ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية
2012

working paper series

ON INFORMALITY AND PRODUCTIVITY OF MICRO AND SMALL ENTERPRISES: EVIDENCE FROM MENA COUNTRIES

Rana Hendy and Chahir Zaki

Working Paper No. 719

ON INFORMALITY AND PRODUCTIVITY OF MICRO AND SMALL ENTERPRISES: EVIDENCE FROM MENA COUNTRIES

Rana Hendy and Chahir Zaki

Working Paper 719

October 2012

Send correspondence to:
Rana Hendy
Economic Research Forum
rhendy@erf.org.eg

First published in 2012 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

Abstract

The objective of this paper is twofold. First, it aims to examine the impact of informality on productivity in the Middle East and North Africa (MENA) in order to identify existing barriers to formality. Second, it pinpoints factors that boost productivity of micro and small enterprises (MSEs). Using firm-level micro data from the Egyptian and Turkish micro and small enterprises surveys, we first find that firm's age, entrepreneur's gender, age and education have a significant impact on the probability of belonging to the informal sector. In addition, we find a negative effect of informality on productivity in both Egypt and Turkey. While this result is sensitive to the estimation method for the Egyptian case, it remains robust for the Turkish one. Consequently, there is a clear and significant productivity differential between formal and informal firms in Turkey, but not in Egypt.

JEL Classifications: D2, E26, O17, P42.

Keywords: MSEs, Productivity, Informality, Middle East, Egypt, Turkey.

ملخص

الهدف من هذه الورقة ينقسم الى شقان. الأول، هو دراسة تأثير الشركات الغير رسمية على الإنتاجية في الشرق الأوسط وشمال أفريقيا من أجل تحديد العوائق القائمة لتحويلها لشركات رسمية. ثانيا ابرازالعوامل التي تعزز إنتاجية المؤسسات الصغيرة والمتناهية الصغر. باستخدام البيانات الجزئية للشركات المصرية و التركية الصغيرة ، نجد أولا أن عمر الشركة،و عمر و نوع صاحب المشروع ، ومستوى تعليمه يكون لهم تأثير كبير على احتمال انتمائه إلى القطاع غير الرسمي. وبالإضافة إلى ذلك، نجد ان الشركات الغير الرسمية لها تأثير سلبي على الإنتاجية في كل من مصر وتركيا. في حين أن هذا النتيجة هي حساسة لطريقة تقدير الحالة المصرية، فإنها لا تزال قوية في الحالة التركية. ونتيجة لذلك، فهناك فرق واضح وهام بين انتاجية الشركات الرسمية وغير الرسمية في تركيا، على غير الحال في مصر .

1. Introduction

Many researches demonstrate that micro and small enterprises (MSEs) are key drivers of productivity growth. At the macro level, informality has been found to be one of the main causes of the productivity gap between developed and developing countries. In addition, there is a strong negative correlation between a firm's formal/informal status and its productivity in developing countries. Therefore, investigating the link between productivity and informality of MSEs is crucial for two main reasons. On the one hand, to understand the determinants and consequences of informality by identifying the barriers to formality and assessing the negative impact of informality (e.g. in terms of impeding creative destruction, deterring formal firms to innovate due to unfair competition, causing congestion in the consumption of public goods,…), and concern over the wellbeing of workers in the informal sector who lack pension coverage. On the other hand, it is important to identify the right incentives and implications of enforcing and encouraging formality.

There is a two-way causality between informality and productivity: formal firms tend to be more productive than informal ones (better access to services, information, skills, technology,…), and lower productivity was found to preclude informal firms to graduate to formality (self-reinforcing dynamics confining them to small scale, inefficient and low productivity work). Low-productivity firms with limited growth potential often opt for informality. And, differences in productivity levels between formal and informal firms stem from not only the idiosyncratic features of the two types of firms, but largely, from self-selection: talented managers and skilled labor that self-selects into the formal sector. The productivity gap between formal and informal firms is found to be important for small informal businesses but much less so for large formal ones.

Given the complexity of establishing a new business in developing countries, MSEs face serious impediments in the start-up process. For this reason, they are forced to remain in the informal sector. In addition, the shift from informal to formal is also important and needs to be studied, taking into consideration the process, constraints, etc. Such barriers prevent either the creation of new firms or the growth of existing small ones. Then, economists who study developing countries have long been concerned with what they call the "missing middle".

The empirical literature on MSEs is scarce. For Egypt, most of the studies are more descriptive than empirical. For instance, El-Mahdi (2006) provides an extensive review on MSEs in Egypt. At the empirical level, El-Hamidi and Baslevent (2010) provides gender-based empirical evidence and compares the perception of growth plans, as well as determinants of economic sector, and size of the business in Egypt and Turkey. In addition, El-Hamidi (2011) finds that women are better performers than men in generating revenues, despite the fact that their revenues are almost one third that of males. What's more interesting is that women are no different from men in terms of employment growth or the efficiency of running their businesses. In Turkey, there are studies which focus on MSEs employing up to 50 persons and operating in the manufacturing industry, but predominantly in the textile sector (Cinar et al. 1987/1988 and Evcimen et al. 1991). These studies are based on data collected, using a sample survey in the province of Bursa. Furthermore, Cinar et al. (1988) argues that the determinants of survival and growth of small enterprises originate from both the demand

and the supply side of the market. Erzan and Filiztekin (2005) finds that factors such as the level of the exchange rate, volatility of inflation and nominal interest rates as well as changes in domestic demand had exerted negative effects on value-added growth in SMEs in the manufacturing sector. Evcimen et al. (1991) observes that starting with a small initial capacity, employing at most three workers and operating at low levels of profitability are the general characteristics of sub-contractors in the textile industry located in Bursa.

On the nexus between informality and productivity, it has been found in the empirical literature that there is a productivity differential between informal and formal firms. Informal firms are less productive than formal firms (Dabla-Norriset al. 2005). Taymaz (2009) argues that there is a significant productivity gap between informal and formal firms, and a wage gap between informal and formal workers. Moreover, the hypothesis that more educated entrepreneurs and workers move to the formal sector is supported by the data. This process of self-selection contributes to widen the productivity gap between informal and formal firms. For this reason, our paper extends this analysis by examining the impact of informality on productivity.

Clearly, one could expect a productivity differential between formal and informal firms. We start by making clear the definition of productivity that we adopt in this paper. Firms' productivity measures how much input is needed to produce the firm's output. Output is measured by the volume of goods and services. There are different measures of productivity depending upon what inputs are measured. Labor productivity measures the output per unit of labor. The unit of labor can be hours worked, or simply the number of workers. While the output per worker is easier to calculate, the number of hours worked shows the efficiency of the production process. However, this is a partial view of productivity. Total factor productivity (TFP) measures all the firm's inputs. This provides a more rounded picture of firm productivity, but it can be rather difficult to estimate. Note that, for data considerations and computational simplicity, we opted for the output per worker as the definition of productivity, despite its imperfection.

The objective of this paper is twofold. First, it aims to examine the impact of informality on productivity in the Middle East and North Africa (MENA) in order to identify existing barriers to formality. Second, it pinpoints factors that boost productivity of micro and small enterprises (MSE). Using firm-level micro data from the Egyptian and Turkish micro and small enterprises surveys, we first find that the firm's age, and the entrepreneur's gender, age and education have a significant impact on the probability of belonging to the informal sector. In addition, we find a negative effect for informality on productivity in both Egypt and Turkey. While this result is sensitive to the estimation method for the Egyptian case, it remains robust for the Turkish one. Consequently, there is a clear and significant productivity differential between formal and informal firms in Turkey, but not in Egypt.

The rest of the paper is organized as follows. Section 2 presents some stylized facts that deal with firms. Section 3 shows the econometric model. Section 4 presents the firm-level data used in this research. Section 5 displays the empirical results. Section 6 concludes.

2. Stylized Facts

Given the complexity of establishing a new business in developing countries, MSEs face serious impediments in the start-up process. For this reason, they are forced to remain in the informal sector. In addition, the shift from the informal sector to the formal sector is also important and needs to be studied, taking into consideration the process, constraints, etc. Such barriers prevent either the creation of new firms or the growth of existing small ones. Economists who study developing countries have long been concerned with what they call the "missing middle'" as shown in Figure 1. The world's poorer nations frequently have large businesses (often connected with the government or with transnational corporations) and very small, informal businesses that are not legally established, don't pay taxes, and don't necessarily follow laws and safety regulations.

Micro and small enterprises significantly contribute to employment and production in emerging economies such as Egypt and Turkey. In fact, according to the Turkish Household Labor Force Surveys, MSEs constitute 99.41%of total enterprises. The share of non-agricultural MSEs' employment in total non-agricultural employment is 73%, whereas 51% of the non-agricultural workforce is employed by the non-agricultural micro enterprises (1-9 employees).They produce 68.4% of the total gross non-agricultural value-added (Ozar 2006). Similarly, in Egypt, 39% of the labor force works in MSEs (El-Mahdi 2006). The latter with medium-sized enterprises account for over 90% of active enterprises in Egypt and contribute with over 80% of the GDP and to 75% of total employment (OECD 2010).

In the survey a detailed questionnaire with 322 questions was applied, and information about the entrepreneur, legal status of the enterprise, types of informality, production, employment, financing, etc. was collected. There are four questions on different types of informality: i) if the enterprise has registered with the industrial or commerce register; ii) if the enterprise has registered with the tax department (acquired a tax card or a card number); iii) if the enterprise has a business license; and iv) if the enterprise has joined any social insurance scheme. This is the reason why several measures of informality are used in the analysis. The first is the least restrictive as it only takes into account the industrial/commercial non-registration. The second measure adds to the first one all firms that do not acquire an official business license. The third measure (and the most restrictive) adds to the previous criteria all firms that neither acquire a tax card nor join any social insurance scheme. Fourth, following Taymaz (2009), we adopt the term "informal employment" to refer to those employees who are not registered with any social security organization. Accordingly, an "informal firm" is defined as a firm that employs informal employees. Furthermore, we construct a large measure of informality when the firm does not have at least one of the items that are mentioned above. Finally, using factor analysis, we construct an informality index that includes all the above variables[1].

