VULNERABLE EMPLOYMENT IN EGYPT

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I. INTRODUCTION

Vulnerable employment is a relatively new concept that refers to those who are employed under relatively precarious circumstances. Workers in vulnerable employment are defined by the ILO as the sum of own-account workers and contributing family workers (ILO 2010a, 18). It is one of the main labor market challenges as it worsens decent work deficits.

Vulnerable employment is highly connected to poverty. The high rate of vulnerable employment may be an indication of widespread poverty. The move away from vulnerable employment into wage work can be a major step towards poverty reduction and higher economic growth. Thus, pulling workers out of vulnerable employment is at the core of the global development challenge set out in the Millennium Declaration and its poverty-reducing goals (ILO 2009a, 12). The ILO and the Millennium Development Goals (MDGs) Technical Working Group on Employment suggested the incidence of vulnerable employment as one of the four indicators for its new target of making the goals of full and productive employment and decent work a central objective of national development strategies; Target (1B), agreed upon in 2008.

Vulnerable employment accounted for half of the world employment (50.1 percent) in 2009; around 1.53 billion workers. In countries of North Africa, the incidence of vulnerable employment has reached 40.4 percent in 2009 (ILO 2011, 22, 69).

In Egypt, vulnerable employment is believed to be widespread (ILO 2010a, 28) and is considered a major labor market challenge. Nevertheless, there is little work in the literature that analyzes vulnerable employment in Egypt. An earlier study of Assaad and El-Hamidi (2001) investigated the determinants of female labor force participation, disaggregating work into several employment states using data drawn from the Labor Force Sample Survey conducted in October 1988. The study analyzed determinants of four employment states; non-wage agriculture work, non-wage non-agriculture work, regular wage work and casual wage work. The first two categories include all employers, self-employed workers, and unpaid family workers. The study focused on females and analyzed determinants of non-wage work as a whole and did not examine transition from non wage work. Recently, a study of the impact of the financial crisis in Egypt mentioned that vulnerable employment was one of the factors affecting the poor in Egypt (Radwan 2009, 32).

This study attempts to address the gap in the empirical literature with respect to the in-depth study of vulnerable employment in Egypt by analyzing vulnerable employment, its determinants and ways of escaping from vulnerable employment.

The main objectives of this study are to assess vulnerable employment in the Egyptian labor market, examine its determinants and analyze the relationship between vulnerable employment and poverty. In addition, the study traces vulnerable workers' labor mobility and examines determinants of escaping vulnerable employment.

Literature Review

Various studies consider vulnerable employment as one of the main labor market challenges that worsen decent work deficits. The vulnerably employed are saddled with low wages and are usually excluded from the social protection of minimum wage laws. They suffer difficult conditions of work (CAMPAS 2008, 1; ILO 2010b, 53; and Weil 2009, 413).

In developing countries, vulnerable employment is widespread and is considered the option of last resort (ILO 2010a, 18). Besides being a labor market challenge, it aggravates other economic problems in developing countries. Empirical evidence[1] asserts that vulnerable employment is highly connected to poverty due to two main effects of vulnerable employment. The first factor is the effect on earnings. Earnings of vulnerable workers are not only very low compared to other workers but also inadequate to provide a decent life. The second effect is related to job quality. Vulnerable workers usually lack elements of decent employment, including access to social protection, health insurance, and effective social dialogue mechanism. Thus, they suffer more than other workers in case of illness or disability. They usually work in conditions that do not provide security in the workplace and do not receive any training to enhance their skills.

Due to lack of social protection, the vulnerably employed are exposed to a higher economic risk, especially during economic downturns. Horn (2009) shows that contrary to conventional wisdom, empirical evidence suggests that expanding types of vulnerable employment, especially in the informal sector during economic downturns such as the global financial crisis, does not mean that vulnerable workers are thriving during the recession.

[1] See, for example, Huynh et al. 2010, 7-10; Greeley 2010, 14; Weil 2009, 414-15; Radwan 2009, 32; Nabaho 2009, 15; Saunders 2003, 15; ILO 2008, 3; WB 2009a, 38; UNOWA 2010, 7-8; and TUC Commission on Vulnerable Employment 2010, 2.

Unlike other workers, they have no cushion to fall back on. Evidence shows that these economic downturns push those workers and their families further into impoverishment.

Thus, trends in vulnerable employment are found to be very much linked to trends in working poverty in different regions (ILO 2010a, 18-24, 27). It is also widely argued in the literature (Nabaho 2009, 15-16; Messkoub 2009; ILO 2009b, 7, 14, 25; UNECA and AU 2010, 46; and WB 2009a, 38) that vulnerable employment undermines poverty alleviation programs in many countries and that poverty alleviation programs will fail unless decent employment opportunities are created to absorb workers in vulnerable employment.

Several studies and reports paid great attention to identifying characteristics of workers in vulnerable employment during the last decade.[2] Several socioeconomic characteristics emerged. The rate of vulnerable employment is found to be highly gender sensitive, as contributing family work is historically a status that is dominated by women. At the global level, the share of vulnerable employment in total female employment was 52.7 percent in 2007 as compared to 49.1 percent for men. The difference is more than 10 percentage points in Sub-Saharan Africa, South Asia, and the Middle East and North Africa (ILO 2009c, 11-12 and WB 2009a, 38). The youth also are more likely to fall in vulnerable employment. In developing countries, new entrants to labor markets who have fewer opportunities in paid jobs are most likely to end up either in unemployment or in vulnerable employment. Low educational attainment is another important feature of workers in vulnerable employment. Vulnerable workers usually come from poor families as unemployment is unaffordable in the absence of savings and social security provisions. Vulnerable employment is more widespread in rural areas, mainly in the agricultural sector.

There are some studies that empirically investigated the main determinants of one type of vulnerable employment, which is self-employment. Empirical studies on determinants of self-employment may be divided into two groups. The first group investigates these determinants on the macroeconomic level; for instance the study of Pietrobelli, Rabellotti and Aquilina (2004) estimated determinants of self-employment based on a sample of 64 developing countries and 19 developed countries in a period from the 1960s through the

[2] Huynh et al. 2010; Bewley and Forth 2010; Geest 2010; Espey and Harper 2009; Sparreboom and Gier 2008; Saunders 2003; WB 2009a; ILO 2010a, 2009c, 2009d, 2008; TUC Commission on Vulnerable Employment 2010; UN/DESA 2010; and UNECA and AU 2010.

1990s in the manufacturing sector. The results confirmed a negative association between the rate of self-employment and the stage of development supporting the Kuznets hypothesis.[3]

The second group investigates these determinants on the microeconomic level, in both developed,[4] developing economies and economies in transition.[5] One important difference exists between studies in developed and those in developing economies. In the majority of studies in developed economies, self-employment is considered a viable career choice, driven by entrepreneurship while in the majority of studies in developing economies, it is not considered a choice but a result of lack of other alternatives and thus it is only a way out of unemployment.

These studies have related self-employment to socioeconomic characteristics, including education, age, gender, marital status, residence, wealth, and economic sector. The evidence on some of these determinants is very mixed.

With respect to education, there is little consensus in the literature. While the effect is positive in some studies (Rees and Shah 1986, 95; Kunt, Klapper and Panos 2007, 18 and Faridi et al. 2010, 163), it is negative in other studies (Henrard 2003, 16; Diamond and Schaede 2010, 15; Velez and Pena 2010, 96; Haile 2008, 8; and Do and Duchene 2008, 19). Lin et al. (1999, 12) shows no significant effect of education. Some empirical evidence shows that the effect of education on self-employment differs in the same country. It may differ by the level of education. According to Pietrobelli, Rabellotti, and Aquilina (2004, 819), the effect seems to be positive for primary and negative for secondary education as self-employment requires some basic skills. Sanchez (2005, 31) reached a similar result in Bolivia. It may differ also by sector; Tamvada (2010, 15) shows that in India, higher education decreases the likelihood of individuals choosing self-employment in non-agriculture while it has an opposite effect in agriculture.

Empirical evidence on the effect of age is also mixed. Some empirical studies (e.g., Lin, Picot and Yates 1999, 17; Mel, Mckenzie and Woodruff 2008, 11; and Velez and Pena 2010, 92) show that self-employment tends to increase among the young. On the contrary, other empirical studies (Henrad 2003, 16; Haile 2008, 15; Faridi et al. 2010, 163; and Tamvada

[3] For more details about the Kuznets hypothesis, refer to: Kuznets (1966).

[4] Rees and Shah 1986; Lin, Picot and Yates 1999; Delic 2006; and Diamond and Schaede 2010.

[5] Henrard 2003; Sanchez 2005; Kunt et al. 2007; Haile 2008; Mel et al. 2008; Do and Duchene 2008; Faridi et al. 2010; Tamvada 2010; and Velez and Pena 2010.

2010, 9) suggest that the probability of self-employment increases with age. According to these studies, self employment requires experience that can only be acquired after several years in working life and the capital accumulation process also takes time. According to some other empirical studies (Kunt, Klapper and Panos 2007, 18 and Do and Duchene 2008, 13), the self-employed are mainly middle aged; as youth lack experience and older persons have less willingness to accept risk.

In addition to education and age, there is also no consensus about the effect of marriage on self-employment. Some empirical literature (Kunt, Klapper and Panos 2007, 16, 18; Do and Duchene 2008, 13, 16; and Velez and Pena 2010, 4) argues that in spite of the fact that self-employment is more risky than wage work, marriage will enhance the probability of being self-employed. The married have a strong survival motive as they have families to support and their families can also support them. Family support may make self-employment less demanding than it would be otherwise. We think that the effect of marriage depends on family support and also on availability of wage job opportunities.

Contrary to the previous determinants, literature has widely agreed that males are more likely to be self-employed while unpaid family work is dominated by females (see for example, Delic 2006, 22; Kunt, Klapper and Panos 2007, 18; Haile 2008, 8; Giannelli, Mangiavacchi and Piccoli 2009, 13; and Tamvada 2010, 11). However, in Colombia, Velez and Pena (2010, 11) show that women are the majority of self-employed. In general, it is agreed that women allocate less time than they would like to paid labor because of domestic activities.

Other socioeconomic determinants include wealth. Individuals who switch to self-employment are more likely to be wealthier. This positive effect is for the transitions towards self-employment with employees (Henrard 2003, 16; Kunt, Klapper and Panos 2007, 13-14, 26; Do and Duchene 2008, 7; and Tamvada 2010, 5). Wealthier here does not mean rich, as wealth is measured in these studies by proxy measures such as household consumption in the study of Kunt, Klapper and Panos (2007, 13) or availability of household land in the study of Tamvada (2010, 11). This suggests that those who shift to self-employment should rely on their own resources. They cannot depend on financial institutions as they are unable to provide enough collateral to secure a loan and financial institutions usually do not approve to finance very small projects. Thus, it is not surprising that the empirical evidence (Kunt,

Klapper and Panos 2007, 2) suggests that individuals who receive remittances or social benefits are less likely to become self-employed. It has also been found that there is a significant negative correlation between wealth and informal sector activity.

