educational attainment or health. This thesis will focus on variations in earnings for a number of reasons. Firstly, it is important in its own right, but also has a strong impact on other socioeconomic outcomes. Secondly, because of the availability of reliable new labor market survey data for Egypt that includes detailed information on the backgrounds of individuals covering variables such as gender, area of birth and parents' educational attainment. Thirdly, because Egypt experienced a youth driven revolt in January 2011 and several analysts have argued that this was in part due to lack of, and unfair access, to earnings opportunities. And also, focusing on earnings inequality can allow for the identification of certain circumstances that lend themselves to policy-reforms in the labor market.

To measure changes in inequality distributions over time, it is not necessary to rely on pure panel data. Repeated cross-sections surveys over time can enable analysis of the level of income and

distribution of income over time. What matters for accuracy is the representativeness and robustness of the surveys.

Measuring circumstances is conceptually simple and presumably, with a full and complete data set, one could choose exactly what conception of personal responsibility one subscribes to and pick the appropriate circumstance variables accordingly. However, full data sets are rare, and even when various sources are merged, there are still missing variables. This is why the selection of the datasets to be used in measuring inequality of opportunity, as well as the decision of which variables to use as the circumstance variables is so important to the integrity of the measurement. The data used for the empirical work in this chapter is reliable and the circumstance and earnings variables have been chosen carefully.

The dataset used is the Egypt Labour Market Panel Surveys (ELMPS) for 1998, 2006 and 2012 (Assaad and Krafft, 2013). The surveys have been conducted by the Economic Research Forum (ERF) and the Central Agency for Public Mobilization and Statistics (CAPMAS). ELMPSs are nationally representative and the data between the three rounds of surveys are comparable. They provide the most comprehensive source of data on many aspects of the Egyptian economy and labor market in the time of and preceding the 2011 Egyptian Revolution. The ELMPS datasets are publicly available through the ERF online portal at www.erfdataportal.com. The available datasets are harmonized through the 1998, 2006 and 2012 rounds. Data usage is contingent on educational and scholarly activities. The data files themselves are in STATA .dta format and all documentation, codebooks, technical reports, questionnaires and variable construction manuals are also available for download with English and Arabic versions for the questionnaires.

In conducting the empirical analysis, I estimated overall levels of inequality of opportunity, as well as the relative contribution of specific circumstances to overall inequality of opportunity. I did not expect overall inequality of opportunity to shift significantly over the period covered, essentially because circumstances do not change over a short period of time. However, I expected that inequality of opportunity, in particular among the youth, may have increased because as first time job seekers they face evolving economic conditions. I was interested in particular in what happened to male youth because of their role in the uprisings of January 2011. However, I also performed the analysis for the overall population as well as other subgroups, including urban, rural and female. The methodological approaches adopted as well as a more detailed discussion of data are presented in Chapter 5 of this thesis.

In exploring the underlying reasons for the persistence of inequality of opportunity in earnings in Egypt, I will argue that Mubarak's regime adopted economic policies that favored his supporters over the rest of the population. In essence, the regime struck a bargain with its citizenry according to which they were given some economic benefits in return for political acquiescence. Initially this bargain worked well until economic liberalization in the 1990s. This led to a massive rollback of the state with government expenditures decreasing from 50%-60% of GDP in the 1970s to 25%-30% in the 1990s. The massive rollback of the state meant diminished social services to the poor and the middle class. At the same time, the liberalization process was partial and tailored. Rent was created through erecting barriers to competition and the granting of privileged access to land, credit and other resources. As a result, Egypt ended up with a dual economy, with a few large connected firms at the top and a large number of informal firms at the bottom with a gap in the middle.

The analysis will also focus on the transitional nature of current Egyptian politics. The rent-seeking behavior that characterizes rich elites in unequal societies has often been traced to institutional

structures, like a lack of effective checks and balances on executive power. But in transition economies, the political and legal institutions are not entrenched, and are often themselves an outcome of a transition process (Roland, 2001). The causality between effective institutions and rent-seeking behavior can go both ways. On one hand, the privatization of industries in Russia enabled a well-connected elite to become rich and powerful (Alexeev, 1999; Black et al., 2000). On the other hand, the policy of privatization itself could have stemmed from prior rent-seeking behavior (Bolton and Roland, 1992). The political economy analysis is the subject of Chapter 6.

To explain the evolution of inequality in Egypt under different political regimes since 1952, I use the framework developed by Acemoglu and Robinson (Acemoglu and Robinson, 2012), in which they argue that political and economic institutions shape the economic incentives facing economic actors and end up favoring some groups over others through self-serving policies. The absence of political accountability and the lack of government's responsiveness to meet the needs of its citizenry lead to non-inclusive growth, discriminatory policies and hence, inequality. Within this framework, I also use the Authoritarian Bargain Model, developed by Desai et al. (2009), which argues that non-democratic regimes persist by allocating economic rents, such as subsidies, protections or employment guarantees, and some influence in policy, to their supporters so as to stay in power.

1.6 Thesis outline

Guided by the three broad research questions explained above, the thesis has 8 chapters. Chapter 2 sets the scene based in the theoretical literature. Chapters 3 to 5 deal with the first question, namely what happened to inequality in Egypt over time covering the existing literature and the empirical contributions of this thesis. Chapter 6 deals with the second question: namely what may have caused the changes in inequality in Egypt? Chapter 7 deals with the third question, what can be done to improve inequality in Egypt? The last chapter offers the conclusions of the thesis. Below is a brief description of the content of each of the chapters successively.

Chapter 2 seeks to frame the research topic of this thesis firstly in the literature on inequality at large, and secondly, within the literature on inequality of opportunity in particular. To this end it begins by tracing the evolution of how economists have thought about inequality over time in terms of both positive as well as normative points of view. It then focuses on what inequality of opportunity means, and finally reviews what has been learned from the empirical work.

Chapter 3 assesses the level and evolution of inequality in Egypt. Besides making a distinction between inequality in terms of the distribution of income and assets, it also reviews the recent empirical literature on equality of opportunity. In addition, it provides an account of the perception of inequality. The analysis is conducted comparatively, placing Egypt in relation to countries in the Middle East and North Africa as well as developing and advanced countries. Finally, the chapter provides a brief historical background to contextualize observed measures of inequality.

Chapter 4 discusses the measurement techniques and data used in the thesis to measure inequality of opportunity in earnings and its determinants in Egypt. Measurements follows three different approaches, Lorenz dominance, parametric methods and nonparametric types and tranches, which derive from the techniques used by Lefranc et al. (2008), Bourguignon et al., (2007) and Checchi and Peragine (2010) respectively. The data come from the ELMPS covering 3 rounds: 1998, 2006 and 2012. The chapter elaborates how the data were collected, what they contain and how statistical robustness

was ensured. Finally, the chapter details what variables and samples will be used for the empirical work in this thesis.

Chapter 5 presents the estimates of inequality of opportunity in earnings for Egypt over the years 1998, 2006 and 2012. It covers results from Lorenz dominance, parametric and nonparametric methods. The analysis is conducted for the full sample, as well as the subgroups of male, female, urban, rural and male youth. In addition to estimating the levels and trends in inequality of opportunity, the relative contribution of specific circumstances to overall inequality of opportunity is estimated using a parametric decomposition.

Chapter 6 places the above findings into a broader economic and political context. It explores how politics may have shaped inequality of opportunity and its evolution in Egypt, with a special emphasis on the era of Mubarak as president. It takes the measurements of the level and decomposition of inequality of opportunity in chapter 5 as a starting point, arguing that observed outcomes are the product of various policies that are themselves the product of the distribution of power and the nature of the prevailing political regime. Conceptually, the chapter explores the relationship between inequality and politics/institutions and how the latter may change over time. It applies this conceptual framework to Egypt in an attempt to better understand how the political regime under Mubarak may have impacted the policies and politics of the labor markets. It pays particular attention to education, area of birth and gender, given their importance in determining equality of opportunity. The analysis lends support to the idea that inequality of opportunity in Egypt reflects both the policies and politics of their time and the legacies of the past. This conclusion is based on a comparative analysis of the policies adopted during the Mubarak regime with those adopted in earlier periods, especially in terms of the power base of different regimes.

With an understanding of where inequality of opportunity stands and what are its economic and political drivers, chapter 7 explores what type of policies that would best promote greater equality of opportunity in earnings, and inequality of opportunity more generally in Egypt. Although the analysis is normative rather than positive in nature, it is informed by the findings of the previous chapters as well as by policy prescriptions from others studies. To make the analysis tractable, the chapter first sets out a conceptual framework for the design of policies. Next, it assesses what the Egyptian government has done to improve equality of opportunity along three dimensions: (i) empowerment of citizens, (ii) expanding their opportunity sets in the marketplace, and (iii) raising government capacity and citizens' participation. In some sense, the empowerment of citizens deals with the factors that address the formation of human capital (education, health, early childhood development, safety nets). Expanding the opportunity set facing citizens is meant to deal with the extent to which they have equal opportunity to participate in markets (e.g., access to finance, the business environment, labor market policies, and infrastructure). Finally, policy formulation has to do with government effectiveness, coordination among different economic agencies, and engagement of various stakeholders in the processes of policy design and monitoring.

Chapter 8 summarizes the findings of the thesis. Furthermore, it discusses some of the limitations of the study and point to a number of areas for further research.

1.7 Contribution to knowledge

The objective of this introductory chapter was to explain the selection of the topic of inequality of opportunity for this thesis as well as the rationale for picking Egypt and earnings as a case study. It also

meant to identify the research questions, how these questions will be answered and what are their implications for policymaking. These questions have been addressed sequentially.

The topic of inequality is gaining importance globally as well as in Egypt. The set of identified research questions for the thesis are broad: what happened to inequality in Egypt, what caused the changes in inequality and what can be done about it. But the intention is to concretely answer these questions with respect to inequality of opportunity, with the policy recommendations building on the findings regarding the circumstances that contribute the most to inequality of opportunity. Given that politics is important for policy making, the thesis will also analyse the political regime in Egypt.

As such, the main contributions of the thesis can be summarized as follows. Firstly, the empirical analysis expands the literature on inequality of opportunity in Egypt. Secondly, the thesis applies well established techniques, including parametric and nonparametric approaches and dominance tests, to three rounds of micro data sets from well conducted labor market surveys in Egypt. Thirdly, not only does the thesis discuss the effects of different circumstance variables on inequality of opportunity, but also explores the underlying political economy of different regimes in Egypt. Fourthly, it offers policy recommendations that can improve inequality of opportunity in earnings and inequality of opportunity more broadly in Egypt.

Chapter 2

Inequality of Opportunity: Literature Review

Abstract

This chapter seeks to frame the research topic of this thesis firstly in the literature on inequality at large, and secondly, within the literature on inequality of opportunity in particular. It begins by tracing how economists have thought about inequality over time in terms of both positive as well as normative conceptions. It then focuses on what inequality of opportunity means, and finally reviews what has been learned from the empirical work. The main conclusion of the review is that thinking about inequality over the last two centuries or so has followed a U-shaped curve, with keen interest in the era of classical economists, diminished interest again among neoclassical economists and renewed interest among economists in recent times. Inequality of opportunity is currently taking center stage, complemented by a growing body empirical literature on the topic.

2.1 Introduction

The topic of inequality is not a revelation of modern societies. It has been of interest to philosophers and social scientists alike for millennia. In ancient Athens, Plato remarked that “there should exist among the citizens neither extreme poverty nor, again, excessive wealth, for both are productive of great evil.” In addition to secular traditions, equality has also figured prominently in religion. One of Islam’s five pillars is almsgiving (*Zakat*), a practice of providing for the poor. While the way inequality is conceptualized or pursued may have differed over time, it has remained of concern to at least the people who are impacted by it.

Economists on the other hand have not always paid inequality the attention it deserves. Interest in inequality in the literature seems to have followed a U-shaped curve. It was central among classical economists, marginal to neoclassical economists and is gaining importance in modern times. Throughout, the topic of inequality has been discussed in positive as well as normative terms. Developments along these two dimensions have led to the modern conception of inequality of opportunity.

Inequality of opportunity, the subject matter of this thesis, has many philosophical underpinnings. From the dawn of utilitarian thought with Bentham (1879) to more recent times, social theorists (notably, Rawls, Sen, Dworkin) have all contributed to the theory of distributive justice. The fundamental idea behind inequality of opportunity is that variations in outcomes due to circumstances that individuals have no control over are not morally justified; variations due to effort are. Based on this basic idea, the empirical work on inequality of opportunity attempts to decompose different socio-economic outcomes into two components: the first is related to effort and the other to circumstances. Achieving social justice according to this view of the world requires adopting policies that would either ensure a level playing field to start with, or make sure people are rewarded based on their efforts alone.

This chapter reviews the literature on inequality in general, and the works on inequality of opportunity in particular. To this end, it begins by tracing the evolution of how economists have thought about inequality over time from the perspectives of both positive as well as normative analysis. It then

focuses on what inequality of opportunity means, and finally reviews what has been learned from the empirical literature thus far.

The rest of the chapter is organized as follows. Section 2 is devoted to the evolution of thinking about inequality in general. Section 3 discusses the conceptual framework of inequality of opportunity, followed in section 4 by the recent empirical literature on inequality. Section 5 concludes.

2.2 Evolution of thinking about inequality

Inequality has not always been a central issue in economics. In the 19th century, in his preface to *Principles of Political Economy and Taxation* (1819), Ricardo pointed out that determination of the laws of distribution was the principal problem of political economy. Despite this, the later neoclassical economists focused on the functioning of markets and largely left distributional issues aside. One reason for this shift may be that the study of inequality is closely linked to normative assessments about what the level and nature of inequality in a society should be. Social scientists who sought to pursue a fully objective line of research thus would avoid the topic of inequality and instead focus on efficiency. Ironically, some social scientists in recent times have been drawn in to the study of inequality precisely by this normative aspect and conceived of theories of distribution that reckon with issues of equity and justice.

The aim of this section is to trace the evolution of thinking about inequality in economics, dividing the discussion broadly into three subsections. The first begins from the classical economists with Adam Smith in the 18th century. The second deals with the neoclassical economists, who adopted a very different perspective. The final section reviews the current thinking about inequality.

This is a vast literature that cannot be reviewed comprehensively. This section thus reviews this literature selectively with a view to identifying how inequality of opportunity came about. For complementary reviews of thinking about inequality, Sandmo (2015) focuses on the positive and normative developments surrounding inequality.⁶ Atkinson and Bourguignon (2000; 2015) discuss the more recent development in inequality. Historical discussions are available in Cannan (1893) and Dalton (1920). Other surveys of the literature include Ranadive (1978) and Asimakopulos (1988) and Goldfarb and Leonard (2005).

2.2.1 Classical Economists and Inequality

The original theoretical approach by classical economists focused on the functional distribution of income that resulted from the rates of return on the factors of production. The factors of production were defined as labor, capital and land and their incomes were respectively wages, profits and rent. This division of the economy mirrored the rigid class divisions in society at the time. The most significant divides were between these different factors of production, not within them.

Starting with wages, the classical economists saw that they were determined in a competitive economy essentially by the supply of and demand for labor, but in the long run, wages tended towards a subsistence wage. Adam Smith in his *“Wealth of Nations”* (1776) argued that increased worker

⁶ Sections 2.2.1 and 2.2.2 draw from Sandmo’s (2015) more comprehensive historical account of the history of inequality in economics.

productivity would not necessarily lead to increased wages, because: workers' capacity for specialization was limited, labor mobility across industries was high and productivity driven wage increases would be spread across them, and finally that any increase in wages would lead to an increase in population and hence the labor supply, which would again depress wages. This last point was central to Malthus' "theory of subsistence wages in his "Essay on the Theory of Population" (1798). Malthus argument focused on the supply side of labor as opposed to the demand side. He argued that population growth increase on a geometric scale while food production increased on an arithmetic scale. This meant that population increases were limited by shortages in food and therefore wages would tend to the subsistence level in the long run. This dynamic modeling of wages meant that while wages could exceed the subsistence level in the short run, they would trend toward a subsistence level equilibrium in the long run.

Despite the prevalence of the subsistence level theory of wages, Adam Smith's competitive theory of wage structure argued that wage inequality resulted from a number of reasons. Different wage levels result from the ease or hardship of different professions. He gave examples of a blacksmith, a miner and a public executioner whose wages varied greatly relative to their hours worked. Another reason Smith pointed to was the differences in costs of training different professions required. This is essentially the cost of human capital investment. Smith's theory came under criticism from Mill (1848) who argued that greater hardship of labor did not mean greater reward, rather the opposite. The most revolting types of occupations would also be the least rewarding since only the most helpless and impoverished individuals would undertake them since they are rejected from all other types of employment. This argument was furthered by Cairnes (1874) who argued that there were non-competing groups in the labor market, where some would be prevented by lack of skills and education (due to social class) to compete for certain types of occupations. To put it another way, inequality of opportunity led to wage inequality

The second factor of production, capital, yielded profits that were defined as interest plus a risk premium. According to Senior (1836), the rate of interest would reflect the compensation to the investor for his abstinence from current consumption. The risk premium would vary based on how risk averse the investor was, and thus would vary even under perfect competition. While this formulation helps with the understanding of the determinants of the returns from capital, it says nothing about ownership and hence is silent on the causes or drivers of inequality.

The third factor of production is land, which produces rent to landowners. Ricardo in his "On the Principles of Political Economy and Taxation" (1817) argued that the rent on a particular site of land was the difference between the price of product times the quantity of product produced on it, minus the cost of producing it. Because land varied in its quality, Ricardo argued that the price was determined by the cost of production on the lowest quality land (the margin of cultivation). Therefore, the owners of better quality land would realize higher rents, because it was cheaper to produce on their land. An increase in the demand for produce would drive up rental prices by furthering the margin of cultivation. The limitation of this theory of rents is that like in the case of capital, it does not provide a theory for the distribution of the ownership of land.

As noted above, the classical framework highlights inequality between classes in society more than within classes. The three factors of production were not tied together in a unified theory of distribution. Only Marx does offer some insights into their links. An additional element Marx entered into the framework was unemployment. He argued that even at the subsistence wage equilibrium there still existed unemployment. These unemployed individuals he termed the "industrial reserve army" and they

lived in poverty. He argued that the existence of the reserve army was a benefit to capitalists, who instead of seeing them as an untapped factor of production, saw that they were able to balance out fluctuations in the demand for labor during economic cycles without having to raise wages.

A second feature of Marx's framework was the notion of exploitation. This idea links the three factors of production as he stipulates that labor is the fundamental factor of production and that all non-labor inputs can be derived from past labor. The difference between the value of something produced and the subsistence wage is then the reward to the capitalist. This profit is termed surplus value and is the value of this exploitation.

On a normative level, the early work of classical economists like Adam Smith did not engage in careful examinations of what types of income distributions would be consistent with some conception of social justice. However, there were some instances of concern over inequality and poverty. In the *Wealth of Nations*, Smith remarked:

“Is this improvement in the circumstances of the lower ranks of the people to be regarded as an advantage or as an inconveniency to the society? The answer seems at first sight abundantly plain. Servants, labourers and workmen of different kinds, make up the far greater part of every great political society. But what improves the circumstances of the greater part can never be regarded as an inconveniency to the whole. No society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable. It is but equity, besides, that they who feed, cloath and lodge the whole body of the people, should have such a share of the produce of their own labour as to be themselves tolerably well fed, clothed and lodged.” (Smith, 1776, p. 96).

Even though he did not offer a more substantive discussion of what exactly a redistributive framework should look like, he did believe society as a whole would be better off with some “equitable” system in place.

Even if these sentiments were shared by Malthus and Ricardo, they argued about their modalities. At the time there existed a system of *Poor Laws* that offered some assistance to impoverished citizens. Malthus applied his population theory to this system of poor relief and argued that supporting the poor would only result in a higher population growth rate and not improve the general condition of the poor in society. Malthus, whose views were strongly supported by Ricardo, argued that support programs should be ceased so as to incentivize the poor to work. These debates spawned the long-contested debates of trade-offs between justice and efficiency.

The most prominent of the classical economists with concern for justice was John Stuart Mill. He did not have a full theory of what just income distributions should look like, but he did discuss many aspects of redistribution. He argued that inheritance should be limited, because it reduces the incentives of their recipients to work. Also, he noted that there would be no benefit of inheritance in over-enriching a few, while the wealth could be put to other more useful ends. Despite his progressive views, when it came to taxation he argued for a fixed tax rate after a certain minimum threshold. The reason for this was likely that Mill's biggest concerns were not with the particular formulation of redistributive policies and safety nets, but with institutional issues. These included the availability of education to all in society, removal of entry barriers to certain professions and most of all, ending the discrimination against women in the labor market, a topic to which he wrote a book “*On the Subjection of Women*” (1869).

2.2.2 The Marginalist Revolution

The advent of neoclassical economics and the marginalist revolution changed the way economics was studied and placed less focus on distributional issues. However, it is fair to say that some of their ideas, such as the marginal productivity theory of wages, did have distributional implications. Also some of the main figures of the neoclassical era did have normative views on justice as well.

In general, classical economists sought to model the world around them, while the new neoclassical economists sought to deduce truths from theoretical models utilizing the mathematical theory of optimization. This new approach to economics was driven both by new theoretical innovations as well as by the social and economic developments that were becoming increasingly visible in the 19th century. Technological developments in particular challenged the previously well-accepted theories of Malthus, which had little room for technological innovation and productivity increases in his theory.

The three main figures in the marginalist revolution and their works are Jevons' *Theory of Political Economy* (1871), Menger's *Grundsätze der Volkswirtschaftslehre* (1871) and Walras' *Éléments d'économie politique pure* (1874). Their primary concern was to establish the theory of subjective value as the most important feature of price formation. They focused both on consumer goods as well as factor prices. Walras also argued that the emphasis on average wage rates was misguided, and sought to analyze labor markets in much more specific terms. In the quest for positive analysis, issues of inequality had no place in these theories.

But even within the context of positive analysis, there were some developments that had bearing on income distribution. For example, Marshall made two partial and positive contributions. Firstly, he was a major proponent of the view that the analysis of wages be done across multiple disaggregated labor markets as opposed to the classical economists who discussed the average wage. Secondly, he emphasized the role of human capital, arguing that professional classes would invest in their children via education and training so as to increase their productivity and therefore capacity to earn higher wages. Since lower ranks of society would not have knowledge or capacity to invest in their children, this further perpetuates inequalities.

In addition to the above, Marshall did have a normative view on inequality as well. In his "Principles of Economics", he wrote:

"The drift of economic science during many generations has been with increasing force towards the belief that there is no real necessity, and therefore no moral justification for extreme poverty side by side with great wealth. The inequalities of wealth though less than they are often represented to be, are a serious flaw in our economic organization. Any diminution of them which can be attained by means that would not sap the springs of free initiative and strength of character, and would not therefore materially check the growth of the national dividend, would seem to be a clear social gain" (1890, pp. 713–714).

He saw excessive inequality as morally wrong and economically unnecessary. He also advocated the narrowing of inequality so long as it did not distort the incentive structure to work and hurt productivity or output.

Other contributions to income distribution were also advanced. Most notably, Pareto, who in his book, *Cours d'économie politique* (1896) put forth what would become known as Pareto's law. The law hypothesized that all statistical income distribution had a common shape, where for every 1% that you

move up the income distribution, the number of individuals above this level falls by 1.5%. What had initially appeared as an empirical regularity in the distributions studied by Pareto became a controversial and highly contested point by many from Pigou (1920) up to Atkinson (1970).

Another contribution was also made by Pareto later on, which had a big impact on how subsequent economists thought about welfare issues, namely that utility was not comparable across individuals (1909, p. 192). He argued that utilities could not be aggregated or compared. He did however introduce a criterion of social welfare optimality which has come to be known as Pareto optimality. This meant that a group of individuals enjoyed Pareto optimality if no one could be made better off without a decrease in someone else's utility. This meant that a redistributive policy that would allocate incomes from the rich to the poor in society would result in a state that would not be compared in terms of utility to the ex ante state. Therefore, Pareto concluded that redistribution in the name of justice or fairness was outside the field of economics.

Despite Pareto's insistence on the noncomparability of utilities, many economists adopted utility maximizing approaches to social welfare. Pigou (1920) argued that redistribution from rich to poor was welfare maximizing due to the diminishing marginal utility of income. He saw that an appropriate redistributive regime would maximize welfare to the point that it did not harm aggregate output. Behind this thinking was an acknowledgement of the potential incentive distorting effects of redistribution.

Other neoclassical economists focused at a later stage on developing a general equilibrium theory. This line of research was concerned with the analysis of the existence and stability of an equilibrium state in the economy. It highlighted the interdependence of the economy as a whole. However, issues of distribution did not feature prominently, mainly because it did not differentiate between commodity prices and factor prices like wages. Subsequently, Stolper and Samuelson (1941) and Samuelson (1953) focused on the relative shares of labor and capital but not the distribution of personal income.

Friedman (1953) explained income distributions as the result of rational choices under uncertainty. He argued that individuals chose between higher and lower risk income streams. Therefore, the resulting inequality ex post was due to free choice. Since individuals knew these potential risks at the outset, they sought to minimize costs by asking for redistributive policies. An assumption behind this model was the presence of equality of opportunity ex ante.

Around the same time, Lewis (1954) published his pioneering dualist model of economic development, which had important implications for inequality. He characterized the economy as being composed of two sectors, a traditional subsistence sector and a modern capitalist sector. He posited that the capitalist sector developed by drawing from the unlimited supply of surplus labor in the subsistence sector. Wages in the capitalist sector would remain constant as the supply of labor exceeded demand at a starting wage rate. The surplus of output over wages would be captured by capitalists who reinvested these profits, driving growth in national income. As capital accumulation in the modern sector continued over time, the economy would undergo a process of structural transformation. Eventually, the surplus of labor in the subsistence sector would become exhausted and wages in the subsistence sector would rise, pushing up wages in the capitalist sector as well and therefore reducing profits. This would slow down capital accumulation in the modern sector and in the long run wages and profits would be determined by marginal productivity. This implies that inequality would rise as the capitalist sector expands, but then decline as subsistence wages catch up in the long run.

This explanation of structural transformation was the focus of Kuznets' (1955) well-known paper on the evolution of economic prosperity and inequality. Using data for the United States, England and

Germany, he found that income inequality was high during the industrial revolution, because shifts to a more modern economy led to higher returns to income from capital. Then as the modern sector expanded, the returns to capital diminished and the income distribution evened out. His empirical findings led to the notion of the inverted-U graphical relationship between growth and inequality.

These findings were challenged recently by Piketty (2014) using new long-run data on the relationship between inequality and growth. He showed that the inverted U-curve did in fact not exist and argued that low levels of inequality in developed countries in the 20th century were due to massive shocks to the global economy caused by the Great Depression, and two World Wars. He posits there is no guarantee of lower inequality at higher levels of economic prosperity as suggested by Kuznets and that this calls for active government policies to combat high inequality. Moreover, this suggests that a developing country like Egypt should not accept higher levels of economic inequality as they grow assuming that inequality will “fix itself” later on. The discussion of inequality in Egypt will be the focus of Chapter 3.

On a more normative side, Bergson (1938) and Samuelson (1947) sought to outline conditions to maximize social welfare. Social welfare was seen as an increasing function composed of individual utility levels represented by ordinal functions. Social welfare could be maximized by fulfilling two sets of conditions, one relating to the Pareto optimal allocation of factors of production and consumer goods, and the other to ensure equal marginal utility among all individuals in society. An obvious difficulty in this approach is to equalize marginal utilities across individuals in society. Vickrey (1945) attempted to solve this issue by measuring the marginal utility of income and in his discussion of socially optimal income distribution argued:

“If utility is defined as that quantity the mathematical expectation of which is maximized by an individual making choices involving risk, then to maximize the aggregate of such utility over the population is equivalent to choosing that distribution of income which such an individual would select were he asked which of various variants of the economy he would like to become a member of, assuming that once he selects a given economy with a given distribution of income he has an equal chance of landing in the shoes of each member of it” (Vickrey, 1945, p. 329).

Along similar lines, Harsanyi (1955) created a model based on certain axioms regarding individual and social welfare judgments, in which one could derive a social welfare function composed of individual utilities. He concluded that the optimal distribution under certain assumptions would be equality. On his part, Mirrlees (1971) sought a theory of optimal income taxation. His approach attempted to maximize social welfare as the sum of all individual and identical utility functions. His results suggested a tax regime that saw an increasing average tax rate with income, but a constant or diminishing marginal tax rate. This work inspired numerous extensions, including an application by Atkinson (1973) who explored optimal taxation, but with a foundational framework derived from John Rawls’ “maximin”. Based on the findings, he advocated a more progressive regime.

2.2.3 Recent Extensions of the Literature on Inequality

More recent thinking about inequality has taken off in a number of directions. Two of the major changes that have taken place are, firstly, that the analysis of well-being has gone beyond the analysis of outcomes by trying to incorporate the notion of individual freedom into the notion of well-being. The

second is derived from the new conception of inequality and it has to do with the policies that may be necessary to bring about a more egalitarian society.

The contrast between the more recent conceptions of inequality and the traditional ones is significant. The recent economics literature on inequality is based philosophically on theories of distributive justice that incorporate a conception of well-being that takes into consideration personal freedoms. This line of reasoning is a rejection of welfarism, the approach that views social evaluation as based on individual but comparable levels of subjective well-being that can be aggregated. The two dominant theories today in distributive justice are Rawls' theory of inequality of opportunity and Sen's theory of functionings and capabilities.

The first major work on distributive justice stems from John Rawls' (1958, 1971) conception of equality of opportunity. His main idea places the role of individual freedom as central in the determination of what types of inequalities are just, and which are not. Many of the developments in the literature since Rawls have focused on equalizing opportunities rather than outcomes.

Rawls' approach is a departure from the previous welfarist approaches that involved ordering social outcomes only by their outcomes. Applied to an example of income, the only information required from a welfarist perspective, would be the existing distribution of income. Rawls incorporated the impact of circumstances, as causes of inequality, which are outside this information set of the welfarist view.

The basis of Rawls' theory stemmed from an approach to derive a conception of social justice based on rationality and impartiality. The starting point of his argument was the veil of ignorance proposition, where social planners had to design a society without knowing what innate resources they would be endowed with and what the distribution of resources would be in the society.

His answer to the veil of ignorance was that a just society is one which maximizes civil liberties and primary goods. Primary goods are defined as those which are needed for an individual to achieve their life plan, which is up to them to choose. This marked a distinction between Rawls and Sen, where the latter focused on what the primary goods provide, rather than the goods themselves. To Rawls, the goal of society was to maximize the bundle of primary goods available to the worst off group in society. This principle has become known as maximin or as Rawls' difference principle.

This line of thinking was extended by Dworkin who also sought to define an ethical conception of equality. Dworkin (1981a) argued that equality of welfare was not ethical, due to differences in tastes. Dworkin (1981b) argued for equality of resources, where resources include positive endowments that were acquired through circumstances. An obvious problem with the idea of incorporating such a comprehensive view of resources is how redistribution could take place when some of the endowments to be compensated for are genetic. His answer proposed a hypothetical insurance market that took place behind the veil of ignorance, where individuals know their own preferences and the distribution of circumstances in society, but not their own placement. He argued that after individuals entered the society, the allocation would be fair as inequalities would be corrected for by insurance.

Sen's (1985) offered two main arguments against subjective welfarism. The first of these is called *physical condition neglect*, the idea that utility is based only on the psychological attitude of the person, without taking into account real physical aspects. Three reasons why this is a problem is that for one, people may adapt to different types of conditions and thus have different expectations. One who is undernourished will be satisfied with something more modest, while someone else who is used to a more luxurious life would require more resources to achieve the same level of satisfaction. This argument is similar to the Dworkin's (1981a) example of expensive tastes. Secondly, Sen pointed to the problem of *valuation neglect*, the idea that a person's life is valued in a reflective way rather than the

fulfillment of a desire. Finally, Sen argued that peoples' lives are too heterogeneous to rely on an outcome like income or material attainment as a meaningful measure of well-being.

Sen's answer to the question he proposed in his Tanner lecture "Equality of What?" (1980) was his theory of functionings and capabilities. Functionings are different from the resources that are used to achieve them. The determinants of an individuals' attainment are broadly speaking related to his personal and environmental characteristics as well as the amount of resources available to him or her. With these, there are different states of being that one can achieve, for example being well-nourished, having a job, being safe, being happy and so on. Capabilities are defined as the opportunity set of different functionings (states of being) that a person can choose from. The distinction of capabilities is made, because evaluating a person by their functioning (outcome), would not place a value on the freedom to choose. By evaluating an individual's capability, one takes into consideration both the value of outcomes as well as the value of being able to choose between them. This distinction is commonly elucidated with the example of a rich man who is on a hunger strike as opposed to a poor man who is starving. While the outcomes are ostensibly equal, the rich man has the capability to be both well fed and starving, while the poor man only has the latter.

Another notable contribution to the conceptual literature came from Arneson (1989) who argued for equality of opportunity for welfare. This conception saw heterogeneous individuals engage in a market over a stock of different goods that they each valued differently. Since they had different individual preferences, the resulting outcome would be unequal, because people made different choices, but the opportunity to achieve them would be equal. Another line of thinking by Cohen (1989) argued that individuals should not be fully responsible for their preferences as these are largely informed by the circumstances they are born into and the society around them.

A central concept in the literature is that of free will or alternatively the limits of individual responsibility. Roemer (1993, 1998) argued that this should be decided by each society and is therefore more of a political question than a metaphysical one.

The conceptual literature has expanded and become more refined over time with notable contributions by Van de Gaer (1993) who emphasized the equalization of opportunity sets, Fleurbaey (1995b), who proposed fair division models for compensation, Bossert (1995) who proposed redistribution mechanisms, as well as Bossert (1996) and Peragine (2004) who offered ways to rank opportunity sets and income distributions according to equality of opportunity.⁷

Collectively, these theories place inequality at the heart of economics. They strike a balance between personal freedom and the moral grounds for inequality. In doing so, they identify concrete instances, or circumstances, where the state can play a role in bringing about social justice.

2.3 Inequality of Opportunity

The increased focus on opportunities has produced an in-depth literature that has refined different conceptions of inequality of opportunity and how to deal with them. This section presents the basic

⁷ Further reading on the philosophical literature on distributive justice and equality of opportunity is available in Rakowski (1993), Parijs (2003), and Hurley (2003).

framework behind inequality of opportunity and alternative ways in which it has been conceived. These different views lead to different ways of dealing with inequality of opportunity.

Inspired by the moral and philosophical theories on fairness and inequality, Roemer (1998) and other economists decomposed the factors contributing to equality of opportunity into circumstances and effort. Circumstances are beyond the control of the individual while effort is not. In that formulation, the equal opportunity principle is conceptually simple: circumstances at birth should not matter for a person's chances to succeed in life. Inequality in income, education, health care and other outcomes results from a multitude of factors. However, some are more objectionable than others. The circumstances that an individual is born into, unsurprisingly, have major implications on the likelihood the individual will achieve certain levels of welfare in life. Differences arising from these circumstantial factors are inequitable compared to those from individual effort. This notion was described by Peragine (2004), "according to the opportunity egalitarian ethics, economic inequalities due to factors beyond the individual responsibility are inequitable and to be compensated by society, whereas inequalities due to personal responsibility are equitable and not to be compensated." This notion conveys a justification for redistributive policies by the government based on moral grounds.

In addition to the moral imperative of rewarding efforts, inequality of opportunity has received attention for other reasons as well. Since it speaks to the redistributive role of the state, it matters for the design of public policy (Arneson, 1989; Peragine, 2004; Roemer, 1998). Surveys have shown that people find differences in income due to effort less objectionable than those due to circumstances (Inglehart, 2004). Additionally, data show that people who believe their society has equal opportunities view government redistributive policies unfavorably (Alesina and La Ferrara, 2005). This is to say that prevailing public attitudes on inequality influence the nature of redistributive policies. This idea has been explored by Alesina and Andeletos (2005) and Benabou and Tirole (2006) who created models where different public perceptions on equality of opportunity can lead to different redistributive approaches by the state.

Another rationale behind the focus on inequality of opportunity is that it impacts aggregate economic performance. Bourguignon (World Bank, 2006) argues that *inequality traps* limit the productive participation of groups in a society. The idea is that when exogenous circumstances such as gender, race, or parental background play a strong role in determining individual income and occupation prospects, there is a suboptimal allocation of resources and lower potential for growth.

The above factors and the increasing level of inequality both globally and within countries has led to an increasing body of empirical literature on the measurement of inequality of opportunity in recent years. This literature follows one of two approaches: ex-ante or ex-post. There are also important considerations to discuss, such as how to measure effort and circumstances. The studies cover a variety of dimensions of inequality of opportunity in different countries and regions. Among the most important contributions to the theory and measurement techniques are Roemer (1993, 1998), Van de Gaer (1993), Bourguignon et al. (2007); Ferreira and Gignoux (2011), Checchi and Peragine (2010) just to name a few.

The first part of this section presents the basic concepts of equality of opportunity. It then elaborates different views on how to think about equality of opportunity and in the final section, different ways to correct for it.

2.3.1 Basic Concepts

To further understand the distinction between the *ex ante* and *ex post* approaches, it is necessary to introduce the concepts of *types* and *tranches* and some simple notation. First, assume that there is a single positive *advantage* (positive outcome) y and a vector of discrete circumstance variables, C . Effort is included as a scalar variable e . The theory of inequality of opportunity is built on the notion that y , a single advantage, is determined by C , circumstances, and e , effort, as shown in eq. 1.

$$(1) \quad y = f(C, e)$$

Because vector C has a finite number of discrete variables, we can partition the population into fully homogenous groups based on different circumstances. The individuals in each group, called individuals of the same *type*, share identical circumstances and can only differentiate themselves by their level of effort exerted.

The framework described above enables measurement of the differences in advantage achieved by individuals with the same level of effort, but different sets of circumstances. Roemer argued that the absolute level of effort exerted is not a fair means of comparison between individuals in different groups. Circumstances impact the amount of effort exerted, so those with adverse circumstances will exert less effort on average than those with positive circumstances. For example, a couple who are both say highly educated doctors, would encourage or even force their child to work harder than another set of parents who themselves have not achieved a higher education or do not equally value education. Therefore, Roemer suggests a fairer means of comparison would be their relative level of effort within their own type, i.e. their percentile as ranked against all the other individuals with the same circumstances. This notion is called the Roemer Identification Assumption.

In addition to arranging individuals by their *type*, we can also arrange them by their level of effort into so called *tranches*, groups where each individual shares the same relative level of effort within their own *type*, meaning that they are at the same centile of effort as individuals from different types. For example, he mentions types such as the “inner city ghetto child” and the “upper-middle class privileged child.” Equal opportunity outcomes would reward the hardest working ghetto child equally to the hardest working privileged child and the same reward to the median effort child in each type distribution and also for the least hard-working individual in each distribution. Even if all individuals in a well-off type work harder on average than people in a worse-off type, the highest working individuals of each type should still be rewarded equally. Therefore, individuals should be rewarded for how hard they work relative to their peers in their own type distribution. Roemer describes this idea as, “individuals should be held accountable for their degrees of effort but not their levels of effort” (Roemer, 1998, p. 18).

The framework presented has thus far left out the role of luck in determining outcomes. This has received significant attention in the philosophical literature on inequality of opportunity, which has been summarized by Ramos and Van de Gaer (2012), Lefranc et al. (2009) and Ferreira and Peragine (2015). Different authors have argued for different treatments of luck, that it be characterized as a circumstance, as effort or subdivided between the two. Analogously, it has been argued that it requires full, none, or partial compensation.

The first type of luck identified was the Rawlsian social lottery, where outcome differences are based on the basic circumstances a person is born into, such as their family background and their social network. These are thought of as warranting compensation.

The second type of luck is based on Rawls' natural luck, where an individual is at birth endowed with certain genetic characteristics. Even though the individual has clearly not exerted any effort to attain these characteristics, a key difference between this genetic luck and social background luck is that these endowments are inherent to the individual and constituent of who the person is. While most authors agree that genetic characteristics should be deemed circumstances and therefore compensated for, some disagree, on the basis of Nozick's (1974) conception of self-ownership, where individuals deserve the benefits of their inborn traits.

The third type of luck is based on Dworkin's brute luck. It refers to the impact of events that the individual has no control over. These types of events may happen at any point throughout an individual's life. A close alternative to this notion has been offered by Vallentyne (2002) who distinguished between initial brute luck, which refers to events that happen before an individual can be held responsible for their choices. Later brute luck is the impact of events after this point. Vallentyne argued that only initial brute luck should be compensated for.

The final type of luck is based on Dworkin's option luck and refers to the outcomes that arise when individuals take calculated risks. Since these outcomes are resultant of informed choices, Dworkin himself, and many others argue that outcome differences are justified. On the other hand, Fleurbaey (1995a) argued that these should be fully compensated for, on the grounds that choices can then lead to the disproportionate and unfair issuance of penalties for some individuals. A middle ground was proposed later by Fleurbaey (2008) divided option luck into two parts, one part resulting from individual choice to undertake a risk, such as a lottery, and not to be compensated for, and a second part reflecting the randomness attached to any lottery, which should be compensated for.

2.3.1 Ex Ante and Ex Post Approaches

Roemer (1998) formalized the concept of inequality of opportunity, (EOp), by suggesting to separate the determinants of a person's *advantages* (i.e. desirable outcomes, such as income or status) into either *circumstances* or *efforts*. Circumstances are those factors that are economically exogenous to the individual. These include gender, race, family income, parents' educational attainment and place of birth. These factors impact the likely outcomes of a person's life and are beyond his or her control. Conversely, efforts refer to those factors that are under the individual's control.

These concepts are simple and straightforward. However, there is no agreement on the approach to equality of opportunity. Broadly speaking, there are two methodological approaches, namely, *ex ante* and *ex post*. Differences between these approaches can lead to different understandings of inequality of opportunity and different policy implications (Fleurbaey and Peragine, 2013), as discussed below.

According to the *ex ante* approach, there is equality of opportunity if everyone has the same opportunity set no matter what their circumstances. Aaberge et al. (2011) define opportunity sets as the type-specific outcome distribution for individuals with the same circumstances. This makes it particularly suited for observing inequalities between different social groups. The *ex ante* approach has been proposed and developed by Van de gaer (1993) and Kranich (1996) and has been used in empirical studies by many including Bourguignon et al. (2007), Ferreira and Gignoux (2011), Lefranc et al. (2008), Peragine and Serlenga (2008) and the World Bank (2006).

The other way to view equality of opportunity is the *ex post* approach. According to the *ex post* approach, there is equality of opportunity if individuals' levels of effort are rewarded equally. This is the

approach developed by Roemer (1993, 1998) and Fleurbaey (1995) and has been used in empirical studies by many, including Checchi and Peragine (2010) and Aaberge et al. (2011).

2.3.2 Compensation and Reward Principles

In addition to these approaches, the inequality of opportunity literature embodies two principles, the *compensation principle*, where inequalities due to circumstances are eliminated, and the *reward principle*, where inequalities due to effort are acceptable.

The *compensation principle* follows the rule that “inequalities due to circumstances should be eliminated” (Brunori et al., 2013). Furthermore, under the *compensation principle*, two methods can be followed: *ex ante compensation* and *ex post compensation*. *Ex ante* compensation would have each individual face the same opportunity set (Van der Gaer, 1993). This approach ignores an individual’s level of effort and concentrates solely on that individual’s *type*. The methodology behind this approach would be to measure the opportunity set available to individual, v_i , and ensure that all individuals of all *types* faced the same opportunity set. One could then compute existing inequality, $I(\cdot)$, by measuring against the counterfactual distribution where individuals’ *advantage* is replaced by the value of their opportunity set v_i (Brunori et al., 2013).

An advantage of this approach is that one does not need to measure effort, which can be difficult to know. However, following this method one would also have to decide how to quantify an opportunity set’s value, v_i , in order to compare across individuals. Also, one would have to choose an inequality index, $I(\cdot)$, to be used as the counterfactual distribution. In trying to measure the opportunity set faced by a single *type*, k , the easiest method is to observe the distribution of advantage within that type, F_k . Often in empirical studies, F_k has been measured as the mean outcome of a type’s distribution, μ_k . This method ignores within type inequality. Other candidates for $I(\cdot)$ have been proposed, such as a measure for infinite inequality aversion (Van de Gaer, 1993), a transformation of the Gini coefficient (Lefranc et al., 2008), a rank dependent mean (Aaberge et al., 2011), or the mean logarithmic deviation (Checchi and Peragine, 2010; Ferreira and Gignoux, 2011).

As for the *ex post approach to compensation*, this method seeks to eliminate inequality among individuals who exert the same degree of effort. Instead of computing opportunity sets, one must be able to observe or measure effort in some way. This approach follows Roemer’s (1998) methodology and seeks to reward individuals in the same *tranche* evenly. Perfect equality would mean that outcomes for each *tranche* would be equal. Inequality could be measured by observing the distribution within each *tranche*, and aggregating the differences. Therefore, a redistributive policy would require a complex set of transfers between high-achieving low-effort types and lower-achieving high-effort types. A major challenge with this methodology is data, since effort variables are difficult to observe, one must use circumstantial variables as determinants of effort. The advantages and disadvantages of different estimation approaches will be discussed further in the empirical measurement techniques section below.

On the other hand, the *reward principle*, offers an alternative to the *compensation approach*. It also has two differing theories, namely the *liberal reward* and *utilitarian reward principles*. The former embodies the idea that differences in outcomes due to effort, among those with the same circumstances, should be left alone. This approach would require a policy that does not redistribute between the high effort percentile and low effort percentile individuals of the same type. The *utilitarian*

reward principle, however, states that differences due to unequal effort should be ignored, and sum-maximizing policies should be adopted among sub-groups with the same circumstances.

While all of these different approaches strive to promote equality of opportunity, the *reward* and *ex-post compensation* principles are incompatible with each other (Fleurbaey and Peragine, 2013). Without providing the formal proof, this can be intuitively understood. While the *ex-post compensation* approach would seem to reward individuals in different types with the same effort equally and do nothing about differences in outcomes due to effort, the *liberal reward* principle seeks to equalize the distributions between types. Both of these goals cannot be achieved simultaneously.

This conflict does not exist between the *ex-ante compensation* principle and the *reward* principles. While the *ex-ante* principle is more concerned with equalizing the opportunity set available to all individuals, the *reward* principle is concerned with equalizing outcome distributions. Brunori et al. (2013) note that it would be possible to “re-scale” the outcome distribution between types so that they would have the same mean, but would have different absolute outcome levels to reward effort across percentiles within each type.

2.4 The Empirical Literature

As thinking about inequality shifted over time, so did the approaches adopted in the empirical studies. This section reviews the recent developments in measuring both equality of outcomes and equality of opportunity as well as the main findings in this field.

The discussion in this section is guided by the notion that the measurement technique adopted empirically is informed by the motivation of the researcher as well as the nature of the object of enquiry. When measuring inequalities in outcomes, two questions are critical: inequality of what? And inequality among whom? Similarly, in the case of the empirical work on inequality of opportunity, a distinction between the *ex ante* and *ex post* approaches is useful. The work following the *ex ante* approach is concerned primarily with the differences between social groups based on the circumstances they are born into. The *ex post* literature is more focused on lessening inequalities in outcomes between individuals who have exerted the same levels of effort.

2.4.1 Outcomes

The more recent literature on measuring inequality of outcomes has focused fundamentally on two dimensions: inequality of what?, and inequality among whom? It also makes a distinction between monetary and nonmonetary outcomes. Monetary outcomes include variables such as consumption, expenditure, earnings, income and wealth and each have their own literature. Nonmonetary outcomes include variables such as health and education.

The selection of what variable to focus on is not so straightforward. The economics literature has focused on income inequality for a number of reasons as discussed in Chapter 1. It has been linked to growth, but is also important for understanding other topics such as aggregate consumption and business cycles. There are additional normative reasons to focus on inequality. Income inequality is often seen as a proxy for well-being and has an impact on a number of other non-economic variables.

Whatever the motivation may be, choosing what exact form of income makes a difference. Earnings typically refer to individuals' wages and salaries, while income represents a wider range of sources like capital or other property. The object of inquiry determines the method of measurement. For capital

income, the type of data required is different from that for earnings. Incomes from different sources also can be paid at different points in time. While wages are typically realized weekly or monthly, but incomes from pensions or stock market return dividends can come at other potentially irregular intervals. The time dimension also impacts the variable of interest. If measuring wages, the length of a single pay-period, say a month, may be more accurate than a year. However, the shorter the time period, the more likely the impact of transitory shocks. For these reasons, focusing on consumption expenditure may be helpful as it is typically smoother than income as explained by the permanent income hypothesis (Friedman, 1957).

The second component, nonmonetary outcomes, are variables such as health, education and other social dimensions. These are relatively more difficult to measure. From an applied point of view, monetary outcomes are inherently cardinal and more easily operational (Decancq et al., 2015). This is not the case with nonmonetary outcomes. Since each outcome can be very different from the other, the literature varies greatly from one nonmonetary variable to the next and in general, newer measures seek to cater to the particular variable in question. In the case of health inequality, methods seek to incorporate social and biological factors that drive health inequality, focusing on behavioral, psychological, material and behavioral factors (Bartley, 2004).

There are also various approaches to measuring inequality in education. Two common approaches to assessing distributions are standard deviations in years of schooling and Gini coefficients. Standard deviations provide a measure of the absolute dispersion of education attainment. They have been used to study links between education inequality and growth (Birdsall and Londoño, 1997) and education inequality and income (Inter-American Development Bank, 1999) as well as to measure long term shifts in education inequality (Ram, 1990). Gini coefficients of education on the other hand provide a relative measure of education inequality and can be calculated using enrollment (van Lutsenburg Maas et al., 1982), financing (Ter Weele, 1975), or attainment data (Thomas et al., 2001).

Most of the literature in economics has measured inequality with respect to a single variable. However, there is a growing body of research that sees this as inadequate, because individuals differ in a variety of ways. This has led to a growing literature on ranking multivariate distributions. The pioneering work of Kolm (1977) argued that the greater the number of attributes considered, the better the assumptions of anonymity and impartiality in welfare analysis. Atkinson and Bourguignon (1982) further added that multidimensional analysis can in some cases be desirable or even inevitable. The methodological literature has focused on Lorenz dominance and has been expanded notably by Koshevoy (1995) and Trannoy (2006) to name a few. This literature is also being increasingly used in applied work, as with the inequality-extended Human Development Index used by the United Nations Development Program (UNDP) (Alkire and Foster, 2010; Foster et al., 2005).

Turning to the second question of inequality among whom, it is worth remembering that classical economists focused on inequalities between the different groups of society, mainly the landowners, capitalists and workers (horizontal inequalities). After the marginalist revolution, the focus was overwhelmingly on the determination of prices, and wages were analyzed in the same vein as the price of any other commodity. This was then extended to inequality of the shares of factor inputs in the production process. In the recent literature, the analysis of inequality has become more nuanced, and the unit of analysis has both normative and positive anchors. Understanding inequalities in the distribution of personal income has implications for growth, while inequalities based on gender are viewed as morally undesirable. The level of analysis is often based in the nature of the motivation.

Moreover, at each level of analysis, whether it is global, within-country or intra-household, there is a vast literature.

