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## Who Is Covered and Who Underreports: An Empirical Analysis of Access to Social Insurance on the Egyptian Labor Market

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# **Who Is Covered and Who Underreports: An Empirical Analysis of Access to Social Insurance on the Egyptian Labor Market**

By

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## **Abstract**

This paper investigates the dynamics and determinants of having access to social insurance coverage on the Egyptian labor market among wage and non-wage workers. The paper explores two issues: the worker- and enterprise- level determinants of having access to social insurance and the risk of underreporting insurable wage to the social security authority.

Using data from the Egyptian Labor Market Panel Survey for 1998 and 2006, the likelihood of having access to social insurance coverage is estimated by a probit regression model for all workers, for wage and non-wage workers, separately. Given the potential endogeneity between the type of work and social insurance access, instrumental variable technique is applied.

Results show that men, older, married, better educated and white collar highly skilled workers are more likely to be socially insured. Underreporting insurable wages is negatively correlated with education and work experience. High contribution rates requested from both the employer and employee, combined with basing benefits on wages level of the last few years of service, and the weak capacity of law enforcement encourage employers and employees to either not participate in the social insurance system or contribute on amounts that are lower than their actual wage. The paper is one of the few studies that focus on the phenomenon of coverage gap and underreporting salaries to the social security administration

**JEL Classification:** J46, H55, C36

**Keywords:** Social Security, Social Insurance, Informality, Endogeneity, Instrumental variables.

## **Introduction**

Since the 1950's, Egypt has implemented quite an inclusive pension system that consists of several insurance schemes in order to cover almost all different types of workers. Nevertheless, the design of these schemes, along with weak capacity of law enforcement of law, has resulted into three negative byproducts. First, a large coverage gap, which has been expanding rapidly over the last two decades leaving quite an important portion of Egyptian workers with no social security. Second, workers' participation in the system does not often occur at their first entry to the labor market, but usually takes time, if it ever happens at all. Third, workers' basic wage declared to the social security administration for contribution deduction is often underreported.

For instance, while the enrollment of wage-workers and non-wage workers, whether employers or self-employed, in the social security system is compulsory the access to social insurance (SI) among all workers declined from about 52% in 1998 to about 42% in 2006. This decline is often been attributed to the decline of public sector hiring in Egypt and the high cost of participation in the social insurance system (SIS), both of which resulted in an expansion of informal employment. Moreover, non-wage workers are more vulnerable in terms of their access to social insurance coverage since about 57.5% of wage workers were socially insured compared to only 20% of non-wage workers (22% of employers and 18% of self-employed) in 2006. This might be due to the existence of different schemes for wage and non-wage workers. Wage workers may also negotiate, with their employers, higher pay in return for not having SI coverage since about 23% of wage workers had lower basic wage reported to the insurance system than they actually earn.

In light of these findings, this paper aims to investigate who gets access to social insurance coverage using available data from two rich nationwide labor force sample surveys: the 1998 Egypt Labor market Survey (ELMS 98) and the 2006 Egypt Labor Market Panel Survey (ELMPS

06). Specifically, two questions are tackled: Who has social insurance coverage both among wage workers and non-wage workers? and who has his/her basic wage underreported?. The first question investigates the worker- and enterprise- level determinants of having social insurance coverage. The second question analyzes the determinants of the worker's basic wage being underreported to the social insurance authorities.

This paper is organized into seven sections. Following this introduction, Section 2 gives a brief background on the social insurance system in Egypt. Section 3 reviews the existing literature on SI coverage. Section 4 presents the data used in this paper and the dynamics of SI coverage among wage and non-wage workers. The estimation methodology and results are discussed in Sections 5 and 6, respectively. Conclusions and policy considerations are provided in Section 7.

### **Background: The Egyptian Social Insurance System**

The Egyptian social insurance system (SIS) operated, since 1952, as a fully funded scheme has gradually shifted to a Pay-As-You-Go system, with defined benefits.<sup>1</sup> The Egyptian SIS provides old-age, disability, survivors, sickness, maternity, work injury and unemployment benefits to workers and their dependents. The system is regulated by four laws, which are law 79 for 1975 for wage workers whose enrollment into the system is made by their employers, law 108 for 1976 for employers and self-employed who can enroll themselves, law 50 for 1978 for Egyptians working abroad, and law 112 for 1980 for workers not covered by any of the previous schemes.

Law 79 for 1975 draws the general scheme for the system, insuring all government, public sector and private sector wage employees. Contributions are deducted from the basic and the variable monthly wages<sup>2</sup>, as reported to the SI authority.<sup>3</sup> The contribution rate amounts to 41% of basic wage and 25% of variable wage, jointly paid by employees, employers and the government.

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<sup>1</sup> The overview of the Egyptian SIS in this section is based on Sieverding and Selwaness (2012).

<sup>2</sup> The variable wage earnings are any earnings beyond the basic wage, including incentives, bonuses, etc.

<sup>3</sup> The wage reported to the SIS administration can be up to maximum ceiling levels. For more details, see Helmy (2008) and Sieverding and Selwaness (2012)

Employees pay 14% and 10% of their base and variable earnings, respectively; while employers contribute 26% and 15% of base and variable earnings, respectively. The government contributes 1% of the base wage (Helmy 2004). Hence, these benefits are mainly financed by the employers and employees contributions.<sup>4</sup> Pensions, claimed at age 60, are calculated on a defined benefit basis for the basic wage and the variable wage. Old-age base pensions represent a certain amount of the average monthly base earnings during the last 2 years for public sector employees and civil servants. For private sector employees, the earnings upon which the base pension is calculated is the average monthly base wage earnings for the last two years or for the five years. Variable pensions are calculated based on the average monthly variable earning computed for the whole duration of contribution increased by 2%.<sup>5</sup>

As for the non-wage workers, the Law 108/1976 provides them with voluntary old-age, invalidity and death insurance. The contribution rates are set lower than those of the general scheme law, reaching 15% of the covered monthly payroll. Moreover, non-wage workers can choose the level of their insurable monthly earnings within the range of 50 to 900 EGP. Pensions, claimed at age 65, are calculated as a share of the declared monthly income or as a share of its average in case of changes in income brackets. The pension does not exceed 80% of average monthly income and is not below 35 EGP (Maait et al. 2000).

Several shortcomings of the SIS have often been highlighted in the literature. First, the high SI contribution rates, requested from both employees and employers, represent a disincentive for enrollment. Second, the fact that pension amount is based on the average monthly earnings during only the last few years in service can encourage workers to underreport their pensionable wage during their first years of work, and then fully report their wages later near the end of their service

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<sup>4</sup> These contribution rates are considered to be high, relative to rates applied in other MENA countries, since the employers' and employees' contribution rates combined in the Maghreb countries and Jordan range from only 8 to 14% (Helmy 2008).

<sup>5</sup> For more details, see SSA (2011) and Sieverding and Selwaness (2012).

to receive high pensions. In other words, the way the pension is determined gives room for workers and employers to get around the system in order to pay lower contributions (Helmy 2008).