These studies focused on determinants of self-employment but did not investigate the characteristics of workers who manage to escape vulnerable employment except for the study of Lin, Picot and Yates (1999), which was mainly concerned with investigating the probability of moving into or out of self-employment among younger Canadians.

Concerning unpaid family work, there are only few empirical studies that investigated the characteristics of this type of work, even in developing countries where this type of work is widespread and negatively affects groups of workers who are in an obviously disadvantaged position in the labor market, especially women. Giannelli, Mangiavacchi and Piccoli (2009) assessed the size and value of two types of unpaid family work; unpaid domestic work and unpaid family care work, in Europe. In developing countries, some studies investigated characteristics and determinants of female unpaid family work, most of them were descriptive. A study in Madagascar (Glick 2009, 3) shows that the majority of working women in rural areas are engaged in unpaid family labor while for urban areas unpaid labor is much less important, reflecting the association of female unpaid work with agriculture. The same results apply to female unpaid family work in Turkey; a study by the WB and SPO (2009, 2) shows that it is concentrated in the agriculture sector. Lisaniler and Bhatti (2005, 218) argue that unpaid family work in North Cyprus is concentrated among females as the traditional division of work overburdens women with the unpaid tasks.

Fewer studies were concerned with the determinants of female unpaid family work. Medeiros and Costa (2005) analyzed unpaid family work in some Latin American countries to explore the effects of different socioeconomic factors on the amount of time spent in unpaid family work. Having young children has been found to require more time to be allocated to household work for both men and women, but the burden of the latter is twice heavier while more female education is found to be associated with less female unpaid family work. The results of a recent study (Ackah, Ahiadeke and Fenny 2009, 12) in Ghana asserts the significant effect of these two factors; the presence of children and education.

Data and Methodology

The empirical analysis is based on the Egyptian Labor Market Surveys of 1998 (ELMS98) and 2006 (ELMPS06). The two surveys are nationally representative household surveys. They were carried out by the Economic Research Forum (ERF) in cooperation with the Egyptian Central Agency for Public Mobilization and Statistics (CAPMAS).

The ELMS 98 was carried on a sample of 4,816 households containing 23,997 individuals. The ELMPS 06 was carried out on a sample of 8,349 households containing 37,100 individuals. The 2006 sample contained 3,684 households from the original ELMS 98 survey, 2,167 new households that emerged from these households as a result of splits, and a refresher sample of 2,498 households[6].

The questionnaires for the two surveys were designed to ensure comparability of the data over time. Regarding vulnerable employment, the two surveys provide information on employment status which is required to identify vulnerable workers and to calculate the rate of vulnerable employment which measures the prevalence of vulnerable employment. It is calculated according to ILO (2009a) as follows:

$$\text{The vulnerable employment rate} = \{(\text{Number of own account workers} + \text{Number of contributing family workers}) \div \text{Total employment}\} \times 100$$

Number of own account workers is estimated as the number of self employed workers and number of contributing family workers is estimated as the number of unpaid family workers.

The two surveys collected information on different socioeconomic characteristics, providing necessary information to examine socioeconomic determinants of vulnerable employment. A comparative descriptive approach is used to analyze vulnerable employment among different socioeconomic groups and its trend between 1998 and 2006.

The study uses logistic regression to examine the effects of socioeconomic characteristics on vulnerable employment. The main socioeconomic determinants are divided into four main groups. The first includes region of residence, as labor market conditions are expected to affect the probability of falling into vulnerable employment. The second group is related to the household economic level. The survey does not provide data on household

[6] For more details about the two surveys, refer to Assaad 2007 and Barsoum 2007.

income nor expenditure. However, it provides data on different aspects of life in the household, such as type of house, and availability of durables. Using factor analysis, a composite index "wealth" is constructed to measure the household's economic status in both 1998 and 2006. The third group of variables includes personal characteristics; age, gender, education, marital status. The fourth group is related to occupation and work sector. Several indicators are constructed to analyze types of vulnerable employment; self-employment and unpaid family work.

The following part tracks vulnerable employment trends and analyzes characteristics of vulnerable workers. Part three turns to track labor market mobility of vulnerable workers, describes differences in escape rates among different socioeconomic groups and their labor market pathways. Part four applies logistic regression to examine determinants of vulnerable employment, among all workers and among male and female workers. Part five examines determinants of escaping vulnerable employment using logistic regression. In part six, international experience in addressing vulnerable employment is reviewed. Finally, part seven suggests policy interventions to reduce vulnerable employment in Egypt.

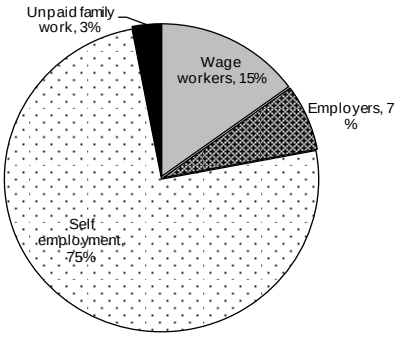
II. VULNERABLE EMPLOYMENT IN THE EGYPTIAN LABOR MARKET

Vulnerable Employment Incidence and Trends

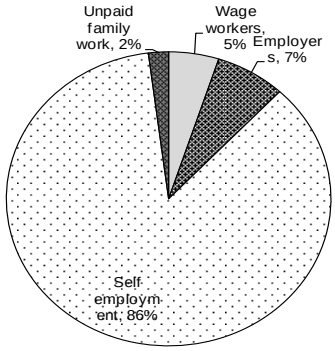
Vulnerable employment rate has slightly decreased between 1998 and 2006 from 39.5 percent to 37.3 percent. The majority of workers in vulnerable employment in Egypt are unpaid family workers.

Figure 1. The Self-Employed Pathways

A. Employment status in 2006 for workers who began as self employed (non-youth workers)



B. Employment status in 2006 for the self-employed in 1998 (non-youth workers)



The composition of vulnerable employment has slightly changed between 1998 and 2006. Unpaid family workers' share decreased from 81.7 percent to 78 percent while the self employed share increased from 18.3 percent to 22 percent. As previously mentioned, in the majority of studies in developed economies, self employment is considered a viable career choice driven by entrepreneurship; while it is considered a route out of unemployment in the majority of studies in developing economies. Egypt is no exception. In the ELMPS 2006, there is no question about why a certain employment status is chosen. However, tracing the self employed overtime, it is found that the vast majority of workers who began their careers as self employed, remained self employed in 2006, only 5.6 percent turned to be employers, the percentage increases to only 6.5 percent among non-youth workers (aged at least 30 years). The same result is reached comparing the employment status in 2006 with that in 1998. Only 6.3 percent of the self employed in 1998 became employers in 2006, the percentage is 6.6 percent among non-youth workers (figure1). Self employment in Egypt, as in many developing countries, is obviously not a choice driven by entrepreneurship but rather an exit strategy for unemployment.

The small change in vulnerable employment structure in Egypt between 1998 and 2006 reflects not only unemployment pressures but also increasing pressures of poverty. Those living under the lower poverty line (poor and extreme poor) increased as a percent of total population according to WB (2007, 53) from 16.7 percent in 1999/2000 to 19.6 percent in 2004/2005. These increasing pressures pushed more people into self employment. Self employment has become more important as a means to earn living, unlike unpaid family work.

Socioeconomic Characteristics of Vulnerable Employment

Analyzing the characteristics of vulnerable employment (Table 1), it is found that vulnerable employment rate in rural areas is 2.5 times higher than in urban areas; it is highest in rural Upper Egypt. They belong to poor households; vulnerable employment rate is higher in the lowest three quintiles than the average vulnerable employment rate in both 1998 and 2006.

With respect to personal characteristics, vulnerable employment is female dominated. However, there is a slight increase in vulnerable employment rate among males and also in the share of males in vulnerable workers. Heads of households have a vulnerable employment rate lower than average vulnerable employment rate. This is expected as they have families to

support. The youth are more likely to fall in vulnerable employment, the elderly also have a vulnerable employment rate higher than average. The vulnerable employment rate is lower among workers aged between 30 and 60. Young workers are more likely to work in the beginning as unpaid family workers. As they get older, they search for paid work to support their families. The relationship between vulnerable employment and age is nearly U shaped.

Married workers were less likely to be vulnerable workers in 1998 while the vulnerable employment rate among married workers was slightly higher than the average rate in 2006. Married males have the lowest vulnerable employment rate while married females have the highest rate. Married females especially in rural areas are more likely to provide their unpaid labor for their families.

Table 1. Socioeconomic Characteristics of Vulnerable Employment (1998-2006)

	Vulnerable employment rate (%)		Distribution of vulnerable employment (%)	
	1998	2006	1998	2006
Residence:				
Urban	0.21	0.19	20.2	18.3
Rural	0.50	0.48	79.8	81.7
Region:				
Gr. Cairo	0.13	0.11	4.6	4.2
Alex, Suez Canal	0.12	0.12	1.8	2
Urban Lower	0.30	0.28	7.2	6.8
Urban Upper	0.34	0.29	6.5	5.3
Rural Lower	0.47	0.45	42.3	42.9
Rural Upper	0.55	0.51	37.6	38.8
Household characteristics:				
Wealth quintiles** 1	0.54	0.50	28.5	29.7
2	0.47	0.46	24.7	27.1
3	0.44	0.39	23.3	20.9
4	0.33	0.28	16	14.5
5	0.16	0.17	7.5	7.8
Personal characteristics:				
Males	0.18	0.19	27.4	31.7
Females	0.74	0.70	72.6	68.3
Head	0.18	0.16	18.2	18.6
Age				
06-11	0.88	0.87	3	2.7
12-14	0.68	0.74	4.5	3
15-19	0.56	0.62	14.4	12.4
20-29	0.38	0.38	21.2	28.9
30-39	0.33	0.31	20.1	19.3
40-49	0.33	0.30	16.7	15.1
50-59	0.35	0.33	11.7	12.2
60-64	0.52	0.48	4.4	3.3
65+	0.56	0.41	4.2	3.1