As shown in Table 1 and Figure 2, according to the first definition of informality, the share of informal MSEs in Egypt is much higher than in Turkey (the former is 24.02%, while the latter is 4.74%).

[1]These are the industrial/commercial non-registration at the firm's start-up, an official business license at start-up, acquiring a tax card or joining any social insurance scheme at start-up.

Yet, the common aspect between the two countries is that formal firms are more productive than informal ones as shown in Table 2. The productivity of informal firms is at most 51% the productivity of formal firms in Egypt, and 33% in Turkey. Moving to the gender aspect of MSEs, it is quite obvious that female-owned enterprises have been growing at rates similar to those of male-owned enterprises but their share remains quite low as shown in Table 3 (they represent 10.7% of total MSEs in Egypt and 6.7% in Turkey).

In Egypt, female-owned enterprises are also characterized by lower productivity than enterprises that are male-owned. Yet, the gap between males and females is less pronounced in formal firms than in informal ones. This is not the case in Turkey since productivity in female-owned firms is higher than in male-owned firms in both the formal and informal sectors. However, the share of informal female-owned firms in Turkey is higher than that in Egypt highlighting the fact that being female increases informality in Turkey.

In addition, as shown in Table 4, formal firms produce more and achieve higher labor productivity (as measured by output per employee) since formal firms are 3.6 times more productive than informal ones in Egypt and 4.2 times more productive in Turkey. They use more capital intensive techniques, and pay higher wages. Moreover, entrepreneurs starting up formal firms are more educated and slightly older than their informal counterparts. Finally, formal firms survive longer especially in Egypt, where on average their average age is 13 years versus 8 years for informal firms. This difference is less pronounced in Turkey.

From presenting the stylized facts, we move to analyzing the role of the factors presented above in explaining productivity differentials by using firm level data.

3. Econometric Model

As discussed in the introduction, this paper aims to examine the impact of informality on productivity and output. To do so, we start by estimating the following regressions:

$$\text{Ln}(\text{Output}_i) = \Pi_0 + \Pi_1 X_1 + \Pi_2 \text{Informal}_i + \varepsilon_1 \quad (1)$$

$$\text{Ln}(\text{Productivity}_i) = \Pi_3 + \Pi_4 X_2 + \Pi_5 \text{Informal}_i + \varepsilon_2 \quad (2)$$

Where $Ln(Output_i)$is defined as the logarithm of the firm's total output in local currency. $Informal_i$ is a dummy variable taking the value of 1 if the firm is informal and 0 otherwise.X_1 includes factors of production (labor, capital, raw materials and energy), infrastructure variables (water, electricity, phone, sewage, roads, transportation of goods and workers, daycare), competition variables (from imports, large, small and micro firms), whether the technology used is modern, the type of equipment the firm uses (electronic, electric and mechanical), access to finance (own savings or formal loans) and whether the firm is located in a cluster. In addition, we control for the owner's demographic characteristics such as age, gender, years of experience, level of education, urban/rural region and whether the owner is engaged in other business activities. Moving to equation 2, the dependent variable is the logarithm of the firm's productivity defined as total output per worker. Therefore, we excluded labor from the set of explanatory variables included in X_2. $\varepsilon_1$and ε_2 represent the discrepancy terms.

As a second step of the analysis, using the Chow test, we test whether the coefficients of our two linear regressions (formal and informal firms) are equal. We rejected the null hypothesis according to which there is no structural break. Therefore, given that we cannot pool the two datasets, we estimate a switching regression model for formal and informal firms to test if there are productivity differences between these two types of enterprises. The switching regression model assumes that an entrepreneur, given a set of his characteristics represented by Z, makes a decision to enter into either the informal or the formal sector. The entrepreneur adopts a specific production technology to produce the output due to the differences in operating conditions in the informal and formal sectors. The parameters of the production function will provide information about the sources of productivity difference.

$I_i = 1 \; if \; \gamma X_i + u_i > 0$

$I_i = 0 \; if \; \gamma X_i + u_i \leq 0$

$Informal: y_{1i} = Z_{1i}\beta_1 + \varepsilon_{1i} \quad if \; I_i = 1$

$Formal: y_{0i} = Z_{0i}\beta_0 + \varepsilon_{0i} \quad if \; I_i = 0$

Where I_i denotes informality status of the i^{th} firm (1 for informal, 0 for formal), X_{iis} a vector of variables that determine the choice of informality, q_{ij} (log) is the output (or productivity) of firm i under j (informal/formal), and Z_{is} a vector of inputs (capital, labor, materials, all in log form). β1, β0 and γ are vectors of parameters to be estimated. It is assumed that u_i, ε_{1i} and ε_{0i} have a trivariate normal distribution with mean vector zero and covariance matrix $(u_i, \varepsilon_{1i,}\varepsilon_{0i}) \sim N(0, \Sigma)$

where

$$\Sigma = \begin{bmatrix} \Sigma_{11} & \Sigma_{12} & \Sigma_{1\varepsilon} \\ \Sigma_{1'2} & \Sigma_{22} & \Sigma_{2\varepsilon} \\ \Sigma_{1'\varepsilon} & \Sigma_{2'\varepsilon} & 1 \end{bmatrix}$$

The impact of informality is given by:

$$\hat{y}_{1it} - \hat{y}_{2it} = E(y_{1it} / d_{it} = 1) - E(y_{2it} / d_{it} = 1)$$

Or equivalently:

$$E(y_{1i} / d_i = 1) - E(y_{2i} / d_i = 1) = Z_{1i}\beta_{11} - Z_{2i}\beta_{21} + (\sigma_{2\varepsilon} - \sigma_{1\varepsilon})\frac{\phi_i}{\Phi_i}$$

Where φ and Φ are the density function and the cumulative distribution of a standard normal random variable. To improve identification, the selection model may include some exogenous variables that do not have any impact on output so that these variables are excluded from the production function.

4. Data

The data used in this project comes from the Micro and Small Enterprises surveys collected by the Economic Research Forum (ERF) in four selected countries of the MENA region: Egypt, Lebanon, Morocco and Turkey. The database consists of

information on households and enterprises gathered from 5,000 questionnaires that were filled by MSEs in the selected countries (but only 3,000 in the case of Lebanon). The surveys were conducted between 2002 and 2004 in the four counties and were followed (except in the case of Lebanon) by follow-up surveys one year later to monitor the dynamics of the sector and highlight its progress. These datasets include a host of key variables that can be exploited to measure productivity, to assess different barriers that are faced by MSEs and to capture the status of formality. Hence, they provide a good fit for answering our research questions empirically. Surprisingly, despite the richness of this data, it has been underutilized in empirical work. Using it in this research represents a substantial contribution to the literature on MSEs in the MENA region.

For Egypt, we use the 2003 survey that consists of 4,958 enterprises. Some 89 percent of these enterprises are headed by males while only 10.47 are headed by females. The majority is located in urban areas. Similar figures are observed for Turkey. It consists of 5,000 enterprises intensively headed by males (93.12 percent) and 62.82 percent of them are located in urban areas. In the future versions of this paper, we will also make use of the two other MENA countries' data available: Morocco and Lebanon.

In the empirical analysis, we control for the employer's gender and region. We also make use of the access to infrastructure services variables that are available in the data such as access to water, electricity, telephone, sewage, roads, workers' transportation, goods' transportation and day care centers. Moreover, we control for the type of equipment the firm uses in its production process as well as the source of capital (formal loan, savings, etc...). Also, the analysis takes into consideration both the years of education and the type of education (general versus technical education) as well as whether the employer has any training/apprenticeship experience. As it is shown in the empirical results, competition is one of the main determinants of productivity. For this reason, we control for different sources as competition from imports, large firms, small firms or micro firms. Tables 6 and 7 present some descriptive statistics for Egypt and Turkey respectively.

5. Empirical Results

5.1 Determinants of Informality

Tables 7 and 8 display the determinants of informality in Egypt and Turkey. We find that being a female owner increases the probability of informality in both countries. Informality decreases in urban regions, which is in line with our expectations as firms are more likely to register and to obtain a business license. On the source of initial capital at start-up, it is clear that own savings increases informality since the entrepreneur does not need an official paper to apply for a formal loan. By contrast, the latter increases formality.

Concerning the impact of age on informality, we find a U-type relationship between informality and age in Egypt and Turkey, because young entrepreneurs are more likely to start with informal activities and later switch to the formal sector. We also find that the probability of informality declines with the level of education and the prior vocational training of the entrepreneur. In Turkey, being located in a cluster in which there are neighboring enterprises engaged in related activities reduces informality since the firm may tend to operate formally. Surprisingly, this result does not hold in the Egyptian case since we found a positive coefficient for this variable. If the entrepreneur has several

activities, then the probability of informality declines. Apparently, the more activities the entrepreneur has, the more likely they are performed formally. Finally, it is worth mentioning that the age of the firm has a negative impact on informality. This is in line with learning and lifecycle theories where young firms tend to start their life in the informal sector and gradually move to the formal sector. Therefore, the lifecycle of the firm matters for informality.

To illustrate the combined effect of the different determinants of informality, we carry out a simulation to estimate the informality probabilities of the firm that is least likely to be informal and one that is most likely to be informal. Based on the signs and sizes of the coefficients in the logistic equation, we define the least likely firm to be informal as a firm aged 10 years old, located in an urban area and belonging to a cluster. The owner is a never-married male aged 40 years old, has 10 years of experience, 20 years of education, and who had a previous training. The owner of the least likely firm to be informal owns other firms and his main source of finance is a formal loan. The predicted probability of being informal is five and zero percent in Egypt and Turkey respectively.