### **Literature Review**

Social insurance coverage in developing countries has been the main focus of several studies, through tackling the question of informality of labor markets, where informality is being defined as the lack of social security (Pages and Madrigal 2008; Bosch et al. 2007; Bosch et Maloney 2010). Studies found that informality and decisions of wage employment versus non-wage employment might be altered by the Social Insurance Systems. Pages and Madrigal (2008) found that low-skilled workers might value the informal wage jobs and the self-employment jobs more than the formal ones since the latter imply paying social security contributions. The non-affordability of deferring present consumption to the future for the low-skilled workers who are in majority poor, shorter life expectancy along with more reliance on family safety nets, or the workers' perception of pensions as being not cost-effective are among the several reasons suggested by the authors. Auerbach et al. (2007) is one of the first empirical studies that tried to examine the determinants of social insurance in order to explain low participation rates of wage workers in the SIS. Authors compared the determinants of SI coverage among wage-workers, whose participation is mandatory, to that of non-wage workers, whose participation is voluntary. They found that the weak capacity of law enforcement and the low willingness of workers to enroll in the system are among the main reasons behind the SI coverage gap. The low SI coverage was not only driven by demand-side factors, but also by employer's choice not to socially insure their workers in an environment of weak law enforcement.

In the Middle East and North African (MENA) countries, with the prevalence of informalization during the late 1990s, the lack of social security coverage became more pronounced. Tansel

(1999) studied the wage differentials between the socially insured and uninsured wage workers in Turkey, accounting for the selection into four employment statuses: not working; covered wage-worker; uncovered wage worker; and other employment. Angel-Urdinola and Tanabe (2012) empirically estimated the determinants of labor informality in the MENA region with informality being defined as lack of SI coverage. In Egypt, empirical studies mainly tackled the phenomenon of informality where it was defined as the lack of both legal contract and social security coverage (Wahba 2009; Wahba and Mokhtar 2002). Nevertheless, to our knowledge, there have been no studies investigating the linkage between the patterns of social insurance coverage and the SI schemes in Egypt, with the selection into wage employment and non-wage employment.

### **Data and Stylized Facts**

The analysis of this paper relies on data from the 1998 Egypt Labor Market Survey (ELMS 98) and the 2006 Egypt Labor Market Sample Survey (ELMPS 06). The ELMS 98 and ELMPS 06 were conducted by the Economic Research Forum (ERF) in cooperation with the Egyptian Central Agency for Public Mobilization and Statistics (CAPMAS). The ELMS 98 was carried out on a nationally-representative sample of 4,816 households. The ELMPS 06 is a follow-up survey to the ELMS 98, representing a longitudinal survey that tracks the labor market and demographic characteristics of the households and individuals interviewed in 1998, and any new households that might have formed as a result of splits from the original households. The ELMPS 06 sample consists of a total of 8,349 households.<sup>6</sup>

This paper focuses only on the working age population (WAP), which is the age group 15-64. The analysis is restricted to the sample of working men and women, based on the market definition of the labor force. We mainly distinguish between wage and non-wage workers, since

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<sup>6</sup> For more details on the data description, see Assaad & Roushdy (2007).

as discussed above the social insurance scheme for each of these types of workers is different and thus might have different implications. The samples of wage workers and non-wage workers are about 4,633 and 1,183 workers in the ELMS 98, respectively, while about 7,456 and 2,632 workers in the ELMPS 06, respectively.

As for the question of under-reporting the Insurable Basic Salary, the paper exploits a unique piece of information collected in the ELMPS 06, which is the wage reported by the employer to the social insurance authorities as distinct from the actual wage the worker is paid.<sup>7</sup> The data shows that in 2006, in the sample of 4,323 wage workers, about 23% had lower basic wage reported to the insurance system than they actually earn. Sample characteristics for the study are provided in table 1.

### ***Dynamics of the Social Insurance in the Egyptian Labor Market***

Access to social insurance among all workers declined from about 52% in 1998 to less than 42% in 2006 (figure 1). As expected, wage workers are more likely to have social insurance compared to all types of non-wage workers, including employer, self-employed and unpaid family workers. In 2006, about 58% of wage workers had social insurance coverage; compared to only 22% of employers, 18% of self-employed and less than 2% of unpaid family workers. The observed decline in access to social insurance in 2006 has been fairly broad, cutting across both wage and non-wage workers. Nevertheless, this decline has been more pronounced among employers (13 percentage points decline) and self-employed (7 percentage points decline) relative to wage workers (5 percentage points decline).

[Figure 1 is about here]

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<sup>7</sup> Information about wage reported by the employer to the social insurance authorities was not collected in the 1998 survey (ELMS 98).



Exploring the evolution of SI coverage in the private versus the public sector for wage workers, figure 2 shows the percentage distribution of first jobs for wage workers by year of entry into the labor market and sector of employment (public, private with social insurance coverage and private with no social insurance coverage), during the period 1960-2006. Following the guaranteed employment scheme of the 1960s, the Egyptian public sector, including both the government and the State-Owned enterprises, was the main creator of formal employment opportunities and typically the preferred sector by most new entrants to the labor market.<sup>8</sup> However, by late 1980s and early 1990's, the public sector first jobs started to decline in favor of the informal private sector. This is the period during which the Economic Reform Structural and Adjustment Program was implemented. This economic reform reduced employment opportunities in the public sector and initiated a privatization program of existing public enterprises (Wahba and Mokhtar 2002). Interestingly, as shown in figure 2, the share of private sector wage workers who had access to social insurance during their first jobs, although growing, has continued to be small during this period. In contrast, socially uninsured wage employment has been making up a substantial and growing share of total first jobs since late 1980s. The share of private sector first jobs with no social insurance coverage reached its peak of 52% of total first employment in 1999. This confirms the failure of the private sector in Egypt in providing formality or social security coverage to all its entrants.

[Figure 2 is about here]

Figure 3 turns to exploring the role of job tenure in acquiring social insurance coverage. This figure compares the share of the private sector wage workers who had no access to social insurance among first entrants, among those with 5 years working experience and among those with 10 years of experience. The figure shows that, as expected, acquiring social insurance

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<sup>8</sup> This guaranteed employment scheme took place since the promulgation of law 14 in 1964, which was later amended by law 85 in 1973.

coverage in the private sector does not often come at first entry; gaining such access takes time. The share of private sector wage workers with no social insurance is highest among labor market first entrants, followed by those having 5 years of experience, and lowest among those with at least 10 years of working experience. However, as discussed above, the percent of those with no social insurance has been increasing over time among all the three working experience categories.

[Figure 3 is about here]

### **Methodology**

In order to explore who gets social insurance, and where the jobs that offer social insurance coverage are found, as well as to differentiate between wage workers and non-wage workers,<sup>9</sup> we use a probit regression to estimate the likelihood of having access to social insurance coverage for all workers and separately for wage and non-wage workers. The dependent variable takes the value 1 if the worker  $i$  has access to social insurance coverage and 0 otherwise.  $X_i$  is a vector of the workers' and household characteristics, while the vector  $E_i$  includes the enterprise-specific characteristics, and  $e_h$  is the error term.

$$\Pr(SI_i = 1 | X_i', E_i) = \Phi(X_i'\beta + E_i\gamma + e_h)$$

Worker-specific characteristics include the following six variables: age and its square, gender, marital status, education, years of experience and its square, and occupation. Additionally, a dummy variable is included to account for whether the individual is the head of the household. The household structure is controlled for using a dummy for the presence of any other member in the household who has social insurance coverage, the

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<sup>9</sup> The separation between wage workers and non-wage workers is important since as discussed above, the laws regulating social insurance coverage are different for these two types of workers and thus might have different implications.

share of members in the household who are out of the labor force grouped into three age categories (0-14, 15-64, and above 65), and the household size.

Moreover, in the pooled workers model (wage workers and non-wage worker), a dummy for wage work is included to account for employment status.