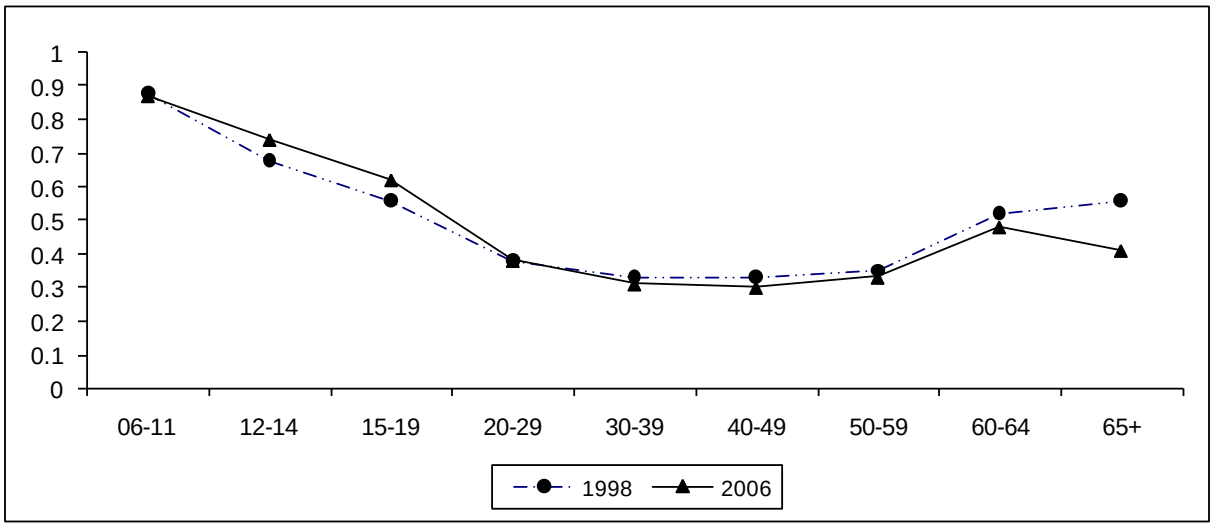
	Vulnerable employment rate (%)		Distribution of vulnerable employment (%)	
	1998	2006	1998	2006
Married	0.37	0.43	67.7	63.8
Married males	0.14	0.13	14.4	15.9
Unmarried males	0.25	0.30	13	15.8
Married females	0.74*	0.72	45.6	47.9
Unmarried females	0.73*	0.65	27	20.4
Educational level:				
No school certificate	0.57	0.55	68.1	57.3
Basic education	0.39	0.39	17	16.2
Secondary education	0.24	0.29	11.8	21.6
Post secondary and university	0.08	0.10	3.1	4.9
Occupation, sector of work and economic activity:				
Occupation:				
Legal, managerial, professional, technicians	0.09	0.09	6.7	6.4
and clerks		0.21	6	6.6
Services & sales workers	0.22	0.72	80.4	75.4
Skill agriculture & fish workers	0.76	0.20	4	7.7
Craft & related trade Workers	0.11	0.13	1	2
Plant & machine operating & assembly	0.10			
Elementary occupations	0.39	0.30	1.9	1.9
Sector:				
Private	0.65	0.58	100	100
other	0	0	0	0
Economic activity:				
Agriculture	0.75	0.71	80.25	75.62
Mining	0.03	0.04	0.01	0.02
Manufacturing	0.10	0.17	3.06	5.31
Construction	0.05	0.08	0.71	1.41
Trade	0.43	0.40	12.73	12.79
Services***	0.04	0.06	3.24	4.85

Notes: * The difference is not statistically significant.

** The wealth index is a composite index, constructed using the data of ELMS98 and ELMPS06.

*** include: hotels, transportation, financial, real estate, public administration, education, and other services.

Figure 2. Vulnerable Employment by Age



Workers with less than secondary education have a vulnerable employment rate higher than the average rate; it is the highest among workers with no school certificate. The share of those with secondary education increased among vulnerable workers. This is due to the increase in the share of the educated among total population; the share of those with secondary education and above increased from 25.6 percent to 37.9 percent. However, the vulnerable employment rate has actually increased among those with secondary education and above, which is an alarming sign indicating that unemployment pressures push more educated workers into vulnerable employment.

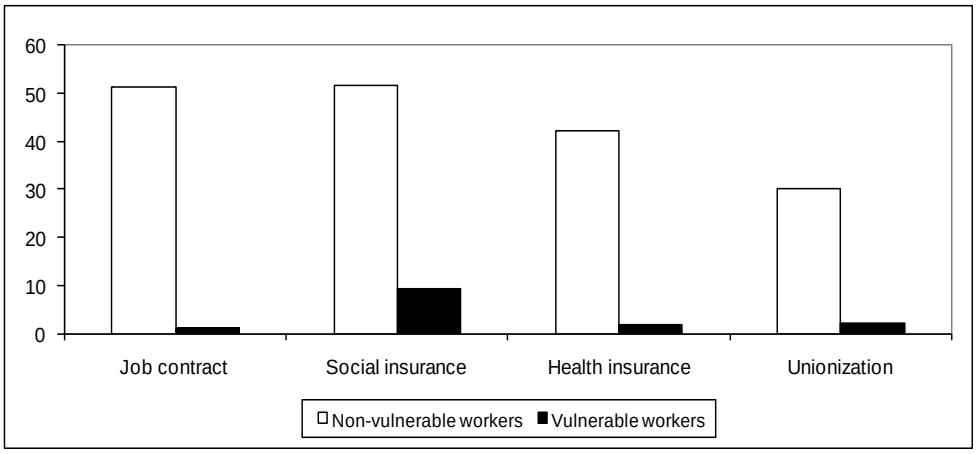
Examining the occupational structure of vulnerable employment shows that the majority of vulnerable workers are agriculture workers; they also have the highest vulnerable employment rate. The agriculture sector has the highest vulnerable employment rate followed by the trade sector.

Vulnerable Employment and Poverty

The literature review shows that vulnerable employment is highly connected to poverty due to two main effects of vulnerable employment; decent work deficit and low earnings.

In Egypt, vulnerable employment significantly worsens decent work deficits. Comparing four main indicators of job quality (Figure 3); availability of a job contract, access to social insurance, health insurance and trade union membership, one can observe a significant large gap between vulnerable workers and other workers.

Figure 3. Decent Work Deficits among Vulnerable Workers (%– 2006)



The percentage of non vulnerable workers who have contracts, social insurance, and health insurance and are members of trade unions in 2006 is 43, 6, 14, and 22 times higher than the percentage of vulnerable workers enjoying these rights. The percentages of vulnerable workers enjoying these rights in 2006 are lower than in 1998 (Table 2). This may be due to the decrease in the percentage of all workers enjoying these rights.

Table 2. Job Quality Indicators: Vulnerable and Non-Vulnerable Workers (1998-2006)

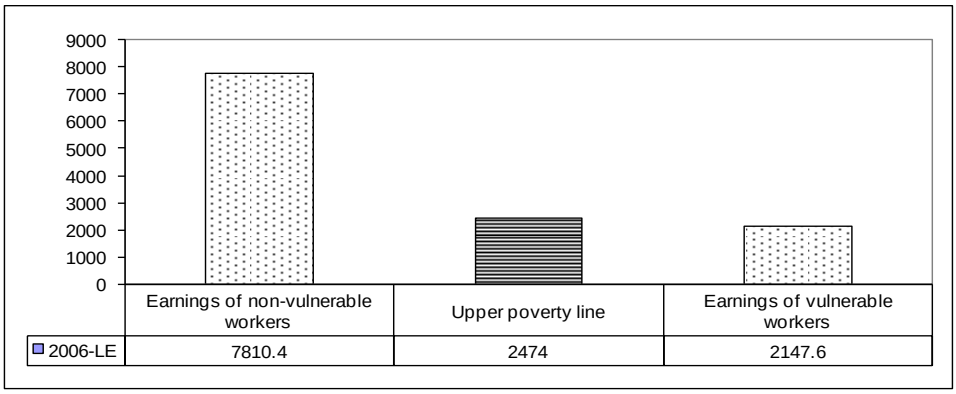
	Job contract		Social insurance		Health insurance		Unionization	
	1998	2006	1998	2006	1998	2006	1998	2006
Non-Vulnerable workers	55.9	51.4	61.4	51.7	52.5	42.2	34.02	30.2
Vulnerable workers	1.3	1.2	18.6	9.4	3.3	1.9	5.3	2.2
All workers	46.7	42.02	54.1	42.4	44.1	33.3	29.1	24

This makes vulnerable workers at higher risk, in times of illness or economic downturn. Data available do not provide any evidence on how the global financial crisis has impacted vulnerable workers in Egypt. However, empirical evidence in developing countries (Horn 2009, 2) suggests that these downturns push those workers further into impoverishment. The empirical evidence available in Egypt shows that small firms suffered more than large ones during the crisis. The results of a survey of 200 Egyptian firms (WB 2009b, 8) show that small enterprises' sales fell by 32 %, while those of large firms dropped by 19%.

With respect to the effect on earnings, average annual earnings of vulnerable workers were around one-fourth of average earnings of non vulnerable workers in 2006. Vulnerable workers have bigger families than non-vulnerable workers; 6.3 vis-à-vis 5.2. The dependency ratio is significantly higher among families of vulnerable workers; 3.2 vis-à-vis 3. These

differences suggest that families of vulnerable workers are less likely than other families to satisfy their basic needs. Comparing average earnings of both vulnerable and non vulnerable workers with the upper poverty line estimated by WB (2009c, 4) in February 2008; at LE 2474, it is found that earnings of vulnerable workers are only 87% of the value of the poverty line.

Figure 4. The Poverty Line and Annual Earnings* of the Vulnerable and Non-vulnerable Workers



* Earnings are calculated as follows: Annual earnings = ({Hourly wage (primary and secondary jobs) + hourly earnings for non wage workers (available only for 2006)} × numbers of hours of work per week) × 52 weeks. Earnings of vulnerable and non vulnerable workers can be calculated only for 2006 as earnings for non wage workers are available only for 2006.

III. ESCAPING VULNERABLE EMPLOYMENT

Labor Mobility of Vulnerable Workers

Realizing its negative effects, escaping vulnerable employment is of great importance. Examining labor mobility of vulnerable workers, Table 3 shows that a very small percentage of them became out of the labor force or unemployed; 3.7 percent and 0.4 percent respectively. Most of vulnerable workers belong to the lowest wealth quintiles; unemployment or choosing not to work is unaffordable to them.