When focusing on within-country inequality, the unit of analysis can lead to a different assessment of the degree of inequality (Atkinson and Bourguignon, 2000). When measuring inequality at the household level, the size of the household matters. If all households in the society were of the same size, then inequality estimations between them would be fair (in per person terms), but if they vary in size, it is not as straightforward. Households can also have many other characteristics that make judgments about inequality between them difficult. For example, they may have a different amount of primary earners, be married or divorced or highly dependent on another household. Another relatively new branch of the literature focuses on intra-household inequality.

While inequality of households may be better suited to analyzing inequality in living conditions, a study of the labor market may focus on inequality among wage-workers. These are however a particular portion of the labor force, which is also a subset of the population at large. Even if inequality between wage-workers is low, it may still be true that labor market outcomes are highly unequal from the perspective of female labor force participation or that the true levels of inequality in society appear in returns on capital.

Another branch of the literature has focused on inequality globally. Jones (1997) article "On the Evolution of the World Income Distribution" documented the distribution of GDP per workers across countries since 1960 and sought to assess whether this distribution would become more or less equal over time. However, this line of research did not consider the inequalities within any country.

Bourguignon and Morrisson (2002) investigated the distribution of well-being among all the world's citizens and sought to assess the relative impacts of within-country or cross-country inequality on overall trends. Their period of analysis was from 1820 to 1992 and they found that early in the 19th century, overall inequality was mainly due to within country inequality and later on by between country inequalities.

The analysis of inequality between men and women also has been researched at many levels, from the division of household work, to labor market outcomes, to many more.⁸ At the household level, it is difficult to focus on gender inequality as most data do not differentiate among different household members and it is highly unlikely that the resources in a household are distributed evenly. Even if more comprehensive data were available on the sources of income to each household members, some incomes may come to the family as a whole and moreover all of these may not be shared evenly. Some attempts to model the resource shares within a household have been developed where individual income shares determine intra-household bargaining power (Blood Jr and Wolfe, 1960; Sabatelli and Shehan, 1993).

Another level of analysis focuses on the gender wage gap. Despite vast improvements in women's levels of education and labor force participation, at least in advanced countries, there is still persistent inequality in wages. The methodological analysis to assess the gender wage gaps in principle seeks to distinguish between the difference in wages that is due to gender and all other observable characteristics. The first papers to measure these gender wage gaps using decompositions were Oaxaca (1973) and (Blinder, 1973) and since then, many new approaches have been developed incorporating changes over time (Juhn, 1991; Juhn et al., 1993), censored outcomes (Bauer and

⁸ Ponthieux and Meurs (2015) provides a comprehensive review of the topic of gender inequality.

Sinning, 2008) and different methods assessing the entire distribution (Chernozhukov et al., 2013; DiNardo et al., 1995; Fortin and Lemieux, 2000).

2.4.2 Opportunities

The empirical literature on inequality of opportunity is vast and covers a range of different topics. This brief review will include studies conducted on either earnings, consumption or wealth as the dependent variable. The empirical work can be broadly divided by those adopting *ex ante*, *ex post*, or both approaches to the measurement of inequality of opportunity. The review covers both developed and developing countries. Among the measurement techniques adopted, are nonparametric, parametric and stochastic dominance methods. A more detailed discussion of these techniques is presented in Chapter 4 of this thesis. Empirical studies on Egypt are reviewed in greater detail in Chapter 3.3.⁹

Starting with the *ex ante* studies, Lefranc et al. (2008) compute a direct measurement of *ex ante* income inequality in nine Western countries using stochastic dominance. They compare pre-tax and disposable income distributions for male-headed households aged 25-40. The circumstance variables are three levels of father's education. Their results show that the highest inequality of opportunity from the sample was in Italy followed by the U.S., Belgium, France, Great Britain, the Netherlands, Norway, Sweden and West Germany.

Another study using *ex-ante* inequality of opportunity was conducted by Ferreira and Gignoux (2011) who used parametric approaches. Both techniques found similar results. They calculated inequality of opportunity for household income per capita in six Latin American countries. The circumstance variables used included: father's and mother's education, father's occupation, ethnicity and region of birth. They found that circumstances accounted for 32% of consumption in Brazil, 23% in Colombia, 26% in Ecuador, 34% in Guatemala, 30% in Panama and 28% in Peru.

Perhaps the most extensive account of circumstance variables used in an *ex ante* study of inequality of opportunity was conducted by Bjorklund et al. (2012) using a parametric approach. In estimating inequality of opportunity for pre-tax income in Sweden, they partitioned their sample to 1,152 types, including parental education, family structure as well as body mass index and IQ. Their results showed that circumstances accounted for 30% of income inequality in Sweden, with IQ playing the most significant circumstance role.

As for studies that have adopted the *ex post* approach, Salvi (2007) calculated inequality of opportunity in Nepal in 1995 and 2003 using parametric methods. Exploring consumption inequality, she found that infrastructure variables like public transportation and functioning electricity played a bigger role in explaining perceived inequalities, while familiar characteristics and ethnicity played a smaller role.

A notable study by Bourguignon et al. (2007) developed a model to explore the impact of correlation between circumstance and effort variables in a parametric approach. They computed *ex post* inequality of opportunity for urban male hourly earnings in Brazil using circumstance variables such as parents' education, father's occupation, race and region of birth finding circumstances accounted for between 10%-37% of inequality. They found that the most significant determinants are familial characteristics.

Another study by Pistolesi (2009) follows a similar methodology as Bourguignon et al. (2007) to estimate *ex post* inequality of opportunity in the U.S. from 1968 to 2001. The dependent variable is

⁹ Section 2.4.2 draws on an extensive literature review by Ramos and Van de Gaer (2012).

income averaged over 5 years and the circumstances are age, total years of parents' education, father's occupation, ethnicity and region of birth. Effort is measured as the variation in educational attainment and annual working hours. The results are virtually the same whether using direct or indirect measures, or whether using different indices, such as the Gini index, Theil index or the mean log deviation.

Another ex ante study by Ferreira et al. (2011) on Turkey measured inequality of opportunity in a wealth index and in imputed consumption. Using both parametric and nonparametric measures covering a sample of ever-married women aged 30-49 they found inequality of opportunity makes up 31% of inequality in wealth and 26% of inequality in consumption.

Piraino (2015) calculated ex ante inequality of opportunity in earnings for South Africa using both parametric and nonparametric approaches. The paper found that circumstances accounted for 16% to 23% of inequality of opportunity with parametric measures yielding lower results than nonparametric approaches. The circumstance variables used were individuals' father's education, area of birth and occupation, as well as own race.

Adopting an ex ante types approach, Assaad et al. (2016) measure inequality of opportunity in earnings and consumption in Jordan, Tunisia and Egypt. They found circumstances accounted for 3.7% of inequality in consumption and 4.0% in wages in Jordan, compared to 7.6% and 8.4% in Tunisia. In Egypt, inequality of opportunity in wages amounted to 13.2% of inequality and 10.3% in consumption. Results on inequality of opportunity in Egypt are discussed in greater detail in Chapter 3.3.

Finally, a number of studies have computed both ex ante and ex post inequality of opportunity. These include Cogneau and Mesple-Soms (2008), who computed inequality of opportunity for five African countries. The dependent variable in their analysis is household consumption per head and the circumstance variables used are father's social origins (farmers, non-farmers with at most a primary education, and non-farmers with more than a primary education) and region of birth. For ex post inequality of opportunity, they follow Roemer's approach and for ex ante inequality of opportunity they follow Van de Gaer's (1993) approach. They find the same ranking of results using both approaches, with Madagascar having the highest inequality of opportunity, followed by Ghana in 1998, Guinea, Uganda, Ivory Coast and Ghana in 1988.

Another study utilizing both approaches was carried out by Checci and Peragine (2010) where they computed inequality of opportunity in Italy using a nonparametric approach. The dependent variable in their estimation was gross annual earnings and used family background variables as the circumstances as proxied by parent's education. For the ex ante opportunity set, they use the mean income of the type. For the ex post measure of effort, they use Roemer's identification assumption. They calculated inequality of opportunity along gender lines and between Northern and Southern Italy. Their results showed that ex ante inequality accounted for 15% of income inequality, while ex post measures showed 20%. The effect was highest on women in Southern Italy. The results demonstrate the lower bound concept discussed earlier, where if efforts can be accurately observed, but not all circumstances, inequality of opportunity represents a lower bound.

As a caveat, comparisons of the results of inequality of opportunity from one study to another should be interpreted with care. Firstly, the object of analysis often depends on data availability rendering comparisons across earnings vs. consumption problematic. Even across studies that use income, their definitions of income may vary, where one is composed of solely wage-earnings and another includes information on other transfers. Secondly, methodological differences across studies can produce systematically different results. Where parametric and nonparametric approaches are used, parametric results tend to produce lower measures of inequality of opportunity (Ferreira and Gignoux, 2011;

Piraino, 2012). Even when nonparametric approaches are used across studies, the granularity of the data used to construct *types* and *tranches* may vary substantially depending on data availability and sample size. Finally, with respect to the circumstances used, the variables that matter more in one country may be inconsequential in another. For instance, race may play a bigger role in Brazil than it does in Egypt.

2.5 Conclusions

The issue of distribution has proven challenging to economists throughout the history of the discipline. In the early phase, classical economists were concerned with inequality but lacked the tools to develop an integrated theory of distribution. The marginalists after them were preoccupied with establishing economics as a science, using mathematics and optimization models. The focus was on price formation and the functioning of markets. There was no room for normative analysis and by association issues of distribution were left out and in fact considered outside the field of economics. Only recently, thinking about inequality has returned to the fore.

An important feature of the modern economic approach to inequality is that it is derived from the normative work of philosophers. The post-welfarist theories of distributive justice led by Rawls and Sen that provided a solid foundation for the new thinking about inequality. Although there is no unified theory of distribution today, thinking on inequality has come a long way. Previously, welfare was discussed in terms of resources, and utilitarians believed in maximizing the amount of resources for the greatest number of people in society. Rawls introduced the concept of opportunities rather than resources. This was a major departure that opened the door for the proliferation of ideas and studies on inequality.

Atkinson and Bourguignon (2015, p. xxv) nicely summarize the different views on inequality over time in the following quotation:

Classical economists focused on functional income distribution among land, labor and capital because they viewed the society they were living in as made up of classes deriving their income from different factors. This view does not fit well our own world, even though factor rewards and the functional income distribution still features today in macroeconomic models... It is only relatively recently, i.e., the 70s, and very much under the influence of Rawls and Sen, which economists have begun to distance themselves from this approach and to consider alternatives.

The concept of inequality of opportunity was operationalized by Roemer (1998), who developed a framework that defines inequality of opportunity as a function of circumstances and effort. His work was further refined by other economists, with additional thinking about the role of luck and how to attribute outcomes to both effort and circumstances. As a result of these developments, a growing empirical literature on the measurement, interpretation and policy implications of inequality of opportunity is growing rapidly. Unfortunately, most of this work is taking place outside the MENA region.

Today, inequality is increasingly attracting the attention of politicians. Many economists are conducting studies of inequality, both of outcomes and opportunities. There are solid theoretical foundations and new techniques to study inequality. This thesis is intended to make a modest contribution to the empirical literature on inequality of opportunity in Egypt.

Chapter 3

Inequality in Egypt

Abstract

This chapter assesses the level and evolution of inequality in Egypt. Besides making a distinction between inequality in terms of the distribution of income and assets, it also reviews the recent empirical literature on equality of opportunity. In addition, it provides an account of the perception of inequality. The analysis is conducted comparatively, placing Egypt in relation to countries in the Middle East and North Africa as well as developing and advanced countries. Finally, the chapter provides a brief historical background to contextualize observed measures of inequality. The main conclusion of this review is that inequality in Egypt is not the worst in the developing world, thanks in large measure to the reforms adopted during the Nasserite era in the 1950s and 1960s and the subsequent persistence of redistributive policies until today. Furthermore, although some work has been done recently on equality of opportunity, this literature is relatively new and rather slim. Further research is needed, especially in terms of attributing variations in outcomes, such as earnings or assets, to the initial circumstances an individual cannot change as opposed to his/her effort.

3.1 Introduction

The gap between Egypt's rich and poor has often been cited by news agencies and analysts alike, as one of the leading sources of discontent in the wake of the 2011 revolution. Yet, available data suggest that inequality has been declining since 2000. According to both the Egyptian government and the World Bank, Egypt's Gini coefficient dropped from around 36% in 2000 to 31% in 2009 (World Bank, 2007, 2011). Simultaneously, Egypt has enjoyed growth rates of around 5% in the years before the revolution, and high growth rates were associated with lower poverty. These surprising observations suggest that there is more to the puzzle of perceptions and actual measures of inequality in Egypt than meets the eye.

This chapter assesses the level and evolution of inequality in Egypt and reviews the context in which these changes occurred. Besides making a distinction between inequality in terms of the distribution of income and assets, it also reviews the recent empirical literature on equality of opportunity. In addition, it provides an account of the perception of inequality. The analysis is conducted comparatively, placing Egypt in relation to countries in the Middle East and North Africa region as well as developing and advanced countries. Finally, the chapter provides a brief historical background to contextualize the evolution of observed measures of inequality.

To reach a well-founded conclusion about the level and evolution of inequality in Egypt, the chapter focuses on measures of inequality from different angles, along the lines discussed in chapter 2. A distinction is made between inequality of outcomes and opportunities. Within outcomes, a further distinction is made between inequality of incomes and inequality of assets. Measures of income typically draw on household surveys and can be compared over time in the form of Gini coefficients or by observing others measures of distribution such as quintile shares. Equality of assets is related to the distribution of wealth in the form of capital, land and labor, but can also include measures of human

capital such as acquired education and health status. It can also be measured by Gini coefficients or averages across different subgroups.

Attention is given to inequality in incomes and assets from the perspective of gender, spatial and age characteristics. Males are often privileged over females. Inequality within a given country tends to be biased against certain regions at the expense of others. For example, Southern parts of Italy tend to be worse-off than the northern parts. And children may also be a more vulnerable group in society compared to middle-aged or older groups.

In addition to inequality of outcomes, the other approach to measuring inequality is inequality of opportunity. The wider empirical literature on equality of opportunity has been covered in Chapter 2. The focus in this chapter will be on the empirical literature on Egypt. Although this latter literature is growing, it remains very thin.

While the above measures of inequality may tell one story, peoples' views and actions are driven by their perceptions as well, which may or may not correspond to the data. Therefore, the chapter complements the traditional metrics with evidence based on opinion surveys to see if there is a gap between facts on the ground and the perceptions of inequality.

After gaining a reasonable sense of the level and evolution of inequality in Egypt, an equally important question is: what was the historical socio-economic and political context in which changes in inequality took place? The intention in this section is not to establish causality between inequality and its drivers in a rigorous manner using econometric or political economy models. Rather, the goal is to provide a brief historical background regarding the socio-economic and political context within which inequality has evolved in Egypt. After all, the nature of the political regime and institutional set-up must have some if not the greatest influence on inequality in any society (Acemoglu and Robinson, 2012).

The rest of the chapter is organized as follows. Section 2 offers various measures of income and asset inequality. Section 3 deals with inequality of opportunity, followed by section 4 on the perception of inequality. Section 5 discusses a number of limitations of these empirical results. Section 6 reviews Egypt's recent history of feudalism prior to 1952, socialism between 1952 and mid-1970s, and finally liberalism from the mid-seventies until now. The last section offers concluding remarks.

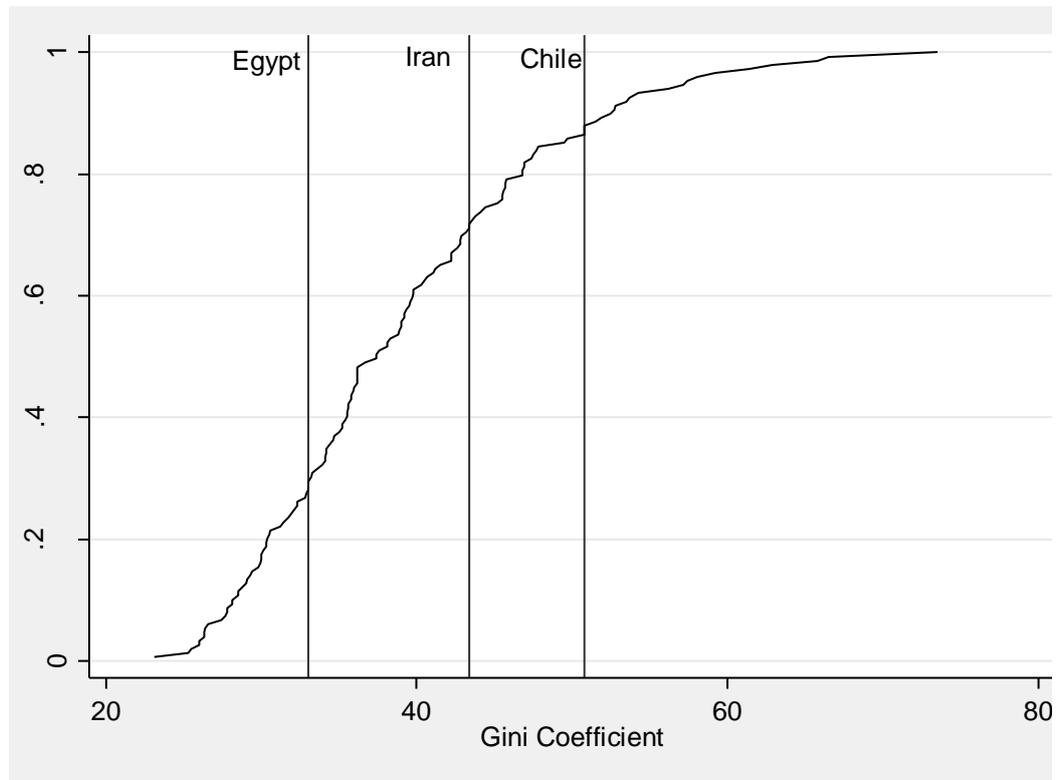
3.2 Inequality of Incomes and Assets

Several studies have looked at income and to a lesser extent asset inequality in Egypt. At the same time, some studies have focused on poverty, while others paid attention to inequality by gender or geographical location. These studies are reviewed below, starting with income inequality.

3.2.1 Income Inequality

Income inequality in Egypt is relatively low by international standards. On the basis of the information provided in Figure 3.1, which shows on the y-axis an ordinal range of all country's Gini coefficients from 0 to 1 and the values of Gini coefficients for each country on the x-axis, Egypt was approximately at the 30th percentile of the world distribution in 2008-9.

Figure 3.1 Egyptian Gini within the Global Distribution in 2008-9



Source: All the Ginis database (Milanović, 2013)

Note: Figure 3.1 includes the most recent observations from the All the Ginis database for 149 countries. Countries with most recent observations from before the year 2000 have been dropped. It also includes as reference points Iran with a Gini coefficient of 43.4 at the 72nd percentile and Chile with a Gini coefficient of 50.8 at the 87th percentile.

In fact, Gini coefficients in Egypt have been around 32% between 2005 and 2011. This is on par with most OECD countries and much lower than the United States, which has a Gini coefficient of over 40%. It is also lower than most countries with GDP per capita in terms of PPP close to Egypt, such as Georgia (42.1% in 2010), Paraguay (52.4% in 2010) and El Salvador (46.8% in 2008) (World Bank - World Development Indicators, or WDI).

In comparison to other Middle Eastern countries, Egypt also performs well. As shown in Table 3.1, Egypt has the lowest Gini coefficient compared with all other countries in the region, but it should be noted that within-country inequality is not particularly high in any country of these countries. Bibi and Nabli (2010) survey the literature on the Arab world and conclude, on the basis of average Gini coefficients, that the region is a “medium inequality” region (p.37).

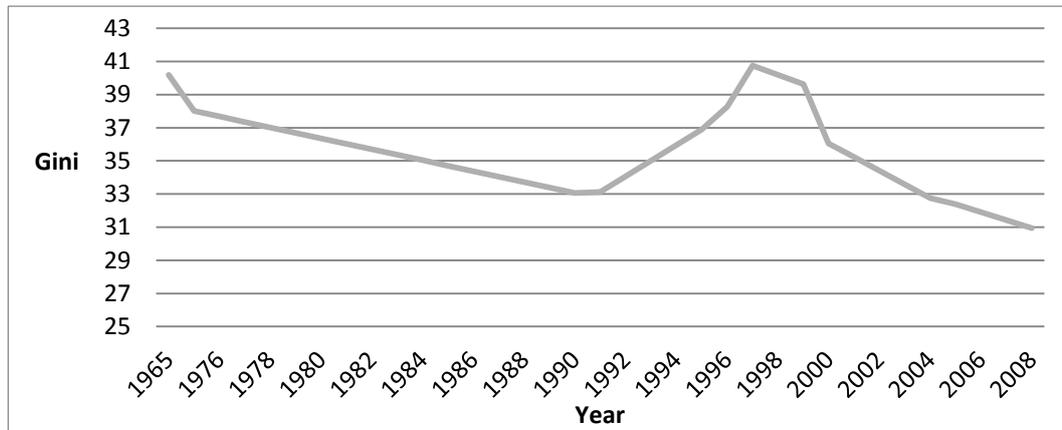
Table 3.1 Gini Coefficients of Expenditure and Expenditure Per Capita for Arab Countries, Turkey and Iran

Country	Year	Gini inequality (expenditure, %)	Expenditure p.c. (PPP, \$ 2005)
Algeria	1995	35.3	1,441
Comoros	2004	64.3	1,199
Egypt	1999	32.8	1,346
Iran	2000	41.7	7,438
Jordan	1997	36.4	1,819
	2002	38.9	2,107
Kuwait	1999	36.0	10,792
Lebanon	2004	36.0	3,869
Mauritania	1995	37.9	944
	2000	39.0	1,060
Morocco	1998	39.5	1,557
	2000	40.6	1,604
Oman	2000	39.9	5,531
Syria	1997	33.7	1,577
	2004	37.4	1,810
Tunisia	1995	41.7	1,849
	2000	40.8	2,189
Turkey	2000	41.0	9,898
UAE	2007	38.3	
Yemen	1998	33.4	1,084
	2005	37.7	1,008

Source: Bibi and Nabli (2010) except for Iran's and Turkey's Gini coefficients, which are from Solt (2009) and their expenditure p.c. from the World Development Indicators (WDI) (World Bank, 2014b)

Over time, inequality in Egypt exhibits three distinct episodes (see Figure 3.2). From 1965 to 1990, Gini coefficients were declining from approximately 40% to 33%. This is surprising given that Sadat shifted from the socialist policies of Nasser starting in the mid-1970s. The most plausible explanation is either data imperfection and/or the lagged impact of Nasser's socialist policies and their persistence over time. Whatever the explanation, inequality seems to have become worse between 1990 and 2000, where Gini coefficients rose from 33% to 41%. And this may be attributed to the lagged effect of the laissez-fair policies adopted by Sadat and followed subsequently by Mubarak. Finally, the third episode started in 1998, during which the Gini coefficient was falling again to around 31% in 2008. This improvement has no apparent explanation and could be attributed to an authoritarian bargain in which the governments paid rents to their citizenry in exchange for limited political freedoms. This explanation will be elaborated more fully in chapter 7 of this thesis.

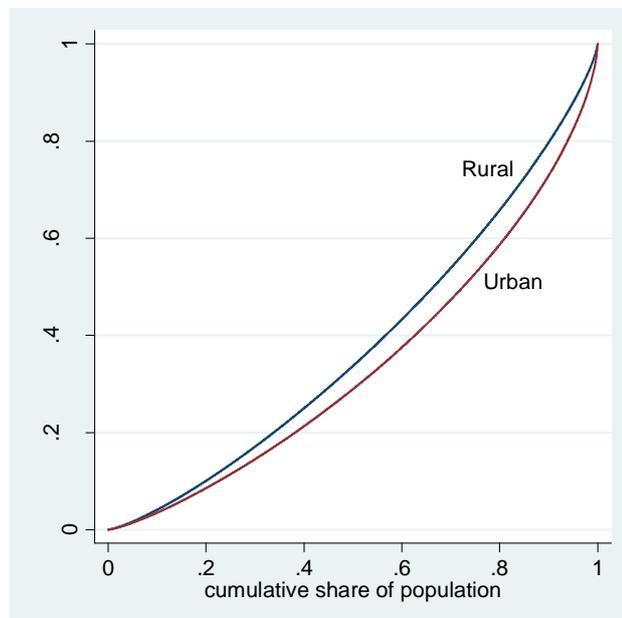
Figure 3.2 Gini Coefficient (expenditure, %) for Egypt, 1965-2008



Source: Solt (2009) database

Geographically, inequality within Egypt is well documented. According to Verme (2014, p. 37), the gap is more pronounced between the four main Egyptian cities, and the rest of the country, than between urban and rural areas. However, inter-personal inequality in the urban areas is also greater than inter-personal inequality in the rural areas. Figure 3.3 shows the Lorenz curves for both urban and rural expenditure. On the y-axis is the cumulative share of total expenditure and on the x-axis is the cumulative share of population. The closer a curve is to a 45-degree line from the origin of the graph, the greater the equality of expenditure. As Figure 3.3 shows, the rural Lorenz curve exhibits greater equality than the urban Lorenz curve.

Figure 3.3 Lorenz Curves for Urban and Rural Total Expenditure in Egypt, 2010



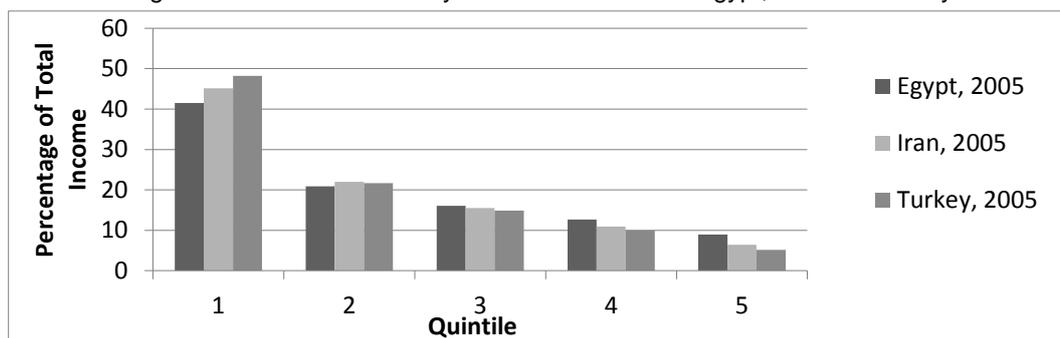
Source: Household, Income and Expenditure Survey (HIECS) (EERF & CAPMAS, 2013)

These findings are not surprising given that typically, urban populations exhibit a greater skill variance than rural populations. Also urban areas provide a greater variance in terms of job opportunities. In addition, governments tend to allocate more public resources to investment in infrastructure to urban rather than rural areas. Between 2005 and 2009, the urban-rural gap decreased somewhat because the average urban income (as estimated from household surveys) decreased more in real terms than the average rural income (Verme, 2014).

Throughout this chapter Iran and Turkey are frequently used as comparators to Egypt. While it is true that no two countries are exactly alike and have the same historical background, Iran and Turkey have some important commonalities with Egypt. They are both populous countries with about 80 million citizens compared to Egypt's 90 million. Though Iran and Turkey are richer than Egypt, they are all middle-income countries. And importantly, the three countries are all in the same region with a similar cultural background. The three countries have also been frequently analysed together as in the work of Salehi-Isfahani et al. (2009) and Zubaida (2000).

Comparing the income share by quintile in Egypt (vertical axis) with Iran and Turkey in 2005 is also revealing (Figure 3.4). While the share of the top quintile in all three countries is above 40% of total income, the percentage is slightly lower in Egypt than the other two countries. At the other extreme, the lowest-income 20% in Turkey receive almost half the share of income the corresponding group earns in Egypt. Iran is in between Turkey and Egypt in all quintiles, save for the second tier.

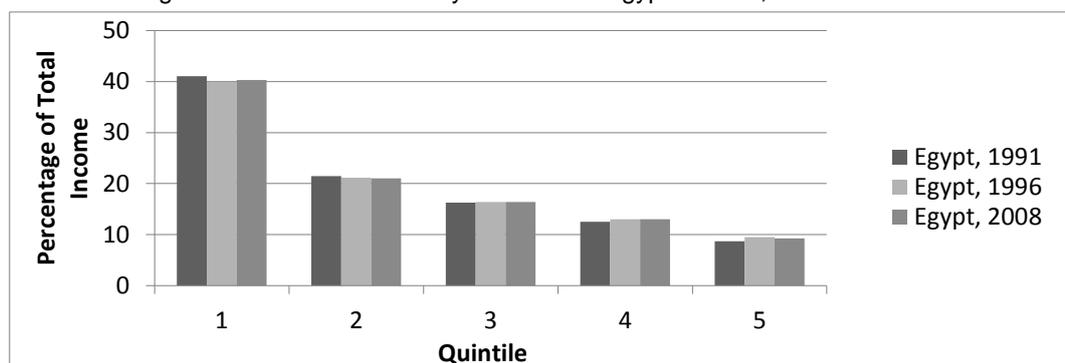
Figure 3.4 Income Shares by Quintiles in 2005 for Egypt, Iran and Turkey



Source: WDI

Looking at the quintile distribution of income in Egypt over time, Figure 3.5 shows that between 1991 and 2008 the income shares between different quintiles have barely changed. This is not to say that inequality has not necessarily changed during this period as suggested by the Gini coefficient. This may be because quintiles distributions are a relatively blunter tool and can leave room for much variance within the quintile groups.

Figure 3.5 Income Shares by Quintiles in Egypt in 1991, 1996 and 2008.



Source: WDI

Additional insights can be gained from examining poverty. Clearly poverty does not directly measure the overall distribution of income or wealth in a country, but it deals with the poorest tail end of the distribution.

In the Egyptian case, a World Bank report (2011) disaggregates poverty into three levels: upper, lower and extreme poverty lines as shown in Table 3.2.¹⁰ The decomposition reveals that despite an overall decrease in the percentage of the poor population to total population from 42.6% in 2000 to 41.2% in 2009, extreme poverty, i.e., the inability to afford basic food needs, reached its highest level during 2008/09 in the last 15 years. This means that 5.1 million Egyptians were severely deprived of basic food needs in 2008/09. Of these, 4.6 million lived in rural areas. Overall, around 16 million Egyptians were below the lower poverty line, and 30 million below the upper poverty line. More than half of the population in rural areas remains poor and near poor. This speaks to the point that relatively high economic growth in the decade of the 2000s was not inclusive. The increases in populations below the lower and extreme poverty lines are also surprising given the decreases in Gini coefficients over the same period. However, this may speak to the limitations of the Gini coefficient as a measure of inequality, which will be discussed later in the chapter.

The World Bank report (2011) also notes that the economic crisis in 2008 further strained the poor by decreasing the demand for labor. This led to an increase in extreme poverty with as many as 5.1 million Egyptians were severely food deprived in FY2 (Fiscal Year) 2008/09 (double the number in 2004/05).

Contrasting the trends in overall income inequality as measured by the Gini coefficient (Figure 3.6) with changes in the lower poverty line reveals a divergence. Despite the decreases in inequality over the time period 2000 to 2009, poverty rates have been rising. This may be because poverty focuses solely on the lower tail of the distribution.

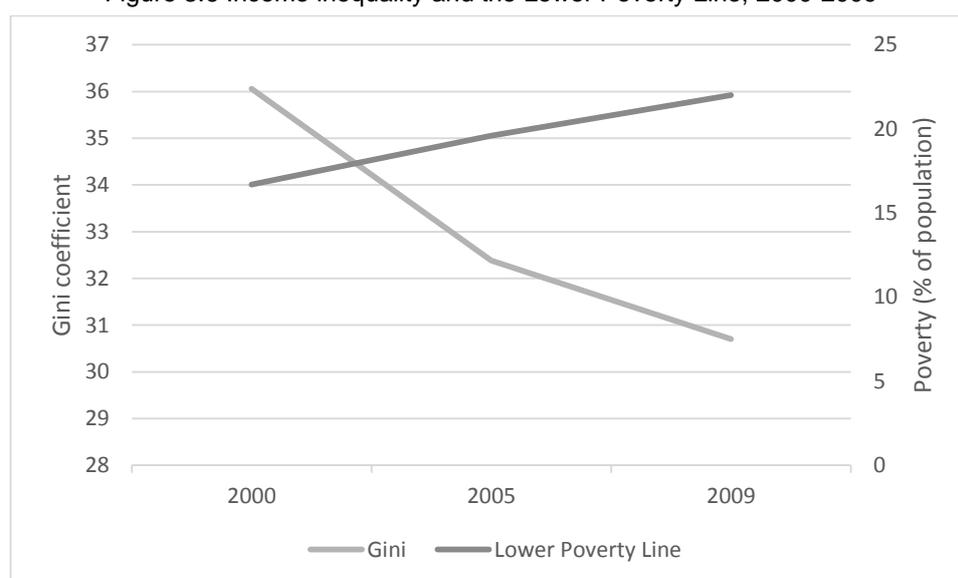
¹⁰ The definitions for levels of poverty are as follows: Extreme poverty – inability to provide even for basic foods (The World Bank report (2007) where these figures are drawn from, calculated a minimal food basket required for survival based on consumption patterns of the poor); the lower poverty line – means spending less than the required amount for both essential food and non-food needs; upper poverty line – means spending enough to cover basic food and marginally more than essential non-food needs. Combined, the three groups constitute total poor.

Table 3.2 Poverty as a percentage of population by urban/rural location and over time

As a percentage of total population									
	1999-2000			2004-05			2008-09		
	Urban	Rural	All	Urban	Rural	All	Urban	Rural	All
Extreme (food) line	0.8	4.4	2.9	1.7	5.4	3.8	2.6	9.6	6.7
Lower poverty line	9.3	22.1	16.7	10.1	26.8	19.6	10.6	30	22
Upper poverty line	20.6	29.8	25.9	15.8	24.9	21	14	22.7	19.2
Total poor	29.9	51.9	42.6	25.9	51.7	40.6	24.6	52.7	41.2

Source: World Bank (2007: iii), World Bank (2011: 2), CAPMAS, HIECS 2000 and 2005.

Figure 3.6 Income inequality and the Lower Poverty Line, 2000-2009



3.2.2 Inequality of Assets

Asset inequality covers a wide variety of monetary and nonmonetary variables including land and physical, financial and human capital. Given data availability, this chapter will focus on land and human capital; data on the distributions of physical and financial capital are simply not available.

Land

The earliest available data on asset ownership in Egypt relate to land ownership from the turn of the 19th century. Table 3.3 shows Gini coefficients of land ownership from a number of sources. According to Radwan (1977), the Gini coefficient for land ownership rose from 70% in 1896 to 76% in 1952. Following Nasser's land reform in 1952, Gini coefficients for land ownership declined until the mid-1960s. In 1977, the coefficients from Hansen (1991) show that inequality had risen again.

The pattern of the distribution of land holdings over the same period is similar to that of land ownership.¹¹ As shown in Table 3.4, the Gini coefficients before 1952 were 0.7 or higher, declining after the land reform in the 1950s, then rising in the 70s.

Additional insights into the distribution of land can be gained by looking at the land ownership patterns broken up by decile as shown in table 3.5. In 1950, the bottom 60% of the population had no land holdings, while the top quintile maintained around 80% of land holdings. The biggest increase over time went to the middle quintiles, essentially at the expense of the top quintile.

Hansen and Radwan (1982) found that the decreases in inequality resulting from the land reform in the 1950s, had been reversed by 1977. Overall, inequality of land ownership and holdings seems to have followed a U-shaped curve starting with high inequality before 1952, declining in the wake of land reform in the 1950s, but increasing thereafter possibly starting in the 1970s.

Table 3.3 Land ownership Gini coefficients, 1896 - 1977

	1896	1950	1952	1961	1965	1977
Radwan (1977)	0.696		0.758	0.43	0.38	
Central Bank of Egypt (1968)		0.61		0.432	0.383	
Hansen (1991)		0.74				0.66

Table 3.4 Land holding Gini coefficients, 1950 – 1979

	1950	1961	1965	1974/75	1977/78	1979
Radwan (1977)	0.889	0.8				
Hansen (1991)		0.64	0.53	0.46	0.48	0.55
Zaytoun (1982)	0.68				0.48	

¹¹ Land holdings is distinguished from land ownership as holdings may be rented or shared in some partnership with the owner. A further discussion is available in Hansen (1991).

Table 3.5 Land Holdings and Ownership, 1950-1978

	Holdings				Ownership	
	1950	1950	1961	1977/78	1950	1977/78
	Radwan (1977)	Hansen (1991)	Radwan (1977)	Hansen (1991)	Hansen (1991)	
1st decile	0		0			
2nd decile	0		0			
1st quintile	0	2	0	6	4	5
3rd decile	0		0			
4th decile	0		0			
5th decile	0		1			
6th decile	0		2.54			
7th decile	2.31		6.21			
8th decile	16.05		9.62			
2nd to 4th quintile	18.36	25	19.37	41	18	25
9th decile	12.03		15.67			
10th decile	69.61		64.96			
Top quintile	81.64	73	80.63	53	78	70
Gini	0.889	0.68	0.8	0.48	0.74	0.66

Source: Recreated from Verme (2014) derived from Radwan (1977) and Hansen (1991)

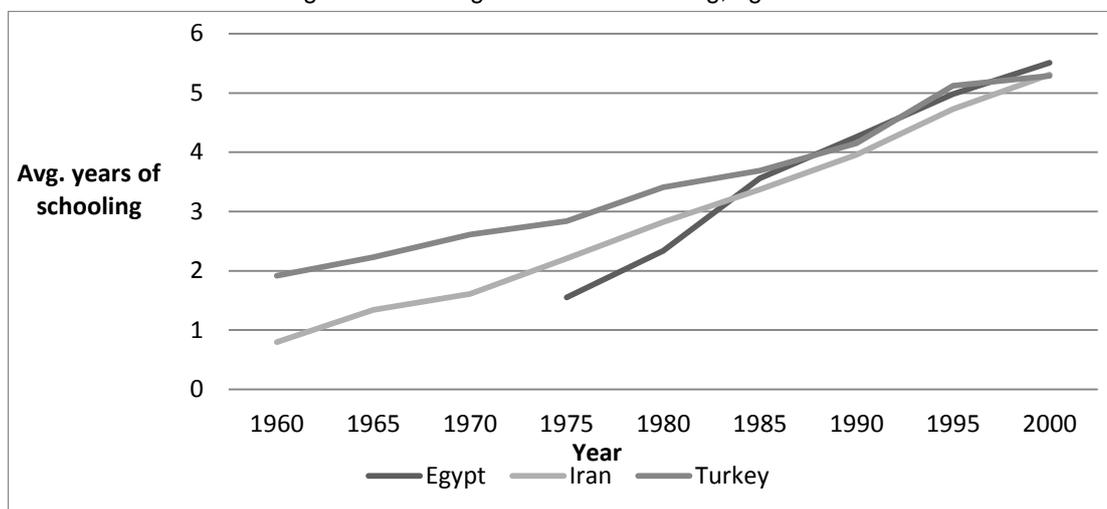
Education

In recent decades, Egyptians saw a significant improvement in the average rates of enrollment at all levels of education. Table 3.6 shows the enrollment rates in primary, secondary and post-secondary education for Egypt, Iran and Turkey over the period 1965-2000. The data for Egypt only begins in 1975, but it is apparent that at that time Egypt had a higher percentage of the population without schooling (78.3% compared to Iran and Turkey with 70.7% and 50.5% respectively). By 2000, Egypt had caught up with Iran (with 35.9% of the population with no schooling compared to 34.8% for Iran). Turkey did better than both, with only 20.8% of the population with no schooling in 2000. With respect to enrollment, in 1975, 22% of the population in Egypt attended primary education and above, while by 2000, this figure had risen to approximately 65%. The corresponding figure for Iran in 2000 was also 65%, with both Egypt and Iran lagging behind Turkey (79%). In all three countries, there was a notable increase in the enrollment in secondary and higher education.

The increase in access to education was translated into an increase in the average years of schooling. Comparing Egypt to Iran and Turkey again, Figure 3.7 shows that all countries exhibit an upward trend over the entire period from 1960 onward. However, Egypt started in 1975 from a much lower average years of schooling compared to both Iran and Turkey. However, Egypt essentially caught

up with Turkey in 1985, surpassing Iran since then. By 2000, all three countries enjoyed an average years of schooling of above 5 years.

Figure 3.7 Average Years of Schooling, aged 15+



Source: Barro and Lee (2010)

Improved education is also apparent from the figures for literacy rates shown in Table 3.7. The literacy rate in Egypt started out in 1975 at just under 40%, so did Iran. In the mid-1980s, Egypt had fallen behind Iran while Turkey had further improved its literacy rates. In 2010, Egypt had reached a literacy rate of 74%, while Iran was at 85% in 2008 and Turkey at 94% in 2011.

Besides these significant improvements, Egypt has also done well with respect to the overall distribution of education across its citizens. Table 3.8 shows the evolution of Gini coefficients for the average years of schooling over time for several countries in the MENA region, along with the corresponding means for East Asia and Latin America. In 1970, Egypt had one of the most unequal Gini coefficients in the region at 88%, third after Morocco, at 90% and Yemen at 99% (5 years later in 1975). By 2010, Egypt's Gini had dropped to 42%, close to the regional mean at 37%, and better than other countries that started out with figures closer to Egypt like Morocco at 56% and Iraq at 49% and closer to countries with higher GDP per capita like Tunisia at 41% and Qatar at 42%. For the MENA region as a whole, the mean Gini coefficient in 1970 was much worse (80%) than both East Asia (50%) and Latin America (45%). By 2000, the mean for the MENA region declined significantly to 47%.

Table 3.6 Educational attainment by level of schooling, % of population (1960-2000)

	Year	No Schooling	Primary	Secondary	Post-secondary
Egypt	1960				
	1965				
	1970				
	1975	78.3	11.3	7.8	2.6
	1980	69.6	14.7	10.6	5.1
	1985	55.7	16.8	23.8	3.6
	1990	49.5	17.1	27.9	5.4
	1995	41.5	20.0	31.2	7.3
	2000	35.9	20.6	34.2	9.3
Iran	1960	88.6	6.9	4.0	0.5
	1965	81.5	10.8	6.8	0.8
	1970	77.8	11.6	9.5	1.1
	1975	70.7	13.3	14.3	1.7
	1980	62.3	18.0	17.6	2.1
	1985	55.4	21.2	21.2	2.3
	1990	46.7	25.5	24.3	3.5
	1995	38.9	26.4	29.3	5.4
	2000	34.8	24.2	33.5	7.5
Turkey	1960	59.2	35.6	4.6	0.6
	1965	55.8	36.4	6.6	1.1
	1970	50.5	39.3	8.4	1.7
	1975	47.7	39.3	11.6	1.4
	1980	41.1	41.8	14.1	3.0
	1985	39.1	41.0	16.0	3.9
	1990	35.4	41.2	18.2	5.2
	1995	23.8	47.4	21.7	7.1
	2000	20.8	50.8	19.7	8.7

Source: Barro and Lee (2010)

Table 3.7 Literacy rate, adult total (% of people ages 15 and above)

	1975	1976	1985	1986	2008	2011	2012
Egypt		38.2		44.4			73.9
Iran		36.5		52.3	85		
Turkey	61.6		76			94.1	

Source: WDI

Table 3.8 Gini Coefficients for Education in Arab Countries and Iran (1970 – 2010)

	1970	1975	1980	1985	1990	1995	2000	2005	2010
Algeria*	0.816	0.767	0.707	0.655	0.606	0.562	0.518		
Bahrain**	0.710	0.630	0.560	0.510	0.450	0.330	0.250	0.220	0.200
Egypt **	0.880	0.840	0.760	0.660	0.610	0.560	0.500	0.460	0.420
Iran **	0.820	0.770	0.700	0.630	0.570	0.520	0.450	0.400	0.360
Iraq**	0.870	0.830	0.770	0.690	0.620	0.570	0.530	0.520	0.490
Jordan**	0.680	0.640	0.590	0.530	0.460	0.410	0.360	0.330	0.300
Kuwait**	0.620	0.680	0.610	0.550	0.520	0.500	0.440	0.360	0.330
Libya**	0.760	0.700	0.650	0.600	0.530	0.480	0.450	0.420	0.400
Morocco**	0.900	0.870	0.830	0.790	0.740	0.690	0.650	0.610	0.560
Qatar**	0.710	0.670	0.630	0.590	0.570	0.520	0.490	0.450	0.420
Saudi Arabia**	0.690	0.650	0.600	0.540	0.480	0.460	0.410	0.360	0.300
Syria**	0.710	0.660	0.600	0.530	0.480	0.430	0.420	0.390	0.370
Tunisia**	0.820	0.750	0.670	0.650	0.600	0.540	0.490	0.450	0.410
UAE**	0.800	0.760	0.710	0.660	0.590	0.500	0.410	0.330	0.280
Yemen*		0.991	0.957	0.91	0.846				
MENA mean	0.770	0.747	0.690	0.633	0.578	0.505	0.455	0.408	0.372

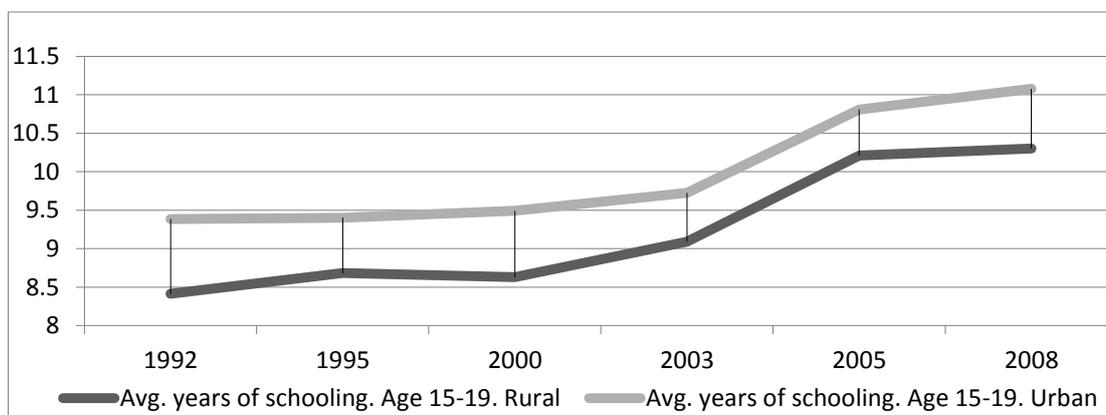
Source: * - Thomas et al. (2001); ** - Ibourk and Amaghous (2012)

Note: Gini coefficients calculated based on years of schooling.

Inequality in the distribution within Egypt is not as favorable. Comparing the average years of schooling between urban and rural areas, Figure 3.8 shows that the urban population has approximately a year more schooling than the rural population. Moreover, the gap has persisted over time. Based on data from the ELMPS, illiteracy among youth adults (ages 25-29) has dropped from 24% in 1998 to 16% in 2012. However, the rates for females remain much higher at 34% in 1998 dropping to 20% in 2012 and in particular for rural females, who were 50% illiterate in 1998 and still at 29% in 2012 compared to urban males who were at 8% in 2012.

And there is evidence supporting the view that the expansion of education to more Egyptians over time has come at the expense of quality of education. Due to limited resources to build enough schools, class sizes became more than 70 students per class and many schools now operate multiple shifts per day. Assaad et al. (2014) and others point out that education in Egypt focuses on credentials rather than skill development, memorizing rather critical thinking. Furthermore, Krafft (2012) noted out that the high grade repetition among Egyptian students was an indication of both poor schooling and a waste of educational resources. She further pointed out that the rates of repetition were not evenly distributed, with students from lower wealth quintiles much more likely to repeat than those from higher ones.

Figure 3.8 Average Years of Schooling in Age Group 15-19 by Urban and Rural Population, years 1992-2008



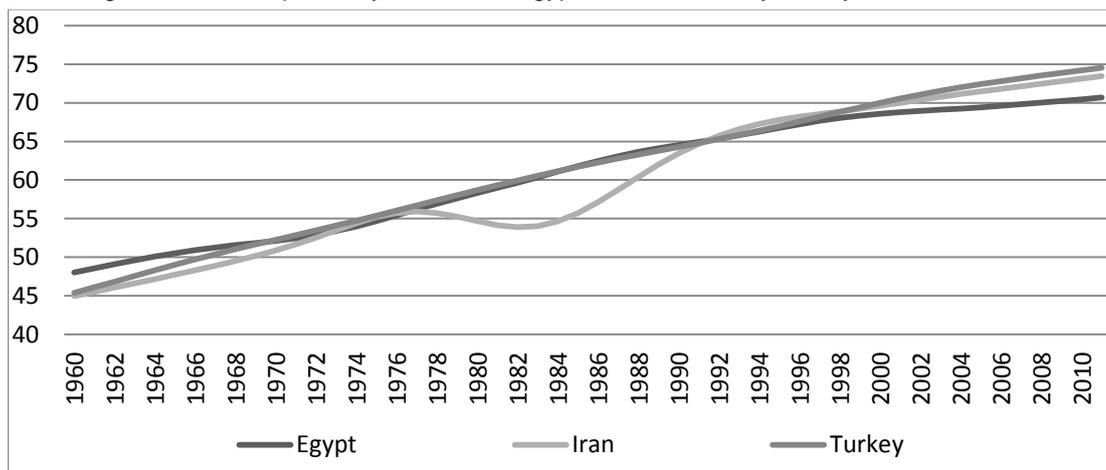
Source: Barro and Lee (2010)

Health

Just as in education, health services have been made more accessible to a larger segment of the population in Egypt since the 1960s. As a result, health outcomes have improved significantly over time and in many instances approximated those in similar developing countries. However, there are some disparities, at least with respect to the poor in general and poor children in particular.

Figure 3.9 shows that life expectancy in Egypt, Iran and Turkey increased from 45-50 years in 1960 to 70-75 years in 2010. Egypt started out with a life expectancy of about 48 years in 1960 rising to just above 70 years by 2010. While from these select countries, Egypt had the highest level of life expectancy in 1960, equal to that of East Asia & Pacific, it has improved the least and now lags behind the other countries.

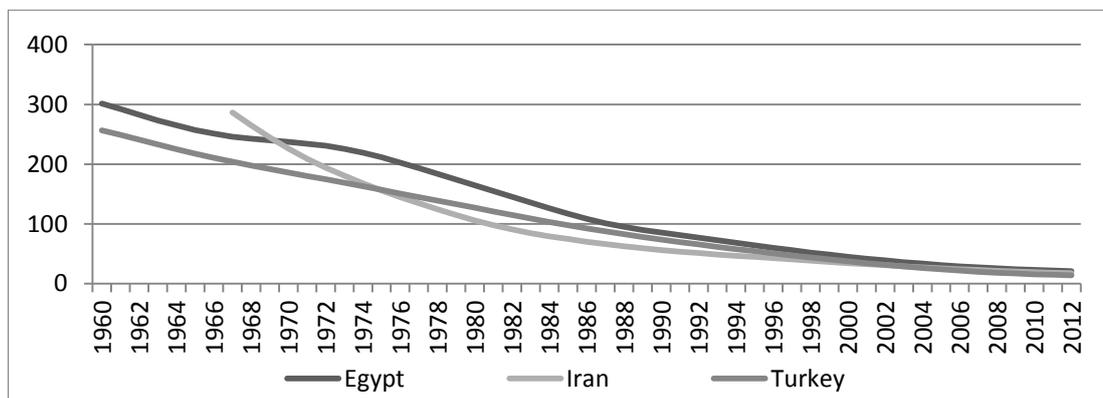
Figure 3.9 Life Expectancy at Birth for Egypt, Iran and Turkey, total years, 1960-2010



Source: WDI

Figure 3.10 shows infant mortality rates for Egypt, Iran and Turkey. Starting from 301 deaths per 1,000 births in 1960 and falling to 21 in 2010, Egypt started with a higher under-5 mortality rate than Turkey, but has exhibited a convergence to the levels of Iran and Turkey.