As for the enterprise-specific characteristics, which are common for both wage and non-wage workers, they consist of the two following variables: the region where the enterprise is located and the enterprise economic activity. Furthermore, for the wage worker model, the enterprise sector and size is captured by a sector-size composite variable that consists of four groups: government or public enterprises (omitted category), private enterprises with 50 or more workers, private enterprises with 10–50 workers, and private enterprises with fewer than 10 workers.<sup>10</sup>

When empirically estimating the likelihood of access to social insurance coverage, a methodological concern arises. In the pooled workers model, the employment status variable may suffer from endogeneity due to the fact that workers might self-select themselves into wage and non-wage work depending on how they value social insurance and their expectation of getting access to social insurance in each of these two types of employment, as was discussed in the literature review.<sup>11</sup> For instance, if an individual who values social insurance has higher expectation of having social insurance coverage in wage work, he/she may decide to wait for a wage job that offers social insurance benefits rather than opting for a non-wage job. This would cause a statistically significant

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<sup>10</sup> This variable could not be included in the non-wage workers equation. There are no non-wage workers in the government and public sector enterprises. Also the percent of non-wage workers working in enterprises with more than 10 workers is very small (2.6%), which prevented the ivprobit model from converging.

<sup>11</sup> While it is important for the selection into labor force participation to be taken care of first, this paper focuses on modeling access to social insurance among the employed group of individual, who have already decided to join the labor market and found a job.

correlation to be observed between social insurance and wage-work, which should not be interpreted as a causal impact of wage work on access to social insurance.

Furthermore, enterprise-specific characteristics (such as sector and firm size) might also be endogenous to social insurance coverage, since enterprise or sector choices and getting access to social insurance may often be made simultaneously.<sup>12</sup> For instance, an individual who values social insurance may self-select into the public sector or in a large private sector enterprise.<sup>13</sup> To correct from possible endogeneity, the Instrumental variables (IV) technique is used where the set of instrumental variables should be correlated with the individual choices of employment status, sector, and enterprise size but uncorrelated with access to social insurance coverage. We use the parents' education and their employment characteristics as instruments as have been occasionally used in the literature on job choices.

Accordingly, in addition to estimating the first specification estimating a single equation probit model, a two-stage IV probit model<sup>14</sup> and a two-stage least square model (2SLS) are estimated, separately for the pooled sample of workers, wage workers and non-wage workers.<sup>15</sup> In the first-stage of each of the two-equation models, the employment status (sector-size) decision is estimated where the worker's parents' education level, employment status and sector of

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<sup>12</sup> One can argue here that this possible endogeneity might also apply to other enterprise-specific characteristics included in the model. However, we believe that neither the enterprise economic activity, nor its location is endogenous in the context of Egypt. Nevertheless, we have separately investigated the endogeneity of each of these two variables, for wage and non-wage workers, and could not accept their endogeneity (results are available upon request).

<sup>13</sup> In Egypt small enterprises may be able to violate the law and work informally to avoid the cost of registration including paying social insurance for its worker. However, working informally is generally hard for large firms. The literature shows that enterprises with more than 10 employees are very unlikely to work informally.

<sup>14</sup> This model was estimated using the command *ivprobit* of Stata statistical package.

<sup>15</sup> Although *ivprobit* command in Stata assumes continuous endogenous regressors and both the employment status and sector-size variables are categorical, the econometrics literature proved that *ivprobit* estimation would still provide consistent estimates in such occasions that outperform the two-stage linear model (2SLS) estimates (see Newey (1987)). Nevertheless, later on, Angrist (1991) proved that a 2SLS model in case of a binary dependent outcome and binary endogenous variables can perform well under certain conditions (Acosta, 2006).

employment are used as instrumental variables. These instruments are expected to be good proxies for workers' employment status (sector-size) choice, since parents education and work experience often affect one's own work choices, but do not directly affect his/her access to social insurance coverage.

### **Estimation Results**

Tables 2, 3 and 4 present the probit (Specification 1), the two-stage IV probit (Specification 2) and 2SLS (Specification 3) models estimates of the social insurance equation, respectively, for all workers, wage workers and non-wage workers.<sup>16,17</sup>

In the pooled workers (table 2) and the wage workers (table 3) 2SLS models specifications, Sargen's test for over-identification of the instruments and the F-statistic for the weak identification test both confirm that the used instruments are valid and that the null hypothesis of weak instruments cannot be accepted. Furthermore, the Wooldridge's (1995) scores and the regression-based tests of endogeneity for both regressions reject the null hypothesis that wage work, public sector and sector-size variables are exogenous to social insurance coverage. Moreover, the IV-probit estimation models lead to a significant  $\rho$ , implying that the error term of each of the employment status, public sector and sector-size equations is correlated with that of the social insurance equation, confirming the existence of an endogeneity problem. Therefore, the results of the two-equation models would be more efficient than those of the single equation probit model. Accordingly, in the following the focus will be on the results of the two-stage IV probit estimation.

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<sup>16</sup> Marginal effects are reported in all tables with robust standard errors in parentheses. Coefficients are available upon request.

<sup>17</sup> First stage estimation results of the IV-probit and 2SLS models are available upon request.

The pooled workers single equation estimates (Table 2) show that wage workers are more likely to have SI coverage than their non-wage workers counterparts; however, when the employment status is instrumented for, the effect of wage work on access to social insurance is no longer significant. Females are less likely to have access to SI coverage relative to males. As expected, age and experience have a non-linear positive relationship with access to social insurance. The probability of access to social insurance significantly increases with marriage and education level. Having a below than intermediate education, relative to no education degree, increases the likelihood of having social insurance coverage by 38 percentage points, by 74 percentage points for having intermediate education and by 87 percentage points for above intermediate education. Blue-collar high and low skill workers are less likely to have access to social security in comparison to the white-collar reference group. Furthermore, the presence of other socially insured members in the household positively increases the likelihood of having access to SI coverage. This is likely due to the spread of awareness regarding the importance of being socially insured and how to attain such access among household members.<sup>18</sup> The share of household members aged 15-64 who are out of the labor force also increases the likelihood of workers' access to social insurance. Individuals working in rural Upper and rural Lower Egypt are less likely to have social insurance, relative to those working in Cairo. This may be due to the difference in the capacity of law enforcement between the capital city and the rural areas; and to how urban workers might value social insurance relative to their rural counterparts (see Sieverding 2012).

[Table 2 is about here]

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<sup>18</sup> The lack of awareness has often been pointed out as one of the main reasons of non-compliance to the social insurance system in qualitative research (see Barsoum et al. 2009 and Sieverding 2012).

As for wage workers (table 3), men and married workers are more likely to have access to SI coverage in all model specifications. Experience, but not age, has an inverse U-shape relationship with social insurance. Working in the private sector, relative to the public sector, decreases the likelihood of having social insurance. As expected, this likelihood increases with firm size. Similar effects are obtained after correcting for endogeneity. The IV-probit and the 2SLS estimation results show that the sector-size variable has a positive and strongly significant effect on access to SI coverage among wage workers.

[Table 3 is about here]

As for the estimation results of the non-wage workers models, table 4 shows that inversely to the pooled workers model, endogeneity tests and the Wald-test for the IV-probit cannot reject the null hypothesis that employment status variable is exogenous to social insurance coverage. In such case, the results of the probit model would be more efficient than those of the two-equation models, and thus, the focus will be on its results.

An exception to the pooled workers and wage workers models is that, as one would expect, experience and marriage does not matter for non-wage workers. The region of work shows different effects. Working in urban Upper Egypt, relative to greater Cairo, increases the likelihood of having social insurance access.