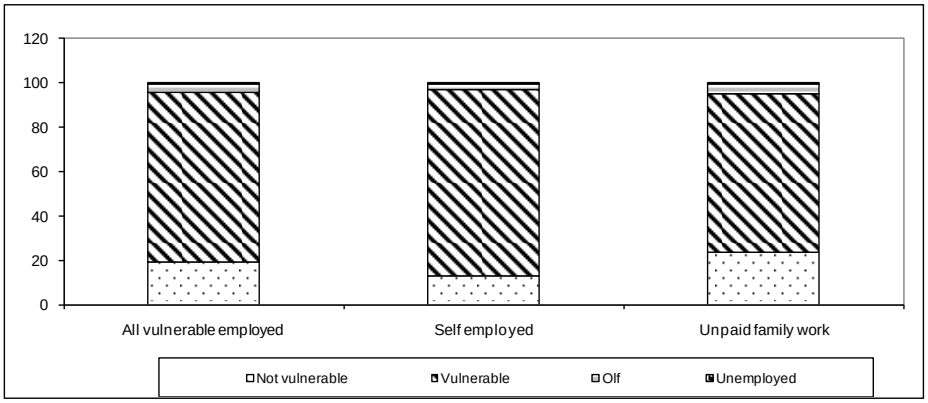
Table 3. Labor Mobility of Vulnerable Workers (1998-2006) - %

1998	2006				
	OLF	Unemployed	Vulnerable employment	Wage workers	employers
All vulnerable employed	3.72	0.44	76.40	10.54	8.9
Self employed	2.44	0.53	84.39	6.22	6.42
Unpaid family workers	4.52	0.38	71.39	13.25	10.47

The majority of vulnerable workers remained in vulnerable employment. Only 19.4 percent of vulnerable workers escaped vulnerable employment; 10.5 percent became wage workers and 8.9 percent became employers. The share of vulnerable workers who escaped

vulnerable employment differs between the self employed and unpaid family workers; figure 5 shows that the share is higher among unpaid family workers. Unpaid family workers have a stronger incentive to escape vulnerable employment considering the earnings gap between these two groups. Earnings of unpaid workers are very low; only 0.16 times earnings of the self employed. Having new families or supporting their families pushes them to escape vulnerable employment.

Figure 5. Vulnerable Workers' Transitions



Limiting the analysis to vulnerable workers in 1998 who were still employed in 2006, table 4 shows that the share of those who escaped vulnerable employment has increased to 20.3 percent; 13 percent and 24.9 percent of the self employed and unpaid family workers. More than half of vulnerable workers who escaped vulnerable employment got a wage work, the percentage is higher among unpaid family workers while the percentage of those who turned to be employers is higher among the self employed. The self employed acquired experience in running their own businesses and may invest some of their returns in expanding these businesses while unpaid family workers lack experience and are more likely to lack also savings that may be used to finance their businesses.

Table 4. Escaping vulnerable employment (1998-2006)*

	Escaping vulnerable employment	in 2006	
1998	%	Wage workers%	Employers%
All vulnerable workers	20.3	54.2	45.8
Self employed	13	49.2	50.8
Unpaid family workers	24.9	55.9	44.1

Notes: * Among vulnerable workers in 1998 who were still employed in 2006.

Table 5. Job finding methods–vulnerable employed 1998 and wage workers in 2006 (major method)%

	All Vulnerable workers in 1998	Self employed 1998	Unpaid family workers 1998	All wage workers
Informal finding methods (social contacts)	32.1	39.5	30	25.1
Contacted employer	22.7	18.6	23.9	15.6
Send Job application	9.7	9.9	9.7	10.8
Formal recruitment agencies (public and private)	10.3	15.1	9.5	18.8

With respect to those who became wage workers, investigating major job finding methods they used, Table 5 shows that the most important methods were informal ones; they depended on their social contacts. These methods are more important among vulnerable workers than among all workers. The role of formal labor market intermediaries; whether public or private, in helping vulnerable workers, is limited compared with their role in helping other workers. Using social contacts to find work is widespread in Egypt. Vulnerable workers are in an obviously disadvantaged position in the labor market as they lack skills, they are less educated, and are less likely to have enough information about formal recruitment agencies.

Workers who escaped vulnerable employment managed to enhance their work quality. Table 6 shows that improvement is more pronounced in having a contract and health insurance. However, their work quality is still obviously lower than among all workers. The majority of those who escaped vulnerable employment and got a wage work are still in informal work. Vulnerable workers find it very difficult to enhance their labor market position and thus their living conditions due to their personal characteristics. They lack skills and experience necessary to compete in the labor market. When they escape vulnerable employment, they are more likely to get low quality jobs; vulnerable employment negatively affects future work prospects.

Table 6. Quality of Work—vulnerable employed 1998, escaped vulnerable employment in 2006 %

	Social insurance	Health insurance	Unionization	Contract	Informal*
Still in vulnerable employment	10.3	1.95	2.1	1.1	95.1
Escaped vulnerable employment	23.5	10.4	4.8	21.5	73.7
All the employed	40.2	31.3	22.5	39.7	56.2

Notes: * No contract and no social insurance.

Who Escape Vulnerable Employment? And to where?

Examining characteristics of those who managed to escape vulnerable employment (Table 7); it is found that the majority of them live in rural areas and in governorates where vulnerable

employment concentrates. However, there is no significant difference by residence in the escape rate. The same results apply to escaping vulnerable employment by wealth quintile. On contrary to differences by residence and household characteristics, there are significant differences by personal characteristics in escaping vulnerable employment.

While vulnerable employment is female dominated, escaping vulnerable employment is male dominated. Females seem to consider vulnerable employment the last resort. Males are more likely to get a wage work while females find it more difficult to get a wage work; and are less likely to escape vulnerable employment unless there is an opportunity to be small business employers. Household heads are more motivated to escape vulnerable employment. While their share of vulnerable workers is less than one fifth, they represent the majority of those who escaped vulnerable employment. Heads and non-heads differ significantly in labor market pathways after escaping vulnerable employment. Heads are more likely to become employers while non-heads are more likely to get a wage work. Heads are expected to be supported by their families in their work. In addition, they are usually older (44 vis-à-vis 31 among vulnerable workers); with no wage work experience (78.4 percent were either self employed or unpaid family workers in 1998).

Table 7. Socioeconomic characteristics of workers who escaped vulnerable employment (1998-2006)

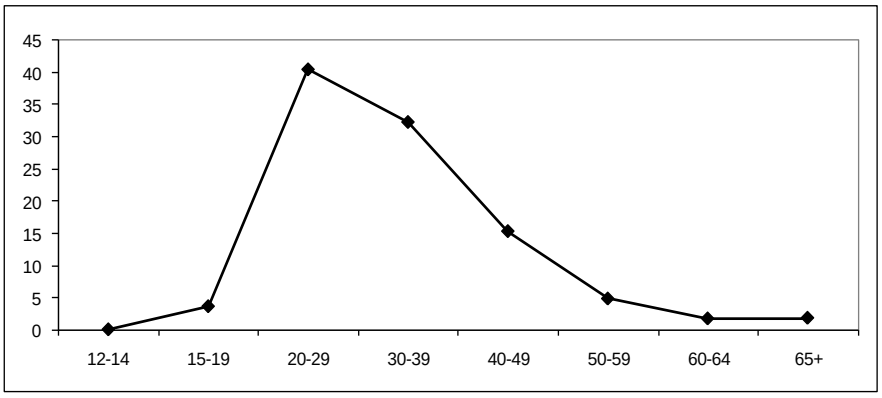
	% of those escaping vulnerable employment	Escaping vulnerable employment		
		All	Wage Workers	Employers
Residence:				
Urban	22.7	19.3*	55.4*	44.6*
Rural	77.3	20.6*	53.8*	46.2*
Region:				
Gr. Cairo	5.8	19.3*	60.6	39.4*
Alex, Suez Canal	3	18.9*	61.8	38.2*
Urban Lower	6	16.8*	48.8	51.2*
Urban Upper	8	22*	54.2	45.8*
Rural Lower	32.6	22.6*	55.1	44.9*
Rural Upper	44.6	19.3*	52.9	47.1*
Household characteristics:				
Wealth quintiles** 1	34.5	20.3*	54.4*	45.6*
2	22.1	18.3*	57.7*	42.4*
3	20.5	21.9*	59*	41*
4	14	19.8*	49.8*	50.2*
5	8.9	23.6*	40.6*	59.4*
Personal characteristics:				
Males	90.1	31.6	57.3	42.7
Females	9.9	4.7	25.5	74.5

	% of those escaping vulnerable employment	Escaping vulnerable employment		
		All	Wage Workers	Employers
Non-heads	39.3	13.1	67.8	32.2
Heads	60.7	31.4	45.4	54.6
Age				
12-14	0	0		
15-19	3.6	18.8	67.5	32.5
20-29	40.5	29.4	67.6	32.4
30-39	32.3	23.5	55.7	44.3
40-49	15.3	15.6	39.1	61
50-59	4.8	7.6	4.2	95.8
60-64	1.7	9.7	0	100
65+	1.8	9.5	13	87
Married	74.6	19.8*	52.1*	47.9*
Unmarried	25.4	21.9*	60.3*	39.7*
Married males	77.3	32.4*	53.5**	46.5**
Unmarried males	22.7	29.2*	70.5**	29.5**
Married females	50.2	3.1	66.5*	33.5*
Unmarried females	49.8	10.7	82.4*	17.6*
Educational level:				
No school certificate	41.4	13.8	42.4	57.6
Basic education	20.3	26.4	58.9	41.1
Secondary education	32	33.9	65.9	34.1
Post secondary and university	6.3	29.6	57.4	42.6
Occupation, sector of work and economic activity:				
Occupation:				
Legal, managerial, professional, technicians and clerks	5.8	11.6	60.8	39.2
Services & sales workers	11.7	24	62.8*	37.2*
Skill agriculture &fish workers	65.1	21.5	50.3*	49.7*
Craft & related trade Workers	12	21.4	56.2*	43.8*
Plant & machine operating & assembly	2.6	18	66.7*	33.3*
Elementary occupations	2.8	13.2	76.2*	23.8*
Economic activity:				
Agriculture	65.4	21.6***	50.2*	49.8*
Manufacturing	5.6	18***	45.1*	54.9*
Construction	4	29.8***	74*	26*
Trade	18.8	17.4***	61.8*	38.2*
Services	6.1	16.7***	69.5*	30.5*

Notes: * The difference is not statistically significant, ** Difference significant at 0.05, ***Difference significant at 0.1, Otherwise: Difference significant at 0.01.

The majority of workers who escape vulnerable employment are between 20 and 49. The very young (<20) and the elderly have lower escaping rates. In contrast to the relationship between age and vulnerable employment, the relationship between age and escaping vulnerable employment is nearly inverse U-shaped (Figure 6).

Figure 6. Escaping vulnerable employment by age



This is the result of differences in motives, ability, and willingness to take risks. Workers aged between 20 and 49 years old have the strongest survival motive; they are in the prime working age, motivated to enhance their position in the labor market, have higher inspirations and are more likely to be married and responsible of families. While only 40.7 percent of individuals surveyed are married, the percentage increases to 68.6 percent among individuals aged between 20 and 49. In addition, the percentage of heads is 30.5 percent among them compared with 22.5 percent among all individuals. They are also better educated; elderly workers are less educated as the educational level in Egypt increases over time while it is more likely that very young workers have dropped out of schools; 58.2 percent of individuals aged between 20 and 49 have secondary education or above, compared with 19.1 percent and 21.1 percent of the very young and older individuals. They also have experience compared with the young, the percentage of individuals aged 20-49 in 2006 that have ever worked before is 20 times higher than the percentage among very young individuals. Workers between 20 and 49 are not only more motivated but also more competitive. Workers less than 40 years are more likely to be wage workers, while those aged 40+ are more likely to escape vulnerable employment through their own small enterprises.