The firm most likely to be informal is a firm aged two years, located in a rural area and does not belong to a cluster. The owner is a 20 year old married female, has zero years of experience, five years of education, and never had any previous training. The owner of the most likely firm to be informal does not own other firms and his/her main source of finance comes from savings. The most likely to be informal profile has a probability of informality of 36 percent and 47 percent in Egypt and Turkey, respectively.

Results of the determinants of informality from the switching regression model (see Table 9 and 10) confirm the previous findings since almost all the variables have the expected sign and the same level of statistical significance. Moreover, we notice that formal firms are likely to have more endowments (in terms of labor and capital) than informal firms. This result is more pronounced in the Egyptian case than in the Turkish one. Finally, access to infrastructure (such as electricity and phone) seems to reduce the probability of informality since having an access to such services may require a business license or a commercial registration.

5.2 Determinants of Output and Productivity

As mentioned above, our aim is to assess the impact of informality on productivity of MSEs. Concerning the productivity levels in Egypt and Turkey, it is calculated by dividing the firm's current output by its number of workers.

Table 11 and 12 show the determinants of firms' output (first column) and productivity (second column) for different definitions of informality in Egypt and Turkey. First, on the link between informality and productivity, we find that informality reduces both productivity and output. Therefore, informality seems to be an impediment to being more productive and this effect is more pronounced in Turkey than in Egypt. Second, it is quite clear that being located in urban area boosts productivity in Turkey. This may be explained by higher externalities coming from other firms which are located in urban areas as well. Similarly, access to roads and to transportation positively and significantly affects firms' productivity as they allow firms to better produce and market their products or serve a wider client base. Moreover, making use of modern technology in the production process leads to more productive firms, especially in Turkey. Interestingly,

training, contrarily to education, has a statistically significant and positive impact on firms' productivity in Egypt. Since this training is specific to firms' activity, it helps the owner to better run his enterprise and hence increase its productivity. However, in Turkey, we find that whereas training does not have a significant impact, education of the entrepreneur is likely to boost output and productivity. Finally, whereas competition from imports, large and small firms does not affect firms' productivity in Egypt, competition from micro firms seems to have a strong impact. This is not surprising since products of the latter are complementary rather than substitutes. Goods and services provided by these micro firms are quite different in terms of quality, varieties, prices and target consumer. Note that most of the firms included in our sample are micro ones. In Turkey, the picture is not the same. Competition from imports, large and micro firms do have a significantly positive effect on MSEs' productivity. Moving to infrastructure aspects, in both Egypt and Turkey, having access to basic infrastructure such as roads, transportation, electricity, water, sewage, etc. is likely to affect the productivity of MSEs. In particular, access to road and to transportation seems to be essential.

Using the Chow test, we test whether the coefficients of our two linear regressions (formal and informal firms) are equal. We rejected the null hypothesis according to which there is no structural break. Therefore, given that we cannot pool the two datasets, we estimate a switching regression model for formal and informal firms to test if there are productivity differences between these two types of enterprises. The first model estimated includes only input variables (capital, labor and raw materials) as explanatory variables. Then variables related to infrastructure are added to the model. Finally, a comprehensive regression is run taking into account input variables, access to infrastructure, competition and the technology used.

In Egypt, the labor elasticity of output is higher for informal firms than for formal firms, i.e., the marginal product of labor is higher in informal firms. By contrast, the capital elasticity of output is higher for formal firms (see Table 13 and 14). This finding demonstrates how formal firms are more capital intensive than their informal counterparts. The coefficient of the intercept term in a model with only inputs measures the level of total factor productivity (TFP). A comparison of that coefficient for informal and formal firms shows that there isn't a substantial TFP gap between them given that the intercepts are not significant in most of the regressions. Surprisingly, when we use the larger definition of informality (where a firm is considered informal when it does not have either a tax card or a business license or commercial registration or social insurance scheme), formal firms seem to have a negative TFP that is statistically significant, while informal firms do not.

For Turkey, productivity differentials are more significant than for Egypt since formal firms are almost 166 percent more productive than informal firms. This result remains robust even when we use the larger definition of informality

6. Conclusion and Policy Recommendations

The objective of this paper is twofold. First, it aims to examine the impact of informality on productivity in the Middle East and North Africa (MENA) in order to identify existing barriers to formality. Second, it pinpoints factors that boost productivity of micro and small enterprises (MSE).

Using firm-level micro data from the Egyptian and Turkish micro and small enterprises surveys, we first find that the firm's age, and the entrepreneur's gender, age and education have a significant impact on the probability of belonging to the informal sector. In addition, we find a negative effect for informality on productivity in both Egypt and Turkey. While this result is sensitive to the estimation method for the Egyptian case, it remains robust for the Turkish one. Consequently, there is a clear and significant productivity differential between formal and informal firms in Turkey, but not in Egypt.

Governments should ensure the prevalence of the right conditions that encourage businesses to grow. A positive macroeconomic environment would encourage investment decisions and strengthen business owners' confidence. Such an environment features low inflation and low interest rates. Governments should also eliminate barriers that hinder business expansion plans, especially for MSEs. A lower total tax burden will free up business resources and improve the investment climate for MSEs. The burden of regulations and paperwork restrict business efficiency, undermine competitive advantages and add compliance costs to business operations. Reducing the regulatory burden and red tape will lower compliance costs for MSEs, thus supporting their prosperity. Inadequate access to financing can hinder investments and constrain the growth potential of MSEs. Governments should take measures to promote a higher level of competition in the financial services sector so that MSEs' ability to obtain credit financing is not compromised.

References

Ayyagari, M., A.Demirgüç-Kunt, and T. Beck. 2003. Small and medium enterprises across the globe: a new database. World Bank Policy Research Working Paper No. 3127. Available at SSRN: http://ssrn.com/abstract=636547

Alvarez, R. Michael, and G. Glasgow. 2000. Two stage estimation of non recursive choice models. *Political Analysis* 8(2): 147–65.

Cinar, E. M., M. Kaytaz, and G. Evcimen. 1987. A case study on the growth potential of small scale manufacturing enterprises in Bursa, Turkey. *METU Studies in Development*24(2): 123–46.

Cinar, E. M., G. Evcimen, and M. Kaytaz. 1988. The present day status of small scale industries (Sanatkar) in Bursa, Turkey. *International Journal of Middle Eastern Studies*20: 287–301.

Dabla-Norris, E., M. Gradstein, and G. Inchauste. 2005. What causes firms to hide output? The determinants of informality. IMF Working Paper No. 05/160, IMF, Washington DC.

El-Hamidi, F., and C. Baslevent. 2010. The gendered aspects of MSEs in MENA: Evidence from Egypt and Turkey. Economic Research Forum (ERF) Working Paper No. 535.

El-Hamidi, F. 2011. How do women entrepreneurs perform? Empirical evidence from Egypt. Economic Research Forum (ERF) Working Paper No. 621.

El-Mahdi, A. 2006. MSEs Potentials and Success Determinants in Egypt 2003-2004: Special Reference to Gender Differentials. Research no FEM 21-31, FEMISE Research Report, Project on "Promoting Competitiveness in Micro and Small Enterprises in the MENA Region". Cairo, Egypt: The Economic Research Forum, December.

Erzan, R., and A. Filiztekin. 2005. Does size matter in growth, productivity, employment, and vulnerability/flexibility in Turkish manufacturing? *Turkish Studies*6(1): 113–26.

Evcimen, G., M. Kaytaz, and E. M. Cinar. 1991. Subcontracting, growth and capital accumulation in small-scale firms in the textile industry in Turkey. *The Journal of Development Studies* 28(1): 130–49.

Lokshin, M., and Z. Sajaia. 2004. Maximum likelihood estimation of endogenous switching regression models. *The Stata Journal* 4(3): 282–89.

Maddala, G. S. 1983. *Limited–dependent and qualitative variables in econometrics.* Cambridge: Cambridge University Press.

McKenzie, D., and Y.S. Sakho. 2007. Does it pay firms to register for taxes? The Impact of formality on firm profitability. IZA Discussion Paper No. 3179, IZA, Bonn.

Micro Small Enterprise (MSE) surveys for Egypt and Turkey. 2004. Available on http://www.erf.org.eg/cms.php?id=MSE_Database. Economic Research Forum, Cairo, Egypt

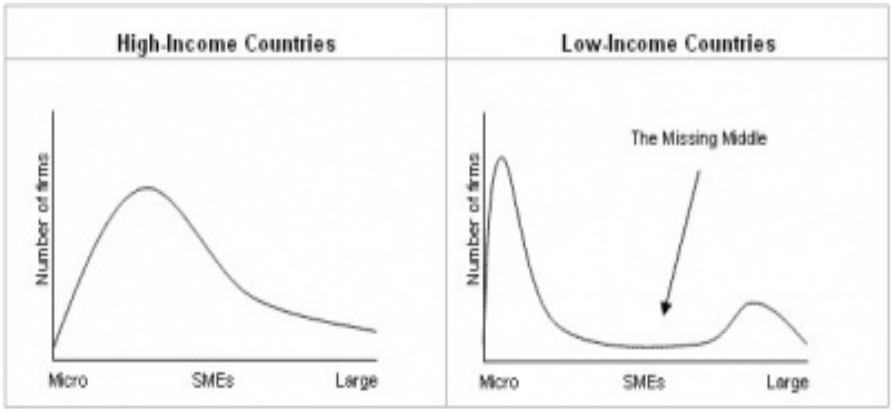
McKinsey Global Institute. 2003. Turkey: Making the productivity and growth breakthrough. New York: McKinsey.

OECD. 2010. Egypt - Business Climate Development Strategy – OECD, Paris, France.

Ozar, S. 2006. Micro and Small Enterprises in Turkey: Uneasy Development. Project on Promoting Competitiveness in Micro and Small Enterprises in the MENA Region. ERF Research Report Series No. 0420.