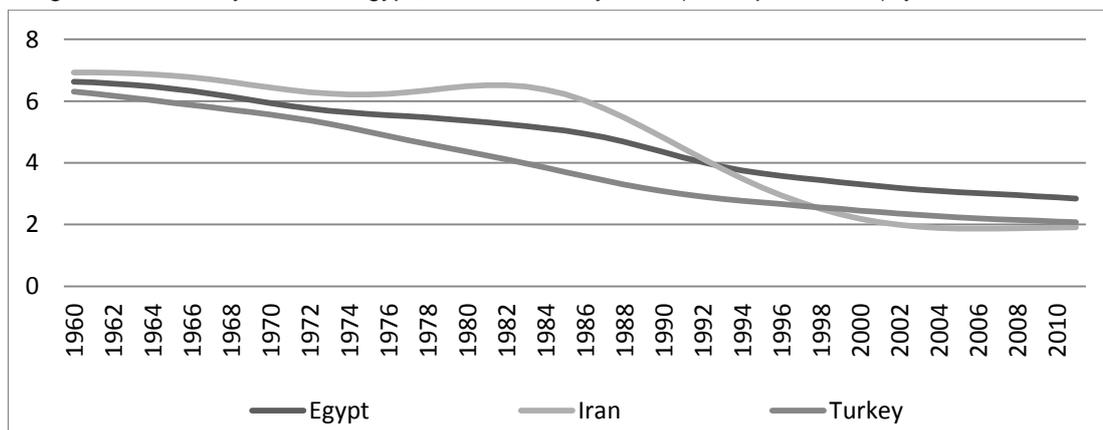
Figure 3.10 Infant Mortality Rate for Egypt, Iran and Turkey, under 5 (per 1,000 life births), years 1960-2010



Source: WDI

Over this same period, fertility rates have dropped considerably everywhere, including Egypt, Iran and Turkey. As shown in Figure 3.11, in 1960, Egypt had a fertility rate of 6.8, but this rate has dropped to 2.9 in 2010. Notwithstanding this observation, the fertility rate in Egypt remains higher than the corresponding rates in Iran and Turkey (by approximately 2%).

Figure 3.11 Fertility Rate for Egypt, Iran and Turkey, total (births per woman), years 1960-2010



Source: WDI

Notwithstanding these improvements, the distribution of health outcomes shows that certain groups are particularly vulnerable, especially poor children. A study by UNICEF (2010) explored the relationship between poverty and children in Egypt and found that approximately 5 million children are deprived of necessary housing conditions, the access to clean water and sanitation. Also 1.6 million children under

the age of 5 experience health and food deprivation. In addition, they found that according to the Egypt Demographic Health Survey (EDHS), severe food deprivation increased from 6.3% of population in 2000 to 17% in 2008 and that 29% of children aged 0-4 experienced chronic malnutrition and 7% were chronically malnourished. The figures overwhelmingly suggested a worsening trend (UNICEF 2010 and Al-Shawarby et al. 2012).

More generally, health services are of low quality and unevenly distributed. Zaky and Abdel-Mowla (2011) compared doctors per population across governorates and found that Upper Egypt has on average 30% less doctors than urban areas and 20% less than the national average. Furthermore, the rural facilities are often worse equipped. In terms of total number of beds in health units, they also find Upper Egypt lags behind, with 39% less beds available than in urban areas. Higher quality healthcare is often prohibitively expensive for the poor and beyond that most private clinics are located in urban areas.

Human Development Indicators

The UNDP Human Development Index combines different monetary and nonmonetary indicators, including life expectancy, education and GDP per capita. Given that the various measures of human capital have been consistently improving as noted above, it is not surprising that collectively Egypt has been doing better over time. A policy of free access to all meant that a larger segment of the population could afford these services. Given that Egypt initially had very low levels of service provision, the country was over time able to almost catch up with comparator countries in the region and elsewhere. The fact that there is a fixed limit on the amount of education or healthcare one can receive (as opposed to say income), suggests that these services can only become egalitarian.

This is not to say that there is no inequality in Egypt across geographical divides or other dimensions. On the contrary, the Human Development Report (Handoussa, 2010) calculates its indices for Egypt (Table 3.9), showing that Lower Egypt in 2007/2008 consistently fared better across health, education and economic variables than Upper Egypt.¹²

Table 3.9 Human Development Indicators by region in Egypt, 2007/2008

	Life expectancy index	Education index	GDP index	Human dev. Index
Year	2007	2007/2008	2007/2008	2007/2008
Lower Egypt	0.775	0.694	0.694	0.734
Upper Egypt	0.753	0.655	0.655	0.708
Egypt total	0.778	0.689	0.689	0.731

Source: Handoussa (2010)

Moreover, an important qualification regarding the discussion of income and asset inequality in this section is in order. The analysis does not cover the distribution of physical and financial assets. In

¹² Note that Upper Egypt refers to Southern Egypt and Lower Egypt refers to Northern Egypt. These demarcations are broad proxies for urban and rural areas as Northern Egypt includes Egypt's two most populace cities, Cairo and Alexandria.

light of the recent book by Piketty “Capital in the 21st Century” (2014), this is not a trivial omission and it is also where inequality may be most pronounced. Unfortunately, the data is not available to researchers to verify this proposition in the case of Egypt.

3.3 Inequality of Opportunity

Measures of inequality of outcomes such as Gini coefficients (with respect to income or assets) do not differentiate between variations that are attributable to effort as opposed to those that are attributable to initial circumstances. As introduced in Chapter 1, the literature on inequality of opportunity does just that. However, the studies of equality of opportunity are more recent and are certainly scarce in the case of Egypt. This section reviews the few studies available on inequality of opportunity.

3.3.1 Employment and Earnings

There are two relatively recent studies so far on earnings inequality in Egypt that sought to assess the relative impact of circumstances and efforts. Hassine (2012), stopping short of more recent data as the analysis stopped at 2006, found that circumstances accounted for a lower bound of 11% to 20% of earnings inequality. The most significant circumstance variable was father’s education, which contributed to overall inequality of opportunity at 6% in 1988, falling to 1% in 1998, but rising to 4% in 2006. The second most significant contributor to inequality was region of birth, which was at 4% in both 1988 and 1998, and declined to 2% in 2006. The paper also measured equality of opportunity for specific subgroups, finding that for women, parental education was the most significant factor until 1998, but then father’s occupation status and mother’s employment became to most significant afterwards.

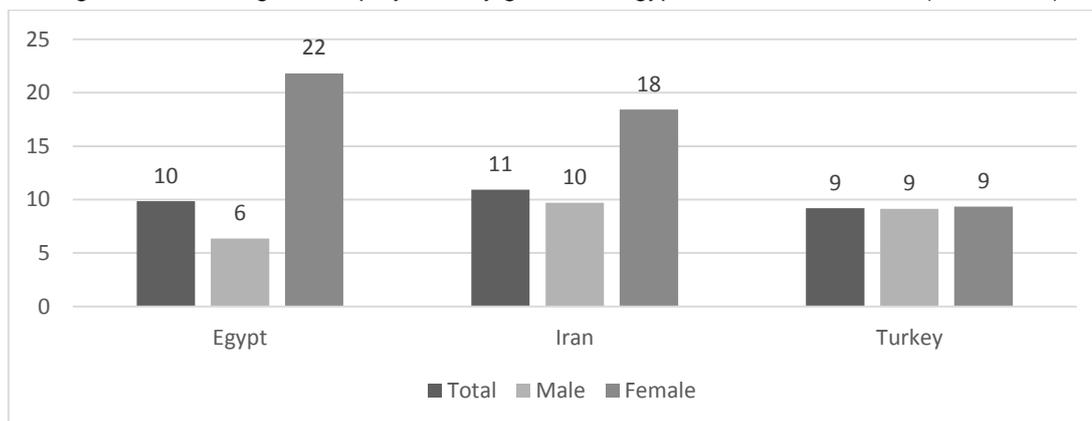
The other study conducted by Assaad et al. (2017) measured inequality of opportunity in wages and consumption in Egypt from 1988 to 2012. Their findings suggest that inequality of opportunity has stayed flat or declined over this period with point estimates ranging from 18% to 13% from 1988 to 2012 in consumption and 20% to 10% in wages. The authors attribute the declines to the fact that outcomes for individuals from middle class backgrounds have shifted closer to those from poorer backgrounds. Meanwhile, the outcomes of individuals from privileged backgrounds have remained far above the rest.

A related study by El Enbaby and Galal (2015) measured the role of circumstances on inequality of both earnings and asset ownership in Egypt from 1998 to 2012. Their results showed circumstances accounted for a lower bound of 9%-11% of inequality of opportunity in earnings and 30%-33% of inequality in asset ownership. The most important circumstance factors contributing to inequality of opportunity in each were area of birth and father’s education level. Their interpretation suggested that while inequality of opportunity in earnings may not be significantly high, it represents a short-term measure of inequality, whereas inequality in assets gives a better sense of long-run inequality as it represents the accumulation of earnings over a longer period of time and sources of income beyond earnings.

To complement these studies, one can gain some sense of the prevalence of inequality of opportunity by observing features of the labor market by demographic factors. According to a number of studies, significant differences are observed in the distribution of employment by age, gender and region. Certain groups suffer from much higher unemployment than others. For instance, Egypt has much higher female unemployment than other regions of the world. Figure 3.12 compares unemployment between Egypt and other countries and the MENA regions by gender. Average female

unemployment during the period 1990-2012 was 22%, compared to 18% in Iran and the MENA region and 9% in Turkey. Meanwhile, male unemployment over the same period was only 6%, lower than Iran at 10% and Turkey at 9%. The gap between male and female unemployment in Egypt is almost 4 times higher for females.

Figure 3.12 Average Unemployment by gender in Egypt and select countries (1990-2012)

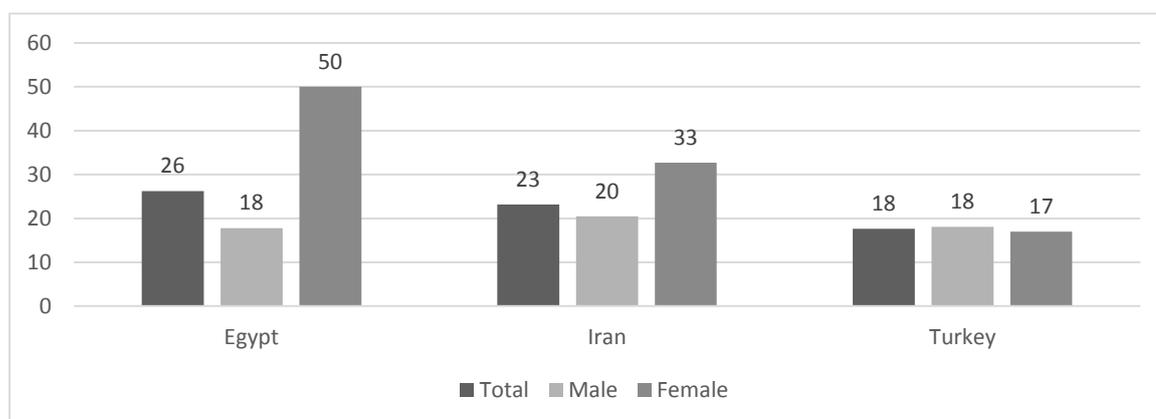


Source: WDI

Figure 3.13 shows that young females in Egypt faced 50% unemployment compared to 33% in Iran and 17% in Turkey in the same period. Meanwhile, male youth unemployment in Egypt at 18% has been much closer to other countries with, 20% in Iran and 18% in Turkey.

While female unemployment is much higher, females seek employment much less than males in the first place. Looking at employment to population ratios by geographic region and gender as shown in Table 3.10, only about 42% of Egyptians were employed in 1998. This figure did increase to 48% in 2006, but there are major gaps along urban/rural and gender lines. Rural females are 3.5 times less likely to be employed than urban males, despite a marked increase in female rural employment between 1998 and 2006. The overall gap between male and female employment is over 50% with 21.9% of Egyptian females working compared to 74.8% of Egyptian males.

Figure 3.13 Average youth unemployment by gender in Egypt and select countries (1990-2012)



Source: WDI

Table 3.10 Employment to population ratios, by urban/rural and sex (1998-2006)

	Male		Female		All	
	1998	2006	1998	2006	1998	2006
Urban	66.6	72.2	19.8	22.1	43.2	46.7
Rural	69.3	76.9	11.9	21.8	40.5	49.1
All Egypt	68.1	74.8	15.5	21.9	41.7	48.0

Source: World Bank (2007, pp. iii, 78), World Bank (World Bank, 2011, p. 2)

Differences are also apparent in wages. A study by Kandil (2009), explored the evolution of the gender wage gap, the level of wage differential based on gender, over 3 years, 1996, 1998 and 2006 in Egypt. She found that in 1998, the overall gender wage gap was 7.6%, but for a subset of the highly educated, it was 14%. In 1998, the overall gap was about 18% and in 2006, it was about 8.7%, while the gap for the highly educated had risen to 23.7%. This means that overall discrimination had initially increased from 1988 to 1998, but had then decreased in 2006. However, when just observing highly educated women, discrimination increased over each year of measurement. The gap for the less educated subset was not statistically significant.

These findings are consistent with another study by Said and El-Hamidi (2006), which looked into the impact of economic transition to a more export oriented economy on education and gender wage distribution in Egypt and Morocco. It found that in the 1990s, wage discrimination by gender increased and that wage compression increased across all sectors in Egypt.

3.3.2 Health and Education

Unlike the scarcity of work on inequality of opportunity in earnings, some work has been carried out conducted on inequality of opportunity in health and education. A study by Assaad et al. (2012) looked into the level of inequality of opportunity in health outcomes. It showed that children in the Arab world and Turkey faced unequal opportunities to accumulate factors of health such as height and weight based on circumstances that are entirely out of their control in life and lead to diminished capacity to lead a healthy and successful life. Based on the available data on circumstances, they were able to account for a lower bound of between 4%-7% and 10%-12% of inequality of opportunity for height and weight respectively in Egypt. These results were similar for Jordan and Morocco with respect to height, and Jordan and Turkey with respect to weight. Overall, the countries with the worst outcomes were Yemen and Egypt, while Tunisia and Turkey performed the best. It was also found that inequality of opportunity in health in Egypt had been oscillating in recent years due to events such as swine flu, which inspired misguided policies to deal with its spread and contributed negatively to child nutrition.

The circumstances that were shown to contribute most significantly to inequality of opportunity in health outcomes were geographic factors. This could be due to an unequal distribution of public goods, like water and sewer infrastructure, health facilities and potentially food distribution networks. Overall, the level of sanitation in the community was more important than characteristics within the individual households. Of the total inequality of opportunity for height, geographic variables accounted for 37% in 1992, rising to 92% in 2008. For inequality of opportunity for weight, the increase was also significant,

from 37% in 1995, rising to 81% in 2008. Factors such as familial characteristics including parental education, wealth and occupation played a small role.

Egypt, among other MENA countries, offers free public higher education to all those that qualify.¹³ This policy embodies the principle of providing equality of opportunity in educational attainment. However, a paper by Assaad (2010) revealed that this was not the case. The students that were able to benefit from free higher education were already from relatively affluent families. More specifically, individuals whose parents were university educated and who came from an urban governorate, had a 98.5% chance of accessing higher education, compared to a 5.5% chance for individuals whose parents are both illiterate and come from rural Upper Egypt.

Another study by Salehi-Isfahani et al. (2014) explored variation in inequality of education opportunities across MENA countries. It found that inequality of opportunities explained a significant part of inequality in educational achievements in most MENA countries. For Egypt, circumstances accounted for between 31% and 39% of inequality in math and science scores between 2003 and 2007. The most important variables were family characteristics and secondly community characteristics. They also note that despite the availability of free education, there is great variance in its quality leading to unfairness among students.

A similar paper by Krafft and Alawode (2016) assessed the role of circumstances in outcomes for higher education in Egypt, Jordan and Tunisia. They found higher measures of inequality in Egypt concluding that in order to create equal opportunity, 37% of opportunities to attain higher education would need to be redistributed from the better to the worse off. The primary drivers of inequality were mother's education and father's education contributing 27% and 42% to their overall measure of inequality of opportunity.

A study by Al-Shawarby et al. (2012) explored the variation in opportunities open to Egyptian children. Its main findings were that most opportunities had improved since the early 2000s primarily due to improved access to essential goods and services (like sanitation and immunization). More specifically, it found that factors such as basic housing services and early childhood development had improved significantly, while improvements in opportunities for education, nutrition and hunger showed either modest improvements or deteriorated. The distribution of the improvements in opportunities was unequal between worse and better circumstance groups. The factors that had the greatest gaps between groups were access to sanitation, completion of secondary education on time, non-overcrowded housing, and access to a telephone. Overall, the five most unequalizing circumstances are parents' education, income per capita, urban-rural location, number of siblings, and regional location. These are at least twice as important as gender, presence of elderly family members, and presence of both parents in the household.

3.4 Perceptions of Inequality

Measuring inequality in economic or social outcomes or even in the opportunities that people have to achieve these outcomes is an exercise that draws on facts. However, peoples' opinions and behavior are also derived from how they see the world, and these two may not always be the same. This is why

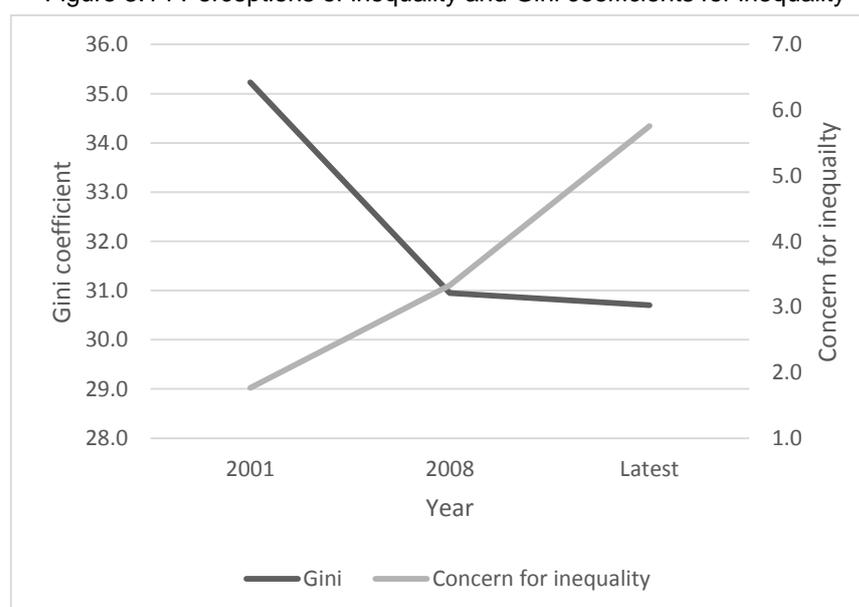
¹³ For example, to access general secondary school, the cutoff score is 70. Assaad et al (2010) demonstrate that mostly students from the highest quintiles of society achieve scores beyond this cutoff.

an exploration of the levels and trends in *perceptions* of inequality can be a valuable complement to the prior analysis.

To this end, the World Values Surveys (WVS) (WVS Association, 2016) offer some valuable insights into the perceptions of inequality. These surveys have been carried out in Egypt over the years 2001, 2008 and 2012 and include a number of questions concerning inequality, which have remained the same in all rounds. One such question asked individuals to rate their views between two statements: (1) *Incomes should be made more equal* and (2) *We need larger income differences as incentives for individual effort*. Respondents were asked to answer the question numerically, with 1 expressing a strong agreement with the one statement and 10 expressing a strong agreement with the other statement. So a very neutral individual might answer 5. Comparing the average responses throughout the three survey rounds shows a stark increase in concern for inequality. In 2001, the average concern for inequality came in at 1.8 out of 10, rising to 3.3 by 2008 and to 5.8 by 2012.

Figure 3.14 contrasts the Gini coefficient reported in Figure 3.2 over the period 2001 to 2012 regarding income inequality with the perceptions of inequality derived from the WVSs. There is clearly a strong divergence in trends between concerns for inequality and the actual measures of inequality. Gini coefficients declined between 2001 and 2008, followed by a slight decline by 2009. Conversely, perceptions of inequality have been on the rise consistently from 2001 to 2012.

Figure 3.14 Perceptions of inequality and Gini coefficients for inequality

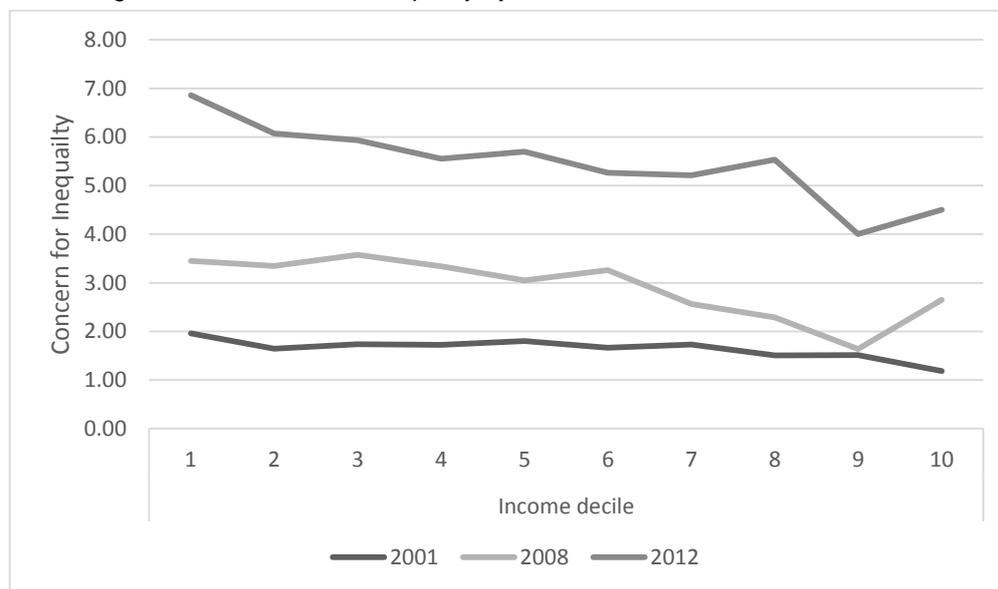


Source: Solt (2009); Verme (2014) and WVS (2016)

Concern for inequality is inversely related to respondents' incomes. Figure 3.15 depicts the concern for inequality by income decile. The horizontal axis shows the perception by deciles of income, with 1 representing the bottom poorest 10% of the population and with 10 representing the richest 10% of the population. The y-axis shows the rating for concern for inequality. At first glance, it is clear that attitudes have shifted to view society as less equal in 2008 than in 2000 and even more so in 2012. Also, not surprisingly, the less wealthy were more averse to inequalities than the rich. Another notable

observation is the range of the attitudes in each round has greatly expanded, when in 2000 all respondents answered between 1 and 2, but in 2012 the range expanded from 4 to 7.

Figure 3.15 Concern for Inequality by income Decile, 2000, 2008 and 2012



Source: WVS (2016)

One potential explanation of the increased aversion to inequality is the increased visibility of corruption and crony capitalism in recent years. As individuals become more aware that inequality results from corrupt practices, inequality is perceived as morally unjust. Egypt, like many countries in the MENA region, has been characterized by rampant corruption among senior state officials and politicians (Leenders and Sfakianakis, 2003). Transparency International (2011) noted that nepotism is so pervasive in MENA countries, such as Egypt and Morocco, that it has become a widely accepted part of life.

Towards the end of Mubarak's regime, several analysts noted the revolving door phenomenon, where members of the business elite often held important positions in government, the ruling party, parliament and other influential posts (Diwan, 2012; Osman, 2010). Favours, such as the granting of procurement contracts to former public officials or their cronies were not uncommon, and even in smaller firms, owners reported regularly needing to pay bribes to obtain licenses from government officials.

These corrupt practices and absence of accountability have not gone unnoticed and despite increases in GDP growth and associated reduction in poverty, negative perceptions of inequality were on the rise in Egypt. According to a Pew (2011) report on attitudes in Egypt, in the spring of 2011, 53% of Egyptians put corruption and lack of democracy each as their top concerns in recent years; lack of economic prosperity came up at 44%. Among low-income Egyptians,¹⁴ 60% stated lack of democracy as among their primary concerns and 59% stated the same about corruption.

¹⁴ Low-income is constituted by a reported household income of EGP 1,000 or less.

3.5 Limitations

This chapter has so far reviewed measures of inequality based on different methodological approaches. It has found that income inequality in Egypt, as elsewhere in the MENA region, is not particularly high when compared internationally. As for assets, land ownership inequality has followed a U-shaped curve declining after the 1950s, but increasing thereafter possibly starting in the 1970s. Egypt has made consistent and substantial improvements in access to human capital factors like education and health. The brief literature on inequality of opportunity highlights the importance of geographic and demographic factors on a range of outcomes, from earnings to health and educational attainment. And as for perceptions, since the 2000s, the public's concern for inequality has been rising steadily across all income deciles. The findings of these studies cannot be taken as given. Each approach has its strengths and weaknesses. Some of these stem from the methodologies used and some from data imperfections. This section will review some of the limitations of the measures presented so far in this chapter.

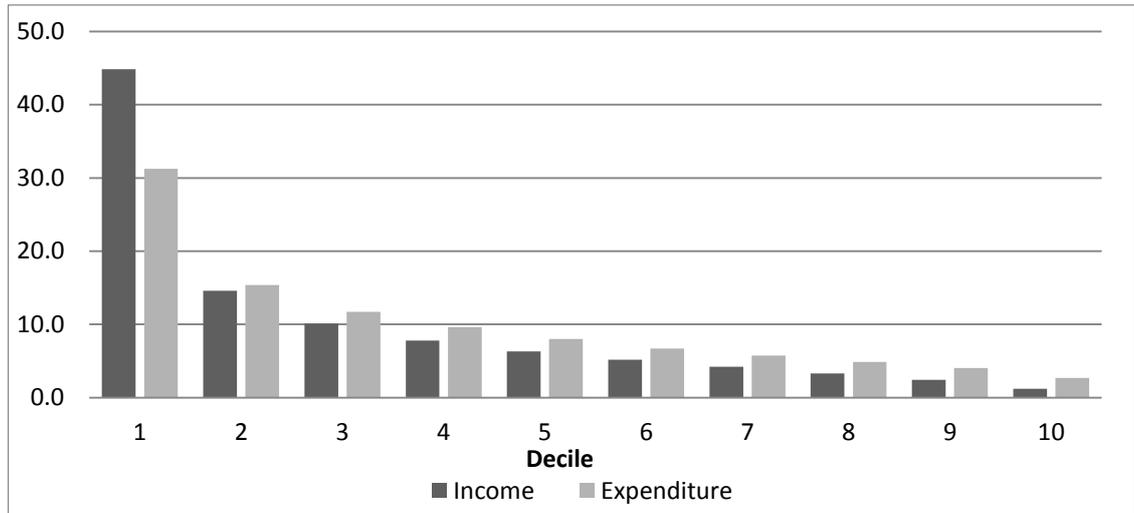
Gini coefficients have a number of theoretical drawbacks. For one, they focus on the overall distribution and relatively less on the tails, where the highest inequalities may lie. Another source of error is that it is possible to have equal Gini coefficients that have different income distributions. This can also make the comparison of Gini coefficients misleading. On the applied side, there are further limitations. It has been shown that small-samples tend to underestimate Gini coefficients (Deltas, 2003; Lerman and Yitzhaki, 1989). Furthermore, since expenditure is drawn from survey data, as opposed to income and tax data, Gini coefficients tend to underestimate the true magnitude of inequality stemming from the high end of the distribution (Bourguignon and Morrisson, 2002).

Some scholars have pointed out certain problems in the case of Egypt. According to Breisinger et al. (2012), there are large discrepancies in consumption data between household surveys and national accounts and this gap brings into question the accuracy of Gini estimates. They also argue that not only may Gini coefficients for Egypt be highly uncertain, but that despite improving income inequality, wealth inequality (say in the form of financial assets or land) may be worsening. Along similar lines, Piketty and Alvaredo (2014) discuss the limitations of conducting applied work on inequality in Egypt, because of the lack of availability of data on top incomes. Based on measures of the lower ends of the distribution, they point out that top incomes may be hypothetically much higher than currently thought, but more data are needed for more conclusive results.

Another limitation of inequality measures using expenditure, which are often more readily available than income as in Egypt, can lead to underestimation of inequality (Milanović, 1998, p. 42).¹⁵ This is reflected in the differences in expenditure and income distributions by decile shown in Figure 3.16. The y-axis shows the percentage of total income or expenditure, and the x-axis shows the population deciles. Several points can be drawn from this graph. Firstly, income shares have a greater range, from 44.8% at the richest decile, to 3.3% in the poorest quintile. Secondly, the concentration at the highest decile is much greater in income than expenditure. Also, only the highest decile has a greater share of income than of expenditure. Beyond these observations, Figure 3.16 strongly suggests that inequality measured by expenditure in Egypt is underestimated as the income shares display a much wider range and is more concentrated at the richest deciles.

¹⁵ The rationale behind this is the Keynesian view that there is a diminishing marginal propensity to consume in incomes above a budget constraint.

Figure 3.16 Income and expenditure by decile for Egypt (1997)



Source: UNU-WIDER (2008)

In the case of inequality of opportunity, there are also limitations both on the data side as well as methodologically. The data required to measure inequality of opportunity is demanding as it requires detailed information on the background circumstances of individuals as well as the outcome variable one is studying. Datasets also must be large enough to produce robust results. These data are rare, particularly for developing countries. Secondly, given that measurement results are highly dependent on the measurement technique adopted, as well as the particularities of different countries, it is difficult to make meaningful comparisons of inequality of opportunity across countries. Thirdly, results from inequality of opportunity measurement attribute the share of inequality to circumstances and produce a lower bound for the impact of circumstances. This can over-estimate the impact of effort masking a much higher impact of circumstances. Finally, in terms of operationalizing the results, drawing policies from inequality of opportunity studies can be difficult to carry out in practice. Depending on the specific area of inquiry, whether it is say economic or health related, leads to policy implications that require institutional changes rather than more straightforward policy tools.

In the case of perceptions surveys, they can provide valuable information about what respondents believe, think or feel about different issues. They can illustrate how much the levels of awareness of certain issues, inform policy debates, impact programs, measures the impacts of policies and enable their improvement and by focusing on the public rather than analysts, reveal information about state-society relations. However, they are not without limitations either. Results from perceptions surveys can be misleading in a number of ways.

For one, they can represent the impact of transitory shocks. For instance, peoples' concerns for security would be much higher in the aftermath of a violent event, despite perhaps consistently diminishing rates in crime. Another problem could be that if individuals are unaware of an issue, their answers may reflect more bias than an informed assessment. For example, individuals may assume that a more important feature of democracy is redistributive policies rather than freedom of political participation. Another interpretation could be that in developing countries, democracy is perceived as associated with Western culture or with economic liberalization. This may bias citizens' responses.

Given the above limitations, it is important to use caution and rely on as comprehensive a set of empirical approaches as possible to draw conclusions about the level and trend in inequality. Also, there is no substitute for what Paul Krugman calls in his book, "The Age of Diminished Expectations", common sense economics.

3.6 Historical Context

Egypt did not get to where it is today by chance. Variations in income and wealth distributions as well as in the perceptions of inequality cannot be isolated from the socio-economic and political context they arise in. No attempt will be made below to provide a full account of what transpired in Egypt along these different dimensions. However, it is fair to say, on the basis of extensive reading of various books (Amin, 2012; Fahmy, 2002; Osman, 2010; Verme, 2014; Waterbury, 1983), that the modern history of Egypt (between 1805 and 2011) can be classified into three episodes. During the first era, until 1952, Egypt was ruled by a small elite mostly under occupation. During the second era under Nasser, Egypt saw a much more egalitarian set of policies as the ruling officers gained their popularity by seeking the support of the farmers, workers and the middle class. In the third phase since the mid-1970s, there have been several waves of liberalizations that seem to have benefited the rich more than the rest of the population.

3.6.1 Pre-1952

Prior to 1952, the first attempt at industrialization began with Mohamed Ali (1805-1849). Even under the Ottoman Empire, Mohamed Ali took many steps to modernize Egypt. These included upgrading the irrigation system from basin to perennial irrigation and constructing the port of Alexandria and Mahmudiya canal as well as linking the port of Alexandria to Cairo via the Nile (Beblawi, 2008). Cotton planting was started on a commercial scale in 1821 and trade with Europe started. Communications were also developed to better facilitate foreign trade. However, the trade system was far from a free market. Mohamed Ali adopted a monopoly system where he bought produce from Egyptian peasant for low prices and sold it to foreign exporters at high prices to sell to European markets (Crouchley, 1937). There were also substantial investments in industry where Mohamed Ali imported modern machinery from Europe. At the time, approximately 30,000-40,000 people worked in factories, while the total population of Egypt was between 3 to 3.5 million.

In addition, Mohamed Ali also adopted legal reforms. These included the abolishment of tax farming, which was the practice of assigning the responsibility for tax revenue collection to citizens. Instead, taxes were paid directly to the government (Issawi, 1961). He also granted large estates, often of uncultivated land, to his relatives or followers. At the same time, the predominant trend of communal ownership was replaced by one in which peasants enjoyed de facto, though not yet legally recognized, rights of ownership, though their shares of land were minimal.

Despite these changes in the structure of the economy, living standards did not improve much due to mismanagement of inflation and Mohamed Ali's primary concerns for military expansion. However, coalition of European powers forced him to abandon these ambitions in 1840, which led to a slowing down of industrialization.

After Mohamed Ali, measures were taken to further improve Egypt's export capacity. Restrictions on private ownership of land were removed by 1858. Collective responsibility for land taxes were abolished and the rights of inheritance for both males and females was affirmed. Ismael Pasha (1863-

79) further expanded irrigated area. This improved Egypt's agriculture sector, which was already benefiting from a comparative advantage in crop production for cotton and sugar cane owing to good climate. Transport was also improved when the railway system was expanded linking Cairo to Alexandria and Suez in 1858. Communications were also improved with telegraph lines.

However, all these developments were funded by government revenues, but also by an increasingly high accumulated public debt, especially from foreign loans. In order to service the debt, the government focused on cotton production for export, because global prices were high due to the American civil war. The other sectors of the economy, namely transport, commerce and finance were primarily engaged in facilitating cotton trade. This came at the cost of diversifying the economy. The economic benefits of exports were also not spreading to the rest of the economy as much of the capital invested was by foreigners, who took their money abroad instead of reinvesting in Egypt.

Aside from these economic developments, Ismael Pasha also modernized the judiciary and civil code, established civil courts and created and called for an elected assembly, even though it had limited powers.

During the interwar period, between the 1920s up to the 1940s, Egypt had become a more modern and growing economy, but inequality was rising. The economy was in some ways devoted to capitalism and promoted free trade, private ownership and open markets, but most land and assets were owned by a handful of feudal elite and foreigners. Despite Egyptian independence in 1922, the British were heavily influential in Egyptian politics. The economy was primarily reliant on agriculture, further entrenching the power of large landowners (Amin, 2012). The pervasive inequality bred a growing sense of injustice and malcontent, especially among the peasant classes. As civil societies, trade unions, feminist groups and welfare organizations became more prominent, organized opposition to the status quo was mounting and there were many riots and demonstrations in the rural delta. Eventually, popular dissent culminated in uprisings against the British and the palace with armed forces mounting a coup against King Farouk in 1952.

3.6.2 Nasser's era

The Free Officers' coup d'état of July 1952 brought Nasser to power with the purpose of dismantling the former regime. The new regime changed the nature of politics. It marked a new era of politics, but also changed the nature of the economy. Nasser and the new Revolutionary Command Council (RCC) did not have much experience in politics, nor did they have a specific agenda for the economy. Rather, they put forth a set of six fundamental pledges (Waterbury, 1983, p. 48):

- 1) End imperialism and its agents;
- 2) End to feudalism,
- 3) End to monopoly and the capitalist control of rule,
- 4) Establishment of a powerful national army,
- 5) Establishment of social justice,
- 6) Establishment of sound democracy.

While these pledges do not represent detailed plans for what they sought to do, they reveal some of the thinking behind their policies. It is also important to note at the outset that not all of these pledges were pursued with the same rigor and success, if at all.

Regarding the changes to the political landscape, Nasser denounced the multi-party system and liberal constitutionalism. He saw it as a failure of the old political system and an instrument of former ruling elite class of landowners and capitalists who had exploited the masses (1984). Nasser argued that a broadly based national movement was more suitable for Egyptian conditions than the free competition of political parties. He asserted that all Egyptians wanted had similar desires for security, prosperity, development, and freedom from oppression. To this end, he launched the Liberation Rally in 1953, as a political movement. Loosely organized and practically devoid of ideological content.

On the policy front, Harik (1984) summarized his development strategy under four themes. Firstly, that industrialization was the means of modernization and improvement in the standard of living. Secondly, that agriculture would be modernized to increase productivity and ensure sufficient food provision. Thirdly, opposing forces to the national targets would be contained. And fourthly, that the peasant class would be supported and play a central role in the development process without hindering productivity. This was a calculation to achieve both social justice as well as garner political support.

The first major action was the land reform act of 1952. Two important aspects of the agrarian reform were to set limits on individual land ownership and to reform the tenancy regulations for land rental. The first of these aspects was carried out under three stages. In 1952 a ceiling on individual land ownership to 200 feddans was instituted.¹⁶ This was tightened to 100 feddans in 1961 and eventually to 50 feddans in 1969. While this reform went a long way in diminishing the power of the former elite, the redistributive outcome was partial. For instance, in 1950, 44 percent of agricultural families were landless. In 1972, due to the increase in population, this was 45% (Fahmy, 2002, p. 202). Also, despite the limitations on land ownership, they increased the numbers and acreage of medium sized properties, especially those of 20-50. These medium landowners owned almost one third of Egypt's cultivated land in 1965, while they made up only 5.2 percent of the total number of landowners (Abdel-Fadil, 1982). So the benefits of land redistribution were limited.

Another important factor of land reform was changing the tenancy regulations. The reform was aimed to balance the power between landowners and tenants and prevent abuses by the former. Prior to the reforms, landowners would lease their land, often through a verbal contract, for short period of one year or even the length of a crop cycle (4-6 months). Furthermore, landowners could terminate these contracts with little reason, while the tenants had no legal protection. The rental rates were either by time (if the seasonal harvest was poor) or by share-cropping (if the harvest was high). The new reform mandated that leases be for a minimum of 3 years, contracts be written and that the cost of rent could not exceed 7 times the basic land tax or in the case of share-cropping, the costs had to be divided between both parties (Fahmy, 2002, p. 204).

Outside agriculture, Nasser nationalized the Suez Canal in 1956 amidst a political crisis. At the time, the Eisenhower administration had agreed to participate in funding for the Aswan Dam project, an important project for Nasser's development strategy. Waterbury (1983, p. 64) remarked:

The Aswan Dam symbolized rationality in resource management, national sovereignty and strength, and the leading role of the state in finding technocratic solutions to Egypt's socioeconomic problems. All are closely interlinked.

¹⁶ A feddan is equal to a 60 metre * 70 metre area.

The Americans withdrew funding as a result of Egypt's conflict with Israel, a move which led Nasser to nationalize the Suez Canal, a French-owned company, claiming he needed the revenues in order to build the dam.

Further nationalization ensued increasing the state's capacity for its strategy of import substitution industrialization. In January 1957, commercial banks, insurance companies and foreign trade agencies were nationalized. Another wave of nationalization occurred in 1960 with Bank Misr and in 1961 more banks, insurance companies, shipping companies and construction and utilities companies (Waterbury, 1983, p. 74).

Throughout this time, the state adopted a number of policies to raise the living conditions of citizens. High marginal tax rates were introduced and salary limits for heads of public enterprises imposed. Consumption subsidies for basic commodities were introduced and all university graduates were guaranteed a job in the public sector. Among the most important policies on the social front, were the initiation of public free education and health care.

Before the revolution, education had been provided by a variety of entities including the government, private sector, charities, associations established by the aristocracy, missionaries, as well as religious and secular organizations (Tadros, 2006). Despite a 1924 decree making primary education compulsory for all, there was no budget allocated to ensure the poor access (Cochran, 1986:23). In order to expand the educational system, the government instituted a law in 1953 making all levels of education free and devoting a significant and increasing portion of the budget to the goal. According to Cochran (1986:36) the early results were impressive.

The case of healthcare was similar to that of education. Before 1952, most hospitals and clinics were established under charities by the aristocracy. Gallagher (1990, p. 171) noted the accomplishments of Mabarrat Muhammad Ali and the Red Crescent Society in combating malaria and cholera in the 1940s. The new policies adopted under Nasser sought to consolidate the provision of medical services under the state. The government invested in the creation of new clinics and hospitals and nationalized many of the existing associations and 13 private hospitals (Gallagher, 1990, p. 171). Results were also positive, with the crude death rate dropping from 15 to 11 per thousand within a decade (Waterbury, 1983, p. 219).

The considerable changes to the economy that followed from the revolution had for the first time defined issues of equity and equality as the primary concern of the government. The state had nationalized most economic assets, was the primary provider of public services, the primary employer and the strongest voice in the media. Beblawi (2008) summarized the developments noting that the state had taken a paternalistic role and was ostensibly taking care of its citizenry. However, defeat in the Yom Kippur war in 1973 revealed that the state may not be as powerful as Egyptians had perceived.

The final years of Nasser's presidency were marked with economic problems. Earlier, the Soviet Union had been an important creditor, but after the fall of Khrushchev in 1964 and the drop in foreign financing, as well as constrained domestic resources, meant that Egypt was forced to adopt a more austere economic policy. This came in the form of the March 30 program. It created room for the private sector and a shrinking of the public sector. The new approach began to foster precisely the kind of economic and social outcomes the revolution had sought to combat.

3.6.3 Sadat and Mubarak

After Nasser's death in 1970, Sadat, a member of the original Free Officer's group that had deposed the King, became president. In the early years of his presidency, Sadat adopted populist policies to gain support such as lowering consumer goods prices and easing import restrictions. His first few years did not see any significant changes in economic policy, but were preoccupied with his consolidation of power (Cooper, 1982: 75). This meant limiting political opposition groups and purging the security elite, who he accused of planning a coup. Sadat was also preoccupied with the war against Israel in 1973, which was further straining the economy.

The turnaround came in 1974, when Sadat unveiled his new economic agenda, the Open Door Policy, or *al-infatah al-intisadi*. The plan provided a number of incentives to attract foreign capital, such as tax holidays, exemptions from labor laws and import/export licenses and exchange rate controls. The view on Nasser's welfare policies at the time was described by Waterbury (1983: 223):

There was an official tolerance of policies of benign neglect of basic welfare programmes, and the acceptance of growing inequity in the distribution of income and in the quality of social services.

It was clear that the poor were no longer the primary concern of the state's policies.

As for the outcomes of the Open Door Policy, the first decade proved successful in terms of economic growth. Between 1974 and 1985 average GDP growth was at 8% annually. The economic success owed to several factors: high oil prices that facilitated foreign investments from oil-rich neighboring countries, a reopening of the Suez Canal, which had been closed between 1967 and 1975 due to conflict with Israel and remittances from Egyptians in the Gulf.

The Open Door policy also showed divergent forces with regard to redistributive policies. On one hand, the state still maintained some Nasser's redistributive policies. Subsidy payments were increased and guaranteed employment schemes continued. However, many of the reforms adopted under Nasser were reversed (Fahmy 2002: 203). In the case of land reform, much of the land that had been sequestered was returned back to its original owners. In 1974, the land that had been nationalized between 1961 and 1964 was returned to its former owners. This was furthered by another law in 1981 that declared all socialist measures taken under the law emergency law of 1958 illegal. In the cases of land that was owned by a third party, they were compensated with 50% over the sale price for rural property and 70% in the case of urban property. The tenancy laws were also changed back to favor the landowners. Rents for agricultural land were increased and the committees that oversaw disputes between tenants and landowners were abolished. The capacity of landowners to evict tenant were expanded and the board of agrarian co-operatives, who acted as political representation for peasants, were stripped of authority and their financial activities transferred to village banks run by the government. A later change in 1985 under Mubarak saw the limits on rental rates further increased from the original 7 times the land tax rate to 15 times. Simultaneously the law of inheritance of land contracts was limited only to heirs who themselves continued to work the land.

Even though economic growth had been high, the economy was heavily reliant on debt. Exports had been relatively low to imports and competition from imported goods had reduced domestic production, leaving the government to using costly short-term credit. These considerations prompted the government to raise the price of subsidized commodities suddenly in January 1977. These resulted in riots the following day and the government quickly restored the subsidies.

Mubarak became president in 1981 following the assassination of Sadat. His economic policy followed in Sadat's footsteps, following a primary concern for growth with the lingering legacy of Nasser's social policies. Mubarak accelerated the reforms in the early 1980s, but instead of the favorable conditions that had brought high growth rates from the mid-1970s, oil prices were low, the Suez Canal revenues were meager, and exports, tourism revenues and remittances were shrinking. The resulting high fiscal deficit and debt and by the end of the 1980s, led Egypt to adopt the IMF and World Bank's stabilization and structural adjustment programs.

The structural reform programs that started in 1991 sought to generate sustainable economic growth by reducing the role of the state through liberalization and privatization (Sufyan, 2007). Egypt also joined the World Trade Organization in 1995 and signed the Greater Arab Free Trade Agreement in 1997. After a first set of reforms that government shifted its focus to trade and institutional measures. In 2001 a Real Estate Mortgage Law and in 2002 additional legislation was passed to establish Special Economic Zones, promote exports and protect intellectual property rights. A year later the government adopted a unified banking and Central Bank Law. On the trade front, Egypt signed the Trade and Investment Framework Agreement with the United States in 1999, a free trade agreement to the Common Market for Eastern and Southern Africa in 2000 and the Agadir free trade agreement with Jordan, Morocco and Tunisia in 2004.

Throughout these economic reforms, the social contract between the state and society was being rewritten. Previously, the constitution characterized the economy as a socialist democracy committed to socialist principles and central planning. The reforms since 1991 changed this approach. In 2007, the constitution was amended to reflect the new approach, which raised the role of market forces and diminished the role of the state. The late stages of Mubarak's presidency saw the rise of a well-connected and wealthy business elite who were closely tied to the regime and the National Democratic Party.

3.7 Conclusions

This chapter has sought to assess the level and evolution of inequality in Egypt and to place the findings in their historical socio-economic and political context. To gain a better sense of what has transpired on inequality, it looked at inequality from three points of view: (i) outcomes, (ii) opportunities, and (iii) perceptions. The historical narrative covered both the economic and political dimensions.

The review of inequality of outcomes since the early 1900s suggests that inequality in Egypt has not remained static. More specifically, it was possible to show, on the basis of scattered measures of land ownership and household expenditure, that there were three broad phases: one phase of high inequality in a fundamentally feudal society up till 1952, another thereafter of decreasing inequality, followed, finally by what seems to be an increasing trend in inequality starting from the mid-1970s in a more liberalized environment. Since 2001, there is evidence of worsening perceptions of inequality.

Leaving land and income distributions aside, available evidence on the distribution of education from the 1960s onwards suggests that access has improved. While the data on the distribution of health outcomes are not available, there is evidence that health outcomes on average have improved as well. These improvements revealed themselves in an increase in the human development index on average.

However, here too, there is no evidence of the distribution of the human development index among the population.

Shifting from equality of outcomes to equality of opportunity, there are a few recent studies. Since they cover a much more recent period in time, they should not be compared with the longer term trends pointed out earlier with respect to equality in outcomes. The studies on earnings do not reveal a substantial amount of inequality of opportunity largely due to data limitations with respect to circumstances (Hassine, 2012; El Enbaby and Galal, 2015; Assaad et al., 2017). In health and education (Assaad et al., 2014; Salehi-Isfahani et al., 2014; Krafft and Alawode, 2016) circumstances accounted for a larger share of inequality. Overall, results leave more room for further analysis of inequality of opportunity.

Finally, the historical trend in inequality since the early 1900s seems to be consistent with the political and socio-economic developments that occurred in Egypt. While this section has not sought to provide a full account of the underlying causes behind the levels of and shifts in inequality over time, it suggests that the early history of Egypt up until 1952 was marked by a high level of inequality due to the prevalence of a feudal system. The 1952 Revolution led to a better level of equality, thanks to land reform, the adoption of a policy of free education and health care and even guaranteed employment of all graduates. Finally, the open door policy that started in the mid-1970s seems to have been associated with a deterioration in certain aspects of inequality, or at least the perception of widening inequality.

Chapter 4

Empirical Study: Methodology and Data

Abstract

This chapter discusses the measurement techniques and data used in the thesis to measure inequality of opportunity in earnings and its determinants in Egypt. Measurements follows three different approaches, parametric methods, nonparametric methods and Lorenz dominance, which derive from the techniques developed by Bourguignon et al., (2007), Checchi and Peragine (2010) and Lefranc et al., (2008) respectively. The data come from the Egypt Labor Market Panel Survey (ELMPS) covering 3 rounds: 1998, 2006 and 2012. The chapter elaborates on how the data were collected, what they contain and how statistical robustness was ensured. Finally, the chapter details what variables and samples will be used for the empirical work in this thesis.

4.1 Introduction

As conceptualized in the previous chapter, measuring inequality of opportunity in earnings amounts to identifying how much of the distribution of earnings can be attributed to individuals' own efforts versus the circumstances they are born into. This is done by decomposing the total level of inequality in society into a part that is considered morally just, which is resultant of peoples' efforts, and a part that is considered morally unjust, which is due to their circumstances. Doing this accurately requires sound techniques and data that include information on the earnings of individuals as well as their background characteristics. Data must also be representative and sample sizes must be large enough in order to produce statistically reliable results. This chapter elaborates on the methodology used to measure inequality of opportunity in earnings in Egypt. Not only are these tasks important for explaining what is being done, but also for the sake of testing the robustness of the data and the suitability of the methodology which are fundamental to the validity of the results.

In terms of techniques, there are a variety of methods for measuring inequality of opportunity and each have their technical advantages and disadvantages. On a more conceptual level, there are three reasons for using the various approaches. Firstly, together they allow for the extraction of more information from the data than a single approach would. Secondly, consistent results across different measurement techniques can corroborate the robustness of the results. Thirdly, as has been discussed in Chapter 2, there exists conceptual differences between the different approaches and there is no consensus on one of these methods being the "right" approach.

Parametric methods, such as those adopted by Bourguignon et al., (2007), where a wage equation is estimated based on different circumstances, use data efficiently. Firstly, one can incorporate a relatively large number of different circumstance variables in the wage equation. Secondly, the estimations are viable even if certain types of observations are few in number, for instance individuals' from rural areas with highly educated mothers. Thirdly, the parametric approach enables a parametric decomposition, which is a method for testing the relative contribution of individual circumstances. This enables one to assess how important a determinant of earnings like one's area of birth is compared with their father's occupation. However, there are downsides too. For instance, the parametric approach

assumes a particular functional form for wages, which may or may not be accurate in reality, therefore leading to inconsistency or bias.