There is no significant difference, neither in escape rate nor in labor market pathways by marital status. However, unmarried females have a significantly higher escape rate; 3.5 times higher than married females. Married males are more likely to establish their own business depending on their families' support while unmarried males are more likely to get a wage work.

The majority of escapers are low educated as they constitute the majority of vulnerable workers. However, the higher the education level, the higher the escape rate is. The less

educated find it more difficult to get other work opportunities. Comparing skills requirements in vulnerable and non- vulnerable employment reveals that skills are significantly less required in vulnerable employment and are more likely to be acquired outside the educational system as table 8 shows. Education also increases the opportunity cost of being a vulnerable worker. Earnings among non vulnerable workers increase significantly with the education level; earnings of those with post secondary education are two times higher than earnings of those who have no school certificate (LE 208.52 vis-à-vis LE106.64 per week).

Table 8. Vulnerable employment and skills requirements

	Requiring any skills %	Acquiring skills through %				
		Regular schooling	Vocational training	Contractor	Craftsman	other
Non-vulnerable	71.1	41	5.4	4.1	22	27.4
Vulnerable	60.8	3.5	1.4	0.8	13.9	80.4

The difference in the escape rate between those with secondary education and those with post secondary education and above is not significant contrary to the difference between workers with no school certificate and those who got basic education. Those with secondary education and above are more likely to be wage workers after escaping vulnerable employment. Getting at least secondary education is necessary to escape vulnerable employment. Education policies should focus on raising the secondary school enrollment ratio, especially among the most vulnerable groups; females and those living in rural Upper Egypt. Universal secondary education should be a main goal. According to Egypt Human Development Report 2010, only 25.5 percent of females in Upper Egypt (15+) have secondary or higher education.

Services workers have the highest escape rate, while those in elementary occupations who usually lack skills have the lowest rate. Although those working in the agriculture sector constitute the majority of vulnerable workers, they have an escape rate slightly higher than the average rate while those in the construction sector have the highest rate. This reflects differences in personal characteristics of workers; 73.3 percent, 18.2 percent, and 32.6 percent of services workers vis-à-vis 59.9 percent, 60.2 percent, and 62.6 percent of agriculture workers are aged between 20 and 49 years old, females and have no school certificate. Policies should target vulnerable groups in each sector, and depend on follow up surveys to identify these. In the agriculture sector, lower educated females should be the main target of education policies and rural small credit programs. One possible way this may be achieved is

through community schools that target adolescent girls who dropped out schools. Graduated girls might be offered small credits to help them establish small businesses.

IV. DETERMINANTS OF VULNERABLE EMPLOYMENT

One of the main objectives of the study is to examine determinants of vulnerable employment in Egypt. To do so, binary logistic regression is used. The dependent variable is being a vulnerable worker in 2006. Determinants include residence, household characteristics, economic activity and personal characteristics.

Three models are estimated as summarized in Table 9. The first estimates the effect of different determinants, including gender, on vulnerable employment. The second examines the effects of these determinants, excluding gender, on male's vulnerable employment while the third examines these determinants among females in 2006. To compare with 1998, another model is estimated for all workers in 1998.

Table 9. Determinants of Vulnerable Employment—Logistic Regression Results

Probability Model: Vulnerable worker = 1

Variables	Model 1 (Males and females)			Model 1 (1998)			Model 2 (Males)			Model 3 (Females)		
	B	Wald	Odds Ratio	B	Wald	Odds Ratio	B	Wald	Odds Ratio	B	Wald	Odds Ratio
Region of residence (ref: Rural Upper)												
Greater Cairo	-.703*	38.63	.495	-.492*	10.140	.612	-.452*	12.668	.636	-1.29*	23.445	.274
Alex, Suez Canal	-.643*	27.99	.526	-.42**	6.471	.655	-.359*	4.123	.698	-1.59*	28.917	.203
Urban Lower	-.020	.045	.980	.172	1.724	1.188	.145	1.747	1.156	-.58**	5.990	.562
Urban Upper	-.049	.320	.952	0.069	.322	1.072	.033	.112	1.034	-.58**	6.391	.562
Rural Lower	-.168**	6.508	.845	0.052	0.226	1.053	-.15***	3.453	.861	-.45**	6.286	.637
Wealth (ref: the highest quintile 20%)												
First two quintiles	-.135	2.137	.873	-.347*	7.117	.707	-.170	2.505	.844	-.270	1.390	.763
Second two quintiles	.16***	3.549	1.174	.122	1.227	1.130	.085	.756	1.089	.080	.145	1.083
Sex (ref: female)												
Male	-1.868*	873.3	.154	-1.97*	445.534	.140						
Head (ref: Heads)												
Non-heads	.924*	173.7	2.519	.636*	37.236	1.889	.750*	56.471	2.116	.691	10.285	1.996
Age (Ref: 60+)												
≤ 29	.502*	18.39	1.651	-.214	1.672	.808	.694*	19.686	2.003	-.91**	6.545	.404
30-59	.205***	3.808	1.228	-.33**	6.084	.717	.400*	7.851	1.492	-1.17*	12.975	.310
Marital status (ref: married)												
Unmarried	-.103	2.679	.902	.041	.189	1.042	.188***	3.469	1.207	-1.16*	55.956	.315
Education (ref: post secondary and university)												
No school certificate	1.348*	168.1	3.851	1.699*	127.913	5.468	.721*	38.651	2.056	1.967*	60.984	7.151

Variables	Model 1 (Males and females)			Model 1 (1998)			Model 2 (Males)			Model 3 (Females)		
	B	Wald	Odds Ratio	B	Wald	Odds Ratio	B	Wald	Odds Ratio	B	Wald	Odds Ratio
Basic												
Secondary	1.355*	155.4	3.878	1.539*	97.895	4.661	.839*	51.524	2.315	1.958*	50.037	7.084
	.755*	61.44	2.128	.704*	24.172	2.021	.536*	24.744	1.709	.636*	8.107	1.889
Activity (ref: services)												
Agriculture	3.057*	1213	21.263	3.338*	702.180	28.151	1.616*	303.592	5.035	6.056*	662.542	426.71
Mining	.026	.001	1.026	.571	.299	1.771	-1.065	1.104	.345			
Manufacturing	1.102*	111.8	3.009	1.010*	41.756	2.745	-.125	1.057	.883	3.329*	179.039	27.914
Construction	.898*	39.85	2.454	.642*	7.093	1.900	-.182	1.752	.834	-2.895	.071	.055
Trade	2.684*	841.9	14.637	2.894*	493.221	18.067	1.692*	355.265	5.430	3.869*	246.930	47.898
Constant	-3092*	364.6	0.045	-2.83*	158.103	0.059	-3.696*	369.999	.025	-2.94*	38.570	.053
Model Chi-square (df)	8356.925(20)			5014.793(20)			1566.051(19)			4559.903(18)		
Pr>Chi-square	.000			.000			.000			.000		
% Correct Predictions	87.1			87.4			83.7			66.7		
Nagelkerke R^2	.606			.654			.251			.827		
Observations	14374			7922			9335			5039		

Notes: * The coefficient is statistically significant at 0.01, ** The coefficient is statistically significant at 0.05, *** The coefficient is statistically significant at 0.1, Otherwise: Not statistically significant at 0.1.

Other six models are estimated in 2006. Table 10 summarizes three models estimated to examine determinants of being self employed; among males and females. The other three models examine determinants of being unpaid family workers; the other type of vulnerable employment, as summarized in Table 11.

Table 10. Determinants of Vulnerable Employment- Self Employment – Logistic Regression Results Probability Model: Self-employed = 1

Variables	Model 4 (males and females)			Model 5 (Males)			Model 6 (Females)		
	B	Wald	Odds Ratio	B	Wald	Odds Ratio	B	Wald	Odds Ratio
Region of residence (ref: Rural Upper)									
Greater Cairo									
Alex, Suez Canal	-.404*	10.008	.668	-.061	.170	.940	-.936*	9.550	.392
Urban Lower	-.207	2.350	.813	.181	1.392	1.198	-1.02*	7.318	.361
Urban Upper	-.035	.095	.965	.455*	11.54	1.576	-1.15*	16.009	.318
Rural Lower	-.070	.405	.932	.147	1.187	1.159	-.173	.692	.841
	-.300*	10.162	.741	-.091	.583	1.095	-1.07*	38.009	.344
Wealth quintiles (ref: the highest quintile)									
First two quintiles	.412*	12.960	1.510	.324**	6.345	1.382	.401	2.036	1.493
Second two quintiles	.358*	11.899	1.430	.299	6.968	1.348	.414	2.300	1.512
Sex (ref: female)									
Male	-.351*	13.758	.704						
Head (ref: Heads)									
Non-heads	-.498*	28.931	.608	-.31**	4.773	.737	-1.30*	40.096	.271
Age (Ref: 60+)									
≤ 29	-.521*	13.130	.594	-.262	2.181	.769	-1.02*	14.731	.359
30-59	.128	1.064	.880	-.060	.152	.941	-.248	1.272	.780
Marital status (ref: married)									
Unmarried									
	-.271*	9.192	.763	-.400*	7.136	.670	-.965*	26.061	.381
Education (ref: post secondary and university)									
No school certificate									
Basic education	1.101*	76.089	3.006	.865*	40.73	2.367	1.693*	17.131	5.435
Secondary education	.787*	34.433	2.196	.671*	22.57	1.957	1.255*	8.184	3.508
	.515*	17.751	1.673	.477*	13.59	1.611	.922**	5.228	2.514
Activity (ref: services)									
Agriculture	-.521*	21.683	.594	-.441*	10.32	.643	.247	.596	1.280

Variables	Model 4 (males and females)			Model 5 (Males)			Model 6 (Females)		
	B	Wald	Odds Ratio	B	Wald	Odds Ratio	B	Wald	Odds Ratio
Mining	-.505	.243	.604	-.727	.507	.483			
Manufacturing	.290**	5.799	1.337	-.075	.303	.928	1.833*	27.463	6.252
Construction	.329**	4.986	1.390	.181	1.505	1.198	-1.787	.026	.167
Trade	2.066*	517.144	7.890	1.708*	307.8	5.517	3.716*	138.95	41.103
Constant	-2.9*	195.498	0.055	-3.31*	222.1	.037	-2.97*	33.319	.051
Model Chi-square (df)	1335.906(20)			712.933 (19)			781.814(18)		
Pr>Chi-square	.000			.000			.000		
% Correct Predictions	91.7			90.7			94.4		
Nagelkerke R^2	.201			.159			.364		
Observations	14374			9335			5039		

Notes: * The coefficient is statistically significant at 0.01, ** The coefficient is statistically significant at 0.05, *** The coefficient is statistically significant at 0.1, Otherwise: Not statistically significant at 0.1.