[Table 4 is about here]

#### ***Determinants of Underreporting of Basic Salary***

This section explores the individual and enterprise characteristics that might motivate the decision to report a lower basic wage for social security deductions, by using a probit model to estimate the probability of wage workers under-reporting their wage to the SI administration. The dependent variable takes the value 1 if the worker's wage reported to the social insurance

authorities is lower than the actual wage the worker is paid and 0 otherwise. Explanatory variables consist of the same set of workers and enterprise characteristics included in the above social insurance wage workers models. The workers basic monthly wage and remaining years to the retirement age (60) are also controlled for here.

[Table 5 is about here]

Regression result, shown in table 5 shows that gender and marital status do not have any significant effect on the probability of having an underreported basic wage to the social security authority. Age is not a significant determinant of under reporting; however, experience has an inverse U-shape relationship with the probability of underreporting. Interestingly, years remaining to the retirement age, once controlled for instead of age, have a positive and significant effect on the probability of underreporting. This confirms that workers are inclined to underreport their basic wages during their early years of service, but to fully report them near their retirement age. This finding emphasizes one of the major shortcomings of the Egyptian SIS.

As expected, the probability of underreporting is significantly higher in the private sector, regardless of firm size, relative to the public sector. This probability is highest among workers of small size firms (10 or below) followed by large size firms (50 and above), and is lowest among middle size firms, compared to government enterprises. This also holds when controlling for monthly wage and years to retirement age. Focusing only on private sector wage workers, only small size firms had a positive and significant effect on the likelihood of underreporting.

### **Conclusion and Policy Implications**

This paper contributes to the growing literature on informality and access to social insurance, by investigating the pattern and dynamics of social insurance coverage in the Egyptian labor market and its determinants among wage and non-wage workers, separately. The paper is also one of the



few studies that focus on the phenomenon of underreporting salaries to the social security administration.

The analysis shows that wage workers are more likely to have social insurance compared to all non-wage workers. The multivariate analysis of the determinants of access to social insurance revealed that men, more educated, white-collar, older and more experienced wage workers are more likely to be socially insured. Marital status and experience of non-wage workers play an insignificant role on the likelihood of having SI. Therefore, their low enrollment in the SIS might be rather due to institutional factors that discourage them to formalize their business. On the enterprises front, access to SI is more likely to occur in large private enterprises, due to better law enforcement.

As for under-reporting the insurable wage, its probability mainly increases with remaining years to retirement age, highlighting the caveat of how the pension is determined, being based on the average monthly earnings during only the last few years of service, instead of the average of the lifetime career wage. This allows workers and employers to by-pass the system in order to pay lower contributions

These results confirm several shortcomings of the Egyptian SIS. The high contribution rates requested from both the employer and employee, combined with basing benefits on wages level of the last few years of service, and the weak capacity of law enforcement encourage employers and employees to either not participate in the social insurance system or contribute on amounts that are lower than their actual wage.

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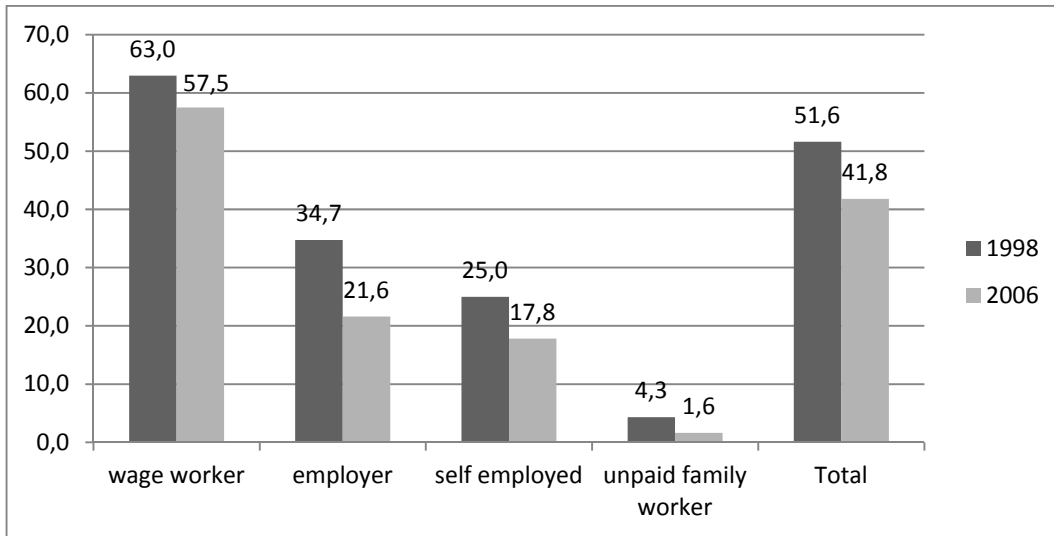
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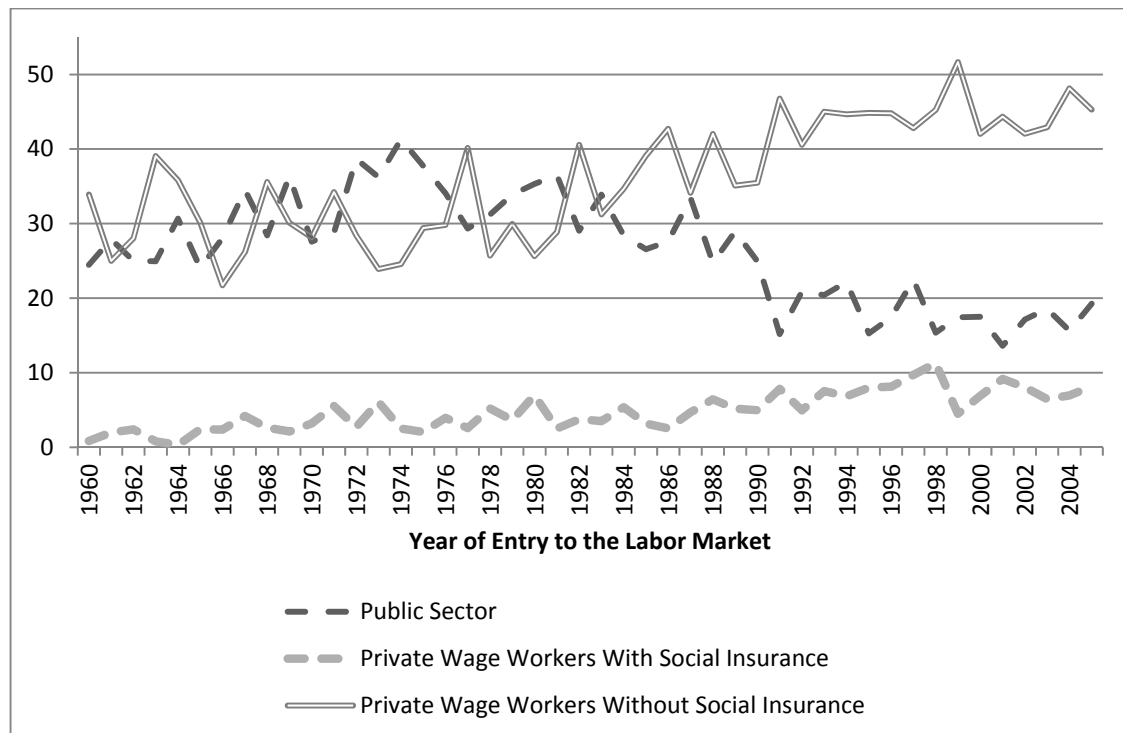
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**Figure 1 Percent of Workers (15-64 years old) who have Social Insurance Coverage by Employment Status in 1998 and 2006**