The nonparametric approaches like those of Checchi and Peragine (2010) also have their advantages and disadvantages. These approaches organize the population into different groups based on their circumstance backgrounds and measure the level of inequality within and between these groups. On the plus side, these approaches do not assume a particular functional form. However, they are more dependent on having a large enough number of observations of each particular type in order to measure accurately the income distributions of different groups.

Another approach, which can serve to demonstrate the inequality of opportunity particularly among groups is Generalized Lorenz Curves or cumulative distribution functions, which are income distributions based on different circumstance-based partitions of the population. This allows one to see the difference in income distributions based on a single circumstance variable as in Lefranc et al., (2008). While this can demonstrate the greater impact of certain characteristics than other estimation techniques, for example of mother's education, it does not show the relative share of particular circumstance to inequality in the overall earnings distribution.

In this thesis, all three techniques will be utilized. The combination of all of them serves the objective of validating different results, on the one hand, and making it possible to demonstrate the findings visually, on the other. While these represent a comprehensive strategy of different measurement approaches, additional techniques do exist. The panel nature of the data could be used in the parametric measurement of inequality of opportunity, where fixed effects could be introduced to account for unobserved heterogeneity among individuals, however, this would render the results less amenable to comparisons across the nonparametric measurement techniques. Studies that have incorporated fixed effects have also not led to substantial differences in results (Assaad et al., 2017).

The other pillar of the empirical work in this thesis is the micro data used. I will focus on earnings using three rounds of the Egyptian Labour Market Panel Survey in 1998, 2006 and 2012. Measuring inequality of opportunity is data demanding. It requires micro data at the level of individuals with respect to the outcome under consideration as well as details about the circumstances each of these individuals are born into. These data are hard to come by, not only in Egypt but also elsewhere. However, the ELMPS, which has been collected systematically over the years by the Economic Research Form (ERF) and the Central Agency for Public Mobilization and Statistics (CAPMAS) have a solid database for the task at hand. The issues of explaining what the data contain, how they were collected, the sample selection and attrition will be presented in this chapter.

The final task in preparing the ground for the estimations presented in the next chapter relates to the selection of variables from the sample for the sake of applying the selected techniques. Aside from the dependent variable (earnings), the more difficult issue concerns the selection of variables related to circumstances as discussed in Chapter 2. In an ideal world, identifying circumstances is conceptually simple and presumably, with a full and complete data set, one could choose exactly what conception of personal responsibility one subscribes to and pick the appropriate circumstance variables accordingly. However, full data sets are rare, and even when various sources are merged, there are still missing variables (Ferreira et al., 2011). This is why a third section in this chapter is devoted to justifying the survey questions used in the analysis as well as the samples used.

The rest of this chapter is structured as follows. The next section presents the empirical approaches used to estimate inequality of opportunity of earnings in Egypt. This will include the exact wage equations estimated in the parametric approach, the ways in which the populations are organized for

the nonparametric approach, and how the variables were used and modified in the estimations. Section 3 reviews the dataset used for the empirical study, demonstrating its viability for measuring inequality of opportunity. This will include a brief description of how the questionnaire behind the dataset is structured, what the samples in each round look like, and how problems of attrition and sample weights have been dealt with. Section 4 presents the specific questions in the questionnaire that were used to capture both earnings and different circumstances. The final section concludes. The results are presented and discussed in the next chapter.

4.2 Measurement Techniques

There are a number of approaches to measuring inequality of opportunity adopted in this thesis, namely parametric methods, nonparametric types and tranches and Lorenz dominance. Each involves a different methodology, as well as a different treatment of the data. Whatever the approach used, it is important to start with a particular index of inequality of the outcome under consideration. The measurement approaches are dealt with in this section, once a discussion of the index is made.

4.2.1 Inequality Index

There are a wide variety of inequality measures and it is important to select the appropriate one for measuring inequality of opportunity. For measuring inequality of opportunity, we are interested in relative inequality as opposed to absolute inequality, that is, we want to know the share of overall inequality that is due to circumstances. Cowell (1985) showed that relative inequality measures must fulfil a certain set of criteria. These are symmetry (or anonymity), the transfer principle, scale invariance, population replication and additive decomposability. To fulfil these conditions, we are left with the group of inequality measuring called the Generalized Entropy, $GE(\alpha)$, class where α is the weight given to observations at different part of the distribution.

Within the GE class, there are several different inequality measures, $GE(0)$ is the mean log deviation, $GE(1)$ is the Theil index and $GE(2)$ is half the squared coefficient of transformation. Some inequality measures are sensitive to different parts of the distribution, say the top or bottom tails of the distribution. Foster and Shneyerov (2000) show that by incorporating a path-independent decomposability axiom, which uses the arithmetic mean as the reference income in the calculation of inequality, the weights at the different parts of the distribution are equal. This is done by using the mean-log deviation, or the $GE(0)$ measure.

For any distribution $X = \{x_1, \dots, x_N\}$, with mean μ_x the mean long deviation is defined as:

(1)

$$GE(0) = \frac{1}{N} \sum_{i=1}^N \ln \frac{\mu_i}{x_i}$$

Since the mean log deviation index is additively decomposable, it allows for total inequality to be the sum of circumstance inequality and effort inequality. Hence, the mean-log deviation has been argued to be best for calculating inequality of opportunity by Ferreira and Gignoux (2011) and is why it will be used in this thesis.¹⁷

4.2.1 Parametric Approach

A parametric approach to measuring inequality of opportunity compares the degree of inequality in a population, to a counterfactual distribution if there were no differences in circumstances. The following method was used by Bourguignon et al. (2007) is the basis for the parametric approach in this thesis. It is an ex post approach where effort has already occurred and is measured as a residual. To begin with, the counterfactual distribution of outcomes when everyone has the same circumstances is $\tilde{F}(\tilde{y})$ and the actual income distribution is $F(y)$. I^* represents the measure of inequality for any distribution $*$, which in this thesis is $GE(0)$. The share of inequality of opportunity from total inequality is then defined as:

$$(2) \quad \theta_p = 1 - \frac{I(\tilde{F}(\tilde{y}))}{I(F(y))}$$

To calculate θ_p , one must first estimate a wage function. Bourguignon et al. (2007) use:

$$(3) \quad \ln(y_i) = C_i\alpha + E_i\beta + v_i$$

where $E_i = AC_i + \varepsilon_i$, v_i represents unobserved factors, α and β are coefficient vectors, A is a matrix of coefficients capturing the effects of circumstances on efforts and ε_i is an error term. This can also be expressed as:

$$(4) \quad \ln(y_i) = C_i\delta + n_i$$

where $\delta = \alpha + \beta A$ and $n_i = v_i + \varepsilon_i\beta$

To calculate inequality of opportunity, the counterfactual distribution can be estimated by replacing y_i in equation (4) with $\tilde{y}_i = \exp(\bar{C}\bar{\delta} + \hat{n}_i)$. Using this method, Bourguignon et al. (2007) show that by not equalizing all circumstances in the estimation, one can obtain the partial effects of certain circumstances while controlling for others.

Inequality of opportunity can also be calculated using a direct method where one creates smoothed distribution $\tilde{u} = \exp(C_i\delta)$. This method removes the residuals of the estimation and replaces individuals' outcomes with their predictions, which are based on their circumstances. The predictions for individuals with identical circumstances are the same. Therefore, the share of inequality of opportunity can be calculated as:

¹⁷ They also provide a more detailed discussion on the conditions behind different inequality measures.

$$(5) \quad \theta_D = \frac{I(\bar{F}(\bar{w}))}{I(\bar{F}(y))}$$

Utilizing this framework, equation 6 displays the wage equation used in the parametric approach of this thesis. The variables are defined as follows:

(6)

$$\ln(w_i) = \alpha_0 + G_i\alpha_a + A_i\alpha_b + FP_i\alpha_c + FS_i\alpha_d + FU_i\alpha_e + MP_i\alpha_f + MS_i\alpha_g + MU_i\alpha_h + FN_i\alpha_i + FPW_i\alpha_j + FPE_i\alpha_k + FPS_i\alpha_l + u_i$$

Circumstance variables:

G – gender

A – area of birth

FP- father’s education – primary and preparatory

FS – father’s education – secondary

FU – father’s education – university and above

MP – mother’s education – primary and preparatory

MS – mother’s education – secondary

MU – mother’s education – university and above

FN – father’s occupation status – non-agricultural worker

FPW – father’s employment status and sector – private wage-worker

FPE – father’s employment status and sector – private employer

FPS – father’s employment status and sector – self-employed

Table 4.1 Parametric variables

Gender	Area of birth	Father's education	Mother's education	Father's occ. Stat.	Father's emp. Stat and sect.
Female	Rural	No education	No education	Agricultural	Public wage-worker
Male	Urban	Primary & Preparatory	Primary & Preparatory	Non-agricultural	Private wage-worker
		Secondary	Secondary		Private employer
		University and Above	University and Above		Private self-employed

The reference categories are in the first row of Table 4.1. They are female, rural, father’s no education, mother’s no education, father’s occupation status agricultural and father’s employment status and sector as public-wage worker.

The regression results from the OLS estimations indicate the magnitude of inequality of opportunity, as well as the relative shares of different circumstance variables. The r-squared coefficients offer some

insight into how much of wage inequality can be attributed to particular circumstances, but results should be interpreted with caution, particularly across rounds as the contribution of certain circumstances is not constant across rounds and unaccounted for circumstances could be hiding greater inequality of opportunity.

After estimating the wage equation, the circumstance variables are set constant and I estimate a counterfactual distribution. This is denoted as $(\tilde{F}(\tilde{y}))$ in equation (2).

4.2.2 Nonparametric Approach

This section details the nonparametric approach to measuring inequality of opportunity in income. The methodology follows that formalized by Checchi and Peragine (2010), which is what this thesis follows. The approach relies on a partitioning of the population into two groups, namely types and tranches as discussed previously in Chapter 2 (Section 2.3.1).

To define types, they first outline that for a society of N , the income distribution is defined as $X \in \mathbb{R}_+^N$. Type i is the set of individuals who all have the same circumstances c_i . N_i^X represents the number of individuals of type i in distribution X and the distribution of the total number of people of a type i can be defined as $x_i = \{x_i^1, \dots, x_i^{N_i^X}\} \in \mathbb{R}_+^N$. Therefore, the overall income profile for the entire population can be defined as:

$$X = \{x_1, \dots, x_n\} \in \mathbb{R}_+^N.$$

Within the overall distribution X , x_i represents the distribution of income available to individuals with their particular circumstances. Where exactly they fall within that distribution x_i would depend on the level of effort they exert. Therefore, the components of X represent the ex ante opportunity sets.

The second way of partitioning the population is into tranches. This approach focuses on grouping individuals with the same degrees of effort relative to their own type distributions. A tranche e , is defined as the group of individuals who exert the same degree of effort. Since effort is hard to observe and quantify, Roemer defined effort based on what percentile individuals fall on within their own circumstance-based income distributions. Therefore, all individuals at the p^{th} percentile of their own type distribution have exerted the same degree of effort. Then let $x_{i,p}$ denote the incomes of individuals of type i at percentile p . This then enables us to group individuals across types who all exerted the same effort p as $x_p = \{x_{i,p}, \dots, x_{n,p}\} \in \mathbb{R}_+^{\frac{N}{m}}$ where m is the total number of quintiles. This then allows an alternative way of representing the entire income distribution based on their effort as:

$$X = \{x_1, \dots, x_m\} \in \mathbb{R}_+^N$$

These two alternative partitions of the population represent two different ways of thinking about inequality of opportunity and are called the types and tranches approaches. The tranches approach emphasizes the notion that individuals who exert the same level of relative effort should receive the same outcome and is the classic ex post Roemerian approach. It does so by observing the inequality within tranches. Therefore, inequality of opportunity would decrease if the inequality among the

individuals who exert the same level of effort would decrease. Effort is measured using the Roemer Identification Assumption presented in Chapter 2.

To formalize the tranches approach, Checchi and Peragine (2010) discuss three different vectors:

$$(a) \quad X^S = (X_1^S, \dots, X_p^S, \dots, X_m^S) \in \mathbb{R}_+^N$$

$$(b) \quad X_B^S = \left(\mu_{X_1^S} \frac{1_N}{m}, \dots, \mu_{X_p^S} \frac{1_N}{m}, \dots, \mu_{X_m^S} \frac{1_N}{m} \right) \in \mathbb{R}_+^N$$

$$(c) \quad X_W^S = (\tilde{x}_1^S, \dots, \tilde{x}_p^S, \dots, \tilde{x}_m^S) \in \mathbb{R}_+^N$$

where,

$\mu_{X_p^S}$ – mean income of tranche p

$\frac{1_N}{m}$ – unit vector of length $\frac{N}{m}$

\tilde{x}_p^S – obtained by rescaling each income $\mu_{X_p^S}$ such that:

$$\forall_i \in \{1, \dots, n\}, \forall_p \in \{1, \dots, m\}, \mu_{i,p}^X \rightarrow \frac{\mu_X}{\mu_{X_p^S}} \mu_{i,p}^X$$

The vectors are defined as follows:

(a) X^S – The overall income vector

(b) X_B^S – a hypothetical smoothed distribution where each person's income is replaced with the mean income of the tranche to which they belong to.

(c) X_W^S – a standardized distribution obtained by proportionally scaling each tranche distribution until it has the same mean as the overall distribution.

Using these vectors, one can calculate inequality of opportunity. Vector X_B^S represents a hypothetical distribution where there exists no inequality of opportunity, as everyone who exerts the same degree of effort would have the same income. Therefore, if we measured the degree of inequality in this distribution, it would resemble only the inequality due to effort, i.e. the morally justifiable share of inequality. Conversely, measuring the level of inequality in vector X_W^S would represent the within-tranche inequality, i.e. the morally unjustifiable inequality due only to circumstances.

To measure inequality of opportunity as a share of total inequality can be done using either of these two distributions. Using vector X_W^S is called the direct approach and using vector X_B^S is called the residual approach.

$$(1) \quad OI_W^e = \frac{I(X_W^S)}{I(X^S)}$$

$$(2) \quad OI_B^e = 1 - \frac{I(X_B^S)}{I(X^S)}$$

I represents any given measure of inequality. The same inequality measure of GE(0) presented earlier is used here as well.

The types approach focuses on the set of possible outcomes available to individuals who share the same circumstances. It is therefore neutral to the level of inequality within a certain type, since this is assumed to be resultant from effort. Inequality of opportunity is the difference in average outcomes between different types and is thus an ex ante approach. Similar to the tranches approach, there are three reference vectors:

$$(d) \quad X^S = (X_1, \dots, X_i, \dots, X_n) \in \mathbb{R}_+^N$$

$$(e) \quad X_B = (\mu_{x_1} 1_{N_1}, \dots, \mu_{x_i} 1_{N_i}, \dots, \mu_{x_m} 1_{N_m}) \in \mathbb{R}_+^N$$

$$(f) \quad X_W = (\tilde{x}_1, \dots, \tilde{x}_i, \dots, \tilde{x}_n) \in \mathbb{R}_+^N$$

Where μ_{x_i} is calculated by:

$$\forall i \in \{1, \dots, n\}, \forall h \in \{1, \dots, N\}, x_i^h \rightarrow \frac{\mu_x}{\mu_{x_i}} x_i^h$$

Here, (d) is the overall income vector, (e) eliminated within-type inequality, (d) eliminates between types inequality. In this scenario, in vector (e) X_B , every individuals income has been replaced by the mean of their type. This means that within-type inequality is suppressed. Applying an inequality measure to this distribution would thus yield only the inequality due to circumstances. Conversely, in vector X_W , we suppress the inequality between types, thus leaving only the inequality of individuals with the same circumstances, which represents the inequality due to effort.

To calculate inequality of opportunity as a share of total inequality both directly and residually can be done by:

$$OI_B^c = \frac{I(X_B)}{I(X)}$$

$$OI_W^c = 1 - \frac{I(X_W)}{I(X)}$$

In this approach, total income inequality can also be defined as effort inequality + opportunity inequality.

In grouping the population into different types and tranches, some of the circumstance variables may need to be modified or constructed. The more different circumstances one incorporates, the greater

the possible number of different groups. When the group defining characteristics become more detailed, the number of observations in each group decreases. Therefore, one should be careful to choose and organize their circumstance variables in such a way that captures as much as possible the effect of circumstances on earnings, but leaves enough observations in each circumstance combination cell. In this thesis, data is organized such that variables are gender, area of birth, parents' education, and father's occupation.

In addition to the inherent benefits of having better educated parents, parents' education is also important as a reflection of social class. Given the limited number of observations in some subgroups, highly educated rural mothers for instance, the parents' education variable is a composite of both. Mother's and Father's levels of education are first arranged in a five-tier structure. Each is assigned a value from 1 to 5 and these are then summed. The levels from an increasing value of 1 to 5 are "illiterate", "read and write", "basic", "intermediate and above" and "post-secondary and above". The sum of the values thus ranges from a minimum of 2 (with two illiterate parents) and a maximum of 10 (with two post-secondary educated parents). This provides us with a joint level of parents' education that takes both parents into consideration and enables a finer partitioning of the data from other aspects.

In addition to parents' education, the variable for father's occupation status has also been compacted to just two variables, agricultural and non-agricultural work. As shown in the data section of this chapter, the agricultural category included the largest sample of observations, with approximately half of all individuals' fathers working in agriculture.

Table 4.2 displays the four different categories and their sub-categories through which the nonparametric groups were constructed. Having a total of 4 categories, 3 with 2 subgroups and 1 with 4 subgroups, meaning there are a total of 32 distinct types of groups.

Table 4.2 Nonparametric Variables

Gender	Area of birth	Sum of parents' educational levels	Father's occupational status
Male	Urban	2	Agricultural
Female	Rural	3 to 5	Non-Agricultural
		6 to 7	
		8 to 10	

However, some of these cells did not exist in the sample or some had too few observations to carry out a robust estimation. For instance, in the tranches approach, each cell is divided into 10-deciles to represent their relative degrees of effort. This would not be possible with fewer than 10 observations. Therefore, some sub-samples are grouped together so as to have enough observations. Table 4.3 displays the maximum number of cells in each sample estimation and lists how many distinct cells were used in the estimation. Cells were combined until each had at least 30 observations. In the case of subgroups, the total number of possible observable groups is half that of the total sample, because the subgroup defining category is not included.

Table 4.3 Maximum and Observed Numbers of Types in Each Estimation Subgroup

Sample	Total	Male	Female	Urban	Rural	Male Youth
2012	24	12	12	11	13	11
2006	25	14	11	13	12	9
1998	20	11	11	12	8	7
Max. no. of groups	32	16	16	16	16	16

4.2.3 Lorenz Dominance

For equality of opportunity to prevail in a society, no particular set of circumstances should provide individuals with a higher set of outcomes. This can also be stated as no particular vector of circumstances should provide individuals with an advantage over any other vector for a higher outcome. This is the basis for the methodology posited by Lefranc et al., (2008) who rank opportunity sets and the empirical work in this thesis follows from their methods.

This approach derives from the ex ante approach, where the focus is on opportunity sets. Opportunity sets are increasing functions of an outcome variable based on type. To illustrate the point, suppose a society where individuals are able to choose their circumstances before being born. If all individuals would choose the vector of circumstances c over c' , then the vector of circumstances c dominates c' . Conversely, if there is no agreement over which vector to choose, then there exists equality of opportunity. Therefore, it can be stated as if one type's cumulative distribution function of income is fully above another's, i.e. is first order stochastically dominating another type's cumulative distribution function, then there is inequality of opportunity. Lefranc et al., (2008) present the conditions for first order stochastic dominance is as follows:

The circumstances of c first order dominate c' if and only if:

$$F(x|c) \leq F(x|c') \quad \forall x \in \mathbb{R}_+$$

where $F(x)$ is the distribution of income x conditional on the vector of circumstances s .

The first order stochastic dominance measure is demanding as it requires that one distribution is unanimously better, regardless of considerations of risk. A less strict condition can be used to establish second order stochastic dominance, which allows a partial ranking of distributions.

The circumstances of c second order dominate c' if and only if:

$$\int_0^x F(x|c)dy \leq \int_0^x F(x|c')dy \quad \forall x \in \mathbb{R}_+$$

Based on expected utility theory, a risk-averse individual whose utility function is increasing in x , will prefer a second order stochastically dominating distribution over a dominated one. Furthermore, Shorrocks (1983) showed that second order stochastic dominance is equivalent to generalized Lorenz dominance. This enables the ranking of circumstance based generalized Lorenz curves.

However, when comparing two Generalized Lorenz curves¹⁸, one of three situations can occur, they are identical, one is above the other, or they intersect. Only in the case where one is fully above another, or dominates stochastically at the second order, can we conclude that inequality of opportunity exists.

In addition to some of the conceptual differences between these different approaches, they also have methodological advantages and disadvantages. The primary advantage of using the parametric approach is that it uses data efficiently and can incorporate a large number of circumstance variables. Secondly, since the estimation allows for holding one or more variables constant, they allow for the assessment of the contribution of individual or a group of circumstance variables on inequality of opportunity. On the other hand, parametric methods measure effort as a residual, which can include other sources of statistical error. The parametric approach assumes a particular functional form, which could lead to the omission of relevant circumstances that are correlated to the observed ones. This may cause residuals of the regression to be correlated to the regressors (Ramos and Van de Gaer, 2012).

The nonparametric approaches overcome the problem of assuming a particular functional form, but also have downsides. For one, the types and tranches methods do not allow for the assessment of the contribution of a particular circumstance variable. These methods are also demanding on the data, as including a large number of individual characteristics can lead to inaccurate results when there are insufficient observations of each type.

An advantage of observing cumulative distribution functions is that inequality of opportunity is easily visible across different groups. A second nicely point noted by Lefranc et al., (2008) states: "These graphs also reveal important differences...in the magnitude of the advantage conferred by more privileged background over less privileged ones. Intuitively, this advantage corresponds to the gap between the cumulative distribution functions (CDFs) corresponding to different social backgrounds." However, an obvious downside is that it does not allow for a direct assessment of the share of inequality of opportunity from total inequality.

4.3 The Data

To measure inequality of opportunity in earnings and identify its determinants, I use the Egypt Labour Market Panel Surveys (ELMPS) for 1998, 2006 and 2012. The surveys have been conducted by the Economic Research Forum (ERF) and the Central Agency for Public Mobilization and Statistics (CAPMAS). ELMPSs are nationally representative and the data between the three rounds of surveys are comparable. They provide the most comprehensive source of data on many aspects of the Egyptian economy and labor market in the time of and preceding the 2011 Egyptian Revolution.

The ELMPS datasets are publicly available through the ERF online portal at www.erfdataportal.com. The available datasets are harmonized through the 1998, 2006 and 2012 rounds. Data usage is contingent on educational and scholarly activities. The data files themselves are in STATA .dta format and all documentation, codebooks, technical reports, questionnaires and variable construction manuals are also available for download with English and Arabic versions for the questionnaires. It is worth pointing out that an alternative dataset on the Egyptian Labour Market, called the Household, Income,

¹⁸ A Lorenz curve is a graphical representation of a cumulative distribution function. On the x-axis it shows the cumulative share of individuals from the lowest to the highest incomes and on the y-axis it shows the level of income acquired by the respective share of the population.

Expenditure and Consumption Survey (HIECS) has similarly been constructed by the ERF and CAPMAS covering the years 2000 to 2012. For the research questions of this thesis, the ELMPS is preferable as labour market and income related information is available in greater detail, and the ELMPS data has been harmonized across measurement rounds unlike the HIECS.

This section will cover the structure of the questionnaire, information on the samples of each round, and data collection issues including attrition and sample weights.¹⁹

4.3.1 Questionnaire Structure

The survey is divided into three major sections. The first section is directed to the household head or their spouse and asks questions concerning basic demographic characteristics of all household members as well as information on the household dwelling and their ownership of assets. The second section of the questionnaire is administered to each individual in the household aged six and above. This section is the most extensive and covers questions about family background characteristics, health, employment, earnings, migration and other topics. The third section of the questionnaire is directed to the most knowledgeable individual in the household and asks questions pertaining to migration, remittances and non-agricultural and agricultural enterprises.

The first section, entitled the “Household Questionnaire” has three sections. It begins with asking the household head or their spouse about basic characteristics such as gender, relationship to household head and date of birth. It also asks basic questions about other individuals in the household such as their marital status and if they live in the household regularly. The second section has to do with housing, services and facilities. These include information about the type of dwelling, its ownership status, number of rooms and net area of the house. It also asks questions about the material the house is constructed from, what is the source of drinking water, the types of sanitation facilities and sources of electricity and whether they hire domestic help. The third section covers information about the ownership of durable goods and assets. These include basic household items such as a refrigerator, dishwasher, air conditioner as well as other assets like a car, computer, wireless internet router and so on.

The second section, called the “Individual Questionnaire”, is the most comprehensive section in the survey. It begins with a detailed series of questions about both parents’ backgrounds. This includes questions about where they were born, what is their highest educational certificate, what their parents’ employment status was when the respondent was 15, what type of occupation and what sector their parents work in. It also asks detailed information about the respondent’s siblings including questions on migration. The following section deals with health issues, asking subjective questions about how the individual rates their own health, how often they see health physicians, and about any chronic illnesses and disabilities the respondent may have. This is followed by questions on the respondent’s education which seeks to assess both the level of education reached, any reasons for not pursuing education and questions indicating the quality of resources in the educational institution. The questions include specific questions about all levels of education. The following section tracks area of birth and residential mobility

¹⁹ The description of the data draws heavily on Assaad and Krafft (2013), who have both been instrumental in the construction of the ELMPS dataset and provide a more detailed description of its design.

covering reasons for moves as well. This is followed by questions pertaining to employment including details such as length of employment, wages, how long the job-hunting process lasted and how many hours the respondent works. The employment section also covers subsistence and domestic work focusing on the amount of time spent by the respondent on various domestic activities such as cleaning, collecting water or caring for children or the elderly. The following section focuses on characteristics of the occupation and the particular role played by the respondent. This applies to those individuals who have worked in the past three months prior to the interview. The same questions are asked of primary and secondary jobs. The following section focuses on job mobility and formality, asking questions about the nature of the contract, any social security benefits obtained through the job, and reasons for changes in job status. The next series of questions focuses on marriage, in particular asking questions about cost and followed by questions regarding fertility. The next section questions only women aged 15 to 49 and asks about the status of women in the household and seeks to gauge what level of autonomy and power in decision-making they have. This is followed by a section on female employment, where female individuals who have ever worked for wages are asked about why they worked, what type of employment they entered and questions about their choice to work impacted other household activities such as child rearing. The following section focuses on earnings asking questions about the regularity of employment, wages and changes in wages. This is followed by an extensive series of questions on migration, information technology, savings and finally savings and borrowings.

The third section of the questionnaire is called “Migration, Remittances, Non-Agricultural and Agricultural Enterprises”. It begins with detailed questions about the educational and employment background of individuals in the household who have migrated. This is followed by a section on remittances from either non-household or former household members where questions focus on the nature of aid and relationship to the donor. The next section asks about any other sources of income and non-farm enterprises, which applies to households with employers or employed workers. This includes information about enterprise assets, expenditures and revenues. The final section asks questions concerning agricultural assets and land. This includes questions regarding livestock, capital assets, harvest and other sources of agricultural revenue.

The questions in each round have been kept similar so as to ensure comparability across survey rounds. However, new modules have been added to latter rounds of the dataset. These changes are shown in Table 4.4. The first round in 1998 included data about parents’ background, respondents’ education, employment, job characteristics, job mobility, geographic mobility and earnings. The 2006 ELMPS added information on siblings, fertility, women’s status, the cost of marriage and characteristics of individuals’ first jobs. The third round added a life events calendar that tracks education, marriage, work, migration over time as well as information on health, information technology and savings and borrowing.

Table 4.4 Modules Included in Each Round

Included in 1998, 2006 and 2012	Added in 2006 (and included in 2012)	Added in 2012 only
Parents' characteristics	Siblings' characteristics	Life events calendar

Education	Characteristics of first job	Health
Employment	Fertility	Return migration
Unemployment	Women's status	Information technology
Job characteristics	Cost of marriage	Savings & borrowing
Secondary jobs		
Female employment		
Job mobility		
Geographic mobility		
Earnings		

Source: Assaad and Krafft (2013)

4.3.2 Samples

The first round of the ELMPS in 1998 was conducted on a nationally representative household of 4,816 households covering 23,997 individuals (Assaad and Krafft, 2013).²⁰ The sample was chosen using a two-stage stratified random sample selected from a CAPMAS master sample. The CAPMAS master sample was first prepared in 1995 and updated in 1998. It is subdivided into 500 Enumeration Areas (EAs) each containing approximately 1,500 households. The sample is split up between urban and rural strata, which are further subdivided by governorate. First, rural villages and urban areas were selected for the sample by the principle of probability proportional to size. Then selected villages and urban areas were subdivided into EAs of around 1,500 dwelling units each and one or more EA was selected from each village of urban area. The final CAPMAS master sample included 306 urban EAs and 194 rural EAs. From this master sample, the 200 primary sampling units (PSUs) were selected representing 22 governorates. Urban areas are over-represented in the sample with 140 out of 200 PSUs coming from urban areas while 56.8% of the population lived in rural areas, however, this was corrected for with sampling weights.

The 2006 ELMPS included 3,685 households from the original 4,816 included in the 1998 survey and added 2,168 new households that emerged as splits from households previously included. A refresher sample of 2,498 households was also added bringing the total in the 2006 survey to 8,351²¹ households consisting up 37,140 individuals. The refresher sample of households were randomly selected from an additional 100 PSUs from a new master sample prepared by CAPMAS. These added households were chosen such as to represent the actual rural urban distribution across governorates.

The 2012 ELMPS is the third round and most recent round of the panel survey and includes households from both 2006 and 1998. The surveys were conducted between March 1, 2012 and June 10, 2012 by 39 teams in the field with each consisting of a supervisor, a reviewer and four enumerators. In addition, there were two teams tasked with quality control. Interviewers all received 10 days of technical training by the technical director and CAPMAS prior to surveying. After interviews were conducted, desk review, coding, data entry and validation took place at CAPMAS. The final 2012 sample

²⁰ For a more detailed explanation of the samples and calculation of attrition and sample weight, see Assaad and Krafft (2013: p. 5-17).

²¹ The total number of households in 2006 is calculated as $3,685 + 2,168 + 2,498 = 8,351$.

included 12,060²² households with 49,168 individuals. Of this total, 6,752 households were present in the 2006 sample, with 3,308 new households emerging as splits. Out of the 2006 sample, 26,770 individuals or about 77% were successfully re-interviewed in 2012. Of these, 13,218 individuals were also tracked since 1998. The refresher sample consisted of 2,000 households that were selected from 200 PSUs from a CAPMAS master sample. In this selection, areas with higher migration rates were over-sampled to increase the representation of current migrants in the sample. Of the 200 PSUs added, 50 were from high-migration urban areas (areas where the migration rate was at least 4% in the 2006 ELMPS), 100 from high migration rural areas (where the migration rate was at least 1%), 22 from low migration urban areas and 28 from low migration rural areas.

4.3.3 Attrition and Sample Weights

An important issue in longitudinal data is how to deal with the households and individuals who cannot be located in latter rounds of data collection. This issue is called attrition. The pattern of attrition is often nonrandom and it is important to correctly identify so as to choose appropriate sample weights. The weights in the sample are based on the inverse probability of non-response to correct for attrition.

In order to correct for the potential bias in the data, two forms of attrition were identified for the 2012 round (Assaad and Krafft, 2013). Type I attrition stems from the inability to locate an entire household interviewed in 2006 and Type II attrition stems from the inability to successfully locate a new household that formed as a split from an existing household. The primary cause of Type I attrition is an inaccurate address or because they moved to an unknown location. The main cause of Type II attrition is when the original household from the 2006 survey was located, but the departed member(s) could not be accounted for. In correcting for these types of attrition, probabilities were estimated based on the characteristics of individuals and households in 2006. These probability estimates are used to create the adjustment weights for the 2012 sample.

Prior to the initiation of the 2012 survey, fieldwork began with an enumeration phase where previously surveyed households were sought out. If households were not found, surveyors sought to find the household's new address from the original residences neighbors or find out the cause for the disappearance of the household such as death or emigration to another country.

In the end, 6,752 of the 8,351 households interviewed in 2006 were interviewed in 2012. Out of the remaining 1,599 households, 43 had left the country entirely, 144 had died out completely, 17 refused to respond and 1,395 could not be found. Type I attrition is calculated based on the amount that could not be located and those that refused to answer, meaning that the Type I attrition rate for households was 17.3%.²³ At the individual level, of the 37,140 individuals interviewed in 2006, 31,589 individuals were found in 2012. Of the remainder, 5,212 were not found and 339 individuals had left the country or died. This results in a Type I attrition rate at the individual level of 14.2%.

As for Type II attrition, this deals with the absent individuals of households that were not found in 2012. Aside from those who had either died or left the country, the rest have either formed a new household, called a split, or if not found, fall under Type II attrition. Of the total 31,589 individuals located in 2012, 6,933 were no longer in the same household; 1,139 had died or migrated abroad, leaving a

²² The total number of households in 2012 is calculated as $6,752 + 3,308 + 2,000 = 12,060$.

²³ Type I attrition is calculated as $(1,395 + 43 + 17) / 8,351 = 17.3\%$.

maximum of 5,794 individuals under Type II attrition. Of these, 4,682 new households were identified and 3,626 were successfully located leading to a Type II attrition rate of 30.3%.²⁴

Results showed that Type I attrition was likelier in households with fewer children, working age males and females and elderly males. Geographically, households from Greater Cairo, Alexandria and the Suez Canal were more likely to attrite than those from more rural areas. Also as expected, households that owned their dwelling were much less likely to attrite. Additional characteristics that increased the likelihood of attrition were if the household head was divorced and more educated.

As for Type II attrition, demographic factors rather than economic ones played a greater role. The biggest differences are apparent in comparing the characteristics of attrited individuals to those heading split households. The heads of attrited households were most likely males aged 35 to 65 who were married and less likely to be single or divorced. Attrited households with female heads were more likely to be separated. Attrited household heads were also more likely to be illiterate or have a lower level of education. Attrition rates were also much higher for households that split in the Greater Cairo area.

In order to correct for these types of attrition, bivariate and multivariate analyses were conducted in order to assess correlates of each type of attrition and predict the probability of each type of attrition. The sample weights are based on the inverse of the probability of non-response. The weights were first calculated at the household level and then applied to all household members.

4.4 Sample and Variable Selection

The selection of the datasets to be used in measuring inequality of opportunity, as well as the decision of which variables to use as the circumstance variables is important to the integrity of the measurement. But before elaborating on the exact variables and measures adopted, it is worth making a few comments about variable selection. Measuring inequality of opportunity requires an understanding of the circumstances that contribute to outcomes. The more relevant circumstances we include in our model, the greater the observable level of inequality of opportunity. It is therefore important to have as complete and true a set of circumstances as possible (Ramos and Van de Gaer, 2012). However in reality, often the available dataset dictates the variables that can be included. Ideally, the selection of variables would be based on our assessment of what an individual is responsible for. However, full data sets are rare.

The variables that have been chosen as circumstances for the empirical work in this thesis aim to capture as extensively as possible the degree of inequality of opportunity in earnings. The circumstances include measures of both parents' levels of education, father's occupation type and status, area of birth, and gender. These are of course not a fully comprehensive account of all circumstances that individuals are endowed with at birth, but they do represent a detailed set of factors that are on par with much of the empirical literature on inequality of opportunity globally. Moreover, some characteristics like ethnicity do not play as determinant a role in the Egyptian context as they may elsewhere.

Since all circumstances cannot be fully accounted for, the results for inequality of opportunity represent a lower bound of the impact of circumstances on outcomes. Ferreira and Gignoux (2011) provides proofs that both parametric and nonparametric estimates of inequality of opportunity can only bias results downwards. But this is intuitively straightforward. For instance, cognitive variables based on genetic information surely impact the outcomes of individuals and are inherited and not chosen, but

²⁴ Type II attrition is calculated as $(4,682 - 3,262) / 4,682 = 30.3\%$.

due to lack of data cannot be included accurately in the calculation. Moreover, even if certain genes could be said to contribute to certain beneficial outcomes, their variance would be unknown. With more circumstance data, the greater the share of inequality one is able to attribute to them. However in practice, circumstances used in the estimations are merely a subset of the *true* set.

Turning to the dependent variable, the scope of this thesis focuses on earnings for several reasons. Conceptually, circumstances influence other economic outcomes through the influence on earnings. For instance, circumstances can influence consumption through earnings, but not the other way around. Moreover, understanding the ways in which circumstances influence any particular outcome can vary substantially from one outcome to another. For instance, the role of circumstances in determining earnings speaks to different factors on the supply and demand sides of the labor market. Circumstances can influence earnings through human capital accumulation or the role of connections in securing higher paying jobs. In the case of consumption, the same circumstance variables may drive inequality through entirely different mechanisms that may have nothing to do with human capital attainment or the labor market. It could be that that in addition to earnings, government transfer policies play a major role in consumption and therefore the role of circumstances may actually be substantially mitigated. This is to say that while the methodological analysis is similar, the context and interpretation can be completely different from one outcome variable to another.

The choice of the independent variable has major implications on the sample of the population that is analysed. The sample used in this study is all working individuals aged 15 to 65 with positive earnings. It does not include the self-employed. The top percentile of observations has been removed due to the presence of outliers that greatly skew the inequality estimates. These wage-workers make up the majority of employed persons in Egypt. It includes both formal and informal workers, who make up about 70% and 30% of wage-workers respectively in 2012. The labor force engaged in unpaid family work are thus not included in the sample. These individuals make up 23% of the labor force in 2012, are 90% women and 80% work in family agricultural work in rural Egypt. If these individuals joined wage-work with positive earnings, one would expect their inclusion into the sample of analysis to increase the number of individuals in the bottom of the earnings distribution, lead to greater estimates of overall earnings inequality, and likely bolster the role that geographic- and gender-based circumstances play in impacting earnings.

The wide age range captures essentially all wage-workers in Egypt. The same age-bounds are used consistently across different measurement techniques. The retirement age in Egypt for the public sector has historically been 60 years for both men and women (Sieverding and Selwaness, 2012). A new law in approved by the Egyptian Parliament in 2010 will see the retirement age gradually raised to 65, rising to 61 in 2015, 62 in 2018, 64 in 2024 and 65 in 2027. The number of wage-working individuals above the age of 60 is only a handful of observations in the sample.

Overall inequality of opportunity is important for everyone, but it is also important to see how the different population subgroups have fared. Talking only about the average trend does not speak to potentially significant differences in the levels of inequality of opportunity experienced by different subgroups.

The particular variables used in this study are from the first two sections of the questionnaire. The first section of the questionnaire (Household Questionnaire), begins with a “Section 0.1 Basic Characteristics” and is the source of the variables on age, gender and area of birth.

The second section of the questionnaire (Individual Questionnaire), is the source of information on background characteristics and earnings. Within it, section “1.1 Father’s characteristics” includes

information on father's education, occupation, employment status and sector. Specifically, it asks the following questions:

- What is your father's highest educational certificate?
- What was/is the occupation of his primary job when you were 15 years old? (if individual is less than 15 years old, s/he should be asked about father's current work. If father died before individual reached 15, s/he should be asked about father's last work)
- What was/is his main employment status when you were 15 years old? (if individual is less than 15 years old, s/he should be asked about father's current work. If father died before individual reached 15, s/he should be asked about father's last work)
- What was/is the sector of his primary occupation when you were 15 years old? (if individual is less than 15 years old, s/he should be asked about father's current work. If father died before individual reached 15, s/he should be asked about father's last work)

Section 1.2 "Mother's characteristics" asks the same exact same questions of the individuals about their mothers.

Also within the Individual Questionnaire section of the full survey, are questions on individual's earnings in section 9.1. The questions in this section are asked of all regular workers. The particular question used for the earnings variable is as follows:

- What is the net amount received (in L.E.) for each of the following categories: basic wage, supplementary pay, overtime, bonus, incentives, profits and other.

For basic wage, supplementary pay and overtime the question asks for net value / month, for the other sources of income, the question asks for the net value and frequency of payment (monthly, 3 months, 6 months and yearly). These are all summed to calculate the total monthly wage.

The variable labels and exact variable names in the dataset are displayed in Table 4.5. The full list of possible answers to each question behind each variable is also shown. In Table 4.6 below, the sample sizes for each category are provided for each round of the data.

Inequalities between certain population subgroups are readily apparent when observing real monthly earnings for different population subgroups. Table 4.7 displays the mean earnings across the years 1998, 2006 and 2012 for the total sample, and separately for the categories of rural, urban, women and men and male youth. Real monthly earnings are consistently highest for the urban subgroup, followed by men, with women and rural with the lowest earnings.

Overall, the ELMPS is an excellent dataset for the analysis of the Egyptian labor market and enables one to explore the magnitude and trend of inequality of opportunity utilizing its wide variety of information on background characteristics of individuals. Yet there are certain noteworthy caveats, which should be taken into consideration when interpreting the results. Firstly, in the case of the 1998 sample, some of the sample sizes for certain variables are particularly small. This leads to wide error margins in the estimations of the 1998 subgroup analysis and observing trends between the 1998 and 2006 rounds is hindered by this. As will be displayed in the estimation results in Chapter 5, many of the point estimates between the 1998 and 2006 fall within overlapping confidence intervals, so changes in the point estimates should be interpreted with care. Secondly, there are circumstance variables that are not

captured in the data. For instance, circumstance variables such as parents' wealth, the quality of local infrastructure and quality of local schooling can be incredibly important determinants of an individual's earnings, but not all such variables are available, nor could all variables be included in the estimations due to the diminishing numbers of observations in each category. Despite these shortcomings, the wide variety of methods adopted and the consistency of results across measurement approaches enable confidence in the forthcoming results.

Table 4.5 Variables Used and Answer Categories

Variable label	Variable name	Categories
Gender	sex	Male Female
Area of birth	abirth	Urban Rural
Father's highest education	fteducst	illiterate read & write less than intermediate intermediate higher than intermediate university post-graduate
Mother's highest education	mteducst	illiterate read & write less than intermediate intermediate higher than intermediate university post-graduate
Father's Occup. of prim. job (1-digit & When Resp. 15)	ftocp1d	Armed Forces Managers Professionals Technicians and associate professionals Clerical support workers Service and sales workers Skilled agricultural, forestry and fish Craft and related trades workers Plant and machine operators, and assembly Elementary occupations
Father's Sector of prim. job (When Resp. 15)	ftsectr	government public enterprise private investment foreign NGO Other DK
Father's Employment Status (When Resp. 15)	ftempst	Wage worker Employer Self-employed Unpaid Family Worker No job

Source: ELMPS

Table 4.6 Variables and Sample Sizes

	1998		2006		2012		Total	
<i>Sex</i>								
Male	12,095	50.40%	18,587	50.00%	24,483	49.80%	69,013	50.00%
Female	11,902	49.60%	18,553	50.00%	24,703	50.20%	68,938	50.00%
Total	23,997	100%	37,140	100.00%	49,186	100.00%	137,951	100.00%
<i>Area of Birth</i>								
urban	8,626	60.00%	13,243	51.80%	14,194	43.70%	36,063	49.80%
rural	5,745	40.00%	12,337	48.20%	18,284	56.30%	36,366	50.20%
Total	14,371	100.00%	25,580	100.00%	32,478	100.00%	72,429	100.00%
<i>Father's highest education</i>								
illiterate	9,089	43.60%	14,824	47.10%	20,053	49.30%	50,866	49.00%
read & write	5,268	25.30%	6,226	19.80%	5,603	13.80%	19,851	19.10%
less than intermediate	2,141	10.30%	3,816	12.10%	5,139	12.60%	11,622	11.20%
intermediate	2,215	10.60%	3,602	11.40%	5,740	14.10%	11,973	11.50%
higher than intermediate	485	2.30%	685	2.20%	851	2.10%	2,089	2.00%
university	1,543	7.40%	2,220	7.00%	3,105	7.60%	7,056	6.80%
post-graduate	103	0.50%	128	0.40%	175	0.40%	437	0.40%
Total	20,844	100.00%	31,501	100.00%	40,666	100.00%	103,894	100.00%
<i>Mother's highest education</i>								
illiterate	14,765	70.80%	22,163	70.40%	27,979	68.80%	74,618	71.80%
read & write	2,254	10.80%	2,580	8.20%	2,294	5.60%	7,921	7.60%
less than intermediate	1,431	6.90%	2,427	7.70%	3,250	8.00%	7,321	7.00%
intermediate	1,439	6.90%	2,859	9.10%	4,910	12.10%	9,324	9.00%
higher than intermediate	330	1.60%	442	1.40%	503	1.20%	1,298	1.20%
university	633	3.00%	998	3.20%	1,652	4.10%	3,313	3.20%
post-graduate	17	0.10%	23	0.10%	64	0.20%	104	0.10%
Total	20,869	100.00%	31,492	100.00%	40,652	100.00%	103,899	100.00%
<i>Father's occupation</i>								
Armed Forces	0	0.00%	1	0.00%	275	0.70%	276	0.30%
Managers	2,667	16.00%	3,971	13.00%	4,437	11.30%	11,075	12.80%
Professionals	1,198	7.20%	2,016	6.60%	2,675	6.80%	5,889	6.80%

Technicians and associate	1,329	8.00%	2,305	7.60%	2,745	7.00%	6,379	7.40%
Clerical support work	475	2.80%	825	2.70%	819	2.10%	2,119	2.50%
Service and sales work	2,320	13.90%	4,247	13.90%	2,613	6.70%	9,180	10.60%
Skilled agricultural	4,445	26.60%	9,795	32.10%	13,453	34.30%	27,693	32.10%
Craft and related	2,256	13.50%	3,957	13.00%	4,776	12.20%	10,989	12.70%
Plant and machine operational	1,460	8.70%	2,384	7.80%	3,263	8.30%	7,107	8.20%
Elementary occupation	564	3.40%	994	3.30%	4,136	10.60%	5,694	6.60%
Total	16,714	100.00%	30,495	100.00%	39,192	100.00%	86,401	100.00%
<i>Father's sector of empl.</i>								
government	5,786	29.00%	8,535	29.00%	11,025	28.10%	25,346	28.60%
public enterprise	1,709	8.60%	2,209	7.50%	1,783	4.50%	5,701	6.40%
private	12,322	61.80%	18,524	62.80%	26,139	66.70%	56,985	64.30%
investment	53	0.30%	124	0.40%	119	0.30%	296	0.30%
foreign	34	0.20%	22	0.10%	27	0.10%	83	0.10%
NGO	36	0.20%	32	0.10%	56	0.10%	124	0.10%
Other	4	0.00%	28	0.10%	27	0.10%	59	0.10%
DK	0	0.00%	0	0.00%	16	0.00%	16	0.00%
Total	19,944	100.00%	29,474	100.00%	39,192	100.00%	88,610	100.00%
<i>Father's empl. status</i>								
Wage worker	12,919	61.90%	18,312	58.10%	25,474	62.60%	61,525	59.20%
Employer	4,225	20.30%	8,298	26.30%	8,961	22.00%	26,130	25.20%
Self-employed	2,745	13.20%	3,710	11.80%	4,529	11.10%	12,253	11.80%
Unpaid Family Worker	110	0.50%	206	0.70%	228	0.60%	659	0.60%
No job	858	4.10%	979	3.10%	1,469	3.60%	3,328	3.20%
Total	20,857	100.00%	31,505	100.00%	40,661	100.00%	103,895	100.00%

Table 4.7 Real Monthly Earnings by Subgroup

	1998			2006			2012		
	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs
Male	847	632	3,585	1,039	745	5,741	1,097	771	8,171
Female	718	541	1,009	899	724	1,522	963	726	1,772
Urban	939	699	2,182	1,149	837	4,241	1,202	854	4,748
Rural	656	455	1,121	871	604	3,004	958	655	5,150
Male Youth	671	442	1,149	852	582	2,217	914	622	3,137
Total	822	618	4,594	1,010	743	7,263	1,072	765	9,943

Source: Author's calculations from ELMPS (1998, 2006 and 2012). Earnings variable is real Monthly Wage All Jobs (in 2012 L.E. using CPI).

4.5 Conclusions

Accurately measuring inequality of opportunity requires rich data as well as appropriate methodological approaches. For the former, the ELMPS provides a well-suited dataset to the analysis of inequality of opportunity. In addition to being technically well constructed in terms of representativeness of the population and being large enough in sample size, it includes a wide range of information on earnings as well as the background characteristics of individuals.

In terms of methodological approaches, the wide variety of techniques adopted as well as the added focus on different subgroups allows for a thorough and robust estimation of inequality of opportunity and its causes in Egypt. The parametric and nonparametric measures of inequality of opportunity for the full population as well as subgroups will provide insights into the overall levels and trends of inequality of opportunity. The parametric decomposition visually reveals how certain circumstances contribute to inequality of opportunity. The fact that analysis is conducted on individual subgroups as well is important for relating results to political processes. The labor markets that individuals face in urban versus rural areas, or across different age groups can be substantial.

Having said that, it is important to keep in mind that no data are perfect and fully suited to the empirical task at hand. In the current study, it is true that the data provide multiple variables capturing different circumstances Egyptians are born into, such as, gender, parents' occupations and education and region of birth. However, one can think of other circumstance variables that are not included, like family social networks or individual genetic information. These data limitations are a feature of all studies on inequality of opportunity. Consequentially, the estimates are interpreted as lower bounds of inequality of opportunity. If more data on circumstances were available, inequality of opportunity would be higher.

Chapter 5

Empirical Findings

Abstract

Building on the discussion of the methodology and data used in this thesis in chapter 4, this chapter presents the estimates of inequality of opportunity in earnings for Egypt over the years 1998, 2006 and 2012. It covers results from parametric and nonparametric methods as well as Generalized Lorenz Curves (GLCs). The analysis is conducted for the full sample, as well as for the subgroups of male, female, urban, rural and male youth. In addition to estimating the levels and trends in inequality of opportunity, the relative contribution of specific circumstances to overall inequality of opportunity is estimated using a parametric decomposition. The results indicate that overall inequality of opportunity has ranged between 10% and 20% throughout the three survey years and that inequality of opportunity among male youth and urban subgroups has increased significantly in the 5 years preceding the Arab uprisings. The most important determinants of opportunity inequality are parents' levels of education and area of birth. From a policymaking point of view, these findings suggest that priority of reform should be given to improving the education system and special attention should be given to relatively poor regions in Egypt (namely Upper Egypt).

5.1 Introduction

Chapter 4 provided a detailed account of the measurement techniques and the micro data to be used in this thesis. This chapter presents the results of estimating the level and decomposition of inequality of opportunity in earnings in Egypt using ELMPS survey data for 1998, 2006 and 2012. The analysis is conducted using Lorenz dominance as well as parametric and nonparametric approaches. The measurements are carried out on the total sample as well as the sub-samples of male, female, urban, rural and male youth. The generalized Lorenz curves of different population subgroups based on different circumstances provide an initial depiction of the importance of different circumstance characteristics on earnings distributions. The parametric measures are decomposable and therefore make it possible to show how much each circumstance variable contributes to the overall level of inequality of opportunity. The non-parametric approaches offer another way to calculate inequality of opportunity, but without imposing a particular functional form at the outset.