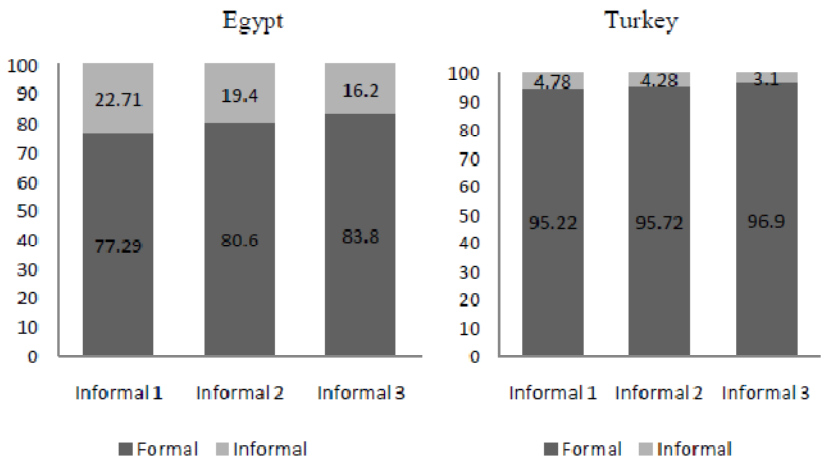
Taymaz, E. 2009. Informality and productivity: Productivity differentials between formal and informal firms in Turkey. ERC Working Papers in Economics 09/01, March.

Figure 1: MSEs in High-Income versus Low-Income Countries



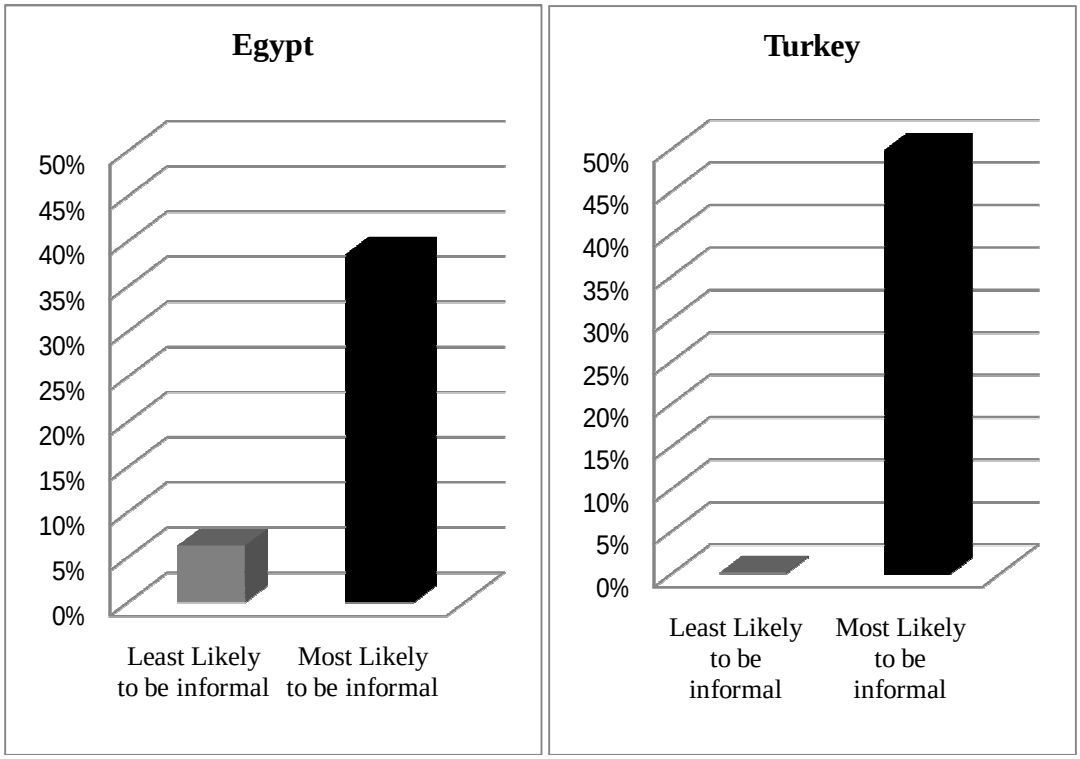
Source: Ayyagari et al.(2003).

Figure 2: Firms' Formality/Informality by Informality Definition



Source: Constructed by the authors using the MSE surveys for Egypt and Turkey (2004).

Figure 3: Predicted Probability of Informality for the Reference Firm



Notes: (i) The firm that is least likely to be informal is a firm aged 10 years, located in an urban area and belonging to a cluster. The owner is a never-married male aged 40 years, has 10 years of experience, 20 years of education, and who has had previous training. The owner also owns other firms and the main source of finance is a formal loan. (ii) The firm that is most likely to be informal is a firm aged 2 years, located in a rural area and does not belong to a cluster. The owner is an ever-married 20 year old female, has zero years of experience, five years of education, and no previous training. The owner does not own other firms and the main source of his/her finance comes from savings.

Table 1: Share of Formal vs. Informal Firms

	Egypt		Turkey	
Informal1	**Frequency**	**Percent**	**Frequency**	**Percent**
0	3,832	77.3	4,763	95.2
1	1,125	22.7	237	4.8
Total	4,958	100	5,000	100

Source**:** Constructed by the authors using the MSE dataset (2004).

Table 2: Informality and Productivity

	Productivity			
	Egypt		Turkey	
Informal1	**Mean**	**Freq**	**Mean**	**Freq.**
0	1210.82	3,832	473741	4585
1	616.365	1,125	156477	227
Total	1067.91	4954	458774	4812

Source**:** Constructed by the authors using the MSE dataset (2004).

Table 3: Gender, Informality and Productivity

	Productivity					
	Egypt			Turkey		
Informal1	**Male**	**Female**	**Total**	**male**	**Female**	**Total**
0	1235.56	988.593	1210.82	450899	830355	473741
	3455	377	3832	4309	276	4585
1	652.207	351.585	616.365	182454	59600.7	156477
	983	142	1125	179	48	227
Total	1097.58	814.306	1067.91	440192	716169	458774
	4438	519	4954	4488	324	4812

Source**:** Constructed by the authors using the MSE dataset (2004).

Table 4: Characteristics of Formal and Informal Firms

	Egypt			Turkey		
	Formal	**Informal**	**Ratio**	**Formal**	**Informal**	**Ratio**
Labor	2.3	1.7	1.3	4.2	2.6	1.6
Capital	13309.8	2098.7	6.3	9942338.0	2110300.0	4.7
Output	5689.4	1203.2	4.7	2880581.0	421494.7	6.8
Productivity	2482.0	695.1	3.6	688372.6	163005.2	4.2
Education	9.0	6.7	1.3	8.587482	6.380753	1.3
Age	40.5	39.7	1.0	37.00987	36.70711	1.0
Firm's age	13.8	7.8	1.8	11	10.3	1.1

Source**:** Constructed by the authors using the MSE dataset (2004).

Table 5: Summary Statistics for Egypt

Variable	Obs.	Mean	Std. Dev.	Min	Max
Informal	4958	0.227	0.419	0	1
Endowments					
Ln(Output)	4955	4.857	5.509	-11.513	16.118
Ln(Productivity)	4954	5.382	2.250	-3.401	13.479
Ln(Labor)	4958	0.594	0.551	0	3.689
Ln(Capital)	4951	7.289	1.291	2.708	16.811
Ln(Raw. Mat.)	4955	0.752	7.919	-11.513	16.118
Ln(Energy)	4956	2.304	4.008	-11.513	8.631
Infrastructure					
Access Water	4955	0.406	0.491	0	1
Access Electricity	4957	0.933	0.250	0	1
Access Phone	4947	0.279	0.449	0	1
Access Sewage	4946	0.318	0.466	0	1
Access Road	4954	0.892	0.310	0	1
Access Tranp. Work.	4951	0.033	0.180	0	1
Access Transp. Good	4947	0.050	0.217	0	1
Access Daycare	4935	0.002	0.045	0	1
Competition					
Comp. from imports	4958	0.285	0.451	0	1
Comp. from large firms	4958	0.615	0.487	0	1
Comp. Small	4958	0.605	0.489	0	1
Comp. Micro	4958	0.586	0.493	0	1
Technology					
Modern technology	4958	0.189	0.392	0	1
Electronic equipment	4958	0.132	0.339	0	1
Electric equipment	4958	0.523	0.500	0	1
Mechanical equipment	4958	0.243	0.429	0	1
Source of Finance					
Formal loan	4958	0.023	0.149	0	1
Savings	4958	0.686	0.464	0	1
Owner characteristics					
Gender	4958	1.105	0.306	1	2
Ln(Exp.)	4897	2.706	0.940	0	4.263
Ln(Education)	4956	-1.384	6.791	-13.816	2.996
Training	4958	0.298	0.457	0	1
Firms characteristics					
Ln(Firm Age)	4641	2.032	1.079	0	4.382
Urban	4958	0.894	0.307	0	1
Other act.	4952	0.039	0.193	0	1
Cluster	4951	0.272	0.445	0	1