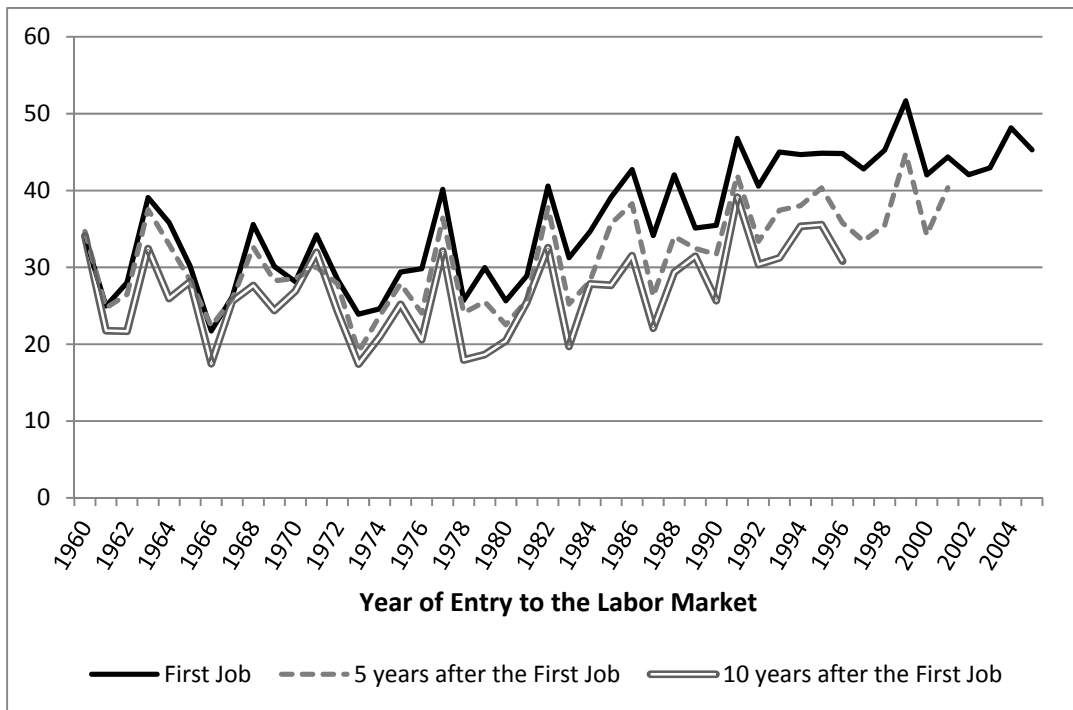
Source: Constructed by the authors from ELMS 98 and ELMPS 06

**Figure 2 Distribution of First Job by Year of Entry and Employment Status, WAP (15-64), 1960 to 2005**



Source: Constructed by the authors from ELMS 98 and ELMPS 06

Figure 3 Distribution of Uninsured Private Sector Wage Workers by Job Tenure, WAP (15-64), 1960 to 2006



Source: Constructed by the authors from ELMS 98 and ELMPS 06

**Table 1 Percent of Workers with Social Insurance, by Employment Status and Workers' and Enterprise Characteristics in 1998 and 2006 and Percent of Insured Wage Workers with Underreported Basic Salary to the Social Insurance Authority by Workers' and Enterprise Characteristics in 2006, WAP (15-64)**

	Wage Work		Non-Wage Work		% Underreported Basic Salary
	1998	2006	1998	2006	2006
Total (%)	62.3	56.9	30.2	20	23.1
<i>Worker's Characteristics</i>					
Female	78	71.7	9.3	5.3	17.3
Male	58.5	53.2	32.8	22.8	25
Married	73.6	68.3	33.1	21.3	22.3
Not Married	39.5	31.4	16.2	13.3	26.7
<i>Age</i>					
15-29	33.8	29.9	11.1	13.8	25.5
30-49	76.1	70.5	31	20.8	22.4
50-64	77.9	82.3	37.8	23.1	22.5
<i>Education Level</i>					
Illiterate/ read or write <sup>1</sup>	35.4	31.9	19.9	11.2	31.1
Less than intermediate	49.9	40.9	37.4	26.1	31.9
Intermediate	70.7	57.7	37.6	23.6	21.4
Above Intermediate	89.3	81.1	58.9	46.2	20.1
<i>Years of Experience</i>					
< 5 years	41.7	33.9	10	5.6	20
5 - 9 years	49.6	43.9	17.9	18.7	22.4
10-14 years	60.4	51.8	27.5	22.1	23.8
15 + years	72.7	69.61	33.7	20.8	23.5
<i>Occupation</i>					
White collar high skill	92.4	89.1	53.9	40.5	19.3
White collar low skill	73.3	57.2	22.1	19.5	22
blue collar high skill	22.5	17.2	10.6	7.6	35.4
blue collar low skill	55.7	43.9	37.1	33.6	39.5
<i>Residence</i>					
Urban	72.5	65.2	49.9	34.6	23.4
Rural	51.4	48	17.8	11.9	22.6
Household Head	72	67.5	36.3	23.5	23.6
Not Head	52.1	45.1	11.5	9.9	22.2
<i>Enterprise Characteristics</i>					
<i>Region</i>					
Greater Cairo	73.4	66	46.3	34.1	24.4
Alexandria & Suez Canal	78.9	67	56.7	41.9	16.1
Urban Lower	74.6	66.7	54.9	36.6	19.1
Urban Upper	76	69.5	47	29.7	26.6
Rural Lower	59.6	53.6	25	12.4	19.2
Rural Upper	57.2	43	6.9	8.6	26.4
<i>Firm Size</i>					
< 10 workers	11.1	24.7	-	20.3	38.1
10-49 workers	31.1	33.5	-	20	24.1
50+ workers	66.9	66.2	-	25.6	30.9
Do not know	15.6	89.8	-	10.8	18.2
<i>Sector of Ownership</i>					

Government	96.7	95	-	-	18.5
State Own Enterprises	96.5	93.8	-	-	17.8
Private Sector	22	23.6	30.2	20	39.7
<i>Economic Activity</i>					
Agriculture & Fishing	11.6	14.7	7.8	3.2	17.9
Broad manufacturing group	54.4	54.3	40.1	30	25.7
Construction	19.4	15.9	18.1	9.3	22
Wholesale & retail trade, hotel & restaurant	35.3	24.7	39.4	29.3	34
Transp., storage & communication	75.2	58.8	63.9	49.5	44.6
Other services	87.6	87	58.7	42.6	18.6
<i>Basic Monthly Wage</i>					
Lowest Quartile					17.1
Second Quartile					17.6
Third Quartile					21.6
Fourth Quartile					31.3
<b>Total number of workers</b>	<b>4,636</b>	<b>7,389</b>	<b>1,184</b>	<b>2,630</b>	<b>4,323</b>

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\*Illiterate or can only read and write, but has no education certificate