The expectation is that significant shifts in inequality of opportunity are not likely to be observed during such a relatively short period of time as between 1998 and 2012. Circumstances into which individuals are born probably take generations to produce major shifts in the fortune of individuals. However, some changes may be observed within subgroups. In particular, male youth may turn out to suffer most because they are first time job seekers in an economy that was not able to provide sufficient jobs. When it comes to circumstances, factors like ethnic and religious background are not as important in Egypt as elsewhere,²⁵ but differences exist on spatial dimensions with poverty being concentrated in Upper Egypt, suggesting that areas of birth is likely to be an important circumstance factor. Finally, it

²⁵ Religious background is not available in the ELMPS dataset, except in the context of a question on marriage, but it does not permit inclusion as a viable circumstance variable to be used in the estimation.

will be interesting to explore the influence of parents' education on variations in earnings, a factor which proved significant in most studies of inequality of opportunity elsewhere.

The rest of the chapter is structured as follows. Section 5.2 presents estimates of inequality of opportunity for the full sample as well as its decomposition. Section 5.3 focuses on inequality of opportunity among sub-groups. Section 5.4 summarizes the main findings and compares them with international studies. The final section concludes.

5.2 Inequality of Opportunity for the Full Sample

This section presents the main findings of the thesis with respect to the level of inequality of opportunity as well as the contribution of different circumstances to earnings for the full sample of all three rounds of the ELMPS. The analysis is carried out using the following techniques: Lorenz dominance, parametric measures and nonparametric types and tranches.

5.2.1 Dominance Tests

Studying inequality of opportunity, regardless of the technique adopted, amounts to a comparison of conditional earnings distributions. A starting point to test if inequality of opportunity exists in the first place is to test for stochastic dominance. These tests provide an ordinal ranking of incomes based on different circumstances and can be visually observed in Generalized Lorenz Curves (GLC), as shown in Figures 5.1-5.4. These are cumulative distribution functions of real monthly earnings based on different circumstance-based partitions of the population. They do not isolate the impact of a single variable on the earnings distribution. For instance, parents' education may in part capture the impact of the geographic divide as well, assuming more highly educated parents reside in urban areas. However, they provide a useful first glance at the impact of certain circumstances on earnings distributions. The GLCs are shown for earnings by parents' education, gender, area of birth and father's employment status/sector. In all figures, the y-axis is the CPI-adjusted real monthly wage in 2012 and the x-axis is the cumulative population proportion.

Figure 5.1 shows the earnings distributions based on three levels of parents' education for the three survey rounds. Individuals with higher educated parents demonstrate consistently higher earnings than those with lower educated parents. This result holds for the three levels of education ordinally. That is to say that those with highly educated parents dominate the distributions of those with parents with a basic level of education and those with no education. Also, the parents with a basic level of education dominate those whose parents have no education. This is true for all survey years.

These graphs also reveal important differences about the magnitudes of inequality of opportunity based on more privileged backgrounds. While tests for stochastic dominance do not allow for a precise measure of the magnitude of inequality of opportunity, the gap between the Lorenz curves can intuitively be understood as the magnitude of difference between the different circumstance-based groups. As can be seen in the case of parents' education, the gap increases over time. In 1998, the difference between the distributions of high and basic education are relatively narrow. The gap increases substantially by 2006 and again in 2012. Another trend can be seen in the narrowing of the gap between groups of individuals with parents of basic and no education. Initially in 1998, the difference between the groups was more substantial, but by 2012, the gap was narrow relative to the high education

category. The fact that the distributions of basic and none are closer together and further from the high education group indicates equality of opportunity is greater at the lower end of the social ladder. Similar findings have been noted in France by Lefranc et al. (2008).

The fact that the earnings premium is greater and rising for the top end of the distribution is consistent with a growing literature on the labor market in Egypt, which indicates that labor market outcomes are based more on circumstances than skills assessments (Assaad et al., 2014).

Figure 5.2 displays inequality of opportunity based on gender, also known as the gender wage gap. The results from the GLCs display consistently that males earn higher wages than females across all survey rounds. The magnitude of inequality of opportunity due to gender hardly changes across the survey rounds, however the gender gap widens at the lower end of the distribution in 2006. This is consistent with substantial increase in the proportion of women who engage in unpaid family work from 1998 to 2006 (Hendy, 2015, p. 152).

The inequality of opportunity that is demonstrated for the urban and rural divide is shown in Figure 5.3. The generalized Lorenz curve for earnings in the urban group consistently dominates the rural group across all survey years and there are no substantial changes in magnitude. However, the relative importance of area of birth is much narrower than is apparent in the distributions based on parents' levels of education suggesting that social background characteristics are of growing importance to inequality of opportunity than geographic characteristics, at least for the analysis of the full sample of the population.

The Lorenz curves for individuals' earnings based on different partitions of father's education and employment sector reveal a consistent ordinal pattern. The earnings distribution of individuals whose father is a public employee consistently dominates that of individuals whose father is either a private wage-worker or self-employed. The distribution of individuals with self-employed fathers also consistently dominates those whose fathers are private wage-workers. This holds across all three survey rounds. The fact that public wage-workers are better rewarded in the Egyptian labor market is a well documented observation. A number of studies have shown that public employees consistently enjoy higher wages as well as greater job security than those in the private sector.

While the differences resulting from father's employment type demonstrate differences in earnings outcomes, based on the Lorenz curves the more significant contributors are geographic factors and family background characteristics.

Whether or not inequality of opportunity exists is also measured formally using the stochastic dominance tests. The results shown in Table 5.1 corroborate the findings inferred from the graphs, where in all instances dominance results are found at the second order of stochastic dominance, meaning that inequality of opportunity does exist.

Figure 5.1 Lorenz Curves for Monthly Earnings by Parents' Education

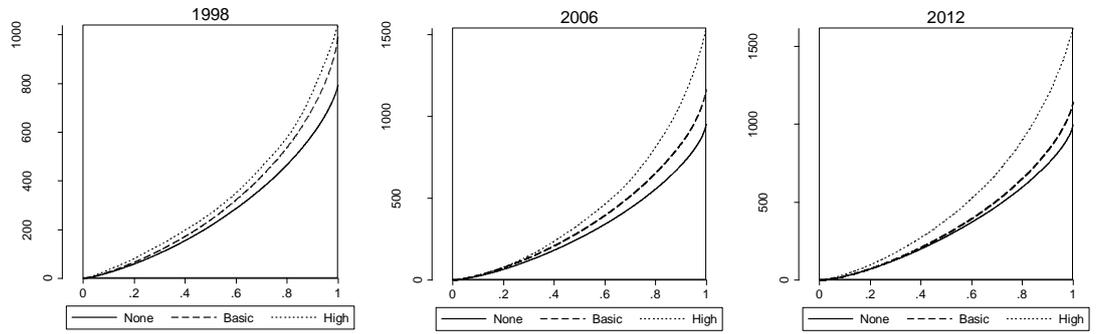


Figure 5.2 Lorenz Curves for Monthly Earnings by Gender

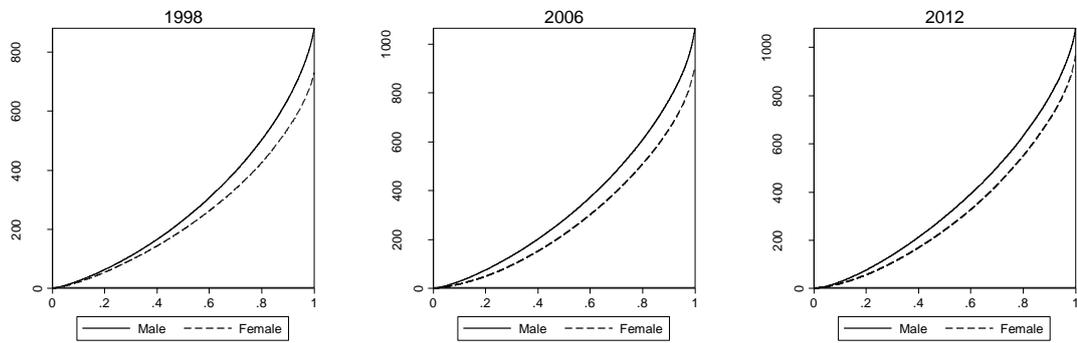


Figure 5.3 Lorenz Curves for Monthly Earnings by Area of Birth

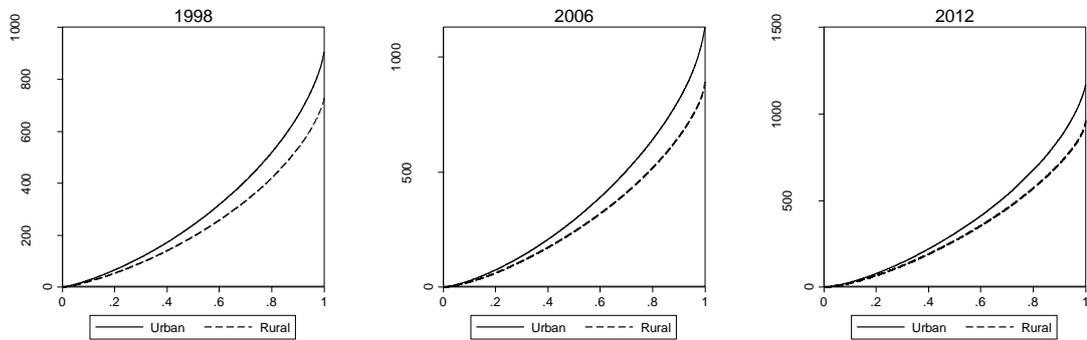


Figure 5.4 Lorenz Curves for Monthly Earnings by Father's Employment Status / Sector

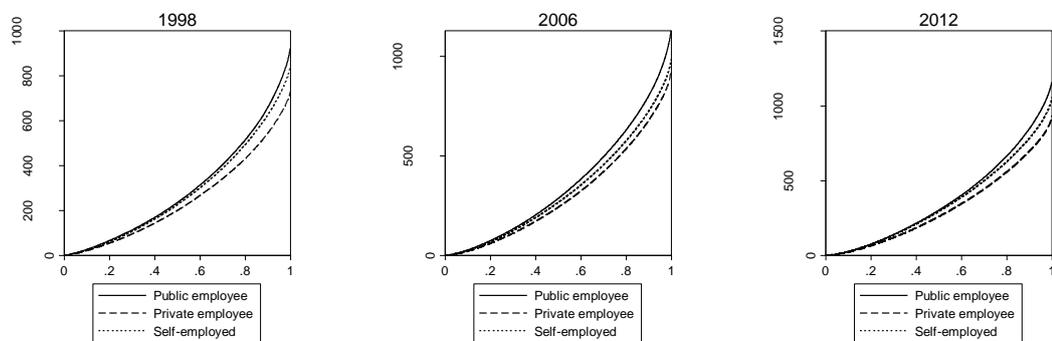


Table 5.1 Stochastic Dominance Tests

		1998			2006			2012		
		High	Basic	None	High	Basic	None	High	Basic	None
Education	High	-	<	<	-	<	<	-	<	<
	Basic	-	-	<	-	-	<	-	-	<
	None	-	-	-	-	-	-	-	-	-
		Male	Female		Male	Female		Male	Female	
Gender	Male	-	<	na	-	<	na	-	<	na
	Female	<	-	na	<	-	na	<	-	na
		Urban	Rural		Urban	Rural		Urban	Rural	
Area of Birth	Urban	-	<	na	-	<	na	-	<	na
	Rural	<	-	na	<	-	na	<	-	na
		Public	Private	Self	Public	Private	Self	Public	Private	Self
Father's Occupation	Public	-	<	<	-	<	<	-	<	<
	Private	-	-	<	-	-	<	-	-	<
	Self	-	-	-	-	-	-	-	-	-

Note: < denotes that the row is dominated by the column at the second order of stochastic dominance.
 – is placed in cells where the comparator is the same group or a lower distribution. na means not applicable.

5.2.1 Parametric and Nonparametric Results

Inequality of opportunity is a relative measure of inequality. It is the share of total inequality that can be attributed to an individual's circumstances. Therefore, the level of inequality of outcomes represents the denominator in measurements of the share of inequality of opportunity.

One way to get a picture of earnings inequality is to measure logarithmically the kernel estimation of earnings as displayed in Figure 5.5.²⁶ The figure shows the densities of earnings distributions across the three survey rounds for the full sample. At first glance, the distribution is typical of the distribution of earnings in that it is skewed to the right and displays a long right tail. The mean earnings of each distribution exceeds their median earnings and the upper percentiles of the distribution account for substantial portions of total earnings.

The 1998 distribution has the highest mode of the three survey rounds, indicating more egalitarian distribution. The distributions for 2006 and 2012 are approximately at the same level. The 2012 distribution is also slightly wider at the mode than the 2006 distribution. However, the overall differences between the distributions for 2012 and 2006 are less sharp. All the distributions also display a strong right skew with a long tail to the right.²⁷

²⁶ Kernel density estimation is a nonparametric way to estimate the probability density function of a random variable. It approximates the density $f(x)$ from observations on x . Intuitively, it is a histogram with continuous observations. The Epanechnikov kernel used in these measures is calculated as $f(x) = \begin{cases} \frac{3}{4}(1-x^2) & \text{for } |x| \leq 1 \\ 0 & \text{otherwise} \end{cases}$

²⁷ As noted earlier, the top 1% of observations have been removed in each round due to outliers that significantly skewed the inequality estimates. This has been done for all estimations.

In the parametric estimation, the starting point is to combine all circumstances in one equation that is carried out using an ordinary least squares (OLS) regression. The results are shown in Table 5.2, with the log of monthly wages as the dependent variable and the set of previously identified circumstance variables on the right hand side. The reduced form estimation for the parametric share of inequality of opportunity includes only pure circumstance variables, as opposed to the full specification that adds age and age-squared as controls. Figures in brackets below the coefficients are standard errors. Since variables are categorical, a single variable in each category is omitted as a reference point and to avoid multicollinearity.

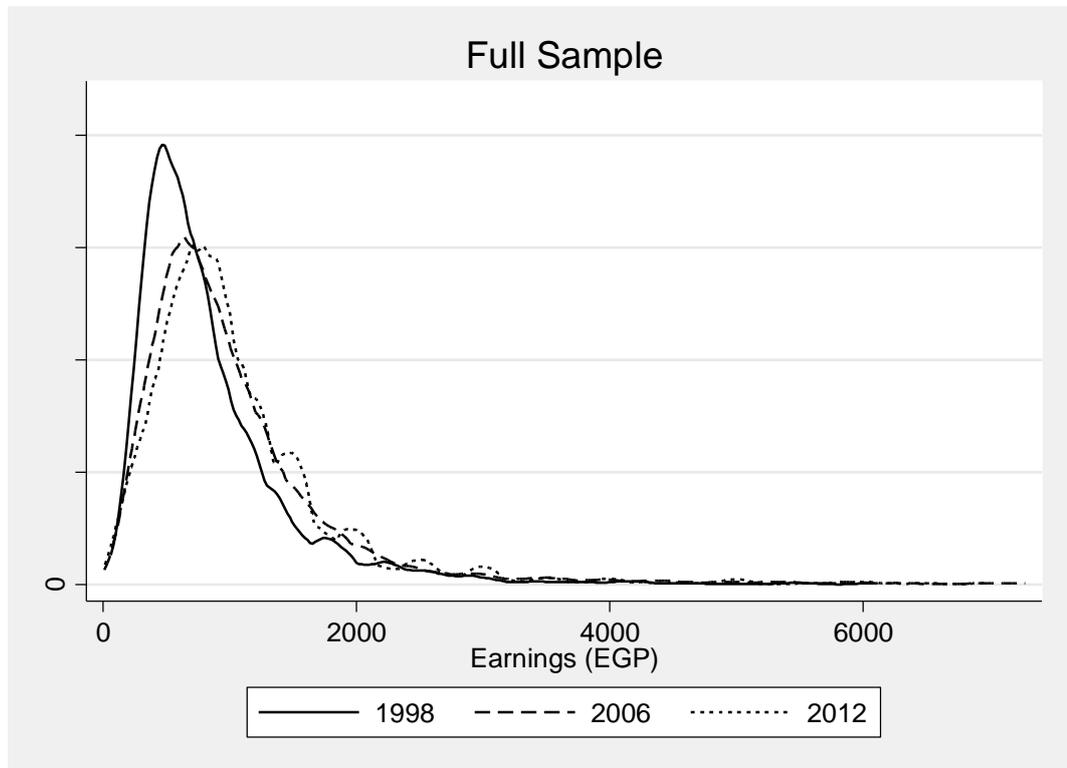
Beginning with the demographic variables, as expected, being male and born in an urban area are positively associated with higher earnings. The male and urban dummy variables are positive and statistically significant in all rounds of the data. This is consistent with the Lorenz curves displayed earlier. Age is also positive and statistically significant in all rounds. Where the coefficient for age squared is negative indicates decreasing return to earnings for older cohorts and the opposite when the coefficient is positive.

The impact of family background is also visible with the results for parents' levels of education.²⁸ For both mother's and father's education variables, the no education variable was omitted. For father's education, the coefficients are all positive and broadly statistically significant. Furthermore, the coefficients increase with higher levels of education, indicating an increasing and non-linear return to parents' education. This is consistent with the notion that inequality of opportunity increases at the better-off levels of society. The results for mother's education are less consistent. Only in 2012 are all coefficients statistically significant and they also display the same increasing returns to higher education apparent in the father's education category.

In the father's occupational status category, agricultural worker is omitted and the positive coefficients in all years indicate that having a father who is not an agricultural worker has a significant and positive effect on earnings. For father's employment status and sector, the public waged worker variable is omitted. Most coefficients in this category are not statistically significant, except for private employer, which is positive and statistically significant in the two latter survey rounds. Compared to the earlier results from the generalized Lorenz curves, a finer partitioning of father's employment status and sector was used in the parametric estimation. The disaggregation indicates that within the private sector, the returns for non-wage employment may vary based on additional factors, for instance, the gap between formal and informal labor. As was indicated by the Lorenz curves, having a father who is a wage-worker in the private sector has a negative and a statistically significant coefficient in 2012 relative to public wage-work.

²⁸ When referring to family background, the specific circumstance variables behind this are mother's and father's levels of education and father's occupation type and employment status.

Figure 5.5 Earnings Densities Estimated by Kernel



Regarding the overall explanatory value of the regression results, the R-squared is decreasing in each survey round from 24% in 1998 dropping to 18% in 2006 and again to 15% in 2012. However, this should not necessarily be interpreted as decreasing inequality of opportunity. For one, some control variables are included. And secondly, even though the same set of circumstances seems to have less of an explanatory power with respect to earnings, this could be due to the changes in the relative importance of certain circumstance variables. For example, if the private sector is employing more of the labor force overtime relative to the government, and this presumably means they are able to better assess the quality of individuals' skills.

Table 5.2 Regression Results, Full Sample, Dependent Variable: log (Monthly Wages)

	1998	2006	2012
Age	0.0275***	0.0537***	0.0343***
	(0.00673)	(0.00471)	(0.00578)
Age-squared	-0.0000462	-0.000435***	-0.000218**
	(0.0000878)	(0.0000632)	(0.0000747)
Gender (Male)	0.259***	0.325***	0.306***
	(0.0214)	(0.0183)	(0.0171)
Area of Birth (Urban)	0.110***	0.105***	0.128***
	(0.0265)	(0.0197)	(0.0159)
<i>Father's Education (no education omitted)</i>			
Primary and Preparatory	0.0368	0.121***	0.0816***
	(0.0393)	(0.0224)	(0.0194)
Secondary and Post Secondary	0.169***	0.109***	0.141***
	(0.0399)	(0.0288)	(0.0232)
University and Above	0.267***	0.331***	0.260***
	(0.0575)	(0.0401)	(0.0388)
<i>Mother's Education (no education omitted)</i>			
Primary and Preparatory	0.0659	0.0450	0.0672**
	(0.0513)	(0.0300)	(0.0255)
Secondary and Post Secondary	0.144*	0.0371	0.102**
	(0.0574)	(0.0407)	(0.0347)
University and Above	0.0755	0.212**	0.294***
	(0.0987)	(0.0691)	(0.0613)
<i>Father's Occupation Status (agricultural worker omitted)</i>			
Non-aggri. Father's occup.	0.133***	0.134***	0.0463*
	(0.0287)	(0.0209)	(0.0187)
<i>Father's employment status / sector (public wage-worker omitted)</i>			
Private wage-worker	-0.0405	-0.00784	-0.0695***
	(0.0264)	(0.0240)	(0.0203)
Private employer	0.0523	0.0603**	0.0465
	(0.0270)	(0.0231)	(0.0238)
Private self-employed	-0.0504	-0.00607	-0.0493
	(0.0349)	(0.0262)	(0.0285)
Constant	5.197***	4.961***	5.458***
	(0.136)	(0.0934)	(0.110)
Number of Observations	2721	6164	7156
Adjusted R-squared	0.243	0.191	0.144

Notes: * p<0.05, ** p<0.01. *** p<0.001

The results for the share of inequality of opportunity estimates for the full population sample based on the parametric approach are shown in Table 5.3. The first row presents the coefficients for total inequality as measured by the GE(0) index. As with the types approach, the “within-group inequality” represents the inequality due to individual effort while the “between-group” inequality is that due to circumstances. The final two columns display the opportunity shares of total inequality that can be attributed to circumstances using both a residual and direct calculation. In both instances, the results according to the parametric approach for the full sample display that circumstances accounted for a modest share of between 9% and 11% (in 2006 and 1998 respectively) of total earnings inequality. The results across the three survey rounds are similar, starting at 10.5% in 1998, dropping to approximately 8.7% in 2006 and rising to 9.8% in 2012. The t-statistics show the same trend as the point estimates, but all confidence intervals overlap. The relatively conservative estimates are typical of parametric measures when compared to other techniques for measuring inequality of opportunity as will be demonstrated next (Ferreira et al., 2011).

Turning to the results for inequality of opportunity using the nonparametric types and tranches techniques, Table 5.4 presents findings. The first row shows the total level of income inequality in each round measured by GE(0). The levels are identical within years as the same sample was used for both the types and tranches measurements. For the types approach, the “within-group inequality” is the inequality that cannot be attributed to the observed circumstances, while the “between-group inequality” is the inequality resultant from circumstances. With the tranches approach, these groupings are reversed; the morally justifiable level of inequality is the “between-group inequality” and that part due to circumstances is the “within-group inequality”. The opportunity shares of total earnings inequality are displayed in the last two rows of the table where coefficients are displayed according to both direct and residual calculations, which are similar in all cases.

The types measurement is an ex ante approach that emphasizes the degree of inequality between groups of individuals who share the same circumstances. Results for the types measurements are displayed in the first column under each survey year. Accordingly, the overall level of inequality of opportunity has remained relatively stable throughout the three rounds ranging from 9% and 10% (2012 and 1998 respectively) in each round.

As for the tranches approach, this technique is an ex post method that emphasizes differences between individuals who have exerted the same degree of effort, relative to the individuals who share the same circumstances as them. It therefore observes the level of inequality among a group of individuals of highly varied backgrounds. The shares of opportunity inequality based on the tranches approach display a higher level of inequality of opportunity than the parametric and types methods for the full sample. The coefficients across the three rounds range between 14% and 18%. The difference between the results should be attributed to their different emphases on the concept of inequality of opportunity, with one stemming from a viewpoint that would seek to equalize rewards for the same effort, while the other would seek to equalize the set of earnings opportunities available to an individual.

Table 5.3 Parametric Results on Inequality of Opportunity in Earnings

		Total Inequality	Within-group Inequality	Between-group Inequality	Opp. Share (Residual)	Opp. Share (Direct)
1998	Point Estimates	0.182***	0.163***	0.0190***	0.105***	0.105***
	SE	(0.00571)	(0.00526)	(0.00266)	(0.0139)	(0.0131)
	t-statistic	(31.91)	(30.95)	(7.15)	(7.56)	(7.95)
	95% CI	="[0.171 0.193]"	="[0.153 0.173]"	="[0.0138 0.0243]"	="[0.0778 0.132]"	="[0.0788 0.130]"
2006	Point Estimates	0.190***	0.174***	0.0163***	0.0815***	0.0859***
	SE	(0.00395)	(0.00349)	(0.00168)	(0.00817)	(0.00816)
	t-statistic	(48.07)	(49.92)	(9.68)	(9.97)	(10.53)
	95% CI	="[0.182 0.197]"	="[0.167 0.181]"	="[0.0130 0.0196]"	="[0.0655 0.0975]"	="[0.0699 0.102]"
2012	Point Estimates	0.192***	0.174***	0.0177***	0.0940***	0.0924***
	SE	(0.00438)	(0.00421)	(0.00184)	(0.00969)	(0.00906)
	t-statistic	(43.76)	(41.21)	(9.63)	(9.70)	(10.20)
	95% CI	="[0.183 0.200]"	="[0.165 0.182]"	="[0.0141 0.0213]"	="[0.0750 0.113]"	="[0.0747 0.110]"

Note: * p<0.05, ** p<0.01. *** p<0.001

Within-group inequality is used to measure the share of inequality of opportunity using the residual method, while between-group inequality is used to measure the share of inequality of opportunity using the direct method.

Comparing the findings for inequality of opportunity in earnings in Egypt with those of other countries, shows that the results are in-line with findings elsewhere.²⁹ Out of the other studies focusing particularly on earnings, Checchi and Peragine (2010) measured inequality of opportunity nonparametrically in Italy, finding that for the overall population inequality of opportunity accounted for a lower bound of 14.8% in the types approach and 19.5% in tranches approach. They also pointed to regional differences between the north and the south, but these figures were all under 20%. Another study by Singh (2012) for India found that circumstances accounted for 19.5% of earnings inequality using a parametric approach. A study by Pistoiesi (2009) for the United States using a semi-parametric approach revealed a share of 18.6%.

²⁹ Brunori, Ferreira and Peragine (2013) include a more comprehensive study of cross-country inequality of opportunity comparisons.

Table 5.4 Results for Full Sample in Each Round, GE(0)

	1998		2006		2012	
	Types	Tranches	Types	Tranches	Types	Tranches
Total income inequality	0.183*** (0.00595)	0.183*** (0.00595)	0.267*** (0.00835)	0.267*** (0.00835)	0.211*** (0.00564)	0.211*** (0.00564)
Within-group inequality	0.165*** (0.00562)	0.0259*** (0.00264)	0.239*** (0.00748)	0.0425*** (0.00288)	0.192*** (0.00494)	0.0349*** (0.00266)
Between-group inequality	0.0182*** (0.00280)	0.153*** (0.00469)	0.0277*** (0.00401)	0.223*** (0.00723)	0.0194*** (0.00217)	0.172*** (0.00511)
Opportunity Share (Residual)	0.0991*** (0.0144)	0.167*** (0.0172)	0.104*** (0.0138)	0.166*** (0.0142)	0.0917*** (0.00933)	0.185*** (0.0156)
Opportunity Share (Direct)	0.0991*** (0.0144)	0.141*** (0.0121)	0.104*** (0.0138)	0.159*** (0.00886)	0.0917*** (0.00933)	0.165*** (0.0111)

Source: Author's calculations from ELMPs (1998, 2006 and 2012). Notes: * p<0.05, ** p<0.01. *** p<0.001

5.2.2 Parametric Decomposition

The parametric approach enables a decomposition of the circumstance variables that contribute to overall inequality of opportunity. Partial effects are calculated by holding a given circumstance variable constant for all individuals, while keeping other circumstances varying, then calculating inequality of opportunity in this new distribution and observing the change in proportion to the original inequality of opportunity.

The results of the parametric decomposition on the full sample are shown in Table 5.5. The columns denote the survey rounds and the rows display the share of different circumstance variables. Father's educational status and area of birth are the primary contributors to inequality of opportunity. The coefficients of these two variables are both positive and statistically significant at the one percent level for all three rounds. The coefficients for gender and father's occupation are also positive but statistically insignificant. The two puzzling results, although statistically insignificant, relate to fathers employment and mother's education.

The negative coefficients can be explained as follows. In estimating the partial shares of different circumstances, it is possible to have negative values for the decomposition depending on how different characteristics are correlated and enter into the underlying regression. Calculating partial effects involves setting one set of circumstance variables to their mean, predicting the income values, and comparing the resulting inequality to total inequality (total inequality – inequality with circumstance J set to mean = partial effect). Dividing this by total inequality of opportunity yields the percentage share. Therefore, if setting a circumstance to its mean results in spreading out the distribution, negative partial effects are possible, but these are typically of very small magnitudes.

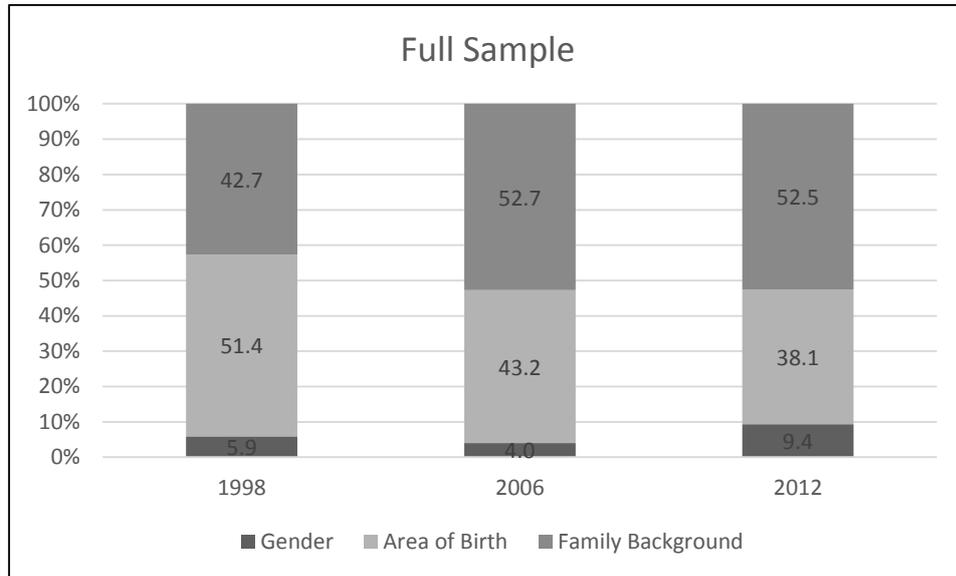
Table 5.5 Partial Shares of Circumstances on Inequality of Opportunity in Earnings

Year	1998	2006	2012
<i>Partial shares associated with:</i>			
Gender	0.0541	0.0398	0.0917
	(0.0538)	(0.0748)	(0.0476)
Area of Birth	0.469***	0.428***	0.373***
	(0.0689)	(0.0569)	(0.0468)
Father's Occupation	0.0402	0.104	-0.0285
	(0.0738)	(0.0572)	(0.0442)
Father's Employment	-0.0191	0.00489	0.132*
	(0.0587)	(0.0560)	(0.0514)
Father's Education	0.349***	0.418***	0.382***
	(0.0622)	(0.0691)	(0.0608)
Mother's Education	-0.0251	-0.0386	-0.0136
	(0.0634)	(0.0783)	(0.0645)

Notes: * p<0.05, ** p<0.01. *** p<0.001

The above results are also displayed visually in Figures 5.6. The relative contribution to overall opportunity inequality of the individual circumstance groups is shown on the y-axis. The circumstance variables have been grouped into three categories: gender, area of birth and family background. At first glance, it is clear that family background characteristics and area of birth contribute the largest shares of inequality of opportunity. This is consistent with the initial observations based on generalized Lorenz curves. Moreover, the trend is also similar. The earlier distributions did not show significant changes in the gap based on geography, however, the gap based on parents levels of education was widening over time. As displayed in the parametric decomposition, the importance of family background is also increasing from 42.7% of the share of inequality of opportunity in 1998 to 52.5% in 2012. As for the relatively meager contribution of gender, it is possible that since the sample size of women was relatively low, the coefficient is relatively small. It is also true that the biggest obstacles from an opportunity point of view for women may be labor market entry in the first place.

Figure 5.6 Partial Shares Decomposition



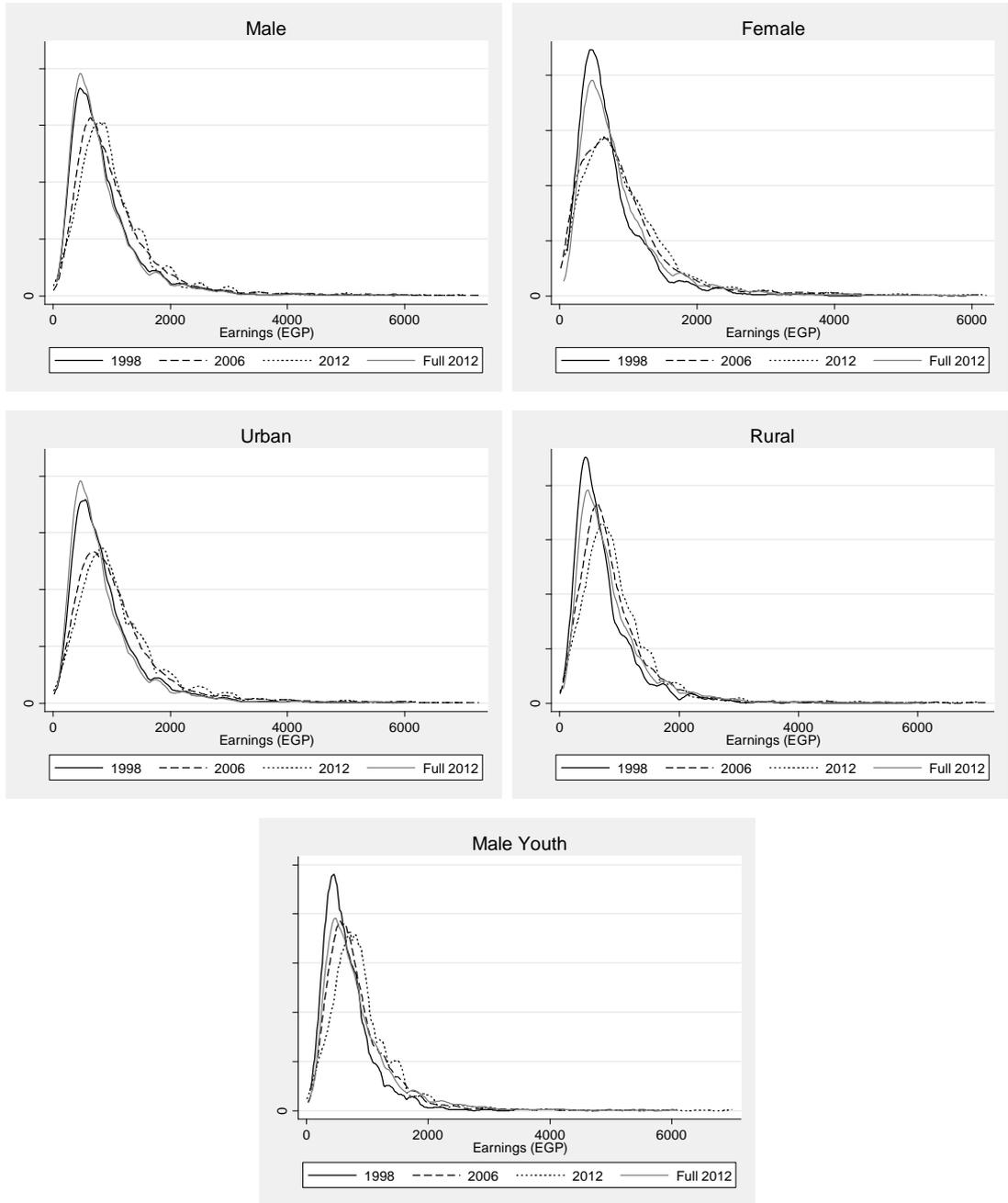
5.3 Inequality of Opportunity for Sub-Groups

This section presents the findings with respect to the level of inequality of opportunity as well as the contribution of circumstances to the results for various subgroups for all three rounds of the ELMPS. The analysis is carried out using the parametric and nonparametric types and tranches approaches. Even if the overall level of inequality of opportunity in the population is not particularly high, the experiences of different subgroups can be markedly different. If some groups are consistently deprived relative to others, this can have significant impacts on the structure of the economy and society as a whole.

5.3.1 Parametric and Nonparametric Results

As with the analysis of the full sample, the differences in income distributions are presented first. The kernel density estimations of earnings are displayed for each subgroup in Figure 5.7. The distribution of earnings for the full sample in 2012 is included in these graphs as a reference point for comparisons across groups. Broadly speaking, the distributions are similar in nature across rounds to that for the full sample. In each case, the mode of the 1998 distribution is the highest, with the 2006 and 2012 much lower and closer to each other. Also, each distribution has a right skew with a long tail to the right.

Figure 5.7 Earnings Densities Estimated by Kernel for Subgroups



Comparing some of the distributions across subgroups corroborates some known regularities about the labor market. For one, the distribution of female earnings has a mode at a lower earnings level than the male subgroup. This is most apparent for the 2006 and 2012 rounds. Secondly, at the geographic level, the distribution for urban-born earnings displays a lower mode and higher mean than for the rural-born subgroup. For the male youth category, the mode is also consistently higher, indicating a stronger concentration of earnings at a lower level. This can be expected since earnings within the age range of 15 to 29 is much less widespread than comparing across the full age range of 15 to 65 where experience plays a greater role.

As in the analysis of the full sample, the regression results that underlie the parametric estimation are reviewed next. Table 5.6 displays the OLS regression results on the log of monthly wages as the dependent variable and the set of previously identified circumstance variables for the male subgroup on the right hand side.

Overall, the results for the male subgroup are similar to those for the full sample. This is not all that surprising since the sample is primarily composed of men given their higher labor force participation rates. Demographic characteristics play a strong role in determining earnings. Area of birth has a positive and significant coefficient across all rounds. The impact of parent's background exhibits a similar trend to the full sample as well. The positive impact of parents' education also increases at higher levels indicating a nonlinear returns to a more privileged social background. The coefficients for mother's education were not significant in 4 out of 6 estimates in the 1998 and 2006 rounds. This is possibly due to the relatively few observations in these categories with the already confined sample size. Factors relating to father's employment do not seem to play a major role in the outcomes of wages for the male subgroup.

Comparing the male and female regression results reveals that while most of the same circumstances are positive and statistically significant for each subgroup, the overall explanatory power of the variables is much higher for women than men. The R-squared values for the regressions in the male subgroup are 19%, 13% and 11% for the three survey rounds. For the female subgroup, the respective values are 38%, 35% and 22%. As noted earlier, the decreasing values should not necessarily be understood as decreasing inequality of opportunity. However, the differences across subgroups indicate that inequality of opportunity for women may be higher than for men as a greater share of the variation in earnings can be attributed to these circumstances.

In the urban subgroup (Table 5.8), family background characteristics and gender have a positive effect on earnings. The father's occupation category is statistically significant in all rounds, unlike in the other subgroups regressions. This is not surprising in that living in an urban environment, but having a father with an agricultural occupation is more strongly indicative of a lower socioeconomic background. These differences would not be so pronounced in the other subgroups as they would contain both urban and rural individuals.

For the rural subgroup, gender is the most important determinant of wages. The regression results displayed in Table 5.9 indicate that parents' educational levels do not seem to play a major role, even at the higher levels compared to other subgroups. This may be attributed to the fact that levels of education are lower on average in rural areas to begin with. This is particularly true for mother's education.

Inequality of opportunity for the male youth subgroup shows a strong impact of mother's education on earnings relative to other circumstance variables that is uncharacteristic of most other subgroups. The first two rounds do not reveal many significant coefficients as restricting the sample size by both

gender and age does not leave many observations in the regression. Therefore, the decomposition results for the 1998 and 2006 male youth subgroup should be interpreted with caution.

Table 5.6 Regression Results, Male Sample, Dependent Variable: log (Monthly Wages)

	1998	2006	2012
Age	0.0223*** (0.00651)	0.0448*** (0.00600)	0.0385*** (0.00576)
Age-squared	-0.0000119 (0.0000856)	-0.000374*** (0.0000808)	-0.000307*** (0.0000725)
Area of Birth (Urban)	0.138*** (0.0333)	0.0818*** (0.0196)	0.115*** (0.0208)
<i>Father's Education (no education omitted)</i>			
Primary and Preparatory	0.0510 (0.0520)	0.115*** (0.0266)	0.0651* (0.0271)
Secondary and Post Secondary	0.171*** (0.0516)	0.129*** (0.0311)	0.168*** (0.0346)
University and Above	0.295** (0.0927)	0.352*** (0.0475)	0.216*** (0.0500)
<i>Mother's Education (no education omitted)</i>			
Primary and Preparatory	0.137 (0.0711)	0.0545 (0.0351)	0.0981** (0.0350)
Secondary and Post Secondary	0.223* (0.0927)	0.0186 (0.0507)	0.113* (0.0461)
University and Above	-0.0385 (0.148)	0.193* (0.0904)	0.328*** (0.0813)
<i>Father's Occupation Status (agricultural worker omitted)</i>			
Non-aggr. Father's occup.	0.113** (0.0350)	0.129*** (0.0274)	0.0463 (0.0271)
<i>Father's employment status / sector (public wage-worker omitted)</i>			
Private wage-worker	-0.0379 (0.0340)	0.0202 (0.0267)	-0.0619* (0.0251)
Private employer	0.0388 (0.0392)	0.0580* (0.0275)	0.0387 (0.0277)
Private self-employed	-0.0402 (0.0423)	0.0314 (0.0312)	-0.0456 (0.0294)
Constant	5.588*** (0.123)	5.527*** (0.112)	5.744*** (0.117)
Number of Observations	2014	4750	5513
Adjusted R-squared	0.192	0.125	0.111

Table 5.7 Regression Results, Female Sample, Dependent Variable: log (Monthly Wages)

	1998	2006	2012
Age	0.0409**	0.0646***	0.0172
	(0.0127)	(0.00939)	(0.0133)
Age-squared	-0.0000791	-0.000376**	0.000124
	(0.000163)	(0.000121)	(0.000163)
Area of Birth (Urban)	-0.0418	0.176***	0.155***
	(0.0441)	(0.0404)	(0.0385)
<i>Father's Education (no education omitted)</i>			
Primary and Preparatory	-0.0205	0.0817*	0.126**
	(0.0595)	(0.0397)	(0.0475)
Secondary and Post Secondary	0.127*	0.0164	0.101*
	(0.0501)	(0.0477)	(0.0481)
University and Above	0.182*	0.252***	0.340***
	(0.0809)	(0.0704)	(0.0667)
<i>Mother's Education (no education omitted)</i>			
Primary and Preparatory	-0.0588	0.0352	-0.0279
	(0.0824)	(0.0496)	(0.0591)
Secondary and Post Secondary	0.0962	0.133*	0.114*
	(0.0629)	(0.0584)	(0.0574)
University and Above	0.362*	0.330*	0.290***
	(0.147)	(0.129)	(0.0822)
<i>Father's Occupation Status (agricultural worker omitted)</i>			
Non-aggri. Father's occup.	0.118*	0.0905*	0.000673
	(0.0490)	(0.0454)	(0.0478)
<i>Father's employment status / sector (public wage-worker omitted)</i>			
Private wage-worker	-0.0335	-0.104	-0.104*
	(0.0518)	(0.0535)	(0.0432)
Private employer	0.0757	0.0352	0.0591
	(0.0412)	(0.0391)	(0.0489)
Private self-employed	-0.0734	-0.145**	-0.0595
	(0.0570)	(0.0524)	(0.0622)
Constant	4.914***	4.516***	5.596***
	(0.247)	(0.191)	(0.267)
Number of Observations	707	1414	1643
Adjusted R-squared	0.379	0.354	0.215

Table 5.8 Regression Results, Urban Sample, Dependent Variable: log (Monthly Wages)

	1998	2006	2012
Age	0.0281***	0.0637***	0.0436***
	(0.00823)	(0.00640)	(0.00683)
Age-squared	-0.0000249	-0.000515***	-0.000292***
	(0.000107)	(0.0000845)	(0.0000883)
Gender (Male)	0.292***	0.291***	0.300***
	(0.0242)	(0.0244)	(0.0225)
<i>Father's Education (no education omitted)</i>			
Primary and Preparatory	0.0467	0.0978***	0.106***
	(0.0508)	(0.0256)	(0.0261)
Secondary and Post Secondary	0.166***	0.0906**	0.137***
	(0.0365)	(0.0301)	(0.0296)
University and Above	0.241***	0.349***	0.287***
	(0.0695)	(0.0484)	(0.0473)
<i>Mother's Education (no education omitted)</i>			
Primary and Preparatory	0.0795	0.0605*	0.0873**
	(0.0550)	(0.0302)	(0.0331)
Secondary and Post Secondary	0.185**	0.0488	0.163***
	(0.0577)	(0.0450)	(0.0397)
University and Above	0.127	0.190*	0.341***
	(0.0956)	(0.0923)	(0.0618)
<i>Father's Occupation Status (agricultural worker omitted)</i>			
Non-aggri. Father's occup.	0.117**	0.166***	0.140***
	(0.0370)	(0.0309)	(0.0345)
<i>Father's employment status / sector (public wage-worker omitted)</i>			
Private wage-worker	-0.0522	-0.00756	-0.0518*
	(0.0335)	(0.0304)	(0.0254)
Private employer	0.0679*	0.0760**	0.0291
	(0.0319)	(0.0259)	(0.0274)
Private self-employed	-0.0463	-0.0503	-0.0562
	(0.0377)	(0.0337)	(0.0322)
Constant	5.237***	4.820***	5.247***
	(0.160)	(0.127)	(0.133)
Number of Observations	1911	3809	3862
Adjusted R-squared	0.271	0.210	0.170

Table 5.9 Regression Results, Rural Sample, Dependent Variable: log (Monthly Wages)

	1998	2006	2012
Age	0.0284*	0.0422***	0.0261***
	(0.0125)	(0.00802)	(0.00783)
Age-squared	-0.000118	-0.000366***	-0.000168
	(0.000162)	(0.000108)	(0.000100)
Gender (Male)	0.148**	0.428***	0.321***
	(0.0524)	(0.0341)	(0.0306)
<i>Father's Education (no education omitted)</i>			
Primary and Preparatory	0.00832	0.186***	0.0345
	(0.0870)	(0.0437)	(0.0354)
Secondary and Post Secondary	0.212	0.166*	0.173***
	(0.113)	(0.0647)	(0.0455)
University and Above	0.414*	0.168	0.146*
	(0.203)	(0.0877)	(0.0659)
<i>Mother's Education (no education omitted)</i>			
Primary and Preparatory	0.137	0.0204	0.0345
	(0.214)	(0.0628)	(0.0562)
Secondary and Post Secondary	-0.232	0.0515	-0.0624
	(0.139)	(0.106)	(0.0614)
University and Above	-	0.785*	0.102
	-	(0.347)	(0.136)
<i>Father's Occupation Status (agricultural worker omitted)</i>			
Non-aggri. Father's occup.	0.128**	0.0878**	0.0184
	(0.0404)	(0.0320)	(0.0319)
<i>Father's employment status / sector (public wage-worker omitted)</i>			
Private wage-worker	-0.0204	-0.00133	-0.0819*
	(0.0598)	(0.0375)	(0.0322)
Private employer	0.0250	0.0359	0.0535
	(0.0616)	(0.0409)	(0.0346)
Private self-employed	-0.0470	0.0558	-0.0348
	(0.0721)	(0.0477)	(0.0436)
Constant	5.370***	5.206***	5.703***
	(0.249)	(0.155)	(0.148)
Number of Observations	810	2355	3294
Adjusted R-squared	0.149	0.141	0.084

Table 5.10 Regression Results, Male Youth Sample, Dependent Variable: log (Monthly Wages)

	1998	2006	2012
Age	0.166	0.188***	0.0880
	(0.0959)	(0.0490)	(0.0535)
Age-squared	-0.00287	-0.00321**	-0.00111
	(0.00207)	(0.00105)	(0.00112)
Urban	0.107	-0.0474	0.0795*
	(0.0588)	(0.0306)	(0.0327)
Father's Education (no education omitted)			
Primary and Preparatory	-0.0893	0.101*	-0.0296
	(0.0702)	(0.0451)	(0.0424)
Secondary and Post Secondary	0.0876	0.0383	0.0754
	(0.107)	(0.0572)	(0.0477)
University and Above	0.443*	0.384***	0.0204
	(0.172)	(0.0756)	(0.0621)
Mother's Education (no education omitted)			
Primary and Preparatory	0.125	0.000626	0.0965*
	(0.0799)	(0.0492)	(0.0487)
Secondary and Post Secondary	0.140	0.0283	0.102*
	(0.128)	(0.0750)	(0.0438)
University and Above	-0.320	0.116	0.372***
	(0.201)	(0.136)	(0.0982)
Father's Occupation Status (agricultural worker omitted)			
Non-aggri. Father's occup.	0.0666	0.0324	-0.00156
	(0.0812)	(0.0389)	(0.0420)
Father's employment status / sector (public wage-worker omitted)			
Private wage-worker	0.0728	0.0948*	-0.00790
	(0.0517)	(0.0395)	(0.0374)
Private employer	0.112	0.0690	0.0920*
	(0.0846)	(0.0397)	(0.0427)
Private self-employed	0.133	0.0372	0.0145
	(0.0747)	(0.0532)	(0.0479)
Constant	3.897***	3.893***	5.059***
	(1.086)	(0.558)	(0.634)
Number of Observations	515	1580	1655
Adjusted R-squared	0.107	0.096	0.081

The results for the male, female, urban, rural and male youth subgroups are shown first in Table 5.11 for the three different measurement techniques. Under each subgroup, the opportunity shares of total inequality using both direct and residual calculations are shown based on the types, tranches and parametric methods for each of the three survey rounds. Given the comprehensive set of approaches adopted, some of the results show different levels and divergent trends. However, there are some notable consistencies.

Regarding the measurement techniques, the tranches approach consistently registered the highest coefficients for opportunity shares (14.1%-18.5%), while the types and parametric approaches were more conservative (9.4%-10.4% and 7.7%-10.5% respectively). This is similar to findings in the full sample. Overall, the range of explained inequality by circumstances is at a lower bound between 8% and 20% among subgroups, which is close to the range observed for the full sample. Upon closer inspection, there are some consistent patterns across measurement techniques, especially between the 2006 and 2012 rounds.

Inequality of opportunity for the urban and male youth subgroups has increased between 2006 and 2012 across all measurement techniques. For the urban group, this increase ranged from a lower end of 6.7% in 2006, to 15.7% in 2012. For male youth, the increase was even sharper. The lowest estimate in 2006 was at 7.8% and highest at 20% in 2012.

Inequality of opportunity for the rural and female subgroups decreased between 2006 and 2012 based on most measurement techniques. Based on the tranches approach, inequality of opportunity in the rural group dropped from 16.6% to 12.2%. The other measurement approaches showed similar 2%-4% declines over the same period. The female subgroup exhibited similar declines based on the types and tranches calculations, though the parametric approach showed about a 1% increase over the same period. The results for the male subgroup showed the least consistent trends with some measurement increasing and other declining or staying the same.