Table 6: Summary Statistics for Turkey

Variable	Obs	Mean	Std. Dev.	Min	Max
Informal	5000	0.048	0.213	0	1
Endowments					
Ln(Output)	4812	10.318	8.372	-11.513	21.416
Ln(Productivity)	4812	8.816	9.498	-16.118	18.459
Ln(Labor)	5000	1.057	0.771	0	3.871
Ln(Capital)	4663	14.190	4.078	-13.816	22.004
Infrastructure					
Access Water	5000	0.931	0.253	0	1
Access Electricity	5000	0.997	0.058	0	1
Access Phone	5000	0.978	0.146	0	1
Access Sewage	5000	0.908	0.289	0	1
Access Road	5000	0.992	0.089	0	1
Access Tranp. Work.	5000	0.986	0.117	0	1
Access Transp. Good	5000	0.884	0.320	0	1
Access Daycare	5000	0.289	0.453	0	1
Competition					
Comp. from imports	5000	0.289	0.453	0	1
Comp. from large firms	5000	0.327	0.469	0	1
Comp. Small	5000	0.381	0.486	0	1
Comp. Micro	5000	0.484	0.500	0	1
Technology					
Modern Technology	5000	0.496	0.500	0	1
Electronic equipment	5000	0.482	0.500	0	1
Electric equipment	5000	0.823	0.381	0	1
Mechanical equipment	5000	0.692	0.462	0	1
Source of Finance					
Formal loan	5000	0.018	0.134	0	1
Savings	5000	0.738	0.440	0	1
Owner characteristics					
Gender	5000	1.069	0.253	1	2
Ln(Exp.)	4987	2.918	0.683	0	4.205
Ln(Education)	5000	1.857	1.848	-13.816	3.135
Training	5000	0.292	0.455	0	1
Firms characteristics					
Ln(Firm Age)	4957	2.075	0.806	0.693	4.635
Urban	5000	0.628	0.483	0	1
Other act.	5000	0.955	0.207	0	1
Cluster	5000	0.186	0.389	0	1

Table 7: Estimation Results - Determinants of Informality for Egypt

	Egypt				
	Informal 1 dy/dx	**Informal 2 dy/dx**	**Informal 3 dy/dx**	**Informal 4 dy/dx**	**Informal 5 Coefficient**
Reference individual	0.2008	0.1528	0.1122	0.3226	
Female	0.069**	0.072***	0.055**	0.163***	0.212***
	(0.027)	(0.026)	(0.022)	(0.030)	(0.047)
Ever married	0.046**	0.038*	0.018	0.005	0.074*
	(0.022)	(0.020)	(0.016)	(0.026)	(0.042)
Age	-0.012***	-0.011***	-0.008***	-0.014***	-0.025***
	(0.003)	(0.003)	(0.002)	(0.004)	(0.007)
Age sq.	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Firm Age)	-0.123***	-0.113***	-0.079***	-0.122***	-0.275***
	(0.014)	(0.015)	(0.013)	(0.010)	(0.013)
Ln(Exp.)	0.043***	0.039***	0.026***	0.024	0.102***
	(0.013)	(0.012)	(0.009)	(0.015)	(0.025)
Ln(Education)	-0.009***	-0.008***	-0.006***	-0.008***	-0.021***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Training	-0.049***	-0.054***	-0.049***	-0.081***	-0.150***
	(0.014)	(0.012)	(0.011)	(0.016)	(0.028)
Urban	-0.098***	-0.082***	-0.057***	-0.106***	-0.293***
	(0.020)	(0.018)	(0.014)	(0.024)	(0.042)
Other act.	-0.003	-0.084***	-0.062***	-0.063	-0.181***
	(0.035)	(0.023)	(0.019)	(0.039)	(0.067)
Cluster	0.124***	0.144***	0.127***	0.109***	0.264***
	(0.021)	(0.024)	(0.024)	(0.019)	(0.028)
Formal loan	-0.102***	-0.064**	-0.038	-0.123***	-0.219**
	(0.035)	(0.032)	(0.029)	(0.047)	(0.088)
Savings	0.047***	0.051***	0.061***	0.028	0.079***
	(0.016)	(0.015)	(0.015)	(0.018)	(0.028)
Constant					0.900***
					(0.133)
R squared					0.170
Observations	4591	4591	4591	4591	4,581

Notes: (i) *** p<0.01, ** p<0.05, * p<0.1. (ii) Standard errors in parentheses. (iii) Calculations are for a reference individual with means for the continuous variables and zeros for dummy variables. (iv) Informal 1: the industrial/commercial non-registration. Informal 2: 1 + no official business license. Informal 3: 2 + neither acquire a tax card nor join any social insurance scheme. Informal 4: no social insurance scheme. Inf. Factor analysis: index of informality constructed using factor analysis.

Table 8: Estimation Results - Determinants of Informality for Turkey

	Turkey				
	Informal 1 dy/dx	**Informal 2 dy/dx**	**Informal 3 dy/dx**	**Informal 4 dy/dx**	**Informal 5 Coefficient**
Reference individual	0.2141	0.1910	0.1391	0.3199	
Female	0.388***	0.405***	0.431***	0.251***	0.257***
	(0.050)	(0.053)	(0.066)	(0.036)	(0.056)
Ever married	0.023	0.015	-0.000	-0.034	-0.028
	(0.039)	(0.037)	(0.032)	(0.027)	(0.044)
Age	-0.031***	-0.030***	-0.028***	-0.051***	-0.044***
	(0.007)	(0.007)	(0.008)	(0.006)	(0.008)
Age sq.	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Firm Age)	-0.112***	-0.103***	-0.065***	-0.094***	-0.124***
	(0.024)	(0.025)	(0.022)	(0.014)	(0.017)
Ln(Exp.)	0.116***	0.108***	0.115***	0.113***	0.139***
	(0.037)	(0.037)	(0.041)	(0.025)	(0.035)
Ln(Education)	-0.017***	-0.016***	-0.014***	-0.028***	-0.040***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)
Training	-0.042	-0.044*	-0.051**	-0.068***	-0.044
	(0.026)	(0.026)	(0.024)	(0.020)	(0.029)
Urban	-0.120***	-0.117***	-0.101***	-0.131***	-0.142***
	(0.030)	(0.031)	(0.032)	(0.021)	(0.027)
Other act.	-0.145***	-0.127***	-0.090**	-0.049	-0.278***
	(0.041)	(0.039)	(0.035)	(0.040)	(0.062)
Cluster	-0.081**	-0.083**	-0.058*	-0.085***	-0.045
	(0.033)	(0.033)	(0.031)	(0.024)	(0.033)
Formal loan	-0.140**	-0.115*	-0.053	-0.008	-0.194**
	(0.060)	(0.060)	(0.063)	(0.061)	(0.098)
Savings	-0.078***	-0.068***	-0.044*	-0.081***	-0.091***
	(0.027)	(0.026)	(0.024)	(0.021)	(0.030)
Constant					1.317***
					(0.155)
R squared					0.046
Observations	4,944	4,944	4,944	4,944	4,944

Notes: (i) *** p<0.01, ** p<0.05, * p<0.1. (ii) Standard errors in parentheses. (iii) Calculations are for a reference individual with means for the continuous variables and zeros for dummy variables. (iv) Informal 1: the industrial/commercial non-registration. Informal 2: 1 + no official business license. Informal 3: 2 + neither acquire a tax card nor join any social insurance scheme. Informal 4: no social insurance scheme. Inf. Factor analysis: index of informality constructed using factor analysis.

Table 9: Results of the Switching Regression Model

Determinants of Informality (1)

	Dependent variable: No social insurance					
	Egypt			Turkey		
Ln(Labor)	-0.193***	-0.0947*	-0.0875*	-0.108***	-0.0835***	-0.0633**
	(0.0451)	(0.0484)	(0.0490)	(0.0236)	(0.0239)	(0.0250)
Ln(Capital)	-0.216***	-0.184***	-0.181***	0.00293	0.00494	0.00513
	(0.0196)	(0.0205)	(0.0206)	(0.00438)	(0.00439)	(0.00442)
Ln(Raw. Mat.)	0.00418	0.00609**	0.00615**			
	(0.00274)	(0.00287)	(0.00290)			
Female	0.344***	0.302***	0.322***	0.0653*	0.0653*	0.0909***
	(0.0752)	(0.0782)	(0.0788)	(0.0347)	(0.0350)	(0.0336)
Ever married	-0.0141	-0.0272	-0.0306	0.0158	0.0165	0.0140
	(0.0706)	(0.0727)	(0.0729)	(0.0293)	(0.0314)	(0.0340)
Age	-0.0331***	-0.0343***	-0.0356***	-0.0279***	-0.0259***	-0.0261***
	(0.0119)	(0.0121)	(0.0121)	(0.00602)	(0.00608)	(0.00622)
Age sq.	0.000307**	0.000338***	0.000353***	0.000261***	0.000239***	0.000239***
	(0.000120)	(0.000122)	(0.000122)	(6.43e-05)	(6.48e-05)	(6.64e-05)
Ln(Firm Age)	-0.316***	-0.301***	-0.304***	-0.0268**	-0.0285**	-0.0295**
	(0.0215)	(0.0221)	(0.0223)	(0.0137)	(0.0143)	(0.0140)
Ln(Exp.)	0.0620	0.0521	0.0570	0.0574**	0.0470*	0.0494**
	(0.0405)	(0.0417)	(0.0420)	(0.0270)	(0.0274)	(0.0244)
Ln(Education)	-0.0169***	-0.00943***	-0.00830**	-0.0166***	-0.0161***	-0.0156***
	(0.00328)	(0.00346)	(0.00350)	(0.00313)	(0.00325)	(0.00295)
Training	-0.160***	-0.103**	-0.0959*	0.00819	0.0128	0.0352
	(0.0499)	(0.0509)	(0.0516)	(0.0224)	(0.0234)	(0.0233)
Urban	-0.218***	-0.164**	-0.157**	-0.0647***	-0.0634***	-0.0546**
	(0.0667)	(0.0694)	(0.0696)	(0.0204)	(0.0211)	(0.0213)
Other act.	-0.140	-0.0862	-0.0766	-0.0737**	-0.0651*	-0.0917**
	(0.119)	(0.120)	(0.121)	(0.0366)	(0.0392)	(0.0402)
Cluster	0.348***	0.266***	0.261***	-0.00448	-0.0171	-0.0207
	(0.0486)	(0.0507)	(0.0509)	(0.0296)	(0.0308)	(0.0306)
Formal loan	-0.362**	-0.318**	-0.309*	0.0518	0.0582	0.0794
	(0.160)	(0.159)	(0.159)	(0.0556)	(0.0543)	(0.0517)
Savings	0.0566	0.0234	0.0156	-0.0424*	-0.0365	-0.0432*
	(0.0480)	(0.0490)	(0.0492)	(0.0219)	(0.0226)	(0.0223)
Access Water		0.00875	-0.00131		-0.220**	-0.202**
		(0.0638)	(0.0644)		(0.0885)	(0.0871)
Access Electricity		-1.182***	-1.177***		-0.0414	0.0582
		(0.0955)	(0.0968)		(0.314)	(0.317)
Access Phone		-0.173***	-0.160***		-0.385***	-0.366***
		(0.0555)	(0.0564)		(0.124)	(0.125)
Access Sewage		-0.0239	-0.00321		-0.0397	-0.0420
		(0.0686)	(0.0694)		(0.0805)	(0.0794)
Access Road		-0.315***	-0.336***		0.107	0.122
		(0.0680)	(0.0687)		(0.238)	(0.235)
AccTranp. Work.		-0.197	-0.175		-0.225	-0.227
		(0.174)	(0.174)		(0.189)	(0.188)
Acc Transp. Good		0.203	0.203		-0.290***	-0.257***
		(0.146)	(0.146)		(0.0583)	(0.0613)
Access Daycare		0.900**	0.905**		-0.0833**	-0.0834**
		(0.445)	(0.446)		(0.0403)	(0.0417)
Comp. imports			-0.0631			0.0171
			(0.0515)			(0.0443)
Comp. large firms			0.0488			0.151**
			(0.125)			(0.0695)
Comp. Small			0.0877			-0.150**
			(0.133)			(0.0717)
Comp. Micro			-0.00763			0.0244
			(0.0637)			(0.0442)