**Table 2 Determinants of Having Access to Social Insurance, all workers, 2006**

Variables	(1) Probit	(2) IV-probit	(3) 2SLS
Wage worker	0.305*** (0.018)	-0.299 (0.346)	0.004 (0.074)
Female <sup>1</sup>	-0.045* (0.024)	-0.206*** (0.076)	-0.046*** (0.016)
Married <sup>2</sup>	0.130*** (0.021)	0.327*** (0.069)	0.087*** (0.014)
Age	0.043*** (0.007)	0.056** (0.025)	0.019*** (0.004)
Age square	-0.000*** (0.000)	-0.000* (0.000)	-0.000*** (0.000)
Less than intermediate <sup>3</sup>	0.156*** (0.023)	0.384*** (0.066)	0.104*** (0.016)
Intermediate <sup>3</sup>	0.243*** (0.022)	0.737*** (0.066)	0.169*** (0.018)
Above Intermediate <sup>3</sup>	0.256*** (0.026)	0.871*** (0.082)	0.195*** (0.022)
Experience <sup>3</sup>	0.011*** (0.003)	0.038*** (0.009)	0.006*** (0.002)
Experience square <sup>3</sup>	-0.000* (0.000)	-0.000*** (0.000)	-0.000* (0.000)
White collar low skill <sup>4</sup>	-0.196*** (0.020)	-0.219** (0.096)	-0.059*** (0.019)
Blue collar high skill <sup>4</sup>	-0.387*** (0.022)	-0.949*** (0.084)	-0.297*** (0.021)
Blue collar low skill <sup>4</sup>	-0.289*** (0.025)	-0.731*** (0.098)	-0.209*** (0.023)
Household (HH) head	0.078*** (0.025)	0.109 (0.082)	0.019 (0.016)
HH members with SI coverage	0.170*** (0.018)	0.406*** (0.056)	0.069*** (0.011)
Share of HH members age 0-14	0.091* (0.047)	0.132 (0.124)	0.036 (0.026)
Share of HH members age 65+	0.208** (0.092)	-0.114 (0.457)	-0.049 (0.086)
Share of HH members age 15-64 and out of the labor force	0.202*** (0.044)	0.509*** (0.124)	0.091*** (0.026)
HH size	-0.014*** (0.004)	-0.011 (0.012)	-0.003 (0.002)
Alexandria & Suez Canal <sup>5</sup>	0.070*** (0.024)	0.165** (0.072)	0.045*** (0.017)
Urban Lower <sup>5</sup>	0.026 (0.023)	0.019 (0.073)	-0.005 (0.017)
Urban Upper <sup>5</sup>	0.051** (0.022)	0.090 (0.070)	0.013 (0.015)
Rural Lower <sup>5</sup>	-0.053** (0.025)	-0.224*** (0.078)	-0.063*** (0.019)
Rural Upper <sup>5</sup>	-0.075*** (0.029)	-0.360*** (0.091)	-0.073*** (0.021)
Broad manufacturing group <sup>6</sup>	0.355*** (0.022)	1.231*** (0.093)	0.273*** (0.029)
Construction <sup>6</sup>	0.122***	0.478***	0.062**



	(0.036)	(0.125)	(0.029)
Wholesale & retail trade, hotel & restaurant <sup>6</sup>	0.100***	0.122	-0.044*
	(0.032)	(0.104)	(0.023)
Transp., storage & communication <sup>6</sup>	0.384***	1.457***	0.344***
	(0.020)	(0.113)	(0.030)
Other services <sup>6</sup>	0.472***	1.696***	0.385***
	(0.025)	(0.113)	(0.037)
Observations	8,959	7,056	7,056
Wald chi2(26)	3356***	2680***	17173***
Pseudo R-squared	0.475	-5020	.
R-squared			0.522
<i>rho</i>		0.375***	
Wald-test of <i>rho</i> =0 (p-value)		0.002	
Sargen's test of over-identification (p-value)			0.9797
Test of weak Instruments			
min eigenvalue statistic			25.391
R <sup>2</sup>			0.4187
Adjusted R <sup>2</sup>			0.4158
F-test			22.72***
Tests of endogeneity			
Robust score chi2 (p-value)			0.009
Robust regression F-test (p-value)			0.009

Notes: Marginal effects are reported and robust standard errors in parentheses.

(d) for discrete change of dummy variable from 0 to 1

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>1</sup> reference category: males

<sup>2</sup> reference category: unmarried

<sup>3</sup> reference category: no educational certificate (illiterate or read or write)

<sup>4</sup> reference category: White collar high skill

<sup>5</sup> reference category: Greater Cairo

<sup>6</sup> reference category: Agriculture & Fishing

**Table 3 Determinants of Having Access to Social Insurance, Wage Workers, 2006**

Variables	(1) Probit	(2) Ivprobit	(3) 2SLS	(4) Probit	(5) Ivprobit	(6) 2SLS
Female <sup>1</sup>	-0.048* (0.027)	-0.210** (0.089)	-0.061*** (0.019)	-0.045* (0.026)	-0.201** (0.078)	-0.068*** (0.021)
Married <sup>2</sup>	0.078*** (0.024)	0.096 (0.089)	0.038** (0.019)	0.095*** (0.024)	0.146* (0.077)	0.064*** (0.020)
Age	0.030*** (0.009)	-0.051* (0.029)	-0.002 (0.007)	0.033*** (0.008)	-0.018 (0.024)	0.007 (0.007)
Age square	-0.000*** (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000*** (0.000)	0.000 (0.000)	-0.000* (0.000)
Less than intermediate <sup>3</sup>	0.073*** (0.025)	-0.085 (0.100)	-0.008 (0.024)	0.076*** (0.023)	-0.135* (0.080)	-0.027 (0.029)
Intermediate <sup>3</sup>	0.136*** (0.027)	0.035 (0.122)	0.005 (0.025)	0.157*** (0.024)	0.048 (0.100)	0.014 (0.027)
Above Intermediate <sup>3</sup>	0.156*** (0.031)	0.211 (0.134)	0.047* (0.025)	0.183*** (0.028)	0.308*** (0.116)	0.095*** (0.026)
Experience <sup>3</sup>	0.012*** (0.004)	0.047*** (0.011)	0.007*** (0.003)	0.010*** (0.003)	0.021** (0.010)	0.001 (0.003)
Experience square <sup>3</sup>	-0.000* (0.000)	-0.001*** (0.000)	-0.000** (0.000)	-0.000* (0.000)	-0.000** (0.000)	-0.000 (0.000)
White collar low skill <sup>4</sup>	-0.119*** (0.026)	0.026 (0.102)	0.016 (0.021)	-0.133*** (0.025)	0.103 (0.089)	0.042 (0.029)
Blue collar high skill <sup>4</sup>	-0.209*** (0.036)	0.656*** (0.237)	0.118* (0.070)	-0.289*** (0.035)	0.471** (0.190)	0.077 (0.077)
Blue collar low skill <sup>4</sup>	-0.160*** (0.040)	0.321 (0.198)	0.071 (0.051)	-0.161*** (0.037)	0.639*** (0.166)	0.181** (0.080)
Household (HH) head	0.040 (0.028)	-0.081 (0.091)	-0.032 (0.021)	0.056** (0.027)	-0.026 (0.077)	-0.014 (0.022)
HH members with SI coverage	0.134*** (0.019)	0.102 (0.087)	0.001 (0.014)	0.142*** (0.018)	0.096 (0.076)	0.006 (0.017)
Share of HH members age 0-14	0.084 (0.053)	0.037 (0.140)	-0.024 (0.030)	0.084* (0.051)	-0.100 (0.123)	-0.065* (0.038)
Share of HH members age 65+	0.157 (0.097)	0.140 (0.496)	0.010 (0.099)	0.160* (0.093)	0.004 (0.418)	-0.026 (0.111)
Share of HH members age 15-64 and out of the labor force	0.174*** (0.049)	0.183 (0.149)	0.018 (0.030)	0.191*** (0.047)	0.198 (0.136)	0.035 (0.036)
HH size	-0.011*** (0.004)	-0.023* (0.012)	-0.005* (0.003)	-0.011*** (0.004)	-0.026** (0.010)	-0.008** (0.003)
Alexandria & Suez Canal <sup>5</sup>	0.037 (0.024)	0.038 (0.081)	0.008 (0.018)	0.042* (0.023)	-0.040 (0.075)	-0.011 (0.025)
Urban Lower <sup>5</sup>	0.001 (0.025)	0.057 (0.071)	0.005 (0.016)	-0.019 (0.024)	-0.056 (0.064)	-0.026 (0.020)
Urban Upper <sup>5</sup>	-0.009 (0.024)	0.031 (0.068)	0.002 (0.016)	-0.010 (0.023)	-0.043 (0.063)	-0.017 (0.020)
Rural Lower <sup>5</sup>	-0.098*** (0.030)	-0.031 (0.078)	-0.019 (0.016)	-0.130*** (0.030)	-0.236*** (0.067)	-0.084*** (0.019)
Rural Upper <sup>5</sup>	-0.181*** (0.040)	-0.248** (0.115)	-0.055*** (0.021)	-0.222*** (0.038)	-0.393*** (0.099)	-0.115*** (0.022)
Broad manufacturing group <sup>6</sup>	0.184*** (0.026)	-0.012 (0.172)	0.011 (0.036)	0.219*** (0.022)	0.202 (0.141)	0.099*** (0.031)
Construction <sup>6</sup>	0.032 (0.041)	0.035 (0.121)	0.006 (0.029)	0.057 (0.036)	0.081 (0.107)	0.034 (0.031)
Wholesale, retail trade, hotel &	0.097***	0.974***	0.210***	0.041	0.591***	0.138***