Turning to a comparison of levels across subgroups, the ranking that emerges in the 2012 round is consistent across measurement techniques and shows that male youth suffer the greatest inequality of opportunity, followed by females, then the urban and male groups, followed by rural with the least. Given that male and male youth show varying results, it may indicate that younger age-groups suffer more from higher levels of inequality of opportunity. Subgroups in the earlier years do not display as consistent patterns, except for the consistently high inequality of opportunity for females. In the earlier years the margins of error are also wider, meaning that robust rankings are hard to establish. This is true especially of the 1998 round.³⁰

³⁰ Graphs showing the trends in opportunity shares over the three rounds is provided in the Appendix. However, the confidence intervals often overlap across the rounds, making statistically robust claims about trend challenging.

Table 5.11 Inequality of Opportunity for Subgroups

	1998			2006			2012		
	Urban								
	Types	Tranches	Para	Types	Tranches	Para	Types	Tranches	Para
IOp(resid)	0.0716*** (0.0132)	0.113*** (0.0142)	0.0825*** (0.0140)	0.0672*** (0.0147)	0.125*** (0.0156)	0.0601*** (0.0144)	0.0776*** (0.0128)	0.157*** (0.0187)	0.0898*** (0.0135)
IOp(dir)	0.0716*** (0.0132)	0.106*** (0.0120)	0.0811*** (0.0136)	0.0672*** (0.0147)	0.120*** (0.0079)	0.0520*** (0.0077)	0.0776*** (0.0128)	0.138*** (0.0122)	0.0824*** (0.0121)
	Rural								
	Types	Tranches	Para	Types	Tranches	Para	Types	Tranches	Para
IOp(resid)	0.0275 (0.0157)	0.0852** (0.0281)	0.0400* (0.0189)	0.0766*** (0.0144)	0.166*** (0.0166)	0.0206*** (0.0177)	0.0264*** (0.0061)	0.122*** (0.0105)	0.0338*** (0.0076)
IOp(dir)	0.0275 (0.0157)	0.0881*** (0.0172)	0.0448* (0.0200)	0.0766*** (0.0144)	0.160*** (0.0128)	0.0534*** (0.0118)	0.0264*** (0.0061)	0.119*** (0.0082)	0.0428*** (0.0079)
	Male								
	Types	Tranches	Para	Types	Tranches	Para	Types	Tranches	Para
IOp(resid)	0.0908*** (0.0167)	0.152*** (0.0231)	0.0932*** (0.0169)	0.0897*** (0.0142)	0.143*** (0.0134)	0.0817*** (0.0144)	0.0706*** (0.0120)	0.162*** (0.0157)	0.0811*** (0.0104)
IOp(dir)	0.0908*** (0.0167)	0.129*** (0.0158)	0.0894*** (0.0147)	0.0897*** (0.0142)	0.139*** (0.0074)	0.0539*** (0.0082)	0.0706*** (0.0120)	0.146*** (0.0098)	0.0681*** (0.0082)
	Female								
	Types	Tranches	Para	Types	Tranches	Para	Types	Tranches	Para
IOp(resid)	0.0756** (0.0243)	0.186*** (0.0370)	0.121*** (0.0292)	0.120*** (0.0200)	0.201*** (0.0254)	0.0733** (0.0253)	0.0875*** (0.0169)	0.170*** (0.0245)	0.0838*** (0.0180)
IOp(dir)	0.0756** (0.0243)	0.136*** (0.0211)	0.125*** (0.0265)	0.120*** (0.0200)	0.166*** (0.0173)	0.0937*** (0.0186)	0.0875*** (0.0169)	0.152*** (0.0169)	0.0845*** (0.0168)
	Youth Male								
	Types	Tranches	Para	Types	Tranches	Para	Types	Tranches	Para
IOp(resid)	0.0714** (0.0269)	0.251*** (0.0538)	0.0930** (0.0299)	0.0776*** (0.0198)	0.124*** (0.0197)	0.0507** (0.0167)	0.105*** (0.0241)	0.200*** (0.0301)	0.104*** (0.0192)
IOp(dir)	0.0714** (0.0269)	0.177*** (0.0320)	0.109** (0.0331)	0.0776*** (0.0198)	0.130*** (0.0138)	0.0451** (0.0153)	0.105*** (0.0241)	0.171*** (0.0204)	0.0866*** (0.0175)

Note: Tables including the absolute inequality of opportunity coefficients and the number of observations are presented in the appendix.

5.3.2 Parametric Decomposition

The parametric decompositions that measure how much individual circumstances contribute to the levels of inequality of opportunity are displayed for the subgroups in Tables 5.12 – 5.14. The coefficients are displayed for each circumstance variable by each survey round. Broadly speaking, the coefficients

for parents' education and area of birth and gender are statistically significant across most subgroups and survey rounds. The coefficients for father's occupation and employment status are in most cases not statistically significant.

The male decomposition shows that inequality of opportunity is driven primarily by area of birth and father's education. Father's occupation type plays a relatively small role and mother's education and father's employment status do not show a statistically significant contribution to inequality of opportunity.

For the female subgroup, area of birth and father's education are also the dominant drivers of inequality of opportunity. However, father's occupation plays a consistently greater role than for the male subgroup.

For the urban subgroup, father's education and area of birth are the two main drivers of inequality of opportunity with gender playing a declining role over the three rounds of the survey.

Inequality of opportunity for the rural subgroup is driven entirely by gender in the 2006 and 2012 rounds. In 1998, father's education was statistically significant and dominant.

Results for the male youth decomposition are more mixed with mother's education, playing a greater role and area of birth playing a relatively small role. Father's occupation is still an important determinant, particularly in the 2006 round, but much less so in the other two survey rounds.

These results have been graphed in Figure 5.8, combining the variables under three broad categories: those relating to area of birth, family background and gender. With the male and female subgroups, in both instances the results are quite similar with area of birth and family characteristics with each accounting for approximately half of the inequality of opportunity in the 2006 and 2012 rounds.

For the urban subgroup, the shares of family background and gender have displayed oscillating importance. In the rural and male youth subgroups, the same pattern emerges, but with much sharper changes. These major fluctuations are likely due more to measurement errors owing to smaller sample sizes than actual reflections of the drivers of inequality of opportunity and thus should be taken with a grain of salt.

Table 5.12 Parametric Decomposition, Male and Female

	Male			Female		
	1998	2006	2012	1998	2006	2012
Area of Birth	0.707***	0.543***	0.529***	0.272*	0.411	0.465***
	-0.089	-0.0776	-0.0651	-0.121	-0.223	-0.0953
Father's Occupation	-0.0101	0.103	0.0766	0.189	0.223	0.146
	-0.114	-0.069	-0.0549	-0.107	-0.169	-0.088
Father's Employment	-0.0252	-0.0871	0.00721	-0.00457	0.224	0.0959
	-0.0784	-0.0594	-0.0649	-0.154	-0.167	-0.0972
Father's Education	0.378***	0.561***	0.591***	0.542***	0.407**	0.428***
	-0.103	-0.0715	-0.0796	-0.119	-0.135	-0.113
Mother's Education	0.0743	0.0283	0.0364	-0.0853	-0.113	-0.157
	-0.0802	-0.128	-0.101	-0.11	-0.161	-0.201

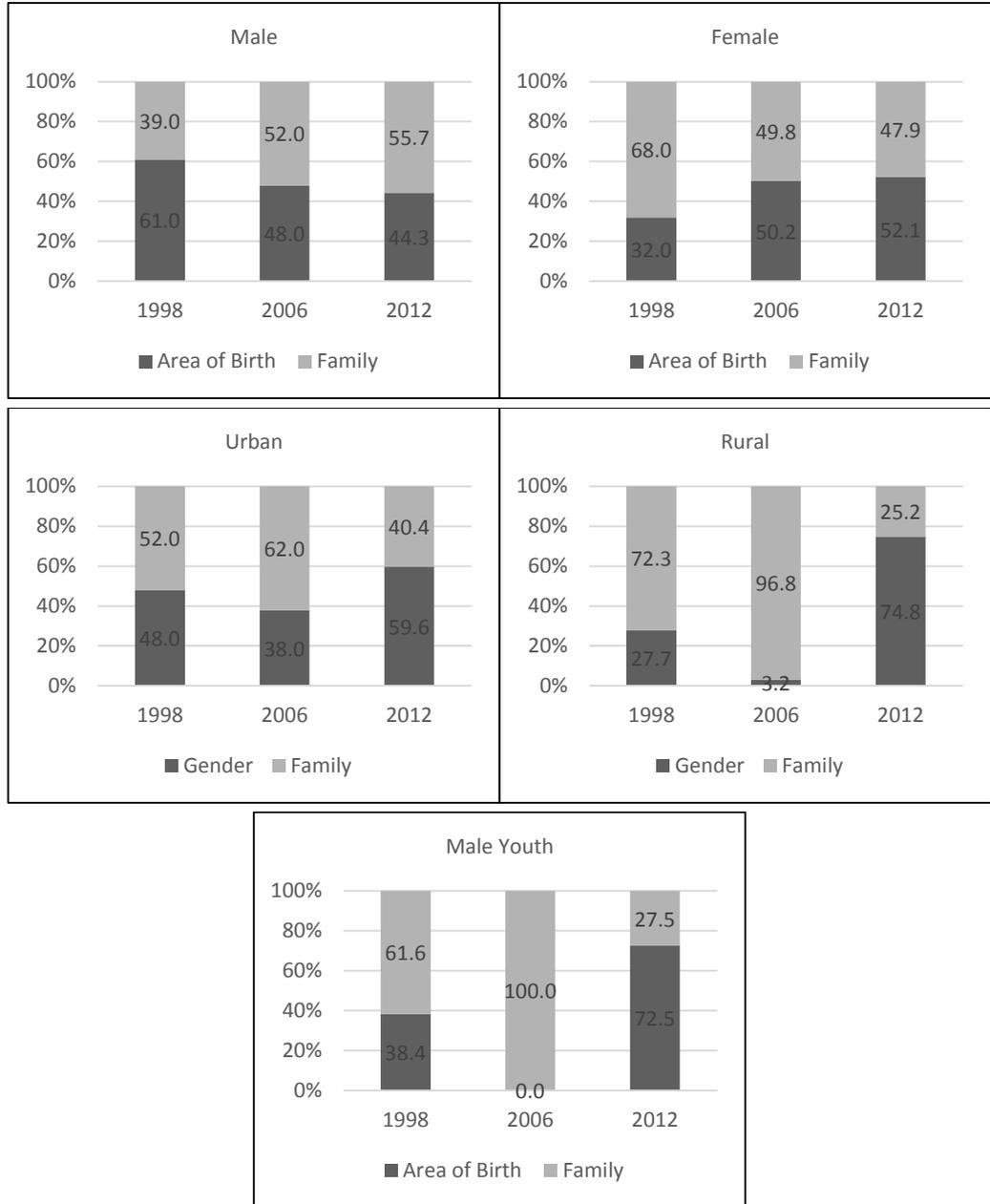
Table 5.13 Parametric Decomposition, Urban and Rural

	Urban			Rural		
	1998	2006	2012	1998	2006	2012
Gender	0.376***	0.351***	0.249***	0.248	0.0277	0.538***
	-0.0989	-0.0985	-0.0704	-0.171	-5.297	-0.128
Father's Occupation	0.00307	0.032	0.112**	-0.0324	0.131	-0.00203
	-0.0136	-0.0302	-0.0396	-0.18	-0.882	-0.0192
Father's Employment	0.0411	0.0198	0.0481	0.0828	-0.0068	0.181*
	-0.0715	-0.0691	-0.0576	-0.194	-1.205	-0.0902
Father's Education	0.336***	0.522***	0.547***	0.515**	0.486	-0.0439
	-0.096	-0.104	-0.0815	-0.195	-2.375	-0.0841
Mother's Education	0.0305	-0.154	0.0506	0.0482	0.226	-0.00654
	-0.0868	-0.153	-0.101	-0.0912	-1.094	-0.0601

Table 5.14 Parametric Decomposition, Male Youth

	Male Youth		
	1998	2006	2012
Area of Birth	0.379	-0.0364	0.279***
	(0.196)	(0.0839)	(0.0613)
Father's Occupation	-0.139	0.00151	-0.0387
	(0.153)	(0.0578)	(0.0566)
Father's Employment	0.0200	-0.0881	0.0817
	(0.129)	(0.0951)	(0.0889)
Father's Education	0.179	0.960***	0.415*
	(0.170)	(0.107)	(0.178)
Mother's Education	0.410**	0.0436	0.563***
	(0.138)	(0.266)	(0.141)

Figure 5.8 Partial Shares Decomposition for Subgroups



5.4 Conclusions

Based on the discussion of methodology and data presented in Chapter 4, this chapter presented the results of an extensive analysis of inequality of opportunity in earnings in Egypt. The analysis was conducted using Lorenz dominance, parametric and nonparametric types and tranches approaches of the three rounds of the ELMPS in the years 1998, 2006 and 2012. It was carried out for the full sample of the population, as well as the male, female, urban, rural and male youth subgroups.

Numerous results were obtained. To begin with, none of the Lorenz curves were intersecting or equal. Thus, the dominance tests confirmed the existence of inequality of opportunity for earnings in Egypt. This conclusion held true for the three survey rounds using a range of different circumstance based partitions. Groups with higher educated parents had better opportunities than those with lower educated parents. There is a gender gap with the distribution of male earnings dominating female earnings. Similarly, earnings distributions in the urban areas are above those in rural ones. And having a public wage-working father provides better opportunities for higher earnings than different types of private sector work. Both family background, geographical location of birth and gender matter for equality of opportunity.

The parametric and nonparametric approaches were used to estimate the share of inequality that can be attributed to circumstances as opposed to efforts. The results for the three rounds ranged between 7.7% and 18.5% of the inequality in earnings depending on the measurement technique. These estimates seem modest, but are similar to the findings of similar studies of inequality of earnings in other parts of the world. As an important caveat, all estimates are lower bounds, which means that the inclusion of additional circumstance variables would explain more of total inequality. The problem as always is one of data availability. The two approaches were used because each of them represents a different way of thinking about inequality of opportunity as either *ex ante* or *ex post*. This means that they also use the data in different ways. Despite these differences, the results were highly consistent corroborating their robustness.

Over time, the share of inequality of opportunity did not change significantly over the three survey rounds. This is possibly due to the fact that significant shifts in inequality of opportunity are unlikely to be observed during such a relatively short period of time. Circumstances into which individuals are born probably take generations to produce major shifts in the fortune of individuals.

As for the subgroups, the levels of opportunity inequality were within a similar range to the range indicated in the previous paragraph, with the highest level registering for male youth subgroup in 2012 at 20%. Ranking the subgroups in the earlier rounds of data is difficult since error bounds are higher due to lower sample sizes. However, comparing the subgroups relative to each other in the latest round showed that male youth and female subgroups suffered the most from opportunity inequality. The urban and male subgroups were slightly more fortunate. The rural subgroup displayed the lowest share of opportunity inequality, which can be attributed to lower variations in circumstances in rural areas compared with urban areas.

Across all measurement techniques, the most important determinants of inequality of opportunity were parents' education and area of birth. These two circumstance variables exhibited the widest gaps in their depiction by the generalized Lorenz curves. They were also identified through the parametric decompositions to account for most of the inequality of opportunity in earnings. The returns to parents' education showed a positive, increasing and non-linear impact on earnings. In most regressions, the coefficients for higher levels of parents' education were larger than those for lower levels of parents'

education. Also, in the generalized Lorenz curves, the distribution of individuals with highly educated parents was much higher than those with basic or no education, which were bunched closer together. This is consistent with the idea that inequality of opportunity is greater at the extreme ends of the social ladder as found in Checchi and Peragine (2010) and as suggested by literature on intergenerational mobility at the extremes (Checchi and Dardanoni, 2002).

Perhaps the most surprising results were that father's education and occupational status as well as mother's education seemed to play a relatively small role in all measurements except for Lorenz dominance. Their low contributions could have been the result of fewer observations, especially for highly educated mothers. The most notable exception of the impact of father's occupation was for the urban subgroup where having a father who was an agricultural worker negatively impacted earnings.

The chapter has tested and measured the levels of inequality of opportunity and tried to find the circumstance variables that matter the most. This diagnosis of the problem leaves two main questions unanswered. Firstly, what are the political and policy drivers of these results? Secondly, what can be done to improve equality of opportunity going forward? These two questions will be addressed in the next two chapters.

Chapter 6

Political Economy of Inequality of Opportunity in Egypt

Abstract

This chapter explores how politics may have shaped the evolution and determinants of inequality of opportunity in Egypt. It takes the results of the level and determinants of inequality of opportunity in Chapter 5 as a starting point, arguing that these outcomes are the product of various policies that are themselves largely the product of the distribution of power and the nature of the prevailing political regime essentially during Mubarak's era. The analysis is positive in nature, although it is not quantitatively rigorous because of the nuances involved in assessing the political regime and the subtle ways through which its biases are translated into certain policies and not others. The chapter draws on the growing literature on the interaction between institutions and economic outcomes. The analysis suggests that the lack of variability in the level of inequality of opportunity in earnings in Egypt over the period 1998-2012 is likely the result of the stagnation of the political regime under Mubarak. The low levels of inequality of opportunity are largely the result of data limitations, especially in terms of missing circumstances that are not captured such as hereditary characteristics, measures of quality of parenting or ethnic background. On the determinants of inequality of opportunity in earnings, the chapter focuses on the variables identified in Chapter 5 as the most important, namely education, area of birth and gender. The analysis of the labor market points out that the regime rolled back better-paying public sector jobs, while lending support to politically connected firms in the private sector that were unable to create sufficient formal jobs, leaving many with no option but low-paying informal jobs. In the area of education, Mubarak's regime revealed its bias in favour of the elite by allowing public education to deteriorate, while expanding private education to cater for the needs of the better off. Geographically, the regime continued to allocate the bulk of public investment to wealthier urban, rather than rural, areas, where poverty was concentrated. As for gender, decreasing public sector employment disproportionately affected women, who found few alternatives and remained marginalized. Finally, while the empirical findings on the level and evolution of equality of opportunity in this thesis do not provide compelling evidence in explaining the revolt and ousting of Mubarak in January 2011, alternative interpretations linking diminished opportunities facing the middle class and the revolt point in the direction of the important role of equality of opportunity. Overall, these findings lend support to the influence of politics on policies and hence on outcomes.

6.1 Introduction

The two main conclusions regarding inequality of opportunity in Egypt from Chapter 5 can be stated as follows. First, the level of inequality of opportunity in earnings has not changed much during the period 1998-2012. Second, the factors that contributed the most to inequality of opportunity are family background (especially parents' education), area of birth (in terms of whether the individual is born in an urban or rural area), and gender (with females being disadvantaged). The purpose of this chapter is to explain the underlying factors behind these two conclusions through the lens of institutional economics. In addition, since Egypt has experienced a massive uprising in January 2011 that led to the ousting of Mubarak, the chapter also explores whether inequality of opportunity had anything to do with this revolt.

The analysis in this chapter is guided by the following conceptual framework: institutions, especially political institutions, influence the choice of policies, which in turn lead to certain outcomes rather than

others. In other words, policies are endogenous to politics. This conceptual framework draws on a vast and growing literature in the area of institutional economics, the pioneers of which include North et al. (2006) and Acemoglu and Robinson (2012). For example, Acemoglu and Robinson (2006) and Robinson (2009) argue that governments may or may not choose policies that favor everyone in society. On the contrary, different constituencies have different shares of power, which they use to influence public policy in order to capture rents for themselves. Their success in doing so is determined by the rules of the game and the power of the participants. These two determinants originate from *de jure* and *de facto* powers. The *de jure* power refers to the official set of institutional rules, while the latter is the actual political power that different participants wield. *De jure* political power derives from the constraints that different political institutions set on different parts of society. These can speak to the form of government and how much the rules limit the power of rulers and elites in society. The *de facto* source of power comes from outside the official rules. For example, the constitution typically does not allocate power to a wealthy elite, but they may have the power to stage a revolt, hire mercenaries or influence the military in order to influence the actions of the government. This concept is also present in Khan (2010), where he explains that differences in the power of different groups is due to the ability to both absorb and impose costs on other groups. This ability depends on their wealth, and the capacity to garner public support and mobilize supporters.

A similar framework has been developed by North et al. (2006), in which they classify societies into limited access and open access societies. In a limited access society, social order is maintained by a political system where entry is limited and rents are used to stabilize the political system and discourage violence. In an open access society, where political and economic participation is available to all members of society, social order is maintained through competition rather than rent-creation and maintained competitively. The room for rewarding hard work is greater in an open access society than in a limited access society.

The implications of these models for equality of opportunity in society is that it depends greatly on whether the country in question has inclusive or exclusive political institutions using the language of Acemoglu and Robinson, or limited or open access societies, in the language of North. Where a country is ruled by a small elite with no checks and balances, members of this elite are in a position to devise policies that serve the survival of the regime and enhance their own interests. They may even go as far as to legislate and institutionalize the rules in their favour at the expense of others. By these actions, they not only cause inequality to rise but also to persist over time. In contrast, where the regime is open, with the majority having a voice in a regime with checks and balances, the rulers tend to devise policies that serve the interest of most of the population and to make rules that ensure continuity of such policies. This type of regime tends to produce lower levels of inequality.

In applying this framework to Egypt, it will be argued in this chapter that inequality of opportunity stagnated during Mubarak's era, because the regime was extractive in nature or a limited access society. Moreover, it remained unchanged during the period of analysis. Secondly, it will be shown that the policies the regime adopted in the areas that influence inequality of opportunity were consistent with a bias in favor of crony capitalists, while paying lip service to the middle class and the poor. The areas of focus will be labor market policies, education, spatial or gender, which are the variables of significance to inequality of opportunity in Chapter 5. Finally, while it is recognized that the results in this thesis with respect to inequality of opportunity in earnings do not provide compelling evidence to cause the revolt in 2011, this may be due to data limitations. However, the analysis of the biases of the regime are

consistent with the findings of other studies, which argued that the neglect of the middle class eventually led them to side with the poor against the ruling elite in 2011 (Diwan, 2013).

One final remark is in order before moving to the structure of the chapter. Methodologically, the institutional framework adopted in this chapter and the focus on one country case study do not permit the use of formal econometric techniques. However, it is believed that much can be gained by relying on an in-depth analysis of the institutional set up and the relevant policies to explain the results of chapter 5 in terms of the levels and determinants of inequality of opportunity. No claim of causality is made, but the aim is to make compelling arguments for the conclusions made at the end of the chapter.

The rest of the chapter is organized as follows. The next section explores how the literature has characterized the political regime in Egypt during Mubarak's era. Section 3 discusses the influence of the political regime in Egypt under Mubarak on the formation of earnings as well as the circumstance variables identified in Chapter 5 to have made a difference for inequality of opportunity, namely education, area of birth and gender. Section 4 then explores the possible role of inequality of opportunity in explaining the 2011 uprising in Egypt.

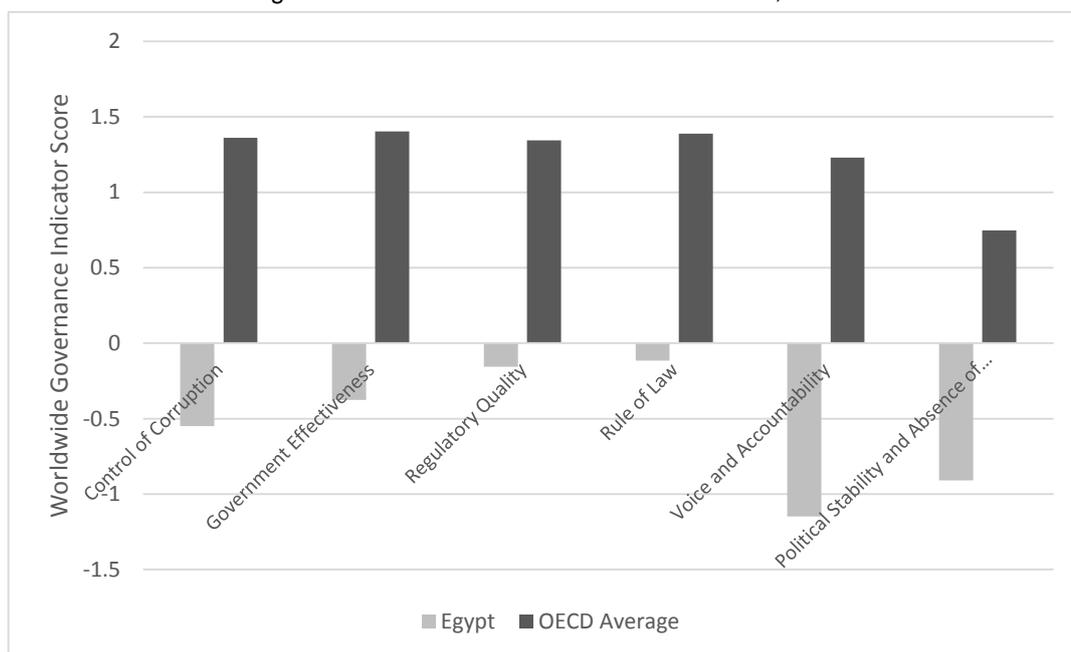
6.2 Egypt's Institutional Set-Up under Mubarak

In an attempt to lay the foundations for understanding the drivers of inequality of opportunity in earnings in Egypt under Mubarak, this section does two things. First, it explains why the regime under Mubarak can be considered extractive in nature. Second, it explores how extractive institutions were translated in reality into crony capitalism coupled with an erosion in the role of the state.

What kind of political institutions did Egypt have under Mubarak? Egypt cannot be characterized in any way other than being a limited access society or a society dominated by extractive political and economic institutions. The most visible feature of the regime was that the constitution did not have term limits on the President. Hence, Mubarak stayed in power for 30 years. The previous two presidents since 1952, Nasser and Sadat, only left office upon their death. Parliamentary elections were not competitive by international standards. The separation of powers was not sharp enough in the constitution nor in practice. In addition, liberties were not fully protected. A small ruling elite seem to have had control over political and economic life and drove the system in their favour.

There is ample evidence corroborating the above conclusion. To cite but one example, according to the World Bank governance indicators (Kaufmann et al., 2011), Egypt in 2010 performed much worse than OECD countries on all indicators. The comparison is shown in Figure 6.1 below. Two important observations can be made here. On a scale of between 2.5 and -2.5, OECD countries fall on the positive side whereas all scores for Egypt are negative. The second observation is that Egypt does particularly worse in the area of voice and accountability, followed by political stability and control of corruption.

Figure 6.1 World Governance Indicator Scores, 2010



Source: World Bank – World Governance Indicators

These features led some analysts to model the regime in Egypt, and for that matter other MENA countries, as an authoritarian bargain (Desai et al., 2009; Yousef, 2004). In this bargain, the rulers stay in power by offering their citizenry extensive rents in exchange for political consent. The authoritarian chooses the least cost combination of economic rents and political openness necessary to stay in power. The rents typically take the form of explicit or implicit transfers, subsidies, protections, favourable regulations, employment or consumption. The choice of recipients of rents depends on the context of a given country at a given point in time, and could include the heads of the military forces, certain national or regional bureaucrats, individuals who play instrumental roles in the political leadership of the ruling party or individuals in the business elite.

During recessions, because of internal or external factors, the ability of the regime to buy support is stifled and can allow for a rise in opposition. In these situations, the rulers may offer greater political openness in the form of allowing greater degrees of political participation in elections, while still seeking to prevent the rise of a significant opposition. This provides an explanation for why welfare spending and political liberalization may be negatively related in autocratic states. It may also explain why partial liberalization may stall transitions to a fuller democracy.

Under this kind of regime, political reforms tend to be used by the rulers not to advance democracy per se, but to appear to be doing so. For example, while Sadat had allowed a limited and short-lived opposition, Mubarak allowed a much broader set of political parties to join the formal space. However, he excluded the rise of any significant opposition (Lust-Okar, 2005, p. 60). In 1983, Mubarak introduced an amendment to the 1972 electoral law, which did just that. It created 48 large constituencies, as opposed to the previous 195 smaller ones. However, it also stipulated that in order to participate in the elections, parties would have to submit lists of candidates in all electoral regions, making it more difficult to focus on specific constituencies where popularity would be greater. Parties would also need to obtain

a minimum of 8% of the national vote in order to win any seats in parliament and candidates were banned from running as independents (Owen, 2004, p. 137).

Mubarak's amendments of the parliamentary laws were used as a rent allocation mechanism to the poor in return for their votes as well as a way to manage the elites by bringing them into the formal political arena (Blaydes, 2008). The goal of elections was not only to appear legitimate, but also to garner the loyalty of the other influential groups in society. On the part of the connected elite, parliamentary seats were a valuable asset to ensure greater extraction of rents. This practice is consistent with Haber's (2008) argument that the creation of property rights can act as a key to stability for autocratic regimes where authoritarians may offer protection, loans, trade protection or other preferential policies under the rubric of property rights.

Another instrument available to an autocratic regime to stay in power instead of rent allocation is repression, which Egypt's regimes used at different points in dealing with the opposition in general and the Muslim Brotherhood in particular. While the brotherhood organization was banned in Egypt since 1954, the regime has dealt with it with varying degrees of tolerance and repression (Shahin, 2010, p. 18). Under Sadat, the regime was more tolerant of the Muslim Brotherhood's activities as they were more concerned with de-Nasserization and moderating the rise of more radical Islamic groups. This approach remained until the mid 1990s, when Mubarak cracked down on the Muslim Brotherhood in an attempt to prevent its growing influence. Between 1995 and 2000, the regime held six military tribunals for 79 of the group's leading members receiving jail sentences. This was followed by a period of continued repression stopping short of completely eradicating the movement, allowing it to maintain some influence in parliament and society more broadly.

If Mubarak's regime was not generating the best economic and political outcomes for society, why did he last that long in office? This question has been raised by Bueno de Mesquita et al. (2003), who sought to answer why some leaders who bring about peace and prosperity leave office in a short period of time and why some, who produce war, corruption and misery, endure. Their answer rests on a theory of political selection where they distinguish between the *selectorate*, the group of people who have influence in choosing their leaders with a prospect of extracting gains, and *the winning coalition*, the subgroup of the selectorate who successfully maintain their incumbent in office. They argue that there is greater redistribution when the winning coalition is relatively large. However, in autocratic regimes where the size of the group whose loyalty is essential for the dictator to stay in power is small, it would make sense that the leader would provide private rather than public goods.

These arrangements under the Mubarak regime were translated into a wide range of barriers to entry and beneficial regulations to supporters. The two most visible manifestations of extractive institutions, with strong implications for inequality of opportunity, were crony capitalism and the rollback of the state accompanied by the economic liberalization of the 1990s. Crony capitalism refers to the relationship between the state and a well-connected business elite that enjoy privileges not enjoyed by others. The rollback of the state refers to the withdrawal of the state from providing public services, which tends effectively to impact the middle class and the poor negatively.

With respect to *crony capitalism*, there is growing systematic evidence of its prevalence in Egypt during the Mubarak regime. The study by Chekir and Diwan (2015) sought to evaluate quantitatively the mechanisms and value of privileges. They identify politically connected firms and explore the main differences between them and unconnected firms, with a particular focus on firms' access to debt, payment of taxes and market share. Beyond this, they measure the degree to which the stock market valued the connectedness of these firms by focusing on events surrounding the 2011 uprisings using

stock market data. In terms of debt, they find that connected firms have substantially more debt than unconnected ones, with an average debt to equity ratio about 108.3 points greater. They also note that in order to secure debt, political connections are much more valuable than market share. In their sample of 116 firms, 22 connected firms received 74% of total debt in the sample firms in 2010, and even increasing after banking regulations in 2006 (Soliman, 2012). The market share of connected firms was also greater than unconnected firms by between 7.7% and 8.4% and had been increasing over time. Analysis of privileges in terms of tax payment did not show that connected firms were favoured. However, the average tax rate paid by firms was 17% of net income, a relatively low rate by international standards.

Crony capitalism has also been explored by looking at stock market returns in the same study. One way of measuring the stock market's valuation of political connections is to see how much more value connected firms lost in the aftermath of the 2011 revolution compared to unconnected firms. This approach was adopted by Chekir and Diwan (2015) and they found that on average, connected firms lost 13%-16% from just political connections. They attribute the value of these connections to stem from expected future gains like larger growth opportunities and bail out guarantees rather than superior profitability.

Another study measuring the value of political connections of firms measured how the stock market responded to protests during the initial 2011 uprisings in Egypt (Acemoglu et al., 2014). The results reveal that large protests negatively impacted the returns of politically connected firms, for example, a 500,000 strong protest in Tahrir Square would translate to a drop in connected firms' market valuation by 0.8% relative to unconnected firms on that day. The value of unconnected rival firms did not increase in response. Analysis was also conducted on how differently connected firms fared during the different regimes following the revolution. Results suggested that whenever a group loses power, the value of the firms connected to that group also fell and conversely, whenever a group gained power, firms connected to them would also gain value. For instance, when the military were in charge following the ousting of President Mubarak, military connected firms gained 8% in value, whereas they lost 2.4% during mass protests in Tahrir Square. Similarly, Islamist connected firms saw gains during Morsi's presidency, but declined after his fall. Their results also found not just an increase in stock market value, but actual profitability as well. The interpretation of these results is that the effect of protests was seen as having an impact on the ability of the connected firms to extract future rents. The fact that changes in valuations were also linked to changes in profitability during times of connectedness meant that these firms were able to capture rents due to their connectedness.

Turning to the *rollback of the state* coupled with economic *liberalization*, this too has increasingly received the attention of several analysts (Bargawi, 2014; Moore, 2012). Fiscal policy is probably the most important channel through which the government can exercise its political influence. Liberalization is essentially the mirror image of the rollback of the government, where a decline in the space for one leaves more room for the other. And both avenues have important implications for inequity.

In reviewing what happened on the fiscal and liberalization fronts in Egypt, and more generally the MENA region, Diwan and Akin (2015) identify three distinct phases since 1960s. The first started in the early 1950s lasting until the 1970s and was characterized by state expansion. As described in Owen (Owen, 2004, p. 24), the expansion of the state in Egypt was seen in the size of the police and military, the establishment of large projects such as the Aswan High Dam, the inauguration of the Helwan Iron and Steel Complex, the nationalization of foreign property, the Suez Canal, Egyptian private banks, factories and other enterprises expanded the number of employees under the government. In 1951/2,

government employees were 350,000 people, but that number grew to 1,000,000 by 1965/6. The number of government ministries also almost doubled from 15 to 29 over the same period. According to the 1960 census, the government employed about a third of the non-agricultural labour force. The military expansion over the same period saw a rise in the number of people between the army, air force and navy rise from 80,000 in 1955/6 to 180,000 in 1966, with an additional 90,000 paramilitary police. Finally, government expenditure as a percentage of GDP rose from 19.3% in 1954/5 to 55.7% in 1970. In addition, the state also increased its presence in education and welfare provision. This further expanded public sector employment with teachers, doctors and health workers. The rising school population provided workers for the growing civil service and further encouraged the public sector to create more jobs for graduates (Owen, 2004: p. 25).

The major expansion of the state was a reflection of Nasser's alignment with the middle and peasant classes. Such policies as land reform had taken power away from the previously powerful landowning elites and gave them to the peasants, and this formula meant that the state would play a paternalistic role for its citizenry. This equilibrium would hold until Sadat's open-door policy in the mid 1970s, which signified a new alignment in political coalitions.

The second phase identified by Diwan and Akin (2015) was characterized by structural adjustment and liberalization. Sadat's open-door policy from 1974 called for liberalization and sought to increase the efficiency of the public sector as well as reactivating the private sector and attracting foreign capital (Owen, page 116). These policies were designed to gain the support of the Egyptian business class (Lust-Okar, 2005: p. 64). Despite Sadat's intent on liberalization, he was unable to undo the legacies of state provision. An important episode occurred in January 1977 when he attempted to cut several subsidies, which led to the "bread riots", prompting him to undo the policy immediately (Owen, 2004: p. 136).

The third and most recent phase leading up to the Arab Spring saw the emergence of new economic arrangements that the regime characterized as market friendly, but were really benefiting private interests instead of fostering an independent, competitive and globally integrated private sector (Malik and Awadallah, 2013). This era saw a greater rollback of the welfare state and public services with increasing state manipulation. This is evidenced by drops in total government expenditure, which have more than been halved from 61.5% in 1982 dropping to 25.1% in 1998, a decline of 36.4% (Diwan and Akin, 2015).

The new political alignment with the private sector that had started under Sadat was greatly expanded under Mubarak in the 1990s and 2000s and the number of favoured businessmen rose from a handful under Sadat, to dozens under Mubarak (Chekir and Diwan, 2015: p. 4; Owen, 2004: p. 92). This coalition led to a new class of politically connected capitalists who amassed substantial wealth (Sfakianakis, 2004). The close ties between these entrepreneurs and in particular Gamal Mubarak, the President's son, are well documented (Osman, 2010; Roll, 2010, 2013). The relationship between the business elite and the regime was built on providing access to certain profitable opportunities through privatization and the provision of certain contracts for financial and other types of support. Between 2004 and 2008, the state's privatization revenues doubled compared to the previous decade (Roll, 2013: p. 7). Simultaneously there was a concentration of capital in a few privately owned companies. Together, the growing capital concentration as well as the growing private sector role in the economy increased the political power of the business elite. By 2004, the cabinet under Prime Minister Nazif included many members were businessmen, while others held important positions in the ruling party, parliament and other boards and committees.

Overall, the shift that took place from the 1990s onwards towards economic liberalization fostered a breed of crony capitalism (Owen, 2004: p. 234). The programs of privatization, coupled with increased availability of resources through opening of the banking system and attraction of private capital expanded the private sector and altered the distribution of political and economic power. The government put in place de jure legal reforms that facilitated the rise of a business elite, while closely connected firms became more involved in the official political process. The previous developmental state that controlled the majority of investment had diminished and instead of fostering a more pluralistic political environment, saw opposition as a threat to its economic achievements. This led to the limitation of organized opposition from different groups in society like workers and peasants. Competition was choked and firms tended to succeed only if they were close to the state (politically connected) or distant from the state (informal) (Malik, 2015).

6.3 Implications for Inequality of Opportunity

Thus far, the emphasis has been on characterizing the political regime under Mubarak. In this section, the focus shifts to what all this might mean for inequality of opportunity in earnings and its determinants. This is done first by looking at earnings in the context of the Egyptian labor market and how the shift in the political regime may have impacted the evolution of earnings and their distribution. Next is a discussion of the three most important circumstance variables identified in Chapter 5 to have had the most influence on inequality of opportunity in Egypt, namely, education, area of birth and gender. In each case, an attempt is made to explain how shifts in the ruling elite in Egypt may have influenced each variable to boost its power base.

The underlying logic is that earnings in Egypt, and elsewhere, are determined in the labor market through market forces on the one hand and labor market policies and regulations on the other. Labor market policies and regulations are in turn shaped by the nature of the political regime and the preferences of the ruling elite. A similar logic applies to education, area of birth and gender. Applied to Egypt against the background provided in the previous section, we expect that the shift in the political regime from Nasser, with the poor and middle class being its power base, to Sadat/Mubarak, with the rich being the primary power base, is translated into policies that are not pro equality of opportunity.

6.3.1 Earnings and Employment Structure

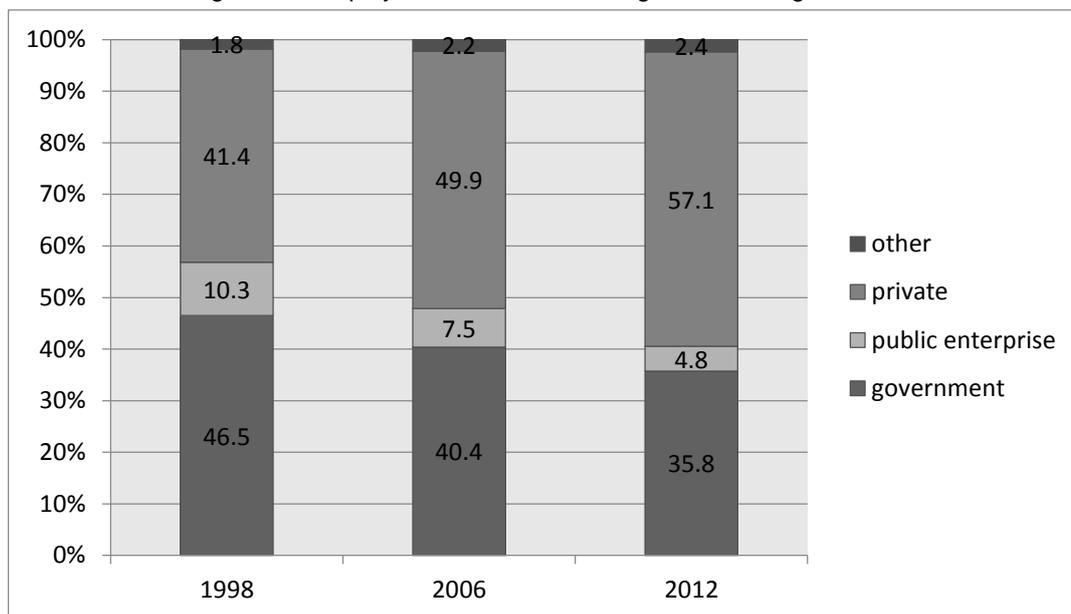
The Egyptian labor market under the Mubarak regime seems to reflect many of the biases of the regime in favour of the business elite at the expense of workers. These biases can be illustrated by looking at the formal employment structure, informality, wage differentials and the role of social networks in securing employment.

Starting with the structure of employment, Figure 6.2 shows the evolution of employed wage workers over the period 1998-2012. The most glaring feature of this structure is that employment in government and public enterprises is relatively high. In 2012, the share of this category in total employment was 41%, declining from 57% in 1998. During the same period, private sector wage work has steadily increased from 41% in 1998 to 50% in 2006 and 57% in 2012. The large size of employment in government and public enterprises is inherited from the Nasserite era, which witnessed a big wave

of nationalization of almost all major industry in 1961/62 as well as the adoption of a policy of guaranteed public employment to all university graduates (Ragui Assaad, 1997). The policy of guaranteed public employment to graduates was extended to vocational secondary school and technical institute graduates in 1964, bringing the total eligible graduates to around two thirds of all graduates. The legacy of this policy is still visible today despite a modest reversal in more recent times. In particular, in the 1980s, the government started eroding real public sector wages and extending the waiting period for government jobs. In 1990, the policy of guaranteeing public sector employment for graduates was abolished, although in practice, public sector employment still drove expectations of graduates. The contrast between the two sets of policies, say of the 1960s and 1980s and beyond, reflects the bias of the regime under Nasser in favour of workers at the expense of the private sector and the subsequent shift in bias in favour of the private sector.

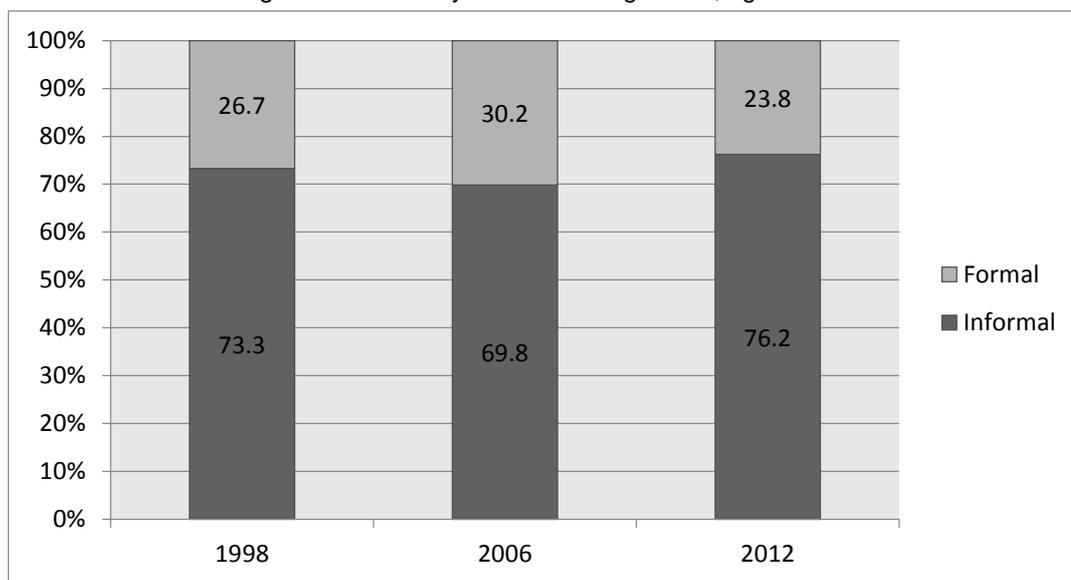
Of course the recent reduction in the share of employment in government may seem reasonable and consistent with the shift in orientation towards markets and private sector development. Indeed, it may also be a more efficient allocation of resources given the rising burden of wages on the government budget. The problem is that the formal private sector did not grow fast enough to absorb the new entrants into the labor market (Malik and Awadallah, 2013). The result was a significant growth of informal employment in wage work as shown in Figure 6.5. With some fluctuation, the rates of informality have been increasing over time and reached 76% in 2012. The significant size of employment in the informal sector can be attributed to several factors. One is that individuals who cannot afford to be unemployed must have decided to join this sector, despite the unfavourable working conditions therein. Another explanation is that joining the formal sector is too costly for very small entrepreneurs because of the restrictive conditions on entry, operation and exit, which leads them to endure the cost and limited opportunities of being informal, including access to credit, markets and government contracts. Whatever the explanation, the fact remains that a large segment of the population lives and operates in the shadow under adverse conditions of no contracts, no social insurance, no reasonable working hours and no specific allowances for annual and sick leave. The regime seems to have catered more to the large and formal private sector and much less to smaller firms.

Figure 6.2 Employment Structure of Wage-workers, aged 15-64



Source: ELMPS

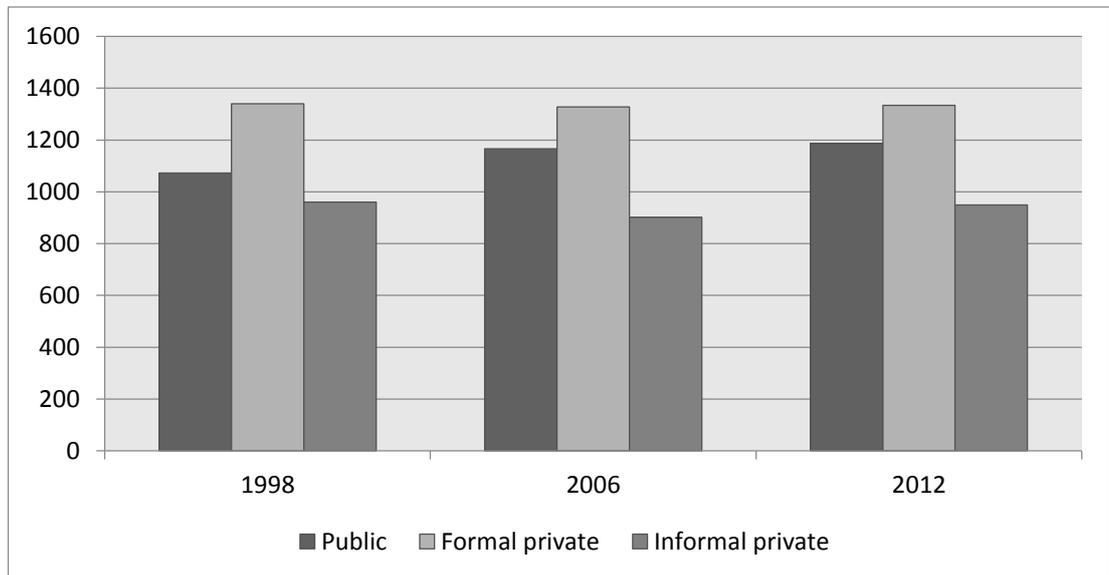
Figure 6.3 Formality in Private Wage-work, aged 15-64



Source: ELMPS.

The bias is also reflected in wage differentials. In addition to the adverse conditions of informal employment, wages in this sector were consistently lower than those in the government or formal private sector. Figure 6.3 shows the mean wages for public, formal private and informal private sectors and the results are consistent across all rounds of the ELMPS. Formal private wage employment consistently displays the highest earnings levels, followed by public employment with informal private employment the lowest. The wage differential between formal and informal private wage work is approximately 20%.

Figure 6.4 Mean Wages in Public and Private Formal/Informal sectors, aged 15-64



Source: ELMPS

Note: Using real monthly wages adjusted CPI to 2012

It is often argued that informal employment can serve as a stepping stone towards better employment opportunities later on. Whether this argument holds true in the context of the Egyptian labor market was explored by Wahba (2009). She measured the conditional probability of entering semi or fully formal employment from informal employment and found that mobility was highly contingent upon education and gender. Only for highly educated male workers were graduating to formal employment likely, while for women and the uneducated, informal employment was a dead end.

Finally, there is evidence that supports the view that circumstances (such as social connections) play an important role in securing jobs, especially in the lucrative formal private sector. Table 6.1 shows the primary methods used to find a job for the public and private sector in 2012. The most revealing observation is related to the group that identified “asked friends or relatives for help” as their active method of finding a job. The figure for this category of responses is much higher for private sector jobs (30%) than for public sector jobs (10%). Similar indications were found with respect to the highly educated youth (Barsoum, 2015, p. 119); there the figures were 47% for private sector jobs and 14% for government jobs. The rationale for this pattern may stem from the scarcity of more lucrative jobs in the formal private sector and the excess supply of equally skilled workers. For government jobs, connections are not as rewarding and perhaps they are based more on administrative rules governing who is hired.

Table 6.1 Primary Methods Used to Obtain a Job by Sector among Employed, Wage-workers aged 15-64 in 2012 (percentage)

Method of finding job	Private Sector	Public Sector
Entered government job competition	14.39	33.02
Registered in government employment office	12.47	29.22
Sent job application	10.93	17.82
Asked friends or relatives for help	29.99	9.45
Other	2.85	4.86
Applied for an advertised job in newspaper	1.24	1.78
Registered in private employment office	1.28	1.64
Inquired at work location	2.37	0.93
Solicited by employers	16.05	0.66
Advertised in newspapers	0.38	0.51
Waited at gathering locations	1.75	0.07
Contacted contractor	6.3	0.05

Source: ELMPS

6.3.2 Education

A similar shift in bias toward the elite under the Mubarak regime can be seen in the area of education as well. One way of supporting upward social mobility is to offer the poor a chance to secure a good education. In the Egyptian case, Egyptians seem to have had greater opportunities to acquire education under the Nasserite regime than under Mubarak's regime. Once again, Mubarak's regime seems to have shifted its alliances in favour of a smaller elite to the neglect, although not entirely, of the lower and middle classes.