Table 9: Continued

	Dependent variable: No social insurance					
	Egypt			Turkey		
Modern Technology			-0.0581			0.00618
			(0.0635)			(0.0402)
Electronic equip.			-0.0406			-0.0715*
			(0.0731)			(0.0404)
Electric equipment			-0.0384			-0.180***
			(0.0496)			(0.0502)
Mechanical equip.			0.0740			-0.000685
			(0.0555)			(0.0418)
Constant	2.347***	3.477***	3.436***	0.250**	1.220***	1.208***
	(0.254)	(0.279)	(0.282)	(0.127)	(0.376)	(0.376)
Observations	4580	4529	4529	4503	4503	4503

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10: Results of the Switching Regression Model

Determinants of Informality (2)

	Dependent variable: at least one aspect of informality					
	Egypt			Turkey		
Ln(Labor)	-0.216***	-0.147***	-0.143***	-0.138***	-0.112***	-0.0875***
	(0.0436)	(0.0467)	(0.0473)	(0.0227)	(0.0230)	(0.0244)
Ln(Capital)	-0.226***	-0.195***	-0.191***	-0.000971	0.00200	0.00263
	(0.0190)	(0.0198)	(0.0199)	(0.00441)	(0.00444)	(0.00447)
Ln(Raw. Mat.)	0.00733***	0.00949***	0.00942***			
	(0.00268)	(0.00280)	(0.00284)			
Female	0.306***	0.264***	0.291***	0.0562*	0.0551*	0.0599*
	(0.0747)	(0.0777)	(0.0782)	(0.0320)	(0.0320)	(0.0318)
Ever married	0.0174	0.00918	0.00524	0.00691	0.0104	-0.000689
	(0.0691)	(0.0711)	(0.0714)	(0.0253)	(0.0268)	(0.0267)
Age	-0.0335***	-0.0352***	-0.0363***	-0.0207***	-0.0204***	-0.0194***
	(0.0117)	(0.0119)	(0.0119)	(0.00500)	(0.00502)	(0.00487)
Age sq.	0.000337***	0.000370***	0.000382***	0.000198***	0.000198***	0.000187***
	(0.000117)	(0.000120)	(0.000120)	(5.22e-05)	(5.21e-05)	(5.07e-05)
Ln(Firm Age)	-0.341***	-0.328***	-0.334***	-0.0170	-0.0192*	-0.0196*
	(0.0211)	(0.0216)	(0.0218)	(0.0110)	(0.0115)	(0.0119)
Ln(Exp.)	0.0845**	0.0749*	0.0772*	0.0551**	0.0474**	0.0458**
	(0.0401)	(0.0413)	(0.0416)	(0.0238)	(0.0240)	(0.0225)
Ln(Education)	-0.0163***	-0.00993***	-0.00880***	-0.0123***	-0.0115***	-0.0113***
	(0.00320)	(0.00336)	(0.00340)	(0.00293)	(0.00305)	(0.00300)
Training	-0.108**	-0.0600	-0.0496	0.0134	0.0121	0.0209
	(0.0476)	(0.0487)	(0.0495)	(0.0183)	(0.0191)	(0.0192)
Urban	-0.230***	-0.184***	-0.176**	-0.0385**	-0.0340*	-0.0294*
	(0.0658)	(0.0684)	(0.0686)	(0.0167)	(0.0175)	(0.0176)
Other act.	-0.0572	0.000415	0.0164	-0.0550*	-0.0516	-0.0602
	(0.113)	(0.114)	(0.114)	(0.0320)	(0.0346)	(0.0367)
Cluster	0.316***	0.245***	0.232***	0.00920	-0.00531	-0.00248
	(0.0474)	(0.0495)	(0.0499)	(0.0223)	(0.0238)	(0.0234)
Formal loan	-0.383**	-0.342**	-0.337**	0.0314	0.0377	0.0563
	(0.154)	(0.154)	(0.154)	(0.0491)	(0.0503)	(0.0494)
Savings	0.0432	0.0180	0.0140	-0.0308*	-0.0244	-0.0261
	(0.0464)	(0.0473)	(0.0476)	(0.0183)	(0.0193)	(0.0195)
Access Water		0.0521	0.0375		-0.168*	-0.154*
		(0.0619)	(0.0625)		(0.0876)	(0.0880)
Access Electricity		-1.206***	-1.200***		-0.387	-0.283
		(0.100)	(0.102)		(0.366)	(0.370)
Access Phone		-0.164***	-0.150***		-0.387***	-0.362***
		(0.0532)	(0.0541)		(0.129)	(0.130)
Access Sewage		-0.0108	0.0142		-0.186**	-0.177**
		(0.0661)	(0.0669)		(0.0780)	(0.0783)
Access Road		-0.301***	-0.316***		0.140	0.174
		(0.0676)	(0.0683)		(0.239)	(0.240)
AccTranp. Work.		-0.0132	0.00970		-0.0416	-0.0541
		(0.167)	(0.167)		(0.192)	(0.194)
Acc.Trsp. Good		0.126	0.122		-0.395***	-0.364***
		(0.143)	(0.143)		(0.0575)	(0.0596)
Access Daycare		0.796*	0.795*		-0.0760*	-0.0780*
		(0.448)	(0.447)		(0.0388)	(0.0404)
Comp. imports			-0.0295			0.0579
			(0.0499)			(0.0431)
Comp. large firms			0.188			0.0840
			(0.120)			(0.0664)
Comp. Small			-0.0438			-0.125*
			(0.128)			(0.0677)
Comp. Micro			-0.0675			-0.00103
			(0.0617)			(0.0423)

Table 10: Continued

	Dependent variable: at least one aspect of informality					
	Egypt			Turkey		
Modern Tech.			-0.0925			-0.00705
			(0.0613)			(0.0377)
Electronic equip.			-0.0677			-0.0491
			(0.0710)			(0.0385)
Electric equip.			-0.0625			-0.213***
			(0.0481)			(0.0497)
Mechanical equip.			0.126**			-0.0451
			(0.0534)			(0.0402)
Constant	2.527***	3.684***	3.663***	0.291**	1.582***	1.584***
	(0.248)	(0.276)	(0.279)	(0.115)	(0.419)	(0.421)
Observations	4580	4529	4529	4503	4503	4503

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 11: Estimation Results – Impact of Informality on Productivity in Egypt