The results show that the most important three determinants of vulnerable employment are working in the agriculture and trade sectors, gender, and education respectively. For males, working in the agriculture and trade sectors and education are the most important determinants while among females the most important determinants are working in the agriculture, trade and the manufacturing sectors, education, region and marital status. Empirical findings (Table 9) suggest that the most important determinants of vulnerable employment were the same in 1998. This implies that vulnerable employment in Egypt is the result of long term causes. This asserts the need for a comprehensive long-term strategy to address socioeconomic determinants of vulnerable employment.

Table 11. Determinants of Vulnerable Employment- Unpaid Family Work – Logistic Regression Results: Probability Model: Unpaid family worker = 1

Variables	Model 7 (males + females):			Model 8 (Males)			Model 9 (Females)		
	B	Wald	Odds Ratio	B	Wald	Odds Ratio	B	Wald	Odds Ratio
Region of residence (ref: Rural Upper)									
Greater Cairo	-1.08*	32.178	.341	-1.071*	16.518	.343	-.559**	4.147	.572
Alex, Suez Canal	-1.58*	49.237	.205	-2.044*	26.821	.130	-.965*	10.267	.381
Urban Lower	-.071	.253	.932	-.36***	2.940	.696	.381***	3.232	1.464
Urban Upper	-.049	.162	.953	.002	.000	1.002	-.224	1.573	.799
Rural Lower	.043	.244	1.044	-.182	2.101	.833	.441*	10.614	1.555
Wealth quintiles (ref: the highest quintile)									
First two quintiles	-.96*	42.270	.381	-1.208*	36.146	.299	-.501**	4.831	.606
Second two quintiles	-.510*	12.992	.600	-.652*	12.073	.521	-.258	1.386	.773
Sex (ref: female)									
Male	-2.46*	890.1	.085						
Head (ref: Heads)									
Non-heads	2.601*	589.85	13.48	3.489*	208.572	32.748	1.383*	59.979	3.986
Age (Ref: 60+)									
≤ 29	.611*	12.630	1.843	2.256*	13.079	9.542	.171	.490	1.186
30-59	-.063	.162	.939	1.224**	3.897	3.400	-.436**	3.926	.647
Marital status (ref: married)									

Variables	Model 7 (males + females):			Model 8 (Males)			Model 9 (Females)		
	B	Wald	Odds Ratio	B	Wald	Odds Ratio	B	Wald	Odds Ratio
Unmarried	.613*	53.108	1.846	.468*	9.277	1.597	-.378*	8.096	.686
Education (ref: post secondary and university)									
No school certificate									
Basic education	1.231*	54.814	3.425	.649*	8.690	1.913	1.237*	21.542	3.446
Secondary education	1.341*	59.786	3.821	.882*	16.212	2.415	1.585*	29.524	4.877
	.807*	26.379	2.241	.590*	8.476	1.804	.561**	4.851	1.752
Activity (ref: services)									
Agriculture	5.330*	952.44	206.4	3.645*	329.964	38.278	6.329*	440.413	560.38
Mining	-.943	.030	.389	-3.416	.144	.033			
Manufacturing	2.344*	157.42	10.42	.360	1.999	1.434	3.621*	133.568	37.382
Construction	1.137*	11.905	3.117	-.466	1.941	.628	-2.402	.045	.091
Trade	2.443*	179.04	11.51	1.508*	53.541	4.517	2.436*	55.374	11.426
Constant	-6.02*	525.77	.002	-8.532*	158.635	.000	-5.641*	166.198	.004
Model Chi-square (df)	11254.748 (20)			3067.333 (19)			4354.570(18)		
Pr>Chi-square	.000			.000			.000		
% Correct Predictions	92.8			94.4			91.5		
Nagelkerke R^2	.790			.617			.782		
Observations	14374			9335			5039		

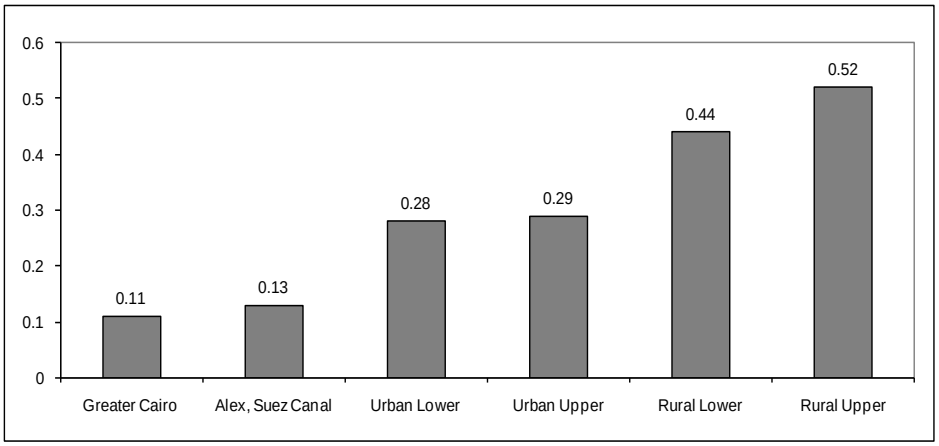
Notes: *The coefficient is statistically significant at 0.01, ** The coefficient is statistically significant at 0.05, *** The coefficient is statistically significant at 0.1, Otherwise: Not statistically significant at 0.1.

Concerning region of residence, living in rural areas, especially in Upper Egypt governorates increases significantly the incidence of being a vulnerable worker. The average predicted probability of falling in vulnerable employment for workers in rural Upper Egypt is almost five times higher than among those living in Greater Cairo. In rural Upper Egypt, there are limited work opportunities outside the agriculture sector. Using ELMPS06, it is found that 60.7% of workers in Upper Egypt are in the agriculture sector compared with only 39.5% of all workers. Considering that 53% of land ownership in Egypt is very small; less than 5 feddans[7], it is not surprising to find that most workers are either self employed or unpaid family workers.

The effect of residence is most pronounced among females. Due to the conservative nature of the society and prevailing traditions in rural areas especially rural Upper Egypt, females have low spatial flexibility in job search.

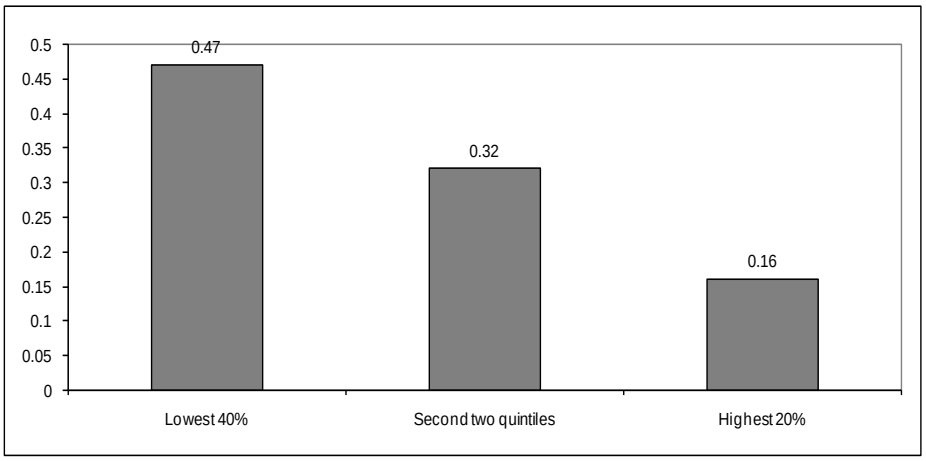
Figure 7. Average Predicted Probability of Being in Vulnerable Employment by Region

[7] Calculated using data from CAPMAS 2008, table 5/16.



Wealth has a significant negative effect on vulnerable employment. The average predicted probability of falling in vulnerable employment for workers in the highest quintile is almost one third of the probability for those in the lowest 40%.

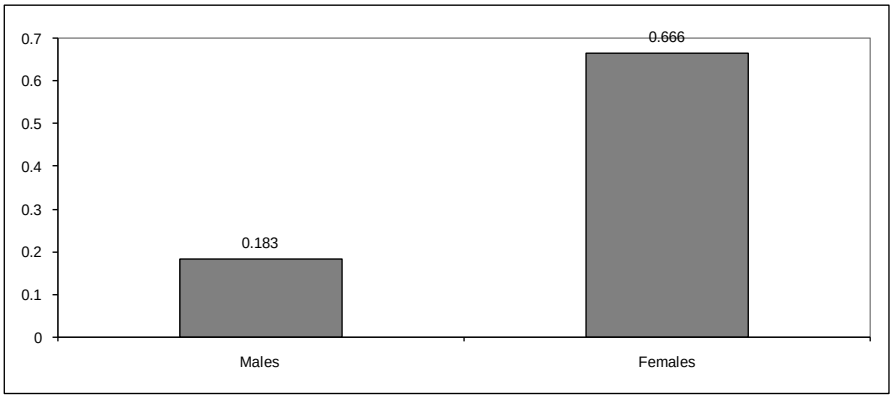
Figure 8. Average Predicted Probability of Being in Vulnerable Employment by Wealth



In contrast to self employment, wealth has a significant negative effect on the incidence of being an unpaid family worker. The poor cannot survive without working; unemployment is unaffordable in the absence of savings and social security provisions. They also cannot work without being paid. They may arrange any small business to earn a living.

The results assert the fact that vulnerable employment is female dominated. The odds of being a vulnerable worker, self employed and unpaid family worker for males are ceteris paribus 0.15, 0.70 and 0.08 times as likely as for females. The gender effect is more pronounced on unpaid family work; females have traditional responsibilities towards their families, while males have to earn a living to support their families. As shown in figure 9, the average predicted probability of being a vulnerable worker for a female is 3.6 times higher than for a male.

Figure 9. Average Predicted Probability of Being in Vulnerable Employment by Gender



Non heads are more than twice as likely as heads to fall in vulnerable employment. However, being a head does not have a significant effect on female's vulnerable employment. Considering the type of vulnerable employment, heads are more likely to be self employed; non heads are more than 13 times likely to be unpaid family workers. The same results apply to both males and females. Household heads have a stronger survival motive; they can neither be unemployed nor unpaid family workers.

The probability of being a vulnerable worker is the highest among youth. The odds of being a vulnerable worker for the youth are ceteris paribus 18.4 times as likely as for the elderly (60 years old and above). However, as expected the youth are less likely to be self employed. They are more likely to be unpaid family workers.

These results are consistent with the literature. The literature shows that the burden of vulnerable employment falls heavily on youth. Unemployment is the highest among the youth. The new entrants to the labor market lack experience and skills and thus are less competitive; they are more likely to accept to be employed under more vulnerable conditions than other groups. In addition, they usually lack capital and experience to start their own businesses.