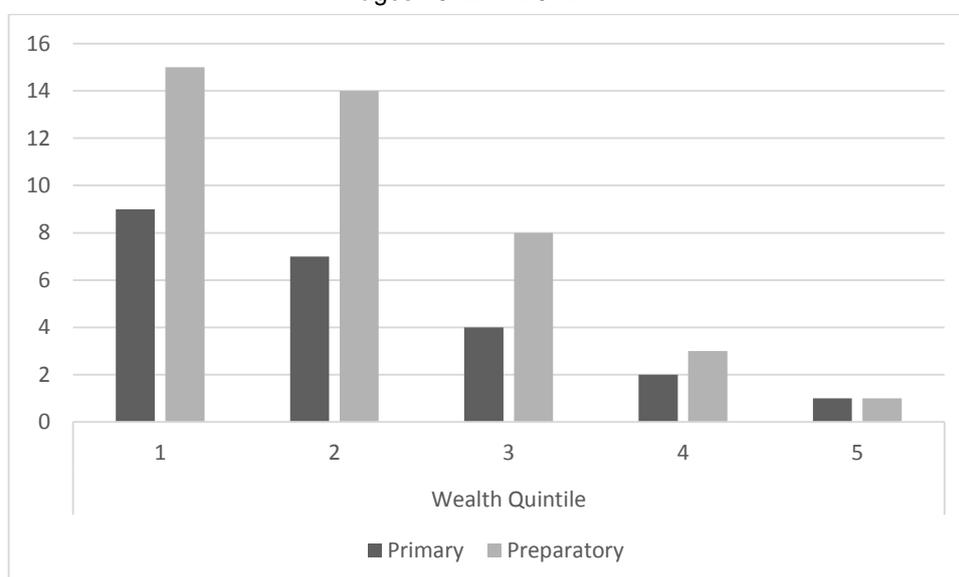
Under Nasser, the provision of free public education was considered a right of all citizens. A policy of free education for all was adopted. As a result, the number of young people in all types of education rose from 1,900,000 in 1953/54 to 4,500,000 in 1965/66 and 5,900,000 in 1972/73. Significant increases were also visible in higher education where numbers rose from 54,000 in the first period to 195,000 in the latter (Owen, 2004: p. 26). And since the mid-70s, when consistent data became available, the average years of schooling has been rising steadily (see Chapter 3.2.2 for details).

Although data on public expenditure by level of education compared to those during Nasser are not available, available figures under Mubarak reveal that the expenditure on public education in Egypt was modest by international standards. Egypt spent 4.1% (2008) on public education, just under the averages for MENA at 4.5% and OECD countries at 4.7%. Moreover, higher education expenditure is much higher. Of the total amount spent on education, 28% was allocated to higher education in Egypt compared to the average of low-and middle-income countries at 18% and OECD countries at 24%. The ratio of spending per student in higher education to pre-university is 3.2 compared to 1.1 in OECD countries (Assaad, 2010).

At the same time, signs of the low quality of public education are showing up and only the wealthier are able to find solutions to deal with that (Elbadawy, 2015, p. 143). Based on the Trends in International

Mathematics and Science Study (TIMSS), Egypt ranked 38th out of 48 countries in their 2007 measurement of mathematical achievement for 8th graders (Gonzales et al., 2008). Another indicator of the deterioration in the quality of public education is grade repetition, which is also costly as students require double the investment per grade. Grade repetition in Egypt is common, with 5% repeating a grade in primary school and 9% in preparatory school (Assaad and Krafft, 2015, p. 21). This rate is not evenly distributed across students. Figure 6.7 displays repetition rates for primary and secondary school in 2012 by wealth quintile.³¹ For the poorest 20% of the population, 9% repeat a grade in primary school and 15% repeat a grade in preparatory school. The figures decline slightly for the second quintile, with rates respectively at 7% and 14%. Conversely, the wealthiest 20% only have a 1% chance of grade repetition in both primary and preparatory school.

Figure 6.5 Percentage Repeating a Grade by Wealth Quintile for Primary and Secondary Schools, ages 13-22 in 2012



Source: ELMPS; presented in Assaad and Krafft (2015)

Note: Parents' wealth quintile is from 2006.

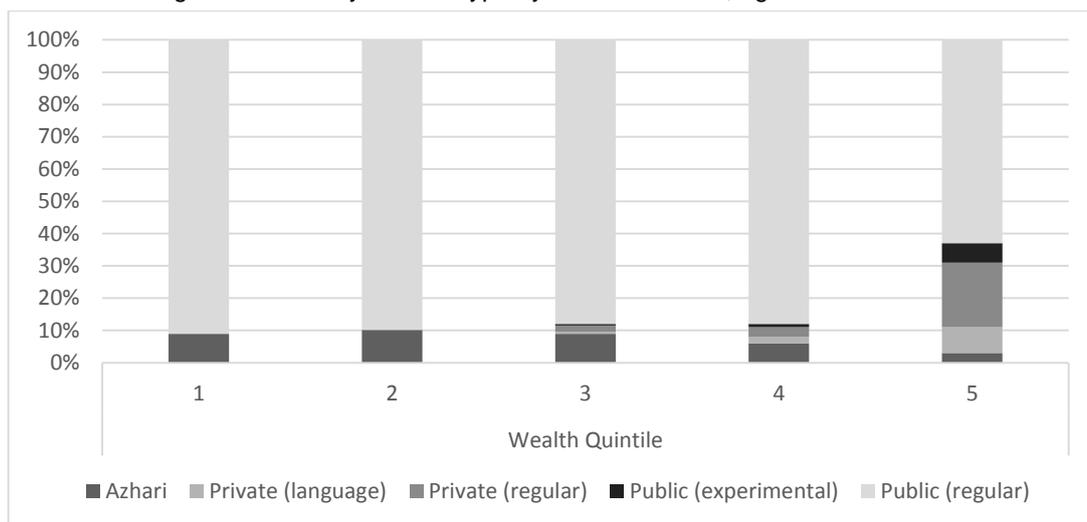
One option that became increasingly available to students with wealthier families under Mubarak was private education. And there are indications that demand for private education has been rising. According to UIS – UNESCO, the percentage of enrolment in primary education in private institutions has been steadily increasing over the past 3 decades. After 1980-89, 5.3% of the students attended private primary schools, with this figure rising to 6.2% between 1991 and 2000 and 8.1% between 2001 and 2010.

A similar picture can be drawn from the ELMPS data in 2012, which shows a preference for private schooling for those who can afford it. Available alternatives to regular public education include public experimental schools, private regular or private language schools (that teach in a foreign language

³¹ Measures of wealth are included in the ELMPS dataset and are based on an asset index of household items constructed using principal components analysis.

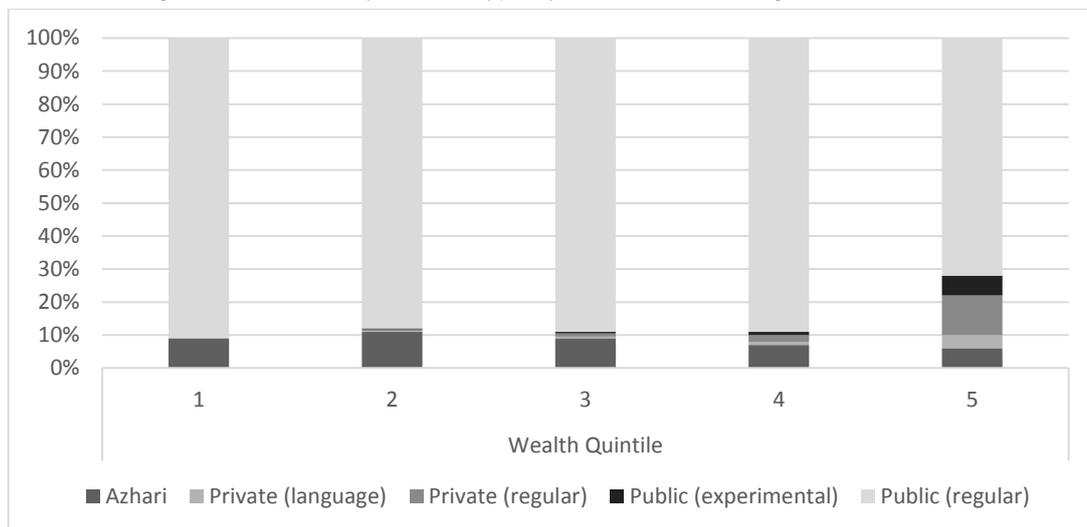
typically English or French), or public Azhari (religious) schools (Assaad and Krafft, 2015: p.19-20). Dividing households by wealth quintile shows that the poorest 80% attend predominantly regular public and Azhari schools whereas the wealthiest quintile has private school enrolment rates of 26% and an additional 6% in public experimental schools (Figure 6.8). The same pattern persists into secondary school enrolment as shown in Figure 6.9.

Figure 6.6 Primary School Type by Wealth-Quintile, ages 12-22 in 2012



Source: ELMPS; presented in Assaad and Krafft (2015)
 Note: Parents' wealth quintile is from 2006.

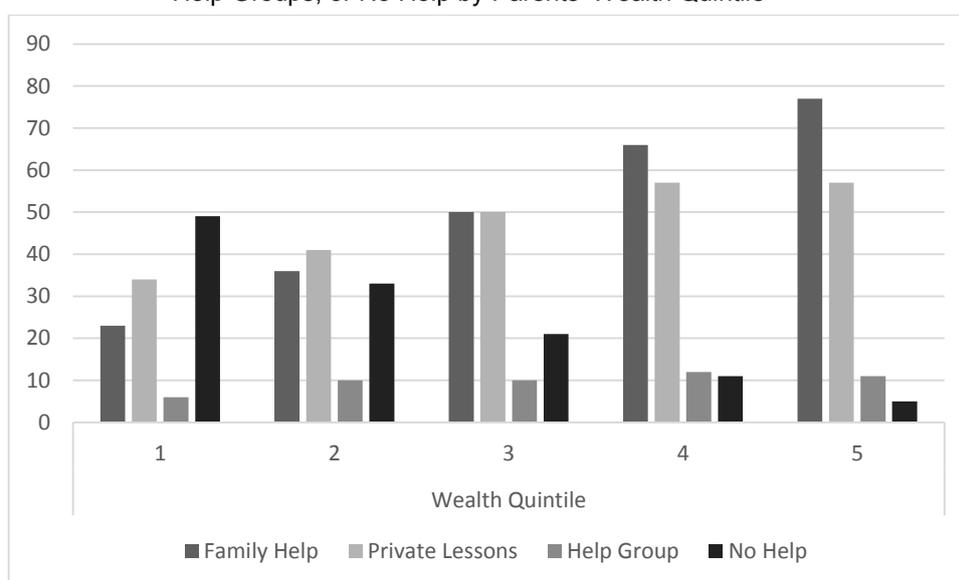
Figure 6.7 Secondary School Type by Wealth-Quintile, ages 12-22 in 2012



Source: ELMPS; presented in Assaad and Krafft (2015)
 Note: Parents' wealth quintile is from 2006.

The quality of education is not just derived from the schools themselves. In order to make up for the deteriorating quality of schooling, many students receive assistance outside of school in the form of family help, private lessons and help groups. The access to these supplemental aids is not the same for everyone. In terms of family help, it is often parents' who help their children with schoolwork. The higher educated the parents are, the better equipped they will be to assist their children. Wealthier families will also be able to afford more private lessons for their children. Thus the amount of help students receive is highly contingent on their household backgrounds. Figure 6.10 shows these levels by wealth quintile. The rates for family help show similar divergences with less than 25% of the poorest quintile receiving help from the family, compared to almost 80% at the wealthiest quintile. As for private lessons, 34% of the poorest quintile receive private lessons compared to 57% at the wealthiest quintile. Collectively these various sources of help amount to a tenfold difference in help received between the lowest and highest wealth quintiles, with almost 50% of the lowest quintile receiving no help whatsoever, compared to 5% at the highest wealth quintile.

Figure 6.8 Percentage in Primary and Preparatory School with Parental Help, Private Lessons, Help Groups, or No Help by Parents' Wealth Quintile



Source: ELMPS; presented in Assaad and Krafft (2015)

Note: Parents' wealth quintile is from 2006.

So far, the major differences in opportunities pointed out had to do with the lower levels of education. The problem is that limited opportunities at early stages of education also have their impact on the fortune of those who continue their education at higher levels. And here too, it has been pointed out that the policy of free higher education is essentially benefiting the better off in society. According to Assaad (2010), the probability of reaching tertiary education while having the most adverse set of circumstances is only 9% for males and 4% for females. Conversely, the most privileged males and females have 100% and 97% chances respectively. According to the World Bank (2002), 45% of higher education expenditure is received by the top quintile and 68% by the top two quintiles.

6.3.3 Spatial

Rural areas in Egypt typically score lower than urban areas on most measures of socioeconomic status. In this thesis, the results for the inequality of opportunity in earnings show that area of birth is consistently one of its main determinants and that those born in rural areas are at a disadvantage. Similarly, the measures of income and asset inequality presented in Chapter 3 consistently indicate a geographic divide as well. Not only is poverty concentrated in rural areas, but also other development indicators focusing on health and education are lower.

The bias against rural areas, which is dominated by agriculture, may have always been a feature of different political regimes in the modern history of Egypt. But there are indications that this bias may have become worse under Mubarak compared with under Nasser. As pointed out earlier, Nasser adopted a major land reform in the 1950s, which involved massive land redistribution in favour of small landholders. It was a hallmark of the socialist era and Nasser considered small farmers, workers and the middle class his power base. By contrast, Mubarak aligned himself with large capitalists and large landowners. While this shift did not involve any redistribution of old land, it allowed the emergence of new large land owners in new areas. The exact distribution of land ownership is not readily available, but most observers of Egypt would attest to that reality.

The distribution of land ownership is not the only way through which politicians reflect their biases. Agricultural policies are another avenue and here too the contrast is quite visible between Nasser and Mubarak. Under Nasser, the agricultural sector was highly regulated. The choice of what crops were planted and the rental rates of agricultural land were controlled by the government. Prices were also typically set well below international standards by between 40% and 60%. This ensured urban areas would receive cheap food. Under Mubarak, many of these regulations were undone from the late 1990s onwards, but this has caused limited improvements for the economic welfare of farmers (Ghanem, 2014). One major impediment to expanding agricultural development has been that in the existing system, those that buy the produce from the farms handle the harvesting, selection, grading and transportation of produce. Since most farmers operate on a small scale, they do not undertake these parts of the business themselves, and hence do not receive more than 20% of the market sale price of their produce. Additionally, an impediment to boosting agricultural production for export has been poor transport infrastructure, limited market information and the lack of a quality assurance process.

Another area where the regime could impact residents of rural areas is the pattern of public investment. And here again, despite the high concentration of poverty, Mubarak's regime did not seek to raise the standards of living in rural areas. Data on public investment between rural and urban areas during Nasser's time are not readily available, but the data in Table 6.2 show the shares of government investment by region in different sectors against the distribution of population and poverty levels in 2009. The data indicate that while the largely rural Upper Egypt has over 50% of the population and almost 80% of the poor, total public investment was only 26% of the total. By contrast, the metropolitan areas, with relatively low poverty rates and a smaller share of the population, receive almost 34% of total public investment. These imbalances are evident with respect to investment in education, health, water and electricity. Public spending is driven more by politics than by the goal of equalizing spatial equalities (Ghanem, 2014).

Table 6.2 Distribution of Public Investment in Select Sectors, 2009

	Population	Poverty	Total Investment	Electricity	Water	Education	Health
Metropolitan	17	4.6	33.6	6.4	16.9	30.4	32.1
Lower Egypt	31.1	16.2	30.3	20.0	53.9	35.6	32.4
Upper Egypt	50.3	78.5	25.6	29.7	20.9	30.2	30.9
Borders	1.5	0.7	10.4	43.9	8.4	3.9	4.6
Total	100	100	100	100	100	100	100

Source: Al-Shawarby et al., 2010

The above pattern of public investment is highly centralized. It is close to what Nasser institutionalized some time ago (Sakamoto, 2013). Martinez-Vazquez and Timofeev (2011) argue that Mubarak did not resort to decentralization, despite the liberalization measures of the agriculture sector, for a number of reasons. Firstly, this would require the political empowerment of communities at the local level. Mubarak's regime was hesitant to do so concerned in particular with the popularity of the Muslim Brotherhood in rural areas. Secondly, empowering rural areas could be risky since it would allow more political competition. The regime was intent on retaining its hold on power.

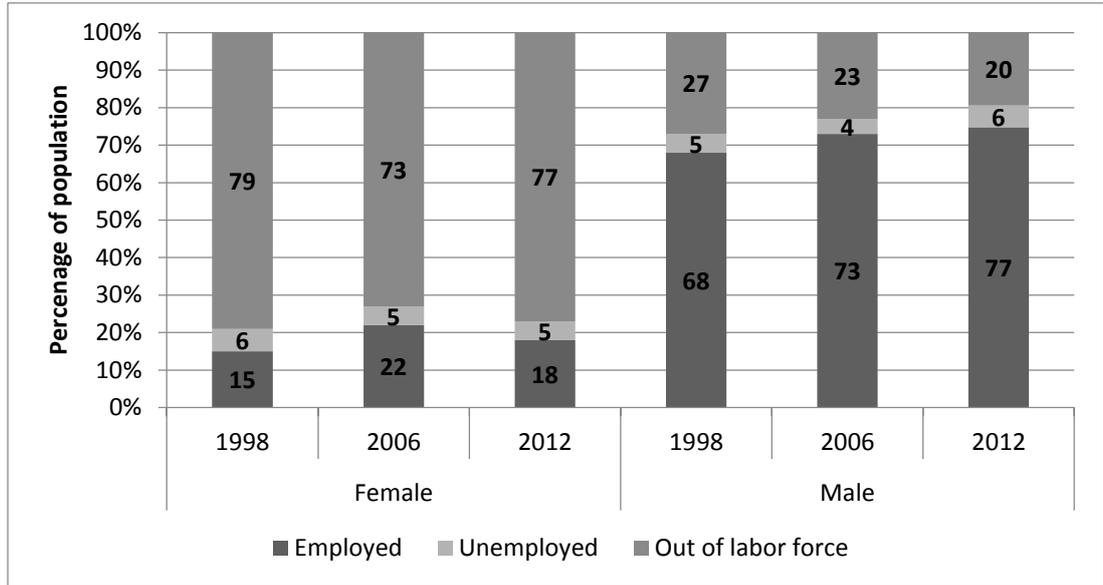
6.3.4 Gender

The contribution of gender to overall inequality of opportunity was relatively lower compared to parents' background and area of birth. On the supply side, women seem to perform as well as men. However, there are major differences in the labor markets conditions men and women face in Egypt, particularly visible in labor force participation rates and the structure of employment among those who do work. And some of the policies under the Mubarak regime may have acted to diminish their opportunities.

The most striking difference between men and women is in their labor force participation rates. Figure 6.11 shows labor force participation rates by gender over the three rounds of the ELMPS. In all rounds, almost 80% of women are out of the labor force. Meanwhile, male labor force participation rates are much higher and are improving over time from 68% in 1998 rising to 77% in 2012.

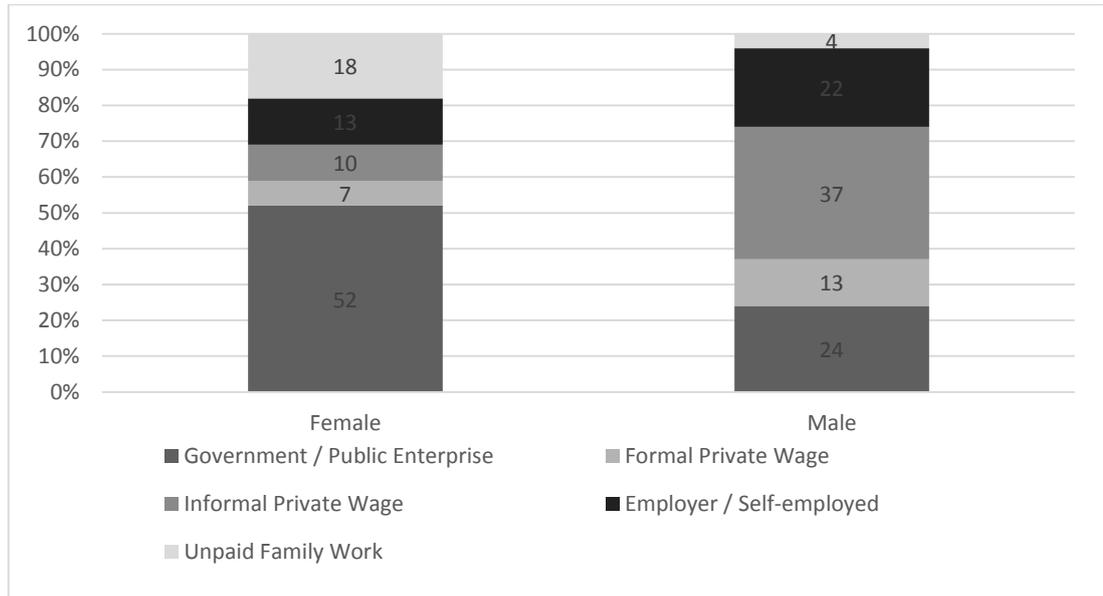
Among those who are employed, gender differences are also substantial. Figure 6.12 shows the structure of the Egyptian labor market by gender in 2012. Women exhibit a strong preference for public sector employment with 52% employment in government and public enterprises compared to 24% for males. This is likely due to the benefits and more flexible working hours in government. For those not employed in the public sector, women are 4.5 times more likely than men to engage in unpaid family work rather than another form of employment. Both formal and informal private sector employment rates are much lower for females than for males.

Figure 6.9 Labor Force Participation by Gender, aged 15-64



Source: ELMPS

Figure 6.10 Structure of the Labor Market by Gender, ages 15-64 in 2012



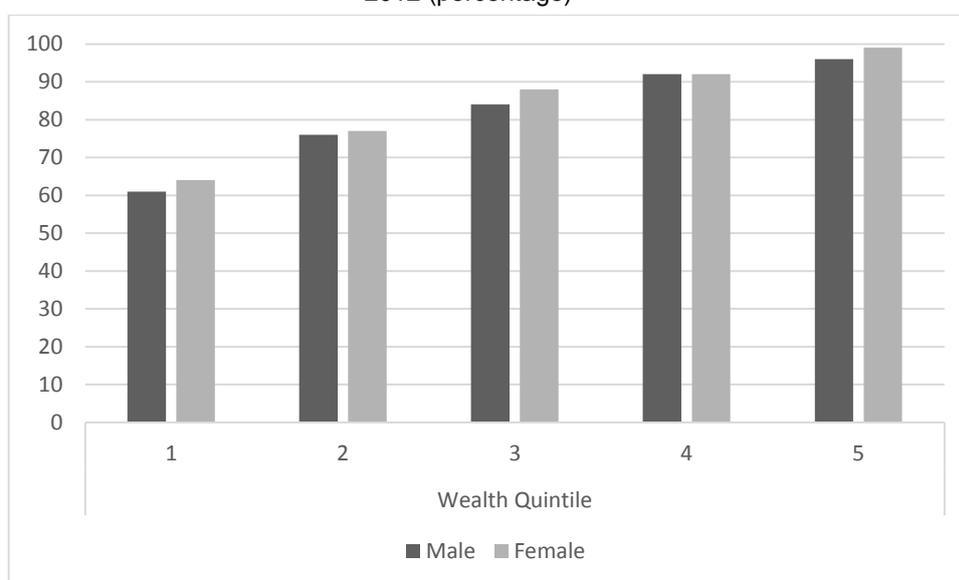
Source: ELMPS.

The possible causes behind these differences are several. For one, some have argued that patriarchal culture plays a major role in determining gendered labor market outcomes in Egypt, particularly when it comes to labor force participation rates (Barsoum, 2010). Assaad and Arntz (2005) argued that female-dominated jobs became defeminized, while male-dominated activities, where most employment growth occurred, did not become feminized. While these factors have not been the direct result of policy biases against women in the Mubarak regime, the decline of public sector jobs where

women disproportionately find employment and the lack of active policy measures to improve women's conditions are symptomatic of the exclusive politics of the regime. For example, given the strong preference for public sector employment, the rollback of the state and declining public sector jobs would disproportionately impact women driving greater shares into unemployment or out of the labor force. Similarly, the government's efforts to encourage private sector growth where women do not fare as well have not been met with policies that would balance the public sector declines.

The above examples relate to the demand side in the labor market. The question on the supply side is whether the regime showed signs of gender equality in access to education. And the evidence is not supportive of this hypothesis. Figure 6.10 displays completion of basic education for males and females by household wealth quintile. What the table shows is that irrespective of the wealth quintile, both males and females have similar completion rates. The most striking differences in completion rates are based on wealth, where the lowest quintile is at 60%, and completion rates steadily rise at each quintile by about 5% reaching almost 100% for the wealthiest quintile.

Figure 6.11 Completion of Basic Education by Parents' Wealth Quintile in 2006, ages 18-22 in 2012 (percentage)



Source: ELMPS; presented in Assaad and Krafft (2015)

Note: Parents' wealth quintile is from 2006.

The slightly higher completion rates of females may in fact represent the relatively higher opportunity costs of education for boys over girls. As boys become older, they could alternatively earn a wage by entering the labor force. For girls, the opportunity cost may be lower, though they may engage in domestic chores or some may enter the labor market. The fact that wealth is a stronger determinant of school completion than gender suggests that other factors, like rising cost of school are more important. For example, having to buy school uniforms or other materials may be more discouraging of school completion at more advanced grades (Assaad and Krafft, 2015; World Bank, 2008).

All in all, this section points out that government policies that make a difference for equality of opportunity in earnings do play a role and that policies are driven by politics. The contrast between the

policies adopted under Mubarak from those adopted under Nasser with respect to the labor market, education, the rural urban divide and to some extent gender, are consistent with the shift in the regime attention to the business elite at the expense of the poor and middle class. In the labor market, the rollback of the state and the focus on developing a small privileged formal private sector was evident under Mubarak. In education, the neglect of public education eroded its quality while more room was given to the private provision of education. Regionally, public investment was meagre in rural areas. And while the regime did not favour the education of men over women, labor market opportunities for women declined.

6.4 Inequality of Opportunity and the Arab Spring

In the aftermath of the Arab Spring, many political commentators suggested that inequality was among the chief causes of the Arab Spring. Income inequality in particular was considered among the drivers of the Egyptian revolution (Hlasny and Verme, 2013; Ncube et al., 2014; Nimeh, 2012). However, the results in this thesis do not support this view. The level of inequality of opportunity that could be captured using the data is not very high, not exceeding 20%. Moreover, that level of inequality did not change much during the period of analysis to establish at least a correlation with the uprising. Does this mean that inequality of opportunity had nothing to do with the revolution in 2011? The answer is not necessarily. This section will elaborate this point of view.

First, the limitations of the data used to measure inequality of opportunity in this thesis and in other studies often produce low levels of inequality of opportunity. This is largely because the data are not designed in the first place to account for all possible circumstances that may contribute to inequality of opportunity. Hence, all estimates of inequality of opportunity tend to underestimate these measures. This is not a problem of the Egyptian labor market survey data alone, it is common to all studies of inequality of opportunity. Failing to capture the relevant circumstance variables does not mean that inequality of opportunity in reality is that low. In fact, speaking at the Economic Research Forum's conference in 2015, John Roemer remarked that if better data were available, circumstances would frequently account for up to 70% of inequality in opportunity.

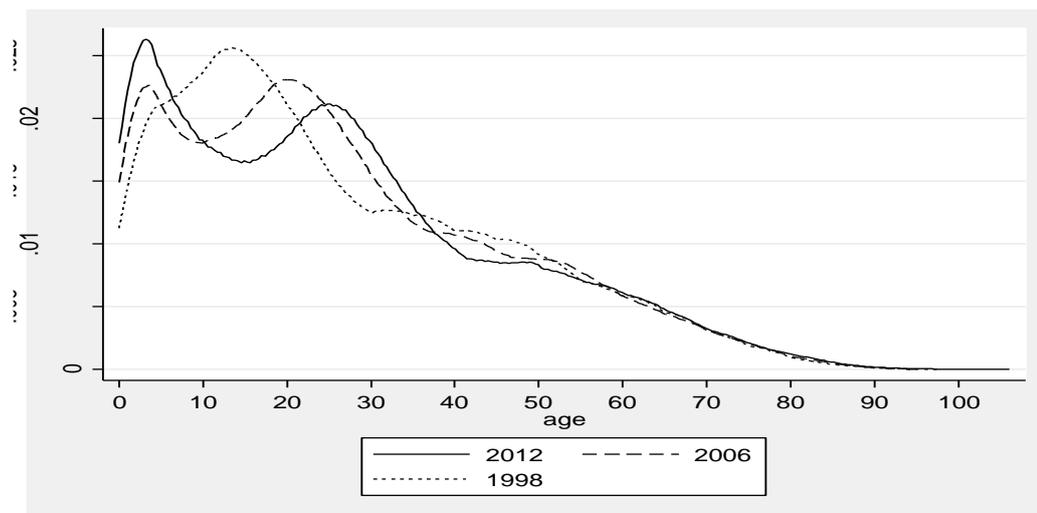
Second, the analysis of government policies under Mubarak's regime revealed a regressive set of actions that would decrease the opportunities for better incomes for disadvantaged groups. By neglecting the deteriorating quality of public education, those who cannot afford expensive supplementary private education face fewer labor market opportunities. Poverty stricken rural areas, which comprise many of those with the lowest earnings prospects, receive disproportionately little in terms of public expenditure. Women who already face fewer opportunities for paid employment in Egypt are further left out of the labor market with the rollback in public sector employment. These policies support the view that some of the drivers of inequality of opportunity were present in Egypt during Mubarak's regime.

Third, it has been argued that among the chief drivers of the revolution were the growing number of youth in the population who were facing increasingly limited opportunities for well-paid employment. Coupled with becoming better educated and better connected through the social media, they were both motivated and able to go to the streets demanding "bread, freedom and social justice".

This claim has some support in reality. Firstly, Egypt has been experiencing a youth bulge at a time of declining well paid job opportunities. As shown in Figure 6.12, the share of youth in the population is

large. In 1998, the age distribution in the population was unimodal at approximately age 15. By 2006, the distribution became bimodal, with one group at around age 22 and another near age 5. In 2012, the older of these groups was in their late 20s, and it is likely that those who would have entered the labor market would already have done so, meaning that pressures on the labor supply side had declined. However, this is temporary as the concentration of young children aged 4 to 8 is high and they will put increasing strain on the provision of public services and then job market in the future.

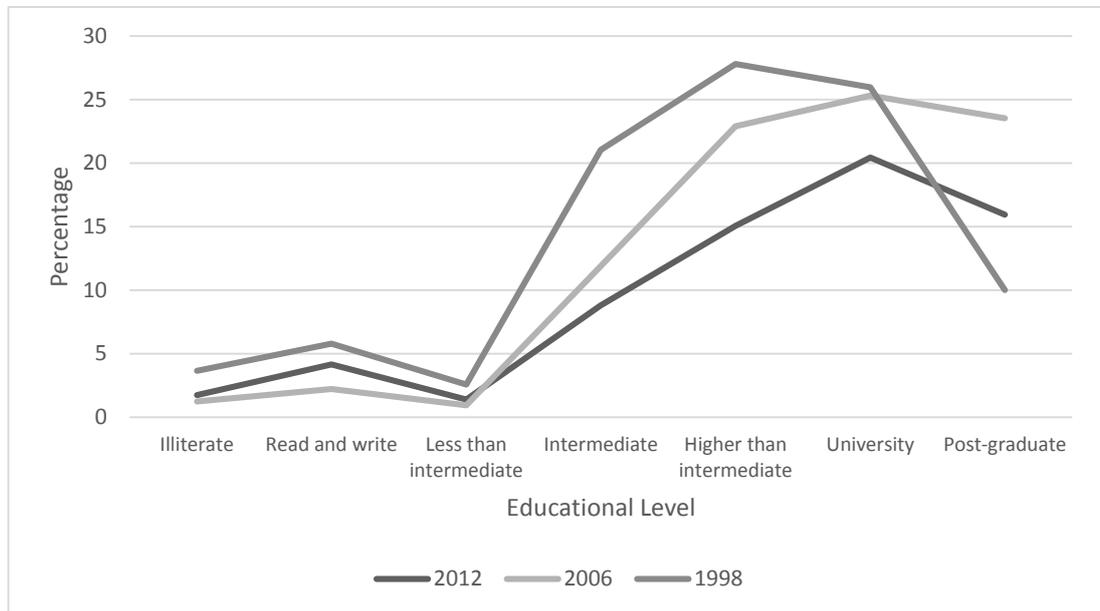
Figure 6.12 Population Age Density



Source: ELMPS

At the same time, unemployment rates were greater among higher levels of education. Figure 6.3 shows unemployment rates by 7 categories of educational attainment over the years 1998, 2006 and 2012. The first striking observation is that unemployment rates for less than intermediately educated youth are consistently below 5%. Beyond an intermediate level of education, unemployment rates are between 10% and 20%. Following the revolution, the highest unemployment rates were among university graduates, and even though these had somewhat declined, they remain high.

Figure 6.13 Youth Unemployment Rate by Educational Level, age 15-29



Source: ELMPS

Finally, Diwan (2013) makes a persuasive case as to why changes in the position of the *middle class* made a major difference in turning the tide towards the revolution. If these structural changes, like the roll-back of the state and rise of crony capitalism, were seen to have deleterious effects on economic opportunities for the middle class, then the issue of inequality of opportunity played a role. Much earlier, the rise of the middle class in Egypt was largely owed to the public provision of education, health services and public sector jobs that had been provided starting from Nasser's regime. As noted earlier, Owen characterized Nasser's coalition as an alliance with the poor and middle classes, while Sadat and Mubarak aligned themselves with the private sector and the business elite. With the rise of crony capitalism, the middle class no longer received the rents that had characterized the previous economic model, and the authoritarian bargain collapsed. The roll-back of services was not accompanied by increasing levels of political openness, and the cyclical nature of extractive economic institutions further squeezed the middle-class. What sustained the adverse equilibrium was a lingering of socialist policies from the previous era, coupled with fear of the rise of Political Islam that had been repressed by the regime.

The rising support for democracy among the middle class is also corroborated by the findings on perceptions. Diwan (2013) found that the middle class supported democracy on average by more than 50%, which was 10% more than the poor. The relatively greater support for democracy among the middle class suggests concerns for issues beyond solely redistributive policies. In a sense, the middle class comprises both of these viewpoints, with the poorer supporting democracy for redistributive reasons, and the better off supporting democracy for modernization based reasons.

Overall, although the results on inequality of opportunity in the thesis do not directly support a causal relationship between inequality of opportunity and the Arab Spring in Egypt, there are enough arguments that suggest opportunities for prosperity mattered.

6.5 Conclusion

This chapter has sought to analyze the drivers behind the prevailing levels of inequality of opportunity from a political economy perspective. It seems that Egypt has had extractive political institutions. These are readily visible when observing indicators of the inclusiveness of the political process, freedom of speech and corruption. These features have been modelled in terms of an authoritarian bargain between the regime and society, where economic rents are traded for political acquiescence. The rents typically take the form of explicit or implicit transfers, subsidies, protections, favourable regulations, employment or consumption. The choice of recipients of rents depends on the context of a given country at a given point in time, and could include the heads of the military forces, certain national or regional bureaucrats, individuals who play instrumental roles in the political leadership of the ruling party or individuals in the business elite.

The manifestations of this extractive set-up are apparent in the rise of crony capitalism and the rollback of the state. Crony capitalism refers to the relationship between the state and a well-connected business elite that enjoy privileges not enjoyed by others. The revolving door phenomenon between business elites and Mubarak's party members shows these close links. Beyond this, politically connected firms have been found to do better than unconnected ones. As for the rollback of the state, the government has engaged in a gradual withdrawal of providing public services, which has tended to impact the middle class and the poor negatively.

These political biases have reflected themselves in the determinants of inequality of opportunity in earnings. In each case, there is evidence of the states' alignment with the elite and neglect of the lower and middle classes. In the labor market, it can be seen in the declines in public employment, rises in informality, wage differentials across employment types and the importance of social networks in securing jobs. In education, the quality of public education has been declining and only the wealthier have been able to invest in supplemental education enabling them to attain free higher education. Spatial investments have been skewed towards urban areas despite the substantially higher rates of poverty in rural areas. As for gender, declining public sector employment, which is favoured by women, has not been matched with mitigating policies to ensure greater opportunities for decent work in the formal private sector.

While the empirical findings on the level and evolution of equality of opportunity in this thesis do not provide compelling evidence in explaining the revolt and ousting of Mubarak in January 2011, alternative interpretations linking diminished opportunities facing the middle class and the revolt point in the direction of the important role of equality of opportunity. Overall, these findings lend support to the influence of politics on policies and hence outcomes.

Chapter 7

Policy Implications

Abstract

Having measured the level and determinants of inequality of opportunity in earnings in Egypt and explored the political economy factors behind them, this chapter turns to answering the following question: what should policymakers in Egypt do to ameliorate inequality of opportunity in earnings? Although the analysis is normative rather than positive in nature, it is informed by the findings of the previous chapters as well as by policy prescriptions from others studies. To make the analysis tractable, the chapter first sets out a conceptual framework for the design of policies to improve equality of opportunity in general. Next, it makes a number of suggestions to policymakers in Egypt to equalize the opportunities facing citizens in the three areas identified in the previous chapters, namely access to good quality education, reduction in spatial disparities, and equalization of opportunities by gender. This analysis is preceded by a discussion of earnings, given that this is the focus of the analysis in this thesis. In addition, the chapter suggests a political road map that will enable Egypt to be more responsive to the demands for more equal opportunities.

In all areas of inquiry, the chapter concludes that Egypt has made some progress on all fronts, but much remains to be done. For example, to bring about more equal opportunities in earnings, reforms should aim at creating decent jobs in the formal private sect, formalization, supporting regional development in Upper Egypt and encouraging greater participation by women in the labor market. With respect to education, reforms should enable under-privileged citizens to access better quality education. While additional resources are necessary, it is equally important to revamp the education system so as to motivate teachers to perform in the classrooms, to upgrade the content of education and the way it is taught and evaluated, and to increase the autonomy and accountability of the schools/universities. Similarly, special attention should be given to less privileged regions (Upper Egypt) compared to more privileged regions (Upper Egypt). This can be done by allocating more public infrastructure investment to Lower Egypt, offering the private sector incentives to locate in this region, and paying attention to agriculture development. Finally, it is argued that sustainable and more equitable development in Egypt would not materialize without more inclusive political institutions. In this context, Egypt should move forward with actions to translate the changes embodied in the 2014 into laws and regulation, while allowing citizens a greater voice in the process of policymaking.

7.1 Introduction

Having measured the extent and determinants of inequality of opportunity in earnings in Egypt and explored the political economy factors behind them, this chapter turns to answering the following question: what should policymakers in Egypt do to ameliorate inequality of opportunity in earnings and inequality of opportunity more generally? Although the analysis in this chapter is normative rather than positive in nature, it is informed by the findings of the previous chapters as well as by policy prescriptions from others studies.

The broad answer to this question may seem obvious: what the Egyptian government should do to equalize opportunities in earnings is to adopt policies that will accord all individuals in society the same opportunities at the beginning of their lives, focusing especially on the factors that make the biggest difference from the empirical analysis. However, this conclusion is too simplistic and may in fact not be

entirely valid. Making meaningful suggestions requires identifying all the circumstance variables that influence inequality of opportunity in earnings, which is not possible because of data limitations at this point in Egypt and elsewhere. Second, once the significant circumstance variables are identified, the next step would be to find the concrete policy drivers that government could use to bring about more quality of opportunity in earnings. In other words, saying that education, area of birth and gender are important determinants for equality of opportunity is not enough, although it is a reasonable first step. Finally, even if both the determinants of equality of opportunity and their underlying policy drivers are identified, the adoption and implementation of these reforms would require a desire and a commitment on the part of politicians and the capacity to do so.

The analysis in this chapter will attempt to provide recommendations to improve equality of opportunity in earnings in Egypt, taking the above issues into account. It will draw on the empirical findings and the political economy analysis of the previous chapters to ensure continuity of the thesis across different chapters. For this reason, attention will only be given to the factors that have been identified to matter for equality of opportunity in earnings – namely: education, area of birth and gender – with full recognition that a more comprehensive treatment of equality of opportunity in Egypt has to go beyond these factors. In addition, attention will be given to earnings as the variable of interest in this thesis. Finally, the chapter will discuss the main political conditions that Egypt ought to satisfy for greater equality of opportunity.

The rest of the chapter is structured as follows. Section 2 provides a conceptual framework for the design of pro-equality of opportunity policies. Section 3 deals with recommended policies to improve the functioning of the labor market from the perspective of enhancing equality of opportunity in earnings, improving access to good quality education, reducing regional disparities and the bias against women. Section 4 discusses governance issues. Section 5 concludes.

7.2 Equal Opportunity Policy Design

The literature on equality of opportunity has a clear way of defining the implications of the theory for policymaking. Government effort should focus on overcoming the hurdles caused by adverse *circumstances* so that each citizen has an equal shot at the future. Variations in outcomes thereafter due to *effort* are quite legitimate and acceptable, while those due to circumstances are not.

Although this way of thinking about policy is clear, it does not go without conceptual problems and limitations in implementation. This section expounds on both of these issues and draws a structure for the discussion of reforms in Egypt to bring about greater equality of opportunity.

7.2.1 Inequality of Opportunity Policy in Theory

Equal opportunity policy embodies the notion that in an ideal society, individuals are not hindered by their circumstances. However, as seen from the different approaches to inequality of opportunity, there

are different ways of formulating a policy. This section will elaborate on the most recognized policy formulations. 32

To design a policy intervention to promote equality of opportunity, there are two broad approaches one can adopt. The first approach seeks to compensate individuals with the same degree of effort, but with different outcomes. The second approach tries to equalize the opportunity set available to each individual, leaving inequalities within opportunity sets untouched. The first of these approaches is the basic intuition behind Roemer's (1998) algorithm. In it, he constructs a mixed social welfare function that combines the notions of utilitarianism and Rawlsian maximin. More specifically, he applies the maximin method to each tranche and the average utilitarian principle to the derived vector of minimum advantages.

Roemer mathematically formalized this type of equal opportunity policy. For each type, t , where $t = \{1, \dots, T\}$, he assumes the existence of a function:

$$u_t = u_t(\varphi, E)$$

where u_t is the expected advantage of individual type t , based on policy φ and effort E . He also defines an individual's relative level of effort at the π th percentile and defines a function $v_t(\varphi, \pi)$, which denotes the advantage of type t for relative effort, π , under policy, φ . Let $\varphi_t(\pi)$ be the amount of resources an individual of type t receives, given an effort level π . This means that individuals within the same type face the same allocation rule.

This algorithm embodies the principle that resources should be allocated so that individuals at the same effort centile receive equal outcomes. The highest effort from the lowest type would receive the same outcome as the highest effort from the highest type, the median effort from the lowest type receives the same outcome as the median effort from the highest type, and so on. It means that an unequal distribution of resources is morally acceptable based only on different degrees of effort relative to one's type.

If individuals are arranged into types and are ordered according to effort, an equal opportunity policy would require that

$$v_t(\varphi_t, \pi) = v_{t'}(\varphi_{t'}, \pi),$$

This means that strictly everyone with the same degree of effort, should receive the same outcome, even if they are in different types. Since this is in practice unrealistic, Roemer suggests an approximation of this ideal. He instead proposes a policy, φ , that maximizes

$$\min_{t \in T} v_t(\varphi_t, \pi)$$

This can also be expressed as

$$\max_{\varphi \in \Phi} \min_{t \in T} v_t(\varphi_t, \pi)$$

³² This section and the formalization of different approaches to equal opportunity policies draws heavily on Pignataro's (2012, pp. 801–805) comprehensive review of the topic.

Or given a discrete case when using centiles

$$\sum_{\pi=1}^{100} \min_t v_t(\varphi_t, \frac{\pi}{100})$$

This means that Roemer's approach would maximize the average value of the outcomes of the worst-off type at every centile of effort. This means that if everyone had the same circumstances, the approach would be utilitarian; and if everyone exerted the same degree of effort, it would maximize the outcomes of those with the worst circumstances.

The second approach, suggested by Van de Gear (1993), focuses on the set of outcomes available to each type (as opposed to the outcome of individuals of different types with the same effort level). In this approach, the average utilitarian method is first applied to the value of opportunity sets, and then the maximin method to equalize the values of the opportunity sets, as shown below:

$$\min_t \sum_{\pi=1}^{100} v_t(\varphi_t, \frac{\pi}{100})$$

This means that the value of each opportunity set is taken as the average outcome of each type, and then the value of the worst-off type (lowest value) is maximized. For example, if we look at the average earnings of different groups of youth, inner-city, suburban, and rural youth, and say that the inner-city group has the lowest average earnings, followed by rural youth and then suburban youth with the highest, an equal opportunity policy would seek to maximize the average value of the inner-city youth group. Since this approach does not take into consideration effort, it may well be that it could enhance differences between individuals who try equally hard. Someone at the 20th effort percentile of the inner-city youth group may now receive more than someone at the same percentile in the rural youth group though the inner-city group average may still be lower.

7.2.2 Limitations

Although the above theoretical analysis of what ought to be done to improve equality of opportunity seems straightforward, in practice that is not the case. There are a number of limitations and legitimate criticisms that speak to both the conceptualization of inequality of opportunity and the way it is measured. These criticisms are particularly relevant when policymakers are interested in designing and adopting policies to reduce inequality of opportunity. And of course once policies are designed, problems could still arise because of administrative capacity hurdles. This section will highlight some of the main criticisms of the concept and measures of inequality of opportunity.³³

One source of several criticisms has to do with the idea of preferences and the degree to which individuals should be held accountable for them. The equal opportunity framework devised by Roemer (1998) is cognizant of this issue that originates from Dworkin (1981a, 1981b) who argued that some

³³ Kanbur and Wagstaff (2014) and Pignatorio (2012) provide helpful reviews of many of the critiques of the concepts and measurements of inequality of opportunity.

types of preferences should be corrected for while others not. For instance, if someone has a strong preference for eating caviar, but is unable to do so, this does not call for redistribution. This issue illustrates the idea that some differences in preferences call for a legitimate redistribution of resources while some differences are illegitimate. Cohen (1989) pointed out that many of these preferences may indeed be out of our control, and that one's upbringing can lead to expensive tastes, a strong work ethic, or laziness. This means that choosing exactly which preferences are legitimate or not may not be enough, as one should also take into consideration where these preferences come from, one's own volition or from one's parents. If they came from one's parents, then they could be deemed circumstances as well. Moreover, simply asking individuals where their preferences originate from may not provide accurate answers.

These arguments are related to the literature on whether *ex ante* or *ex post* inequality is a more appropriate equalisandum, as pointed out by Kanbur and Wagstaff (2014). They point to Friedman's (1962) argument in favor of *ex ante* equalization where individuals who start out with equal endowments voluntarily enter a lottery with unequal prizes. The inequality that exists after the lottery takes place is a result of the free choices made to enter the lottery and the known levels of risks in various choices. Friedman argues that equalizing outcomes after the lottery is tantamount to denying individuals the freedom to choose to enter the lottery. Friedman defends this concept by pointing out that individuals do in practice enter such lotteries for instance in choosing their occupations and investments. This means that *ex post* levels of inequality may be greater than *ex ante* inequality because of legitimate choices in the face of risks.

Even in the extreme case, where there is perfect *ex ante* equality and all inequality *ex post* is due to risk, Kanbur (1987) argued that when the outcome is a state of destitution, our moral intuitions do favor redistribution. Taking the example of patrons at a homeless shelter, the choices of these individuals should not be assessed prior to providing aid, rather the observation of the outcome is sufficient even if the individual might have had every positive opportunity to succeed.

Kanbur and Wagstaff (2014) elaborate a further conceptual challenge based on Friedman's lottery. Namely, when parents engage in a lottery, the outcome of the lottery has an impact on their children. Even if there had been perfect *ex ante* inequality for the parents before entering the lottery and the *ex post* inequality that exists is based on their risk preferences, there exists inequality among the children that they had no choice over. On the one hand, an equal opportunity egalitarian would want to equalize the circumstances among the children, but doing this would mean intervening in the *ex post* inequality of their parents, which is resultant of their freely chosen risk preferences. These considerations lead Kanbur and Wagstaff (2014, p. 6) to point out: "If preferences are themselves determined by resources, say parental resources, then a clean separation may not be possible, certainly empirically and perhaps even conceptually."

A similar criticism is highlighted by Hild and Voorhoeve (2001) who disagree with Roemer's implementation of equality of opportunity. They argue that the partitioning of individuals into types and then tranches does not accurately group individuals of truly equal efforts together, because the factors for which one does and does not want to hold people responsible for are statistically correlated.

Another argument against Roemer's identification principle made by Hild and Voorhoeve (2001) is that using the relative measure of effort by observing the percentile of an individual's outcome in their type does not offer an accurate basis for assessing inequality of opportunity. This is because, much like the distribution of the absolute level of effort, the distribution of relative effort is also influenced by circumstance factors. Individuals' choices for how much effort to expend are determined by the reward

schedule they face, which is determined by their circumstances as well as existing policies. This means that different policies and circumstances impact individuals' effort choices in different ways. Therefore, compensating individuals based on their relative levels of effort may not act as a fully equalizing intervention.

A problem that arises in the empirical application of policies to reduce inequality of opportunity is the fact that estimates produce a lower bound. Kanbur and Wagstaff (2014) highlight the challenge this poses to policymakers. If inequality of opportunity is found to only represent say 10% of overall inequality in a given outcome, concerns for inequality of opportunity may be lessened as results only revealed a somewhat low level of opportunity inequality. However, in reality, the true level of inequality of opportunity may be far greater. This also makes measuring trends in inequality of opportunity less accurate; the fact that results are lower bounds means that true inequality of opportunity may be highly variant or the contribution of unaccounted for circumstances are playing a greater role than known. These same challenges make cross-country comparisons in practice difficult. Different circumstance characteristics may be more determining of outcomes in one country over another, and if a researcher wishes to use the same set of variables, they may be constrained by the availability of the greatest number of common variables.

7.2.3 Implications for policy analysis

Without sorting out all the contradictions and intellectual disputes among various economists, it seems appropriate to point out a few principles that will guide the analysis in the rest of the chapter:

- First, to preserve the coherence and continuity of different chapters in the thesis, the focus will be on earnings as the variable of interest, the circumstance variables that were identified in the empirical work as significant, as well as the political economy of policymaking in Egypt. A fuller design of policies to enhance equality of opportunity in earnings would obviously have to go beyond these issues, given that data limitations precluded the possibility of having more circumstance variables.
- Second, while it is recognized that circumstance variables often correlate with each other, the advocated policy package in the rest of the chapter does not explore possible overlaps in any details. Such an endeavor would require including variables outside the scope of this study and expand the analysis beyond any reasonable bounds.
- Thirdly, because of the difficulty inherent in compensating individuals ex post according to their relative effort, the discussion of policy reform in the rest of the chapter relies on the principle of seeking to equalize opportunities on an ex ante basis.

7.3 Reforms to Equalize Opportunities in Earnings

Building on the above discussion, this section deals with the reforms Egypt could or ought to undertake in order to improve equality opportunity in earnings. Besides addressing the biases in the labor market itself and how these may be reduced or removed, the discussion will focus on the circumstance

variables that were found to adversely affect equality of opportunity in the previous chapters. These circumstance variables are education, regional development and gender equality. As such, the discussion in this section is closely aligned with the rest of the thesis. Broader reforms to address equality of opportunity more generally merit a discussion in their own right.