	Not registered		No insurance		One informal asp.	
	Ln(Output)	**Ln(Productivity)**	**Ln(Output)**	**Ln(Productivity)**	**Ln(Output)**	**Ln(Productivity)**
Informal (reg.)	-0.612***	-0.153*				
	(0.221)	(0.0881)				
Informal (insurance)			-0.434**	-0.0704		
			(0.194)	(0.0773)		
Inf. (one asp.)					-0.464**	-0.0859
					(0.186)	(0.0740)
Ln(Labor)	0.835***		0.843***		0.835***	
	(0.169)		(0.169)		(0.169)	
Ln(Capital)	0.508***	0.515***	0.507***	0.516***	0.502***	0.515***
	(0.0700)	(0.0270)	(0.0702)	(0.0271)	(0.0703)	(0.0272)
Ln(Raw. Mat.)	0.103***	0.0395***	0.103***	0.0394***	0.104***	0.0395***
	(0.0103)	(0.00410)	(0.0103)	(0.00410)	(0.0103)	(0.00410)
Ln(Energy)	-0.113***	-0.0476***	-0.110***	-0.0462***	-0.111***	-0.0465***
	(0.0363)	(0.0144)	(0.0363)	(0.0144)	(0.0362)	(0.0144)
Access Water	-0.236	-0.183**	-0.234	-0.182**	-0.228	-0.181**
	(0.233)	(0.0922)	(0.233)	(0.0922)	(0.233)	(0.0922)
Access Elec.	-0.446	-0.106	-0.389	-0.0856	-0.386	-0.0863
	(0.546)	(0.217)	(0.545)	(0.217)	(0.545)	(0.217)
Access Phone	-0.835***	-0.269***	-0.828***	-0.266***	-0.830***	-0.267***
	(0.196)	(0.0776)	(0.196)	(0.0776)	(0.196)	(0.0776)
Access Sewage	0.709***	0.224**	0.695***	0.220**	0.697***	0.220**
	(0.248)	(0.0987)	(0.248)	(0.0987)	(0.248)	(0.0987)
Access Road	3.200***	1.129***	3.210***	1.136***	3.209***	1.134***
	(0.259)	(0.103)	(0.259)	(0.103)	(0.259)	(0.103)
Acc.Trp. Work.	-1.095*	-0.639***	-1.097*	-0.638***	-1.075*	-0.634***
	(0.613)	(0.244)	(0.613)	(0.244)	(0.613)	(0.244)
Acc. Trp. Good	1.940***	0.796***	1.933***	0.793***	1.928***	0.792***
	(0.512)	(0.204)	(0.512)	(0.204)	(0.512)	(0.204)
Acc. Daycare	-0.843	-0.903	-0.818	-0.906	-0.827	-0.905
	(1.742)	(0.694)	(1.743)	(0.694)	(1.742)	(0.694)
Comp. imports	0.0276	0.0121	0.0248	0.0122	0.0280	0.0125
	(0.183)	(0.0729)	(0.183)	(0.0729)	(0.183)	(0.0729)
Comp. large firms	0.406	0.116	0.351	0.102	0.370	0.105
	(0.434)	(0.173)	(0.433)	(0.173)	(0.433)	(0.173)
Comp. Small	-0.392	-0.146	-0.340	-0.133	-0.355	-0.136
	(0.461)	(0.184)	(0.461)	(0.184)	(0.461)	(0.184)
Comp. Micro	0.843***	0.443***	0.836***	0.441***	0.827***	0.440***
	(0.225)	(0.0898)	(0.226)	(0.0898)	(0.226)	(0.0898)
Modern Tech.	0.191	0.114	0.196	0.116	0.191	0.114
	(0.222)	(0.0884)	(0.222)	(0.0884)	(0.222)	(0.0884)
Electronic equip.	0.328	0.123	0.337	0.125	0.334	0.124
	(0.254)	(0.101)	(0.254)	(0.101)	(0.254)	(0.101)
Electric equipment	0.239	0.0490	0.247	0.0515	0.243	0.0506
	(0.179)	(0.0715)	(0.179)	(0.0715)	(0.179)	(0.0715)
Mechanical equip.	0.0580	-0.0172	0.0387	-0.0227	0.0473	-0.0210
	(0.199)	(0.0792)	(0.199)	(0.0791)	(0.199)	(0.0792)
Cluster	-0.0989	-0.0594	-0.114	-0.0654	-0.114	-0.0650
	(0.182)	(0.0724)	(0.182)	(0.0724)	(0.182)	(0.0723)
Formal loan	-0.262	-0.247	-0.249	-0.240	-0.256	-0.242
	(0.549)	(0.219)	(0.549)	(0.219)	(0.549)	(0.219)
Savings	0.316*	0.176**	0.308*	0.174**	0.308*	0.174**
	(0.174)	(0.0693)	(0.174)	(0.0693)	(0.174)	(0.0693)
Gender	0.271	0.0949	0.303	0.0997	0.304	0.101
	(0.282)	(0.112)	(0.282)	(0.112)	(0.282)	(0.112)
Ln(Firm Age)	-0.356***	-0.142***	-0.333***	-0.133***	-0.342***	-0.136***
	(0.0828)	(0.0329)	(0.0816)	(0.0325)	(0.0820)	(0.0326)
Ln(Exp.)	0.0947	0.0325	0.0781	0.0286	0.0843	0.0297
	(0.0981)	(0.0389)	(0.0980)	(0.0389)	(0.0980)	(0.0389)
Ln(Education)	0.0223*	0.00498	0.0237*	0.00541	0.0233*	0.00532
	(0.0125)	(0.00500)	(0.0125)	(0.00499)	(0.0125)	(0.00499)

Table 11: Continued

	Not registered		No insurance		One informal asp.	
	Ln(Output)	**Ln(Productivity)**	**Ln(Output)**	**Ln(Productivity)**	**Ln(Output)**	**Ln(Productivity)**
Training	0.445**	0.143**	0.437**	0.142**	0.441**	0.143**
	(0.178)	(0.0709)	(0.178)	(0.0709)	(0.178)	(0.0709)
Urban	0.0327	0.0193	0.0623	0.0285	0.0559	0.0267
	(0.267)	(0.106)	(0.266)	(0.106)	(0.266)	(0.106)
Other act.	1.633***	0.637***	1.608***	0.632***	1.620***	0.634***
	(0.420)	(0.167)	(0.420)	(0.168)	(0.420)	(0.168)
Constant	-2.352**	0.521	-2.460***	0.455	-2.391**	0.478
	(0.928)	(0.370)	(0.928)	(0.370)	(0.929)	(0.371)
Observations	4529	4529	4529	4529	4529	4529
R-squared	0.122	0.161	0.122	0.161	0.122	0.161

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 12: Estimation Results – Impact of Informality on Productivity in Turkey

	Not registered		No insurance		One informal asp.	
	Ln(Output)	Ln(Productivity)	Ln(Output)	Ln(Productivity)	Ln(Output)	Ln(Productivity)
Informal (reg.)	-1.703***	-1.904***				
	(0.616)	(0.702)				
Informal (insurance)			-1.086***	-1.211***		
			(0.345)	(0.393)		
Inf. (one aspect)					-0.658**	-0.744**
					(0.295)	(0.335)
Ln(Labor)	1.032***		1.014***		1.019***	
	(0.175)		(0.175)		(0.175)	
Ln(Capital)	0.158***	0.180***	0.157***	0.178***	0.158***	0.180***
	(0.0333)	(0.0375)	(0.0333)	(0.0375)	(0.0333)	(0.0375)
Access Water	-0.377	-0.467	-0.424	-0.523	-0.369	-0.461
	(0.607)	(0.691)	(0.607)	(0.692)	(0.607)	(0.691)
Access Electricity	5.090**	5.764**	5.896***	6.676***	5.948***	6.729***
	(2.149)	(2.449)	(2.121)	(2.418)	(2.122)	(2.419)
Access Phone	-0.134	-0.193	-0.139	-0.200	-0.0755	-0.130
	(0.863)	(0.984)	(0.862)	(0.983)	(0.862)	(0.983)
Access Sewage	-1.167**	-1.294**	-1.181**	-1.313**	-1.248**	-1.388**
	(0.542)	(0.617)	(0.542)	(0.617)	(0.543)	(0.618)
Access Road	1.672	1.854	1.570	1.741	1.576	1.748
	(1.604)	(1.830)	(1.603)	(1.829)	(1.604)	(1.830)
Acc.Tranp. Work.	-0.849	-1.011	-0.838	-0.997	-0.740	-0.888
	(1.290)	(1.471)	(1.289)	(1.471)	(1.290)	(1.471)
Acc. Trp. Good	-1.856***	-2.156***	-1.867***	-2.167***	-1.903***	-2.208***
	(0.411)	(0.468)	(0.411)	(0.468)	(0.412)	(0.470)
Access Daycare	-2.084***	-2.427***	-2.053***	-2.389***	-2.073***	-2.412***
	(0.281)	(0.319)	(0.281)	(0.319)	(0.281)	(0.319)
Comp. imports	1.561***	1.778***	1.540***	1.754***	1.574***	1.792***
	(0.295)	(0.336)	(0.295)	(0.336)	(0.295)	(0.336)
Comp. large firms	1.218***	1.385***	1.230***	1.398***	1.186***	1.348**
	(0.458)	(0.523)	(0.458)	(0.523)	(0.459)	(0.523)
Comp. Small	-2.123***	-2.403***	-2.113***	-2.392***	-2.104***	-2.382***
	(0.470)	(0.536)	(0.470)	(0.536)	(0.470)	(0.536)
Comp. Micro	0.451	0.471	0.472	0.495	0.470	0.493
	(0.297)	(0.339)	(0.297)	(0.339)	(0.297)	(0.339)
Modern Tech.	0.760***	0.898***	0.746***	0.878***	0.757***	0.891***
	(0.256)	(0.289)	(0.256)	(0.289)	(0.256)	(0.289)
Electronic equip.	-0.836***	-0.934***	-0.802***	-0.902***	-0.796***	-0.893***
	(0.266)	(0.298)	(0.266)	(0.297)	(0.266)	(0.297)
Electric equip.	0.356	0.420	0.359	0.422	0.384	0.450
	(0.352)	(0.401)	(0.351)	(0.400)	(0.351)	(0.400)
Mechanical equip.	-0.0166	0.00454	-0.0724	-0.0612	-0.0865	-0.0762
	(0.284)	(0.323)	(0.283)	(0.322)	(0.284)	(0.322)
Cluster	-1.347***	-1.512***	-1.358***	-1.526***	-1.323***	-1.487***
	(0.313)	(0.357)	(0.313)	(0.357)	(0.313)	(0.357)
Formal loan	-1.701*	-1.917*	-1.626*	-1.835*	-1.647*	-1.858*
	(0.892)	(1.017)	(0.892)	(1.017)	(0.892)	(1.017)
Savings	-0.0667	-0.0594	-0.0774	-0.0738	-0.0676	-0.0628
	(0.281)	(0.320)	(0.281)	(0.320)	(0.281)	(0.320)
Gender	0.573	0.658	0.486	0.562	0.440	0.511
	(0.515)	(0.588)	(0.512)	(0.584)	(0.512)	(0.584)
Ln(Firm Age)	-0.0895	-0.0901	-0.107	-0.111	-0.0925	-0.0954
	(0.155)	(0.176)	(0.155)	(0.176)	(0.155)	(0.176)
Ln(Exp.)	0.166	0.175	0.0885	0.0899	0.129	0.134
	(0.193)	(0.219)	(0.195)	(0.221)	(0.194)	(0.220)
Ln(Education)	0.190***	0.215***	0.188***	0.212***	0.198***	0.223***
	(0.0708)	(0.0806)	(0.0707)	(0.0806)	(0.0706)	(0.0805)
Training	-0.417	-0.444	-0.423	-0.451	-0.399	-0.423
	(0.268)	(0.306)	(0.268)	(0.306)	(0.268)	(0.306)
Urban	0.952***	1.080***	0.921***	1.044***	0.946***	1.071***
	(0.252)	(0.287)	(0.253)	(0.288)	(0.253)	(0.288)
Other act.	0.785	0.838	0.897	0.969	0.914	0.986
	(0.573)	(0.651)	(0.570)	(0.648)	(0.570)	(0.648)
Constant	2.402	1.262	2.177	0.994	1.777	0.566
	(2.722)	(3.102)	(2.696)	(3.072)	(2.696)	(3.072)
Observations	4503	4503	4503	4503	4503	4503
R-squared	0.073	0.062	0.073	0.062	0.072	0.061