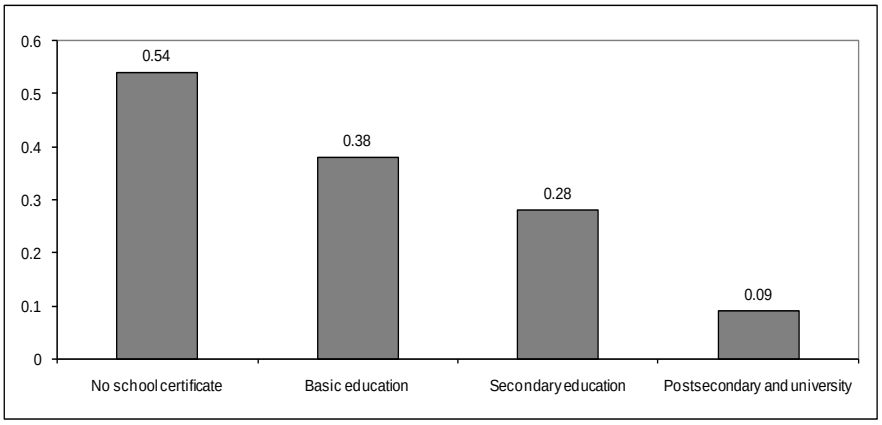
Middle aged workers are expected to have more experience. They also may have some savings they can use to start their own businesses. They have families to support and thus are not willing to work without being paid. The elderly are more likely to be under less pressure. They are more likely to receive pensions and have fewer responsibilities. They are also relatively more adverse to the more demanding work entailed by the types of vulnerable employment.

Females between 30 and 59 are only 0.65 likely to be unpaid workers compared to the elderly, while there is no significant difference in the probability of being unpaid family worker between very young females and elderly females. They both tend to be less educated and less able to find work and thus unpaid family work may be the last resort for them. Using ELMPS06, it is found that 14.1% of females aged 30-59 have secondary education or above, compared to only 9.9% and 3.9% of young females (<29) and elderly females (60+).

The marital status does not have a significant effect on falling in vulnerable employment among all workers. However, comparing its effect on males and females shows contradictory effects. While unmarried males are 1.21 times likely to fall in vulnerable employment compared with their married counterparts, unmarried females are only 0.32 likely to fall in vulnerable employment compared with married ones. Married females are usually more obliged to work for the family to support their husbands. Unmarried females are only 0.69 times likely to be unpaid family workers compared with married females. Both unmarried males and unmarried females are 0.7 and 0.4 less likely to be self employed than their married counterparts. It is likely that married persons have a stronger survival motive. In addition, their families are expected to support them in their work.

Lower education levels have a significant positive effect on the probability of vulnerable employment of all types among both males and females. The average predicted probability of falling in vulnerable employment of workers with no school certificate is 6 times higher than the probability of those with secondary or university education. It is very difficult for the first group with their limited skills to compete in the labor market and find decent work. To them, vulnerable employment may be the only resort. The effect of education is obviously more pronounced among females than among males. While uneducated males are only 2.1 times likely to fall in vulnerable employment compared with those with post secondary education and above, uneducated females are 7.2 times likely to fall in vulnerable employment compared with those with post secondary education and above. Uneducated males are 2.4 and 1.9 times more likely than those with post secondary education and above to be self employed or unpaid family workers respectively, while uneducated females are 5.4 and 3.4 times more likely than those with post secondary education and above to be self employed or unpaid family workers respectively. Raising educational levels is far more important for females than males to escape vulnerable employment.

Figure 10. Average Predicted Probability of Being in Vulnerable Employment by Educational Level



Working in agriculture is found to be a major determinant of being a vulnerable worker in Egypt. The odds of being a vulnerable worker and unpaid family worker for workers in the agriculture sector are ceteris paribus 21.3, and 206.4 times as likely as for workers in the service sector. The effect is more pronounced among females; according to odds ratio, females in the agriculture sector are 426.7 times more likely than females in the service sector to be in vulnerable employment, and 560.4 times more likely to be unpaid family workers. The second sector, where workers are more likely to fall in vulnerable employment is the trade sector. The odds of being a vulnerable worker for workers in this sector are ceteris paribus 14.6 times as likely as for workers in the service sector. Working in both sectors is found to have a significant positive effect on being unpaid family workers. However, workers in the agriculture sector are less likely to be self-employed contrary to workers in the trade sector. This applies to a lesser extent to working in the manufacturing sector. According to official statistics (Egypt State Information Service 2006), this sector is characterized by clear concentration on the micro facilities that represent 70% of the small industrial total facilities. Small facilities constitute 19% of the total facilities while large facilities represent only 6% of the total facilities. The agriculture sector in Egypt is dominated by very small land ownership and poverty is significantly higher in rural areas; according to Egypt Human Development Report 2010, the poverty rate in rural areas is 2.6 times higher than in urban areas. This may explain why vulnerable employment is widespread in this sector. On the other side, micro enterprises are widespread in the retail sector.

V. DETERMINANTS OF ESCAPING VULNERABLE EMPLOYMENT

Examining determinants of escaping vulnerable employment in Egypt is as important as examining determinants of vulnerable employment. To do so, binary logistic regression is used. The mode estimated is summarized in table 12.

Table 12. Determinants of Escaping Vulnerable Employment- Logistic Regression Results

Probability Model: Escaped vulnerable employment = 1

Variables	Model 10		
	B	Wald	Odds Ratio
Region of residence (ref: Rural Upper)			
Greater Cairo	-1.072*	12.996	.342
Alex, Suez Canal	-1.328*	16.431	.265
Urban Lower	-.1.428*	31.648	.240
Urban Upper	-.428**	5.016	.652
Rural Lower	-.456*	7.373	.634
Wealth quintiles (ref: the highest quintile 20%)			
First two quintiles (40%)	-.329	1.952	.719
Second two quintiles	-.488**	4.695	.614
Sex (ref: female)			
Male	1.714*	70.617	5.552
Head (ref: Heads)			
Non-heads	-.876*	35.529	.416
Age (Ref: 50+)			
≤ 19	.718***	3.475	2.050
20-49	1.001*	21.950	2.721
Years of schooling	.023***	3.574	1.023
Activity (ref: services)			
Agriculture	-.763*	16.068	.466
Mining	6.833	.094	928.129
Manufacturing	-.604**	5.535	.547
Construction	.294	1.268	1.341
Trade	-1.260*	41.665	.284
Constant	-1.687*	21.2	.185
Model Chi-square (df)		405.212 (17)	
Pr>Chi-square		.000	
% Correct Predictions		81	
Nagelkerke R^2		.285	
Observations		2007	

Notes: * The coefficient is statistically significant at 0.01, ** The coefficient is statistically significant at 0.05, *** The coefficient is statistically significant at 0.1, Otherwise: Not statistically significant at 0.1.

The dependent variable is being a vulnerable worker in 1998 and a non-vulnerable worker in 2006. Determinants include residence, household characteristics, economic activity and personal characteristics.

The most important determinant of probability of escaping vulnerable employment is obviously gender of the worker followed by the age of the worker. Other important determinants that have a significant positive effect on the probability of escaping vulnerable employment are wealth, education and being a head of the household while working in the agriculture sector has a significant negative effect on the probability of escaping vulnerable employment.

With respect to gender, which is the most important variable determining the probability of escaping vulnerable employment. The odds of escaping vulnerable employment for a male vulnerable worker are ceteris paribus 5.6 times more likely as for a female vulnerable worker. Males are far more likely to escape vulnerable employment while females are more likely to stay in vulnerable employment. On one hand, males are more survival motivated; they traditionally have to support their families. They do not have an option that is largely available to women, that is to be inactive or to remain unpaid workers. On the other hand, they are more able to get jobs and escape vulnerable employment as they are usually higher educated than females, have more work contacts and have more spatial flexibility in job search.

The important significant effect of gender on the probability of escaping vulnerable employment may be explained by two main gender differences; differences in motives and in ability. Males are more motivated to escape vulnerable employment as males are expected traditionally to support their families; the majority of households surveyed are male headed (83% in 2006). Males are also more able to find a paid job, as they are better educated; 34% and 64.5% of males have no school certificate and secondary education or above in 2006 respectively, compared with 43.5% and 35.5% of females. In addition, males usually have more work contacts in their social networks, have more spatial flexibility in job search[8] and face less discrimination in the labor market. It is worth mentioning that the unemployment rate among females was almost four times higher than the unemployment rate among males in 2006[9].

Females should be targeted by two types of policy measures. There is an urgent need to invest more in girls' schools in rural and remote areas and to make these schools friendly for girls by employing more female teachers. Meanwhile, community schools can help adolescent girls who dropped out of schools. These schools should be supported by small credit programs targeting graduating girls.

Examining the effect of age on the probability of escaping vulnerable employment supports the inverse U shaped relation in figure 6. Being between 20 and 49 years old has a highly significant positive effect (significant at 0.01) on the incidence of escaping vulnerable

[8] McDonald and Elder 2006, 542; and Eriksson and Lagerström 2008, 4.

[9] Calculated using data from: Assaad 2007, 42.

employment. The odds of escaping vulnerable employment for workers aged between 20 and 49 years are ceteris paribus 2.72 times as likely as for older workers (50+). Young workers are also more likely than older workers (50+) to escape vulnerable employment but less likely than those aged between 20 and 49. The odds of escaping vulnerable employment for workers aged less than 20 years are ceteris paribus 2 times as likely as for older workers (50+), the effect of very young aged is significantly positive only at 10%.

From a policy perspective, this implies that policies that aim to alleviate vulnerable employment should focus on workers aged between 20 and 49 years old. They should be the target of policies aiming at providing job opportunities and should be the main beneficiaries of small credit programs such as SFD programs.

With respect to wealth as a determinant of escaping vulnerable employment, its effect is positive but it is only statistically significant at 0.05. Workers belonging to the middle two quintiles are only 0.614 times as likely to escape vulnerable employment as workers in the highest wealth quintile. Relatively wealthier families are more able to support their members to escape vulnerable employment, through financing their work or through helping them to find a paid job through their social networks.

The effect of education on the probability of escaping vulnerable employment is as expected positive. Increasing years of schooling by one year increases the probability of escaping vulnerable employment.

Position in the household is found to have a highly significant impact (significant at 0.01) on the probability of escaping vulnerable employment. As the odds ratio shows, non heads are only 0.416 times as likely to escape vulnerable employment as heads. Household heads are more survival motivated to escape vulnerable employment. They need to support their families while vulnerable employment results in earnings that are inadequate to satisfy basic needs as shown in comparing earnings of vulnerable workers with the poverty line (figure 4).