7.3.1 Earnings and the Labor Market

From the discussion in Chapter 6, it was possible to identify a set of biases in the labor market that have a bearing on equality of opportunity in earnings. These biases took the form of favoring crony capitalists at the expense of small firms, workers in the formal sector at the expense of workers in the informal sector, and workers who have a job (especially in government) at the expense of those who do not. Because of a web of restrictive and biased labor market policies and regulations, individuals who qualify for certain jobs are denied equal opportunities with their peers. Small entrepreneurs and their workers also do not fare well compared with their counterparts in medium and large firms. Unemployed workers do not receive a relief during the transition between jobs, nor do they benefit from minimum wage legislation.

To explore how the government may reduce or eliminate these biases, the discussion below takes workers and entrepreneurs as entry points. With respect to workers, the focus is on disadvantaged groups in the process of obtaining a job, the conditions they operate under once they have one, and the lack of temporary relief for those who lose their job. With respect to entrepreneurs, the focus is on the subgroup of firms that suffer from differentiated treatment by virtue of their size, state of formality or lack of connections.

As a prelude to this discussion, it is worth reiterating that average unemployment rates in Egypt since 2012 have hovered around 13%. As discussed in Chapter 6, these averages conceal significant variations. The disaggregated figures reveal that unemployment is concentrated among university graduates (Figure 6.3). Most of the growth in job creation has taken place in the informal sector, which is trapped in low productivity, low wages and disagreeable working conditions. Formal private employment has only increased from 13.0% to 13.5%, while public sector employment has declined from 34.0% to 27.1% (Section 6.4.1).

These dire conditions have been felt disproportionately by first-time job seekers, workers in the informal sector, and those who do not have a job in the first place or in transition between jobs. Among job creators, the biases have been felt disproportionately by small and informal firms in the form of having limited access, if any, to credit, government contracts or other types of support.

Three examples illustrate the above biases. First, the way a worker obtains a job in Egypt seems, as noted in Chapter 6, to depend significantly on connections in both the public and private sectors. The most surprising observation, derived from Table 6.1, is that the group that identified “asked friends or relatives for help” as their active method of finding a job in the private sector was much higher (30%) than for public sector jobs (10%). A similar observation was noted with respect to the highly educated youth (Barsoum, 2015: p. 119); there the figures were 47% for private sector jobs and 14% for government jobs.

The second example concerns workers in the informal sector, whose size has been significant and rising. According to the ELMPS, employment in the informal private sector has increased between 1998 and 2012, from 30.7% to 40.0% of total employment (World Bank, 2014, p. 38). Most of these informal

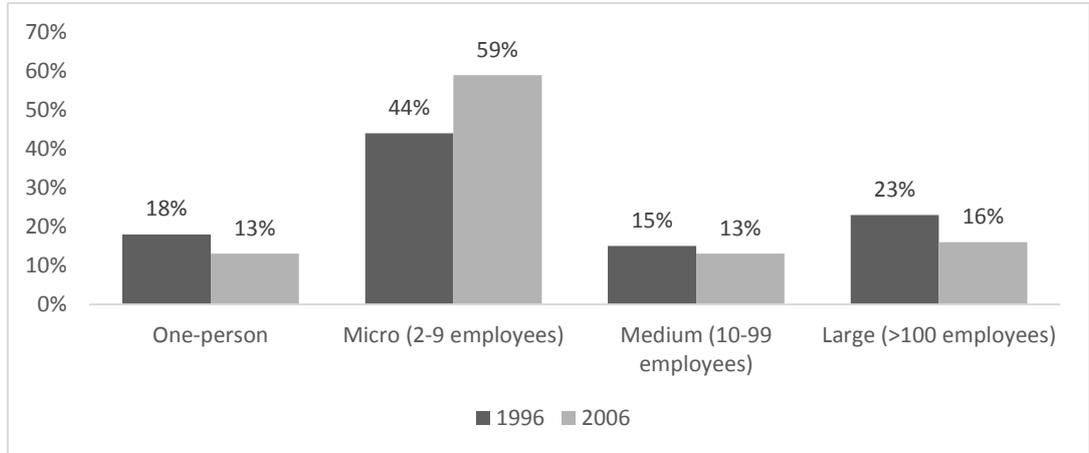
jobs are in small enterprises, the bulk of which are also informal. In 2012, 66% of informal workers were employed in small household firms, 80% of which operated without a license (World Bank, 2014, p. 157). The highest rates of informal employment are for men aged 25 to 29, whose informal employment to population has increased from 36% in 1998 to 46% in 2006 and 55% in 2012 (World Bank, 2014, p. 159).

For workers in the informal sector, working conditions have been deteriorating. According to the ELMPS 2012, 52% of formal private sector workers said they were “fully satisfied”, while only 28% of informal workers responded the same. Workers in the informal sector complain the most about job security (World Bank 2014a: p.158). In addition, only 3% of informal workers get paid vacations, paid sick leave or have medical insurance. A wage penalty, according to Tansel et al. (2015), was found to persist and even increase over time, especially for the better educated and more experienced among them. Based on the ELMPS, the median hourly wage for informal workers is EGP 3.8 compared with EGP 4.7 in the formal private sector. Another study (Wahba, 2009) measured whether informal jobs could act as a stepping-stone to better jobs in formal employment and found that it did so only for highly educated male workers, while acting as a dead end for the uneducated and female workers.

The third example concerns unemployment insurance, which does not effectively exist in Egypt. Workers who lose their jobs, even if they are actively pursuing another, have no source of income. This means that they have no option but to rely on the support of extended family, or charity if they are truly poor. Perhaps this may also explain why most Egyptians seek a job in government, as a guarantee against facing this situation. A similar issue is related to minimum wage policy, which while beneficial to those who are employed, tend, above certain levels, to put the unemployed at a disadvantage in terms of finding a job. Furthermore, such policy would also be disadvantageous to workers in the informal sector because the authorities cannot enforce the rule in the shadow economy.

Turning to entrepreneurs, who create jobs, there is ample evidence in support of the view that the prevailing policies are biased against small and informal entrepreneurs, with perverse consequences for their workers. This is not a small segment of the population, as indicated in Figure 7.4. Small firms accounted for 95% of all establishments employing less than 10 workers in 2006, as well as 72% of total employment. The literature on small enterprises consistently points out that smaller firms have limited opportunities to access formal credit, land, certain markets or even government contracts. In Egypt, based on data from the Enterprise Surveys, a report by the World Bank (2014, pp.151-152) indicates that smaller firms have to wait longer to obtain operating licenses, construction permits, and customs clearance compared to larger firms. Unequal opportunities to doing business are also visible in the distribution of access to finance by firm size. Only 5% of all loans go to SMEs in Egypt, compared with 10% in Jordan, 15% in Tunisia and Lebanon at 16%. The limited access to credit is also symptomatic of the unequal access to land, which is often used as collateral for loans. Added to all these disadvantages, informal firms suffer further from the threat of closure by the local authorities and often pay bribes to survive.

Figure 7.1 Share of Employment by Firm Size, 1996, 2006



Source: CAPMAS Establishment census from World Bank (2014, p. 132)

To reverse this trend or at least ameliorate these biases, the government could adopt policies and procedures to ensure that all Egyptians have equal opportunities in earnings. Part of the solution resides in equalizing access to jobs in government by ensuring that jobs are awarded based on merit rather than connections. This will require more transparency in the process of announcing and selecting candidates. With respect to private sector jobs, the government has no direct control over them. However, reforms to stimulate job creating growth and measures to enhance competition in markets will both put pressure on the private sector to hire the most qualified individuals and reduce the role of connections in getting a job.

To improve the working conditions for those who work in the informal sector, formalization is unavoidable. Being formal means that workers will enjoy the benefits of the prevailing labor market laws, as well as the security against old age and sickness by having access to social and health insurances. So far, the government has created a unit in the ministry of finance in 2013, with the key mandate of making it attractive for the informal sector to decide voluntarily to join the formal sector and stay there. However, no initiatives have been put forward thus far. What the government needs to do is to reduce the costs of joining the formal sector and enhancing the benefits of staying formal. This means adopting policies that will simultaneously: (i) improve the business environment in the formal sector to make it more attractive, and (ii) provide firms in the informal sector a temporary incentive package (for example, tax breaks, contributions to social insurance, a percentage of government contracts, easier collateral requirements for borrowing, etc...). Without such reforms, informality will remain the more attractive option.

While improving the business environment is critical for supporting workers and entrepreneurs in the informal sector, it will also encourage investment and job creation in the formal sector. This will reduce the suffering of the unemployed, especially if designed to pressure firms to operate in a more competitive and dynamic environment. The specific reforms in this area are relatively well known, including easing the process of entry of firms (for example, through a one-stop shop), the operation of firms (including tax administration, social insurance, contract enforcement, export and import procedures), and exit of firms, as Egypt does not have a bankruptcy law as of now. These reforms can

be augmented by providing support to small entrepreneurs, in particular in terms of access to finance and a certain percent of government contracts.

What about the unemployed and those with low levels of wages? The point has been made that Egypt does not effectively have an unemployment insurance scheme. This is one reform area worth considering by government. The main issue would be to make sure that such a scheme strikes a reasonable balance between protecting the unemployed against the hardship of being unemployed without encouraging dependency.

With respect to minimum wages, this issue has received significant public attention in the aftermath of the revolution. The pressure for raising the minimum wage led PM Beblawi's interim government to raise public sector minimum wage by 70%, from LE700 per month to LE1,200 per month. However, the revised minimum wage was not applied to workers in the formal or informal private sector. In the latter case, it was estimated that 41% of those in the informal sector earn less than LE700 and 75% earn less than LE1,200 (Devarajan and Vishwanath, 2014). Beyond its narrow applicability, the new minimum wage must have raised the reservation wage derived from the possibility of working for the government, which was already high. According to CAPMAS, the average public sector wage was LE2,600, while that for the formal private sector was LE1,600. Finally, the move may have increased informal sector employment, given that the public sector and the formal private sector largely share the same pool of laborers. Therefore, an increase in the minimum wage of public employment indirectly raises private sector wages. This rise in private sector wages can have two effects. One, it may make Egyptian products more expensive and less competitive abroad. Secondly, it may decrease formal private sector employment and force workers into the informal sector. This dynamic occurred in 2003, when the Egyptian government froze public sector hiring.

7.3.2 Education

From the discussion in Chapter 6, it was also possible to present evidence in support of the notion that the provision of education in Egypt was not equality of opportunity enhancing. In particular, while the system did not favor boys over girls, it did favor the rich over the poor and even the middle class. Given that parents' education proved to be a key determinant of equality of opportunity in earnings, the system was effectively perpetuating inequality of opportunity. The children of parents who are well off and educated are likely to acquire good quality education, and, when they grow up, will do the same for their kids. The opposite is likely to materialize for children who are born to poor and uneducated parents. As such, inequality of opportunity breeds inequality of opportunity across generations, unless government intervenes through appropriate reforms to strengthen opportunities for education.

In search of what the government could do, a good starting point is to highlight the main biases in the current education system, especially in terms of how they are revealed in terms of access to and quality of education as well as the allocation of public funds and attention to equality. The main biases can be summarized as follows:

With respect to access, Egypt has made significant progress over the last several decades. As noted in Section 3.2.2, the percentage of enrollment at all levels of education increased over time, while illiteracy rates decreased. However, as noted in Section 6.3.2, because the system under Mubarak favored the rich, it expanded the provision of private education. At the same time, it did not sufficiently expand public schools and universities to accommodate new cohorts, which increased classroom

densities to levels not conducive to effective learning. Of course, the expansion of private schools and universities is not a bad thing in and of itself, the problem for those who cannot afford private education is that they have to go to excessively dense classrooms.

- Regarding quality, the public education system suffers from the problems of focusing on memorizing rather than critical thinking. This problem is derived in large measure from the fact that entry to university depends primarily, if not solely, on the grades in high school national exams (thanawaya ama). In addition, the content of what is taught is repetitive and the pedagogy (or the way teaching is conducted) is outdated. Moreover, teachers do not always have the necessary skills to teach, and schools and universities do not enjoy sufficient autonomy to undertake their duties, nor are they held accountable for results. Not surprisingly, Egyptian students do not score highly on international tests (Assaad and Krafft, 2015) and the erosion in the quality of public education has been felt more disproportionately by the poor (Section 6.4.2).
- Turning to the pattern of allocation of public funding, the system does not appear to favor the poor. As noted in Section 6.3.2, the government allocated disproportionately high levels of public expenditure to tertiary education, which implies a subsidy to the rich as only those with very fortunate circumstances are able to reach these higher levels of education (Assaad, 2010). As mentioned in Section 6.4.2, the probability of reaching tertiary education while having the most adverse set of circumstances is only 9% for males and 4% for females. Conversely, the most privileged males and females have 100% and 97% chances respectively. According to the World Bank (2002), 45% of higher education expenditure is received by the top quintile and 68% by the top two quintiles in Egypt.
- Finally, Egypt has a policy of free public education for all. This policy has been reinstated in the new constitution, which was voted on in 2014. However, the reality is that families spend substantial sums on private tutoring for their children (Assaad and Krafft, 2015). Additional evidence of the regressive nature of public education is seen in the rise in the popularity of costly alternatives to public education and supplementary tutoring that only the better-off can afford. These make educational outcomes highly contingent on the wealth quintiles of households that individuals were born into (Figures 6.7-6.10). However, much remains to be done to improve the quality of services as well as access to these services by disadvantaged groups.

To address these problems, reforms were not in short supply before and after the revolution. Typically, these reforms focused on training teachers, revising the curriculum, increasing the number of teachers to reduce class density, increasing teachers' salaries to motivate them and attract new ones, and building new schools to accommodate new students. However, the problems continued to persist over time. At the same time, too many disadvantaged Egyptians continue to lack equal opportunities to acquire decent and affordable education services.

Looking ahead, it seems that the Egyptian government would do well by changing the framework that guides its reform process. Furthermore, it would be wise to accept that the way reforms are

implemented matter for outcomes. There is no single blueprint for all countries to best enhance educational performance. Indeed, many of the successful performers like Finland and Singapore have different systems. However, it may be useful for the Egyptian government to consider a World Bank report (2008), which suggests that education reforms should focus on three pillars: engineering (or education infrastructure), incentives (of teachers, students and schools) and accountability (of policymakers and schools). The engineering pillar entails all the elements of the education process (e.g., teachers, schools, pedagogy). The incentives involve motivating all the actors to perform their duties and be rewarded accordingly. The accountability deals with holding the policymakers and providers of education responsible in front of students, their families and citizens at large.

A In addition, there are no guarantees that the increase in the allocation of government resources to the health sector, as stipulated in the constitution, will lead to notable improvements if these resources are put say into increases in the salaries of administrative staff, the purchase of equipment that are not needed or in building hospitals in privileged locations

In terms of instruments, it is important to recognize that reforms do not always produce their intended results. For example, very few would dispute that the Egyptian government should allocate more resources to education. In fact, the 2014 constitution stipulates that annual expenditure on education should reach 6% of GDP over a period of 3 years. Recent figures show that number around 5.5%. However, there are no guarantees that higher expenditure on education would not be spent on administrators as wages rather than improving students' outcomes.

Similarly, the policy of free education for all does not always ensure that the poor will have access to higher education as the evidence shows. Socioeconomic background holds the poor back and deprives them from having equal opportunities (Assaad, 2010). The alternative would be to make the rich pay for their education, while the poor are to be covered directly by government or at a minimum be given the option of acquiring student loans.

In short, the government reforms in training teachers, building schools, upgrading the curriculum are important and should continue. In addition, attention should be given to shift the focus on problem-solving rather than memorization. To motivate schools and teachers to teach in the classrooms rather than engage in private tutoring, their incentives (monetary and non-monetary) should be aligned with student performance. Finally, while schools/universities should be given more autonomy in return for accountability, parent and student representation should be strengthened.

7.3.2 Regional Development

Based on the empirical analysis in the previous chapter, the other important determinant of inequality of opportunity in earnings, beside parents' education, is the area of birth. In other words, it does matter whether an Egyptian is born in Lower or Upper Egypt, or born in urban or rural areas. Being born in rural Egypt is less advantageous than being in urban Egypt, at least from the perspective of earnings opportunities. This outcome is likely to materialize irrespective of how much effort an individual in urban or rural Egypt puts into his/her work.

Where does the bias against rural areas come from? Taking the political factors as given for now, the discussion in Chapter 6 reveals that urban areas have consistently received more government attention than rural areas. Not surprisingly, poverty is concentrated in Upper Egypt, where half of the population resides but close to 80% of the poor is concentrated. With respect to extreme poverty, the

percent of those below the extreme poverty line in among the rural population was as high as 10%, compared to only 2.6% among the urban population (Table 3.2).

The root causes of the bias against rural areas, especially in Upper Egypt, can be traced to a number of government policies that can be summarized in the following points:

- As indicated in Table 6.2, Upper Egypt consistently received less public investment than Lower Egypt. More specifically, while Upper Egypt is home to 50% of the population it receives only a quarter of public investment. In contrast, the population in Lower Egypt is 31%, but they receive 30% of total public investment. Making the distinction between urban and rural areas, it was noted in Chapter 6.3.3 that rural areas host over 80% of Egypt's poor, but receive only a quarter of public investment.
- Correspondingly, the population in Lower Egypt received much less public services than those in urban areas. This bias is consistent across different types of services, including electricity, water, education and health (Table 6.2). The low level of provision of these services weakens the capacity of the residents of Upper Egypt to enter the labor market, and it makes the region a less attractive location for investment. The end result is that the initial adverse circumstances lead to a vicious circle of deprivation along geographic lines.
- Finally, historically the Egyptian government tended to favor industry at the expense of agriculture through a host of protection, taxation and subsidization measures (Waterbury, 1983). This is despite Sadat's open-door policy and liberalization to some degree of both traditional and modern sectors in the 1990s onward.

To bring about more balanced regional development and reduce the influence of the adverse earning conditions in disadvantaged regions, the government could embark on a reform program that tackles the above root causes. At the core of the program would be to reverse the previous policies, or better yet, compensate Upper Egypt for past discrimination. The first pillar of the reform program is a major reorientation of public investment in infrastructure, including electricity, roads, water and sanitation, in favor of Upper Egypt, and rural areas outside of Upper Egypt. The second would be allocating more public funds than before to empower the residents of Upper Egypt and rural areas with the capacity to enter the labor market through education and better health facilities. The third would involve the adoption of programs to support agricultural development to ensure better opportunities for farmers.

Each of these reform areas would require a detailed investigation to spell them out fully and meaningfully, but progress on equalizing opportunities in earnings without such reforms is not likely.

7.3.2 Gender

The empirical analysis has shown that gender is a significant determinant of earnings. This means that women are at a disadvantage compared with men. This observation does not seem to originate on the supply side, since women perform as well as men in acquiring education at different levels of schooling. Rather it is more a result of deficiencies on the demand side, revealing itself most visibly in the extremely

low labor force participation by women and secondly in the structure of employment of those that do work. From the analysis in Chapter 6, women's labor force participation rates are almost four times lower than those for men. Figure 6.11 showed labor force participation rates by gender over the three rounds of the ELMPS. In all rounds of the ELMPS, Figure 6.11 shows that almost 80% of women are out of the labor force. Meanwhile, male labor force participation rates are much higher and are improving over time, from 68% in 1998 rising to 77% in 2012. Similarly, the differences in employment structure between men and women is also substantial. Women are more than twice as likely to be employed in the public sector than men (Figure 6.12). While it is true that wages are higher in the public sector than the informal sector, they are not as high as those in the formal private sector, leaving women on average with lower earnings than men.

The reasons behind women's relatively worse opportunities for earnings as well as for labor force participation in the first place are closely linked. Based on the literature, the two can be attributed to the following main causes:

- There exists a patriarchal culture in the labor market outcomes (Barsoum, 2010; Assaad and Arntz, 2005). Previously female-dominated jobs became defeminized, as male-dominated activities where employment growth has greater did not become feminized.
- Women's strong preference for public sector employment owe significantly to the greater flexibility of work hours and provision of benefits and nurseries (Assaad and Arntz, 2005; Hendy, 2015). Often women that do participate in the labor force still maintain active roles in terms of household chores thus placing a greater value on the flexibility of work. The shift in government policy toward rolling back the role of the state in the 1990s and diminishing opportunities for working for the public sector, meant that women lost their preferred employment option.
- The working conditions in the private sector and particularly in the informal private sector act as a deterrent to women's participation. In the formal private sector, work hours are not as flexible as in government. In the informal sector, services like nurseries are absent and often working conditions themselves may be less safe than in formal employment.

To reverse this and improve the opportunities for women to both take part in the labor market and to obtain equal pay for the same work as men, two things are difficult for the government to change. One is the patriarchal culture, which will only change as society itself changes over time. The other is offering women an opportunity to work for the government, which can be problematic given its enormous size relative to the population and rising budget deficit.

However, the government could take other actions to improve the economic opportunities available to women. For one, it could play a more active role in providing the policy environment to encourage the formal private sector to flourish and create more productive job for both men and women. For another, it could adopt initiatives that make it easier for women to join the labor force, such as providing nurseries for those who decide to work. Other supporting initiatives could include government paid maternity leave, extending support to SMEs, and facilitating the possibility of working from home.

7.4 The Politics of Reform

Thus far, this chapter has attempted to identify the policy drivers that the Egyptian government could/should adopt to bring about more equality of opportunity in earnings based on the determinants identified in the empirical analysis. The objective of this section is to explore what Egypt could/should do to make recommended policies politically more desirable and even sustainable.

Put differently, this section shifts from policies to politics. However, it stays in line with the approach adopted in this chapter, which is normative rather than positive in nature. While the analysis will draw on the conclusions of Chapter 6, it will be concerned with identifying the political reforms that will persuade or guarantee that politicians adopt pro-equality of opportunity measures.

To elaborate the nature of the political reforms that are more compatible with equality of opportunity, it is worth recalling the argument spelled out in Chapter 6. Namely, when a country is ruled by a narrow elite with no checks and balances, members of this elite are in a position to devise policies that serve the survival of the regime and enhance their own interests. Their actions not only cause inequality to rise, but also to persist over time as the those powerful today are better able to ensure they remain powerful tomorrow. In contrast, where the regime is open, with the majority having a voice in a regime with checks and balances, rulers tend to devise policies that serve the interests of most of the population and to make rules that ensure continuity of such policies. This type of regime tends to produce lower levels of inequality. Applied to Egypt, it was also pointed out in Chapter 6 that Mubarak's regime was not inclusive, which means that the ruling elite did not have the political desire to pursue equality of opportunity enhancing policies. Not surprisingly, adopted policies tended to favor crony capitalists while paying lip service to needs of the middle class and the poor.

Since January 2011, two main political events occurred, offering Egypt a rare window of opportunity for moving forward in the direction of building more inclusive political institutions, and by association a more egalitarian society. The first is the uprisings of 2011, during which the rebels chanted for "bread, freedom and social justice". The second event was the enactment of a new constitution in 2014, which was approved overwhelmingly by voters. The new constitution provides a solid foundation for building a modern society, and for breaking away from the prior extractive political institutions. If Egypt were to exploit this opportunity, progress ought to be made on two fronts: (1) translating the new constitution into actions on the ground, and (2) engaging key stakeholders in society in the process of decision-making. In other words, Egypt needs to bridge the gap between de jure and de facto institutions. It also needs to work on engaging key stakeholders in society in the process.

Starting with the constitution, it is worth noting that it was drafted by a representative committee of key stakeholders in society. The 50 members of the committee were drawn from different political parties, intellectuals from different fields, members of professional syndicates, members of national councils, union members, religious representatives from both Al-Azhar and the Coptic Orthodox Church, the armed forces, the police and public figures (Ahram Online, 2015). Perhaps because of the inclusive nature of the committee and the demands of the rebels of the revolution, the constitution came out as well as it did from the point of view of its emphasis on inclusiveness and equality. Three points stand out in this regard:

- The constitution stipulates that the political system would work to achieve equal opportunity for all Egyptians.

- It even goes as far as to specify certain percentages of GDP to health and education, along with a restatement of free access to these services by all Egyptians.
- Beyond specifying the liberties all Egyptians will enjoy, it details the roles of the executive, legislative and judicial branches in such a way that none of them will encroach on the other.

With these foundations in place, the next step for building inclusive political institutions in Egypt is to move beyond building de jure institutions to building de facto institutions through the enforcement of the articles embodied in the constitution and the exercise of the rights for free election, free association and free expression. This process will not only help reconcile differences between different groups, but also enable society to build consensus in favor of a more egalitarian society. Key to its success is the extent to which major stakeholders are well organized and active, but thus far the Egyptian political landscape is in a state of formation. Some progress has been made, but much growing up lies ahead.

Consider for instance the role of political parties, which is critical for pooling the expression of the interests of different groups in society. Here, as in other transition countries, there has been a proliferation of the number of newly created parties after the revolution. However, their influence on the political landscape remains weak. Perhaps more importantly, the parties that gained momentum in the wake of the fall of Mubarak's ruling party (the National Democratic Party) were those who were organized before the revolution, namely the Islamist parties of the Muslim Brotherhood Freedom and Justice Party or the Salafist's Al Nour Party. More recently, following the protests that brought down President Morsi, secular parties have gained more importance but they have not fully establish themselves as influential players (Dawoud, 2014).

What about the labor movements? Before the revolution, Egyptian workers fell under the state-run Egyptian Trade Union Federation, which monopolized worker representation. After the fall of Mubarak, Ahmed Hasan Al-Burai, the Minister of Manpower and Migration, along with input from independent trade unionists and labor-focused NGOs, drafted a Trade Union Freedoms Law, which was aimed at fully legalizing independent trade unions (Beinin, 2013). The legislation passed under PM Beblawi's government after the fall of Morsi, and has since led to the formation of independent trade unions, even though they are at an early stage and according to Hoda Kamel, a former EFITU board member stated in an interview that, "[independent federations] are weak, divided and underfunded" (Charbel, 2015).

The role of non-governmental organizations (NGO), despite their large number, has also been mixed. At one end, it is remarkable that a grassroots movement called *tamarod* (rebellion) was able to mount a signature campaign that amassed over 22 million signatures in petition to call for early presidential elections one year after Morsi took over as President. When the proposal was not accepted, millions went out to the streets in the June 30th 2013 protests that led to the ousting of Morsi with support from the Military. At the other end, several NGOs faced challenges in their operation because they relied on foreign funding. Security concerns at a time of transition prompted President Sisi in September 2014 to issue a decree granting prosecutors the ability to indict against such organizations. But this action raised concerns over the freedom of civil society institutions (International Freedom of Expression Exchange (IFEX, 2015).

As for the Egyptian media, a UNESCO report on the assessment of media in Egypt found that prior to the revolution, public levels of trust in state media were low even though they enjoyed high rates of viewership, listenership and readership (Mendel, 2011, p. 65). However, a poll by IPSOS, a polling agency, found that in February 2012, levels of viewership of national channels were low compared to

private satellite channels. The degree of government criticism within the media discourse since the 2011 revolution has been oscillating. The level of freedom of speech and the state's tolerance of a critical media has varied under various interim regimes from the SCAF, to Morsi's presidency to the current regime. A Carnegie report found that state media caters to the government while private media caters to the interests of the businesspeople that own them (Abdulla, 2014). Without institutional reform, the role of the media will be limited as a player in civil society.

In short, building inclusive political institutions supportive of greater equality of opportunity is still work in progress in Egypt. The transition is still unfolding, amid some progress here and setbacks there. While the literature on transition does not indicate that success is inevitable, the adoption of a good new constitution and holding free elections of a new president (2014) and parliament (2016) are positive steps in this direction. What is likely to make the difference in the nature of the future political regime in Egypt is how much Egyptians are willing to participate actively in making the transition.

7.5 Conclusion

This chapter has sought to assess what could be done in Egypt to bring about greater equality of opportunity. From a theoretical viewpoint, inequality of opportunity offers a paradigm for assessing inequalities that are due to either circumstances or efforts, and those stemming from the former should be compensated for, while those due to the latter are permissible. While there exists a debate about how the principle of inequality of opportunity can be extended to policy, the analysis in this chapter primarily focuses on the circumstance variables identified in the empirical analysis of this thesis.

This chapter makes a number of suggestions to policymakers in Egypt on how to equalize earnings opportunities facing citizens. In the area of the labor market, reforms are needed to equalize earnings opportunities by creating decent jobs in the formal private sector, formalization and adopting policies that support regional development in Upper Egypt and greater women participation in the labor market. With respect to education, reforms are needed to equip under privileged citizens with access to better quality education. While additional resources are necessary, it is equally important to revamp the education system to motivate teachers to perform better in the classrooms, to upgrade the education content and the way it is taught and evaluated, as well as to increase the autonomy and accountability of the schools/universities. Similarly, further reforms are needed to shift the focus from historically privileged regions (Lower Egypt) to those that were less fortunate (Upper Egypt). This can be done by allocating more public investment to infrastructure in these areas, providing incentives to make them attractive locations for private investment, and initiatives to promote agriculture.

Finally, it is argued that no matter how well problems are identified and policies to remedy them are devised, sustainable and more equitable development in Egypt would not materialize without more inclusive political institutions that involve different stakeholders in society.

Chapter 8

Conclusion

Abstract

This chapter synthesizes the main findings of this thesis. It is guided by the three research questions posed at the outset, namely: (i) What has been the level and evolution of inequality in Egypt, with a special focus on inequality of opportunity in earnings, (ii) what are its underlying causes, and (iii) what can/ought to be done to promote greater equality in society? The presentation of the main findings is followed by a brief discussion of the limitations of the study and a number of questions for future research.

8.1 Introduction

This thesis set out to explore the level and determinants of inequality of opportunity in earnings in Egypt over time. A main motivation behind this study was to attempt to explore the policy and political economy drivers of inequality. Finally, based on the findings, the plan was to identify a set of policies and institutional reforms that Egypt could/should undertake in order to promote greater equality.

The study was further motivated by the rising concerns for inequality both globally and in Egypt. On the first point, concerns for inequality have become prominent not just among social scientists and politicians, but also among the public at large as can be seen in the rise of protest movements around the world and in Egypt. In the economics literature, inequality has also received increasing attention in recent years, especially in terms of: (i) its economic impact, particularly on growth, (ii) its social impact, particularly on the stability and cohesion of society, and (iii) on a more normative/philosophical level, encapsulating the relationship between inequality and fairness.

Using Egypt as a case study, there are a number of persuasive reasons: (i) Egypt provides a rich country for analysis as its modern history is characterized by economic, social and ideological shifts that can be used to trace and explain variations in inequality under different circumstances; (ii) recent economic growth in Egypt has not been inclusive, which may explain in part the recent social and political uprisings, and (iii) Egypt is a relatively large country in the Middle East and it has historically had a contagion effect on its neighbors.

In measuring inequality of opportunity in earnings in Egypt the study was carried out using a number of empirical methodologies, namely nonparametric techniques such as the types and tranches approaches and Lorenz Dominance test as well as parametric approaches. Each approach has its advantages and disadvantages, but these techniques are complementary. Measuring inequality of opportunity can be highly demanding in terms of data requirements given the need for detailed information about the socio-economic backgrounds of individuals, but the ELMPS for years 1998, 2006 and 2012 provides a rich and representative dataset to undertake such measurements.

In order to understand the causes of inequality of opportunity, the analysis went beyond the impact of particular policies on the level of inequality or inequality of opportunity to explore the role of politics in shaping these policies. The underlying premise is that policies themselves are the product of the

distribution of power and the nature of the prevailing political regime. Accordingly, our analysis explored the relationship between inequality and politics/institutions and how the latter may change over time. Applying this approach to Egypt made it possible to better understand why Mubarak's regime opted for certain policies over others, in particular with respect to education and geographical focus given their importance to inequality of opportunity.

To identify the kind of policies and institutional reforms needed to promote greater equality in Egypt, the analysis became more normative than positive. To stay in line with the empirical findings, analysis focused on specific policies in the labor market as well as the circumstance variables that turned out to be significant determinants of inequality of opportunity. In addition, attention was given to the policy-making process.

The rest of this chapter is organized as follows. Section 8.2 provides a synthesis of the level and evolution of inequality in Egypt and reviews the findings of this thesis. Section 8.3 discusses these changes and their causes in the context of the political economy of Egypt. Section 8.4 reiterates how equity can be enhanced. Section 8.5 points to the limitations of the study and proposes some areas for future research. Section 8.6 concludes.

8.2 The Level and Evolution of Inequality in Egypt

This section looks at past performance, then turns to the contribution of this thesis. This thesis has looked at inequality from three points of view: (i) inequality in different types of outcomes, (ii) perceptions of inequality, (iii) and inequality of opportunity. While the empirical work in this thesis focused on inequality of opportunity in earnings over the period of 1998 to 2012, it has also taken stock of the existing literature to see how inequality has evolved over a long period of time, since the earlier 20th century. The key findings are summarized below.

Historically, inequalities in outcomes seem to have gone through three broad phases, one of high inequality in a fundamentally feudal society until 1952, another of decreasing inequality since then until the mid-1970s, followed finally by an increasing trend starting from the mid-1970s in a more liberalized environment.

In the first of these phases prior to 1952, the primary evidence for the high degree of inequality comes from the distribution of land ownership and holdings. At the time, despite Egyptian independence in 1922, the British were heavily influential in Egyptian politics. The economy was primarily reliant on agriculture, further entrenching the power of large landowners. Pervasive inequality bred a growing sense of injustice and malcontent, and eventually, popular dissent culminated in uprisings against the British and the palace with armed forces mounting a coup against King Farouk in 1952.

In the second phase starting from 1952, inequality (most notably in land ownership) declined as a result of Nasser's land reform and socialist policies. This era saw large improvements in the attainment of health and education as the public provision of services increased and made free. The public sector also expanded greatly contributing to a more equal distribution of wages.

In the final phase under Sadat and Mubarak, there was a steady rise of economic liberalization combined with a roll-back of state services, which resulted in a decline in the provision of public services. A new bargain emerged in which the alliance between the state and large businesses became stronger. The role of market forces and the private sector increased, replacing socialist principles and central planning. The role of the state in the provision of public services also diminished, giving way to the emergence of the parallel private provision of services which only those who were better off could afford.

Leaving inequality in asset distributions aside, income inequality in Egypt, based on Gini coefficients, may not have become much worse in the last few decades, but perceptions of inequality have been rising in the years leading up to the January 2015 revolution, possibly because of the increased visibility of crony capitalism and the close ties between the business and political elite. In addition, while access to public health and education has continued to contribute to improvements in the human development index, the quality of both education and health services deteriorated. Surely, this was due to limited financial resources, demographic pressures and lack of reforms. But by association, it may have also meant growing inequality of opportunity. And indeed, recent studies on health and education outcomes indicate that circumstances people are born into account for a notable percentage in some cases.

Turning to the contribution of the empirical work in this thesis, the key focus as noted already was on measuring the levels of inequality of opportunity in earnings in Egypt and finding out what variables matter the most for inequality of opportunity. The analysis was carried out using various approaches, which produced a number of empirical results for the full sample of the population over the three rounds of the ELMPS, as well as different population subgroups. These results are summarized below.

To begin with, the Lorenz dominance tests confirmed the existence of inequality of opportunity for earnings in Egypt. This finding was consistent for the three survey rounds using a range of different circumstance based partitions. Groups with higher educated parents had better opportunities than those with lower educated parents. There is a gender gap with the distribution of male earnings dominating female earnings. Similarly, earnings distributions in the urban areas are above those in rural ones. And having a public wage-working father provides better opportunities for higher earnings than different types of private sector work.

Turning to the parametric results for the full sample, across the three rounds circumstances accounted for a modest share of between 9% and 11% of total earnings inequality. The results across the three survey rounds are relatively similar, starting at 10.5% in 1998, dropping to approximately 8.7% in 2006 and rising to 9.8% in 2012. The relatively conservative estimates are typical of parametric measures compared to other techniques for measuring inequality of opportunity in general.

As for the nonparametric measures, the types approach showed that the overall level of inequality of opportunity has remained relatively stable throughout the three rounds ranging between 9% and 10% in each round. The tranches approach displayed a higher level of inequality of opportunity than the parametric and types methods for the full sample. In this approach, the coefficients across the three rounds range between 14% and 18%. The difference between the results should be attributed to their different emphases on the concept of inequality of opportunity, with the former stemming from a viewpoint that would seek to equalize rewards for the same effort, while the latter would seek to equalize the set of earnings opportunities available to an individual.

The parametric decomposition revealed that family background characteristics and area of birth contribute the largest shares of inequality of opportunity. This is consistent with the initial findings based on generalized Lorenz curves. Moreover, the trend is also similar. The earlier distributions did not show significant changes in the gap based on geography, however, the gap based on parents' levels of education was widening over time. The importance of family background also increased from 42.7% of the share of inequality of opportunity in 1998 to 52.5% in 2012. As for the relatively meager contribution of gender, it is possible that since the sample size of women was relatively low, the coefficient is relatively small. It is also true that the biggest obstacles from an opportunity point of view for women may be labor market entry in the first place.

As for the population subgroups, comparing some of the distributions across subgroups corroborates some known regularities about the labor market. For one, women earn less than men on average in the labor market. Secondly, at the geographic level, wage inequality is higher in urban areas. For the male youth category, earnings are also lower than for other subgroups as they are relatively younger than the full sample.

Regarding the measurement techniques, the tranches approach consistently registered the highest coefficients for opportunity shares (14.1%-18.5%), while the types and parametric approaches were more conservative (9.4%-10.4% and 7.7%-10.5% respectively). This is similar to findings in the full sample. Overall, the range of explained inequality by circumstances is at a lower bound between 8% and 20% among subgroups, which is close to the range observed for the full sample. Upon closer inspection, there are some consistent patterns across measurement techniques, especially between the 2006 and 2012 rounds.

Over time, inequality of opportunity for the urban and male youth subgroups has increased between 2006 and 2012 across all measurement techniques. For the urban group, this increase ranged from a lower end of 6.7% in 2006, to 15.7% in 2012. For male youth, the increase was even sharper. The lowest estimate in 2006 was at 7.8% and highest at 20% in 2012.

Inequality of opportunity for the rural and female subgroups decreased between 2006 and 2012 based on most measurement techniques. Based on the tranches approach, inequality of opportunity in the rural group dropped from 16.6% to 12.2%. The other measurement approaches showed similar 2%-4% declines over the same period. The female subgroup exhibited similar declines based on the types and tranches calculations, though the parametric approach showed about a 1% increase over the same period. The results for the male subgroup showed the least consistent trends with some measurement increasing and other declining or staying the same.

Turning to a comparison of levels across subgroups, the ranking that emerges in the 2012 round is consistent across measurement techniques and shows that male youth suffer from the highest levels of inequality of opportunity, followed by females, then the urban and male groups, followed by rural with the least. Given that male and male youth show varying results, it may indicate that younger age-groups suffer more from higher levels of inequality of opportunity. Subgroups in the earlier years do not display as consistent patterns, except for the consistently high inequality of opportunity for females. In the earlier years the margins of error are also wider, meaning that robust rankings are hard to establish. This is true especially of the 1998 round.

The parametric decompositions showed that broadly speaking, the coefficients for parents' education and area of birth and gender are statistically significant across most subgroups and survey rounds. The coefficients for father's occupation and employment status are in most cases not statistically significant. The male decomposition shows that inequality of opportunity is driven primarily by area of birth and father's education. Father's occupation type plays a relatively small role and mother's education and father's employment status do not show a statistically significant contribution to inequality of opportunity. For the female subgroup, area of birth and father's education are also the dominant drivers of inequality of opportunity. However, father's occupation plays a consistently greater role than for the male subgroup. For the urban subgroup, father's education and area of birth are the two main drivers of inequality of opportunity with gender playing a declining role over the three rounds of the survey. Inequality of opportunity for the rural subgroup is driven entirely by gender in the 2006 and 2012 rounds. In 1998, father's education was statistically significant and dominant. Results for the male youth decomposition are more mixed with mother's education, playing a greater role and area of

birth playing a relatively small role. Father's occupation is still an important determinant, particularly in the 2006 round, but much less so in the other two survey rounds.

In sum, the results for the three rounds ranged between 7.7% and 18.5% of the inequality in earnings depending on the measurement technique. These estimates seem modest, but are similar to the findings of similar studies of inequality of earnings in other parts of the world. Comparing the findings for inequality of opportunity in earnings in Egypt with those of other countries, shows that the results are in-line with findings elsewhere. Out of the other studies focusing particularly on earnings, Checchi and Peragine (2010) measured inequality of opportunity nonparametrically in Italy, finding that for the overall population inequality of opportunity accounted for a lower bound of 14.8% in the types approach and 19.5% in tranches approach. They also pointed to regional differences between the north and the south, but these figures were all under 20%. Another study by Singh (2011) for India found that circumstances accounted for 19.5% of earnings inequality using a parametric approach. A study by Pistoiesi (2009) for the United States using a semi-parametric approach revealed a share of 18.6%. Moreover, all estimates are lower bounds, which means that the inclusion of additional circumstance variables would explain more of total inequality. The problem as always is one of data availability.

Over time, the share of inequality of opportunity did not change significantly over the three survey rounds. This is possibly due to the fact that significant shifts in inequality of opportunity are unlikely to be observed during relatively short periods of time. Circumstances into which individuals are born probably take generations to produce major shifts in their fortunes.

Perhaps the most surprising results were that father's education and occupational status as well as mother's education seemed to play a relatively small role in all measurements except for Lorenz dominance. Their low contributions could have been the result of fewer observations, especially for highly educated mothers. The most notable exception of the impact of father's occupation was for the urban subgroup where having a father who was an agricultural worker negatively impacted earnings.

8.3 The Underlying Causes of Inequality in Egypt

The second research question asked what are the underlying causes of the levels and evolution of inequality in Egypt. This thesis has argued that firstly, inequality of opportunity is also determined by discretionary policies and that these are determined by the nature of political and economic institutions. The process through which policies are adopted is derived from the nature of the political process, de facto and de jure forces, and whether institutions are inclusive or extractive. Secondly, the relationship between democracy and inequality is not straightforward. While one might expect that democracies empower greater shares of the population and thus lead to more redistributive and egalitarian policies, autocracies can also engage in redistribution when it can serve the regime's interests to stay in power. Thirdly, institutions are difficult to change. Once an equilibrium is established, it is difficult to change and given the reinforcing nature of institutions, they can lead to a virtuous circle or vicious cycle of institutional persistence. An extractive elite can put in place laws that guarantee their interests. Conversely, an egalitarian set-up will enforce checks and balances so that no one group can overpower the rest. Institutional change is possible if doorstep conditions are met, or at critical junctures.

Applying this framework to Egypt, this thesis has argued that Egypt has had extractive political institutions. These are readily visible when observing indicators of the inclusiveness of the political process, freedom of speech and corruption. These features have been modelled in terms of an

authoritarian bargain between the regime and society, where economic rents are traded for political acquiescence. The rents typically take the form of explicit or implicit transfers, subsidies, protections, favorable regulations, employment or consumption. The choice of recipients of rents depends on the context of a given country at a given point in time, and could include the heads of the military forces, certain national or regional bureaucrats, individuals who play instrumental roles in the political leadership of the ruling party or individuals in the business elite.

The manifestations of this extractive set-up are apparent in the rise of crony capitalism and the rollback of the state. The revolving door phenomenon between business elites and Mubarak's party members shows these close links. Beyond this, politically connected firms have been found to do better than unconnected ones. As for the rollback of the state, the government has engaged in a gradual withdrawal of providing public services, which has tended to impact the middle class and the poor negatively.

The analysis of the labor market points out that the regime's rollback of better-paying public sector jobs, while lending support to politically connected firms in the private sector that were unable to create sufficient formal jobs, left many with no option but low-paying informal jobs. In the area of education, Mubarak's regime revealed its bias in favor of the elite by allowing public education to deteriorate, while expanding private education to cater for the needs of the better off. Geographically, the regime continued to allocate the bulk of public investment to wealthier urban, rather than rural, areas, where poverty was concentrated. As for gender, decreasing public sector employment disproportionately affected women, who found few alternatives and remained marginalized. Finally, while the empirical findings on the level and evolution of equality of opportunity in this thesis do not provide compelling evidence in explaining the revolt and ousting of Mubarak in January 2011, alternative interpretations linking diminished opportunities facing the middle class and the revolt point in the direction of the important role of equality of opportunity. Overall, these findings lend support to the influence of politics on policies and hence outcomes.

8.4 What Can/Should Be Done to Enhance Equality in Egypt?

The third research question this thesis sought to assess was what could be done in Egypt to bring about greater equality of opportunity. As a theoretical framework, inequality of opportunity offers a paradigm for assessing inequalities that are due to either circumstances or efforts, and those stemming from the former should be compensated for, while those due to the latter are permissible. However, as discussed in the previous chapter, there are limitations to the policy usefulness of inequality of opportunity research. Some of these issues are conceptual and some are practical.

Moving from the theoretical framework to prescribing policy and political reforms to improve equality of opportunity in earnings, this chapter argues that making meaningful suggestions requires identifying all the circumstance variables that influence inequality of opportunity in earnings, which is not possible because of data limitations at this point in Egypt and elsewhere. Second, once the significant circumstance variables are identified, the next step would be to find the concrete policy drivers that government could use to bring about more equality of opportunity in earnings. In other words, saying that education, area of birth and gender are important determinants for equality of opportunity is not enough, although it is a reasonable first step. Finally, even if both the determinants of equality of opportunity and

their underlying policy drivers are identified, the adoption and implementation of these reforms would require a desire and a commitment on the part of politicians and the capacity to do so.

To overcome these limitations and maintain coherence with the empirical findings in the thesis, the normative analysis to improve equality of opportunity in earnings in Egypt focuses on education, area of birth and gender. It also takes political conditions into account. To bring about more equal opportunities in earnings, reforms should aim at creating decent jobs in the formal private sector, formalization, supporting regional development in Upper Egypt and encouraging greater participation by women in the labor market. With respect to education, reforms should enable underprivileged citizens to access better quality education. While additional resources are necessary, it is equally important to revamp the education system so as to motivate teachers to perform in the classrooms, to upgrade the content of education and the way it is taught and evaluated, and to increase the autonomy and accountability of the schools/universities. Similarly, special attention should be given to less privileged regions (Upper Egypt) compared to more privileged regions (Upper Egypt). This can be done by allocating more public infrastructure investment to Lower Egypt, offering the private sector incentives to locate in this region, and paying attention to agriculture development. Finally, it is argued that sustainable and more equitable development in Egypt would not materialize without more inclusive political institutions.

8.5 Limitations of the Study and Recommendations for Future Research

The work in this thesis is not without limitations. It also raises questions for further research. Both issues are addressed briefly below.

On the limitations, one is related to the choice of the object of enquiry, another has to do with data limitations, and a third relates to interpretation of the findings. It is true that the analysis could have been applied to another economic outcome like consumption. The choice of earnings in the thesis was made on several grounds. Firstly, at the outset of the research there was only a single study on inequality of opportunity in Egypt in earnings in Egypt (Hassine, 2012) covering up to 2006 leaving room for new analysis with newer data that was compatible and consistent over time. Secondly, focusing on earnings as the dependent variable allows for the identification of certain circumstances that lend themselves to policy-reforms in the labor market. If one were measuring the role of circumstances behind consumption, the drivers of inequality of opportunity may not be as amenable to policy action. Thirdly, earnings are important in their own right and can also influence other socioeconomic outcomes such as consumption, health and education.

Another limitation is related to the data. No data are perfect and fully suited to the empirical task at hand. In this study, it is true that the data provide multiple variables capturing different circumstances Egyptians are born into, such as gender, parents' occupations and education, and region of birth. However, one can think of other circumstance variables that are not included, like family social networks or inherited genetic characteristics. These data limitations are a feature of all studies on inequality of opportunity. Consequently, the estimates are interpreted as lower bounds of inequality of opportunity. If more data on circumstances were available, inequality of opportunity would likely be higher. This also makes the identification of changes in inequality of opportunity difficult, as even if the observable lower bounds are constant, true values could fluctuate greatly.

As for interpretation, there are a number of controversial aspects to inequality of opportunity that render making policy suggestions difficult. For one, the separation between efforts and circumstances may not be so clear-cut either in theory or in practice. Many of our preferences are resultant from our upbringing, and whether or not they provide a justifiable impetus for redistribution (and should be identified as inequality of opportunity) can be highly debatable. Another area of contention has to do with the tension between responsibility and risk, where in some cases, adverse outcomes can be the result of freely calculated choices. These choices could be in the types of careers or investments individuals choose. Finally, opportunities for achieving success in one outcome can be highly correlated with outcomes in other areas, like those of earnings, health and education. Policies that would only focus on one of these areas at a time may be misguided. Moreover, it may not be sufficient to only focus on inequality of opportunity and circumstances, leaving out inequalities in outcomes themselves.

Turning to future research on the topic of inequality, there are a number of areas for fertile analysis. Firstly, the research could be extended to measure inequality of opportunity in different types of outcomes other than earnings, both economic and non-economic. These could include education, health, wealth or even happiness. The HIECS dataset contains detailed information on consumption and expenditure and the role of circumstances could be assessed with respect to these outcomes as well. Asset inequality is also particularly important, especially as some data exist on land holdings and land ownership over a long time. The recent economics literature has underscored the importance of asset inequality and its impact on social stability, democracy and economic growth (Acemoglu and Robinson, 2012; Piketty, 2014).

Another area deserving further research is the incidence of government fiscal policy (taxes, subsidies and investment expenditures) on inequality of opportunity. In some cases, the primary benefactors of redistributive government policies may in fact not be those worst off.

A third line of research could be to extend the analysis of inequality of opportunity to other countries in the region to allow for a comparative analysis. As noted in this thesis, there is a growing literature in recent years on inequality of opportunity but the country coverage is still limited. Egypt, Jordan and Tunisia, Turkey and Iran have received the most attention, but no similar studies exist for Morocco or Lebanon for example.

A fourth line of inquiry is related to the political economy of inequality. This area of research is becoming more important in light of the political transformations taking place in the region and the need to better understand the link between these political developments and their underlying reasons. In this regard, different theories of political settlements could be better substantiated by linking them to data. One way this could be done is by looking more closely at perceptions of inequality as well as democracy and other political variables. This line of research can also help develop a better understanding of the drivers of the revolution and could focus on different key subgroups of the population like the middle class and youth. Similarly, the existing evidence on crony capitalism, for example, presents a compelling narrative and sheds some light on the mechanisms through which the political elite allocate rents. However, more work is needed.

Finally, in terms of promoting greater equity, it is important to continuously evaluate the impact of different policies from a distributional point of view. This is becoming more important, as the demands for social justice are increasing, so are the government initiatives to achieve this objective. An additional way to improve the delivery of equity-enhancing social policies, would be the use of randomized control trials, which have not been carried out much in Egypt or the region for that matter. These types of

experiments can be highly informative of how policy interventions influence the behavior of target groups and could provide valuable lessons about how to best benefit some of the worst-off groups in society.

Concerns over inequality have become reignited. It can be seen in the rise of protest movements like Occupy Wall Street along with the tremendous popularity of Thomas Piketty's book "Capital in the Twenty-First Century", and in the MENA region, the Arab Spring is another manifestation of the resistance to perceived injustice.

This thesis contributes to the literature by synthesizing the existing literature on inequality in Egypt, as well as measuring inequality of opportunity in earnings. It has also linked these findings to policy and political economy drivers of inequality. Finally, it has pointed to some areas where policies can be equity-enhancing. In doing so, it is a part of a long journey towards a better understanding of inequality and its drivers.

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