restaurant <sup>6</sup>	(0.034)	(0.127)	(0.054)	(0.036)	(0.107)	(0.051)
Transportation, storage & communication <sup>6</sup>	0.211*** (0.020)	0.288 (0.244)	0.079* (0.042)	0.186*** (0.022)	-0.142 (0.192)	-0.015 (0.061)
Other services <sup>6</sup>	0.176*** (0.038)	-0.509** (0.207)	-0.120** (0.059)	0.154*** (0.036)	-0.851*** (0.164)	-0.242*** (0.089)
50+ workers <sup>7</sup>	-0.326*** (0.036)					
10-49 workers <sup>7</sup>	-0.551*** (0.027)					
< 10 workers <sup>7</sup>	-0.712*** (0.018)					
Sector-firm size		-1.431*** (0.031)	-0.442*** (0.061)			
Public Sector <sup>8</sup>				0.530*** (0.017)	3.595*** (0.055)	1.283*** (0.208)
Observations	6,336	4,807	4,807	6,513	4,939	4,939
Wald chi2(26)	2445***	4958***	7099***	2232***	.	7169***
Pseudo R-squared	0.612			0.579	.	
R-squared			0.485			0.260
<i>rho</i>		0.801			-0.867***	
Wald-test of <i>rho</i> =0 (p-value)		0.000			27.770***	
Sargen's test of over-identification (p-value)			0.591			0.819
Test of weak Instruments						
min eigenvalue statistic			15.438			13.488
R <sup>2</sup>			0.594			0.568
Adjusted R <sup>2</sup>			0.591			0.5644
F-test			14.990***			13.43***
Tests of endogeneity						
Robust score chi2 (p-value)			0.000			0.000
Robust reg. F-test (p-value)			0.000			0.000

Notes: Marginal effects are reported and robust standard errors in parentheses

(d) for discrete change of dummy variable from 0 to 1

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>1</sup> reference category: males

<sup>2</sup> reference category: unmarried

<sup>3</sup> reference category: no educational certificate (illiterate or read or write)

<sup>4</sup> reference category: White collar high skill

<sup>5</sup> reference category: Greater Cairo

<sup>6</sup> reference category: Agriculture and Fishing

<sup>7</sup> reference category: Government and Public sector

<sup>8</sup> reference category: Private Sector

**Table 4 Determinants of Having Access to Social Insurance, Non-wage Workers, 2006**

Variables	(1) Probit	(2) Ivprobit	(3) 2SLS
Employer <sup>7</sup>	0.112*** (0.016)	0.969* (0.512)	0.188* (0.096)
Female <sup>1</sup>	-0.106*** (0.020)	-0.335 (0.305)	-0.001 (0.045)
Married <sup>2</sup>	0.009 (0.024)	0.129 (0.144)	0.052** (0.023)
Age	0.017** (0.007)	0.062* (0.035)	-0.003 (0.006)
Age square	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Less than intermediate <sup>3</sup>	0.076*** (0.025)	0.285** (0.111)	0.075*** (0.025)
Intermediate <sup>3</sup>	0.082*** (0.027)	0.409*** (0.112)	0.109*** (0.024)
Above Intermediate <sup>3</sup>	0.146*** (0.042)	0.693*** (0.150)	0.228*** (0.037)
Experience <sup>3</sup>	-0.000 (0.003)	0.001 (0.015)	0.007*** (0.003)
Experience square <sup>3</sup>	-0.000 (0.000)	-0.000 (0.000)	-0.000** (0.000)
White collar low skill <sup>4</sup>	-0.038** (0.019)	-0.031 (0.168)	-0.060 (0.039)
Blue collar high skill <sup>4</sup>	-0.073*** (0.024)	-0.127 (0.143)	-0.064 (0.039)
Blue collar low skill <sup>4</sup>	-0.075*** (0.022)	-0.167 (0.320)	-0.107* (0.058)
Household (HH) head	0.036 (0.027)	0.186 (0.200)	0.021 (0.031)
HH members with SI coverage	0.057** (0.025)	0.192* (0.111)	0.047* (0.024)
Share of HH members age 0-14	-0.001 (0.047)	-0.085 (0.238)	0.038 (0.050)
Share of HH members age 65+	0.128 (0.098)	0.993 (0.804)	0.164 (0.168)
Share of HH members age 15-64 and out of the labor force	0.126*** (0.044)	0.645*** (0.220)	0.159*** (0.048)
HH size	-0.008* (0.004)	-0.028 (0.024)	-0.007* (0.004)
Alexandria & Suez Canal <sup>5</sup>	0.052 (0.035)	0.242 (0.149)	0.072 (0.047)
Urban Lower <sup>5</sup>	0.036 (0.029)	0.189 (0.128)	0.041 (0.040)
Urban Upper <sup>5</sup>	0.075** (0.033)	0.312** (0.135)	0.067* (0.040)
Rural Lower <sup>5</sup>	-0.002 (0.027)	0.023 (0.137)	-0.013 (0.038)
Rural Upper <sup>5</sup>	0.021 (0.031)	0.165 (0.154)	0.025 (0.039)
Broad manufacturing group <sup>6</sup>	0.449*** (0.048)	1.504*** (0.154)	0.271*** (0.039)
Construction <sup>6</sup>	0.164**	0.755**	0.078

	(0.071)	(0.369)	(0.065)
Wholesale & retail trade, hotel & restaurant <sup>6</sup>	0.323***	1.521***	0.256***
	(0.039)	(0.200)	(0.049)
Transp., storage & communication <sup>6</sup>	0.744***	2.499***	0.580***
	(0.056)	(0.273)	(0.075)
Other services <sup>6</sup>	0.467***	1.685***	0.327***
	(0.071)	(0.237)	(0.066)
<hr/>			
Observations			
Wald chi2(26)			
Pseudo R-squared			
R-squared			
<i>rho</i>		-0.213	
Wald-test of <i>rho</i> =0 (p-value)		0.337	
Sargen's test of over-identification (p-value)			0.215
<hr/>			
Test of weak Instruments			
min eigenvalue statistic			8.890
R <sup>2</sup>			0.367
Adjusted R <sup>2</sup>			0.356
F-test			8.35***
<hr/>			
Tests of endogeneity			
Robust score chi2 (p-value)			0.369
Robust regression F-test (p-value)			0.372