Region of residence has also a significant effect on escaping vulnerable employment. Workers in rural areas, especially in Upper Egypt governorates, where vulnerable workers concentrate, as shown in the regional distribution of vulnerable workers in table 1[10], are more likely to escape vulnerable employment. For instance, workers in Greater Cairo are only

[10] 81.7% of vulnerable workers live in rural areas; 42.9% in rural Lower Egypt and 38.8% in rural Upper Egypt.

0.342 times as likely to escape vulnerable employment as workers in rural Upper Egypt. The second group of workers has the strongest motive to escape vulnerable employment and enhance their living conditions considering that poverty pressures are highest in these areas. According to Egypt Human Development Report 2010, the poverty rate is the highest in Upper Egypt governorates; 1.7 times higher than the poverty rate in Egypt, it is in rural Upper Egypt more than two times higher than the poverty rate in Egypt. They are more motivated to enhance their living conditions by different methods including working in other areas. Among those who were vulnerable workers in 1998 and escaped vulnerable employment in 2006, 20.8% changed their place of work from rural areas in 1998 to urban areas in 2006 compared with only 1% of those who are still in vulnerable employment and 5.4% among all workers.

Workers in the agriculture sector are only 0.466 times as likely to escape vulnerable employment as workers in the service sector. Workers in the services sector have more spatial flexibility.

VI. Challenges of Vulnerability and Lessons from International Experience

Vulnerable employment poses a challenge for policy makers in Egypt. A review of international experience reveals a variety of policy options to address this problem. These policies aim to improve working conditions for vulnerable workers and to pull them out of vulnerable employment.

Empirical findings in Egypt suggest that females; heads of households, workers aged 40+, and workers with no school certificate are less likely to get a paid job. In this regard, self-employment assistance is one of the main active labor market policies used; Kunt et al. (2007, 26), Huynh et al. (2010, 24, 26) and Urdinola et al. (2010, 14) suggest that it is an effective tool to pull the vulnerable out of vulnerability. These programs should be based on an integrated approach, as barriers to developing micro enterprises are not only financial. One example of these comprehensive programs is the *"Microemprendimientos Productivos"* in Argentina[11]. Some programs provide only technical assistance and non-financial services as the GATE (Growing America through Entrepreneurship) program[12].

However, there is another group of vulnerable workers who are more likely to search for a paid job; including the youth. To increase labor demand for them, subsidies represent an

[11] For more details, see Almeida and Galasso 2007.

[12] For more details, see Michaelides and Benus 2010.

important active labor market policy that may be used to encourage employers to hire new workers; through reducing or exempting temporarily from social security contributions (e.g. Bulgaria). It is better if these subsidies are targeted to encourage employers to employ vulnerable workers (e.g. Turkey)[13]. In addition, public works involve direct job creation. One example of these programs is the National Rural Employment Guarantee Act in India[14]. According to ILO (2009c, 33), investment in rural infrastructure, especially roads; provide long-term advantages to a large percentage of vulnerable workers.

One of the major policy challenges is addressing decent work deficits among vulnerable workers. Up till 2010, the Egyptian pension system was governed by six main laws. The most two important laws regarding vulnerable workers are Law 108/1976 and Law 112/1980. In spite of the fact that these two schemes are mandatory, only around one tenth of vulnerable workers are covered by social insurance. Another important defect suggested by Helmy (2006, 2) is that this pension system has become unable to achieve long-term fiscal sustainability. According to official statistics of the Ministry of Finance (2007, 98), 71.1% of the beneficiaries of Law 108/1976 get less than 150 LE monthly. A new social insurance law 135/2010 has been approved but the new system is not expected to result in an increase in the percentage of vulnerable workers covered by social insurance. On one hand, according to article 47 of the law the self employed, casual and informal workers are excluded from the benefits of the unemployment insurance. On the other hand, the contribution rate for the self employed was increased to 20%, but it is still calculated on the basis of the contributable wage that the individual choose. A review of different pension schemes shows different options to address this problem. One option is to have a separate flexible pension scheme for vulnerable groups. The study of Choi 2009 on the pension schemes of the self employed in OECD countries; shows that the self employed are covered by flexible systems in many countries, as in France, Greece and Denmark. However, it is worth mentioning that subsidies given to the self employed under these systems are gradually removed. Another option is matching defined contributions schemes; transfers made by state are conditional on workers' voluntary contributions. The study of Costa et al. 2011 shows examples of these schemes in Latin American countries.

[13] For more information about using these subsidies, see: Bell and Blanchflower 2009, 3-6, 23-24; WB and Turkey's State Planning Organization (SPO) 2009, 3; and Stafford and Duffy 2009, 61.

[14] For more information about use of public work programs, see: Sziraczki et al. 2009, 14-15, 21; and Urdinola et al. 2010, 2-3, 9, 13 .

There are also some private micro insurance systems that have proved very effective. One of the most inspiring experiences is the Grameen Pension Scheme in Bangladesh. According to (Roth et al. 2006, 102-103), this program is a personal pension savings account; it is designed for the purposes of old-age pensions.

Micro health insurance programs might be effective in addressing health needs of vulnerable workers. One source of inspiration is the Vimo Self-Employed Women's Association program in India[15].

In the long run, alleviating vulnerable employment requires improving workers' skills through education. Women's lower educational levels are an important challenge and a major determinant of female vulnerable employment in Egypt. International evidence indicates that investments in VET help women to get formal jobs[16]. Measures used to remove barriers to girls' education include providing scholarships, conditional cash transfers and eliminating user fees; tracking completion and attendance rates[17]. In this respect, two of the inspiring experiences are the Bangladeshi and Indian experiences in promoting female secondary education[18]. In Bangladesh, in order to promote female secondary education in Bangladesh, several interventions have been found to be very successful. The most important interventions are the Female Stipend program, promotion of female teachers and establishment of new schools. Government launched the Female Stipend program at secondary level. Under this program female student who score 45% marks in the annual examination and maintains 75% attendance in classes is eligible to receive stipend. The stipend covers cost of school fees, textbook, stationary, uniforms, shoes and transport also. In addition, the role of female teachers has been found to be very important in increasing girls' enrollment in the schools. Satellite schools and community schools were established to bring the school nearer to the door steps to the children, who cannot travel to the main school. In India, the government of India established the National Open School (NOS) in order to extend secondary education to students without access to the conventional system. The primary medium of learning in NOS is the self-instructional guide. The School has been particularly successful in reaching disadvantaged groups including girls.

[15] For more details about the program, see Radermacher 2006, 71-73.

[16] WB and Turkey's State Planning Organization (SPO) 2009, 3.

[17] Greeley 2010, 11.

[18] For more details about these two experiences: Nadong-Jatta and Kuroda 2009, 37-45 and Wu et al. 2007, 125-126.

VII. SUMMARY AND POLICY IMPLICATIONS

Vulnerable employment is a major labor market challenge in Egypt; it absorbs more than one third of total workers. The vulnerable employment rate is higher in rural areas; among workers in the lowest quintile, the less educated and among agriculture workers. Vulnerable employment is female dominated. The most important three determinants of vulnerable employment are work sector, gender, and education. The most important determinant of escaping it is gender.

Empirical findings on vulnerable employment in Egypt raise questions about policy interventions needed to reduce vulnerable employment. These interventions are suggested to be based on an integrated approach and to be classified according to the time horizon into short and long term interventions.

Policy interventions in the short run are suggested to have three targets. The first is to encourage the self employed, who are performing well, to grow their businesses further. The Social Fund for Development should expand credit opportunities and non-financial services in regions where vulnerable employment is the highest. Limited public resources may preclude applying these programs to a large scale. However, they might provide only technical assistance. In addition, NGOs and donors should be encouraged to participate in financing these programs. To raise cost effectiveness of these programs, explicit criteria may be adopted for choosing the beneficiaries; these criteria should be determined based on the characteristics of vulnerable workers. These programs should be supported by regulatory reforms necessary to improve the investment climate for small enterprises in Egypt[19].

The second group of short run policy interventions is suggested to focus on providing job opportunities for vulnerable workers who are more likely to search for a paid job. Subsidies may be used to encourage employers to hire new workers. These subsidies include temporary exemption from social security contributions.

Public labor market intermediaries, like offices of the Ministry of Manpower, might be more active in helping vulnerable workers if they increase their presence in rural areas. The presence of training centers of Ministry of Manpower in Upper Egypt is very weak[20] in spite

[19] For more details on main obstacles to micro and small enterprises growth in Egypt and the severity of different obstacles, see Abdel-Mowla (2008).

[20] Only 9 centers in 4 governorates; Menya (3), Suhag (3), Fayoum (1), and Giza (2).

of the fact that educational levels are lower and vulnerable employment is widespread in these areas.

The third suggested short run policy interventions should address main decent work deficits among vulnerable workers. There is a need to provide incentives for vulnerable workers; to avoid social security contribution evasion or under-reporting of income. One possible way this may be achieved is through a separate flexible pension scheme, subsidized for at least five years.

The new proposed health insurance law is expected to address the problem of being not covered by any health insurance system. However, low quality health insurance services in Egypt are still a serious problem especially in remote and rural areas. Micro health insurance programs should be encouraged.

Union membership helps reducing vulnerability; there should be trade unions that represent vulnerable workers' interests. However, in Egypt up till April 2011 this was not possible due to regulatory constraints. The first trade union defending small farmers' interests has been announced in April 2011. The study suggests that civil society organizations should provide technical and legal support to these unions.

Long run policy interventions suggested should focus on alleviating vulnerable employment in Egypt, through addressing its main determinants. The most important two determinants are found to be education and working in the agriculture sector.

Increasing investments in education is essential to achieve comprehensive secondary education, especially for females. The study suggests investing more in expanding female vocational schools in rural areas.

Enhancing quality of labor supply is necessary but not sufficient. In the long run, vulnerable employment is less likely to be reduced unless the unemployment rate is lower. The study of Nassar and Abdel-Mowla (2005), suggests that GDP annual growth rate needed to absorb the growth in the labor force during (2010-2015) ranges from 5.1% and 6.4%.

There is a need to redistribute investments, and invest more in rural areas especially in Upper Egypt governorates. To do so, there is a need to adopt effective measures to attract more investments to Upper Egypt; including a package of investment incentives and more infrastructure investment. For instance, while 89.8% and 37.5% of households in urban and

rural areas have access to sanitation, only 76.5% and 13.5% of households in urban and rural Upper Egypt have access to sanitation (UNDP and INP 2010, 261). In this respect, it is worth mentioning that there is a National Project for Upper Egypt Development which is considered one of the priority projects in the sixth development plan 2007-2012 (Ministry of Economic Development 2007, 184-186). It adopts several measures that are expected to very helpful in attracting investments to Upper Egypt if they are effectively implemented.

Finally, there should be follow-up surveys to track vulnerable employment trends and the living conditions of vulnerable workers, and avail targeted support and training.

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