Notes: Marginal effects are reported and robust standard errors in parentheses

(d) for discrete change of dummy variable from 0 to 1

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>1</sup> reference category: males

<sup>2</sup> reference category: unmarried

<sup>3</sup> reference category: no educational certificate (illiterate or read or write)

<sup>4</sup> reference category: White collar high skill

<sup>5</sup> reference category: Greater Cairo

<sup>6</sup> reference category: Agriculture & Fishing

<sup>7</sup> reference category: self-employed

**Table 5 Determinants of Underreporting Basic Salary, Wage Workers, 2006**

Variables	All Wage Workers			Private Sector Wage Workers		
	(1)	(2)	(3)	(4)	(5)	(6)
Female <sup>1</sup>	-0.032 (0.020)	-0.011 (0.021)	-0.011 (0.021)	-0.028 (0.063)	0.011 (0.067)	0.015 (0.066)
Married <sup>2</sup>	-0.020 (0.021)	-0.023 (0.021)	-0.021 (0.021)	0.038 (0.064)	0.039 (0.066)	0.033 (0.065)
Age	-0.005 (0.007)	-0.000 (0.007)		-0.019 (0.020)	-0.017 (0.021)	
Age square	0.000 (0.000)	-0.000 (0.000)		0.000 (0.000)	0.000 (0.000)	
Less than intermediate <sup>3</sup>	0.022 (0.029)	0.008 (0.028)	0.006 (0.027)	-0.128* (0.066)	-0.133** (0.067)	-0.131* (0.067)
Intermediate <sup>3</sup>	-0.005 (0.027)	-0.041 (0.026)	-0.042 (0.026)	0.181*** (0.070)	0.186*** (0.071)	-0.183** (0.072)
Above Intermediate <sup>3</sup>	0.018 (0.031)	-0.052* (0.031)	-0.052* (0.031)	-0.058 (0.096)	-0.125 (0.096)	-0.124 (0.096)
Experience <sup>3</sup>	0.008*** (0.003)	0.006* (0.003)	0.006** (0.003)	0.022** (0.009)	0.018* (0.009)	0.015* (0.008)
Experience square <sup>3</sup>	-0.000** (0.000)	-0.000 (0.000)	-0.000* (0.000)	-0.000** (0.000)	-0.000 (0.000)	-0.000 (0.000)
White collar low skill <sup>4</sup>	0.000 (0.019)	0.017 (0.019)	0.017 (0.019)	0.010 (0.062)	0.044 (0.064)	0.045 (0.064)
Blue collar high skill <sup>4</sup>	0.096*** (0.033)	0.097*** (0.034)	0.096*** (0.034)	0.177** (0.078)	0.182** (0.079)	0.183** (0.079)
Blue collar low skill <sup>4</sup>	-0.027 (0.027)	-0.016 (0.028)	-0.017 (0.028)	-0.084 (0.069)	-0.071 (0.070)	-0.071 (0.070)
Household (HH) head	-0.021 (0.023)	-0.029 (0.022)	-0.028 (0.022)	-0.033 (0.070)	-0.090 (0.073)	-0.090 (0.073)
HH members with SI coverage	-0.011 (0.015)	-0.020 (0.015)	-0.021 (0.015)	-0.029 (0.052)	-0.067 (0.053)	-0.061 (0.052)
Share of HH members age 0-14	0.020 (0.041)	0.028 (0.041)	0.031 (0.040)	0.020 (0.129)	0.044 (0.131)	0.043 (0.132)
Share of HH members age 65+	0.095 (0.082)	0.075 (0.081)	0.080 (0.080)	0.127 (0.237)	0.042 (0.244)	0.030 (0.245)
Share of HH members age 15-64 and out of the labor force	-0.029 (0.038)	-0.057 (0.038)	-0.058 (0.038)	0.185 (0.130)	0.143 (0.129)	0.154 (0.126)
HH size	0.002 (0.004)	0.004 (0.004)	0.004 (0.004)	0.000 (0.012)	-0.002 (0.012)	-0.002 (0.012)
Alexandria & Suez Canal <sup>5</sup>	0.097*** (0.016)	0.087*** (0.016)	0.087*** (0.016)	-0.119** (0.048)	-0.107** (0.049)	-0.107** (0.049)
Urban Lower <sup>5</sup>	-0.025 (0.018)	-0.008 (0.019)	-0.008 (0.019)	-0.041 (0.055)	-0.015 (0.058)	-0.014 (0.058)
Urban Upper <sup>5</sup>	-0.001 (0.018)	0.019 (0.019)	0.019 (0.019)	0.028 (0.054)	0.034 (0.055)	0.035 (0.055)
Rural Lower <sup>5</sup>	-0.031 (0.021)	0.004 (0.023)	0.004 (0.023)	0.143 (0.105)	0.175* (0.105)	0.180* (0.106)
Rural Upper <sup>5</sup>	0.025 (0.029)	0.067** (0.032)	0.067** (0.032)	0.072 (0.135)	0.113 (0.140)	0.114 (0.142)
Broad manufacturing group <sup>6</sup>	0.100* (0.055)	0.089 (0.054)	0.089 (0.054)	0.110 (0.125)	0.126 (0.126)	0.129 (0.125)
Construction <sup>6</sup>	0.038	0.015	0.016	0.135	0.114	0.115

	(0.066)	(0.062)	(0.063)	(0.156)	(0.157)	(0.156)
Wholesale, retail trade, hotel & restaurant <sup>6</sup>	0.102 (0.064)	0.077 (0.061)	0.077 (0.061)	0.150 (0.136)	0.142 (0.137)	0.145 (0.136)
Transportation, storage & communication <sup>6</sup>	0.179*** (0.067)	0.140** (0.065)	0.140** (0.065)	0.318** (0.138)	0.280** (0.143)	0.281** (0.142)
Other services <sup>6</sup>	0.077* (0.041)	0.087** (0.039)	0.087** (0.039)	0.038 (0.137)	0.085 (0.143)	0.085 (0.142)
50+ workers <sup>7</sup>	0.125*** (0.031)	0.074** (0.030)	0.074** (0.030)	0.030 (0.050)	0.027 (0.051)	0.028 (0.051)
10-49 workers <sup>7</sup>	0.103*** (0.038)	0.045 (0.035)	0.046 (0.035)			
< 10 workers <sup>7</sup>	0.389*** (0.039)	0.309*** (0.040)	0.308*** (0.040)	0.269*** (0.055)	0.252*** (0.056)	0.253*** (0.055)
Log Basic monthly wage		0.158*** (0.011)	0.158*** (0.011)		0.190*** (0.033)	0.191*** (0.033)
Years to retirement age of 64			0.004** (0.002)			0.004 (0.006)
Observations	4,104	4,104	4,104	736	736	736
Wald chi2(26)	291.5	493.2	493.9	131.6	156.5	153.5
Pseudo R-squared	0.0708	0.129	0.128	0.148	0.187	0.187

<sup>1</sup> reference category: males

<sup>2</sup> reference category: unmarried

<sup>3</sup> reference category: no educational certificate (illiterate or read or write)

<sup>4</sup> reference category: White collar high skill

<sup>5</sup> reference category: Greater Cairo

<sup>6</sup> reference category: Agriculture and fishing

<sup>7</sup> reference category: Government and public sector