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 13: Results of the Switching Regression Model in Egypt and Turkey (1)

	Egypt						Turkey					
	Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)	
	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal
Ln(Labor)	0.864**	0.820***	0.888**	0.797***	0.682*	0.786***	-0.209	0.404**	-0.136	0.578***	-0.187	0.681***
	(0.366)	(0.179)	(0.358)	(0.187)	(0.353)	(0.189)	(0.547)	(0.176)	(0.518)	(0.177)	(0.516)	(0.187)
Ln(Capital)	0.430**	0.532***	0.549***	0.539***	0.554***	0.516***	0.0277	0.0821**	0.0192	0.1000***	0.0547	0.104***
	(0.188)	(0.0791)	(0.168)	(0.0788)	(0.163)	(0.0795)	(0.0841)	(0.0365)	(0.0797)	(0.0363)	(0.0771)	(0.0364)
Ln(Raw. Mat.)	0.123***	0.0964***	0.139***	0.0922***	0.141***	0.0917***						
	(0.0198)	(0.0119)	(0.0194)	(0.0119)	(0.0191)	(0.0122)						
Access Water			1.028**	-0.558**	0.915**	-0.576**			-1.148	-1.525**	-0.687	-1.334**
			(0.475)	(0.266)	(0.465)	(0.269)			(1.246)	(0.679)	(1.202)	(0.678)
Access Electricity			-2.071***	0.729	-2.357***	0.628			8.050***	1.493	6.975**	1.976
			(0.596)	(0.745)	(0.566)	(0.747)			(3.025)	(2.649)	(2.923)	(2.649)
Access Phone			-0.876**	-0.642***	-0.905**	-0.704***			0.252	-2.551**	0.481	-2.388**
			(0.442)	(0.215)	(0.437)	(0.218)			(1.451)	(1.011)	(1.401)	(1.011)
Access Sewage			-0.233	0.892***	-0.496	0.918***			-1.198	-0.631	-1.189	-0.587
			(0.518)	(0.279)	(0.512)	(0.282)			(1.215)	(0.597)	(1.175)	(0.597)
Access Road			3.593***	3.554***	2.881***	3.511***			3.035	0.910	2.744	1.045
			(0.427)	(0.333)	(0.430)	(0.334)			(2.800)	(1.869)	(2.689)	(1.860)
Access Tranp. Work.			-0.440	-1.395**	-0.204	-1.316*			-1.405	-1.435	-2.082	-1.570
			(1.245)	(0.710)	(1.213)	(0.711)			(2.285)	(1.504)	(2.192)	(1.497)
Access Transp. Good			1.481	1.947***	1.014	1.951***			-2.017**	-1.891***	-1.323	-2.087***
			(1.025)	(0.596)	(1.003)	(0.595)			(0.917)	(0.445)	(0.915)	(0.457)
Access Daycare			0.153	-3.257	0.341	-3.197			-5.688***	-0.733**	-5.782***	-0.485
			(2.431)	(2.607)	(2.368)	(2.606)			(0.716)	(0.297)	(0.702)	(0.305)
Comp. from imports					0.126	0.0836					2.796***	0.762**
					(0.343)	(0.215)					(0.825)	(0.320)
Comp. large firms					0.432	0.214					1.785	1.519***
					(0.788)	(0.516)					(1.318)	(0.497)
Comp. Small					-0.413	-0.422					-6.140***	-1.357***
					(0.855)	(0.547)					(1.347)	(0.510)

Table 13: Continued

	Egypt						Turkey					
	Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)	
	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal
Comp. Micro					1.962***	0.542**					0.167	0.264
					(0.446)	(0.260)					(0.781)	(0.323)
Modern Technology					1.287***	0.144					2.501***	0.145
					(0.480)	(0.249)					(0.663)	(0.280)
Electronic equipment					-0.388	0.580**					-0.814	-0.280
					(0.566)	(0.283)					(0.697)	(0.287)
Electric equipment					1.486***	-0.0825					0.235	-0.977**
					(0.349)	(0.206)					(0.725)	(0.387)
Mechanical equipment					-0.571	0.195					-0.711	-0.406
					(0.392)	(0.226)					(0.648)	(0.305)
Constant	1.524	0.104	-1.022	-3.818***	-2.086*	-3.799***	6.344***	10.89***	2.515	15.82***	3.645	15.72***
	(1.022)	(0.614)	(1.131)	(1.020)	(1.122)	(1.027)	(1.720)	(0.532)	(3.799)	(2.994)	(3.669)	(2.985)
Lns1	1.710***		1.668***		1.640***		2.204***		2.135***		2.089***	
	(0.0207)		(0.0203)		(0.0201)		(0.0364)		(0.0349)		(0.0342)	
Lns2	1.672***		1.654***		1.651***		2.146***		2.137***		2.133***	
	(0.0128)		(0.0130)		(0.0129)		(0.0119)		(0.0119)		(0.0119)	
r1	-0.0837		-0.0577		-0.0381		0.260*		0.230*		0.211	
	(0.121)		(0.112)		(0.104)		(0.134)		(0.139)		(0.146)	
r2	-0.167***		-0.180***		-0.176***		3.317***		3.388***		3.574***	
	(0.0505)		(0.0509)		(0.0515)		(0.102)		(0.121)		(0.178)	
Observations	4580	4580	4529	4529	4529	4529	4503	4503	4503	4503	4503	4503

Notes: (i) Standard errors in parentheses (ii) *** p<0.01, ** p<0.05, * p<0.1. (iii) Informality is defined as firms that employ informal employees (without social insurance)

Table 14: Results of the Switching Regression Model in Egypt and Turkey (2)

	Egypt						Turkey					
	Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)	
	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal
Ln(Labor)	0.952***	0.815***	1.003***	0.789***	0.755**	0.799***	0.582	0.0967	0.646*	0.348*	0.431	0.499**
	(0.336)	(0.185)	(0.330)	(0.193)	(0.327)	(0.196)	(0.391)	(0.188)	(0.369)	(0.189)	(0.374)	(0.199)
Ln(Capital)	0.398**	0.565***	0.525***	0.563***	0.517***	0.537***	0.149**	0.0383	0.146**	0.0655*	0.164***	0.0718*
	(0.166)	(0.0825)	(0.151)	(0.0824)	(0.147)	(0.0831)	(0.0684)	(0.0389)	(0.0651)	(0.0386)	(0.0636)	(0.0388)
Ln(Raw. Mat.)	0.124***	0.0929***	0.137***	0.0882***	0.134***	0.0892***						
	(0.0185)	(0.0122)	(0.0182)	(0.0123)	(0.0180)	(0.0126)						
Access Water			0.703*	-0.602**	0.646	-0.620**			-0.667	-1.367*	-0.583	-1.149
			(0.422)	(0.279)	(0.418)	(0.282)			(0.897)	(0.752)	(0.877)	(0.751)
Access Electricity			-1.998***	1.112	-2.257***	1.008			8.209***	-1.976	7.329***	-1.226
			(0.546)	(0.828)	(0.525)	(0.830)			(2.438)	(3.286)	(2.383)	(3.298)
Access Phone			-0.869**	-0.604***	-0.875**	-0.671***			-0.491	-3.035***	-0.402	-2.954***
			(0.397)	(0.222)	(0.396)	(0.226)			(1.151)	(1.134)	(1.123)	(1.134)
Access Sewage			-0.0492	0.942***	-0.265	0.980***			-1.448*	-1.773***	-1.027	-1.658**
			(0.457)	(0.292)	(0.456)	(0.295)			(0.811)	(0.666)	(0.795)	(0.667)
Access Road			3.822***	3.340***	3.287***	3.292***			2.107	1.294	1.798	1.534
			(0.401)	(0.347)	(0.404)	(0.347)			(2.283)	(2.045)	(2.217)	(2.039)
Access Tranp. Work.			-0.275	-1.591**	-0.149	-1.497**			-0.774	-0.176	-1.354	-0.407
			(1.134)	(0.735)	(1.116)	(0.736)			(1.919)	(1.629)	(1.863)	(1.629)
Access Transp. Good			1.468	2.012***	1.137	2.015***			-1.681**	-2.856***	-1.364**	-2.913***
			(0.977)	(0.607)	(0.964)	(0.606)			(0.673)	(0.492)	(0.676)	(0.504)
Access Daycare			0.146	-3.282	0.157	-3.176			-4.979***	-0.615*	-4.921***	-0.436
			(2.392)	(2.618)	(2.351)	(2.616)			(0.565)	(0.316)	(0.559)	(0.325)
Comp. from imports					0.219	0.0458					2.663***	0.995***
					(0.314)	(0.224)					(0.615)	(0.342)
Comp. large firms					-0.0143	0.304					0.796	1.025*
					(0.732)	(0.539)					(0.982)	(0.529)
Comp. Small					-0.145	-0.512					-4.551***	-1.134**
					(0.791)	(0.570)					(1.003)	(0.542)
Comp. Micro					1.664***	0.622**					0.285	-0.00894
					(0.414)	(0.269)					(0.590)	(0.345)
Modern Technology					1.071**	0.173					2.244***	0.0843
					(0.444)	(0.256)					(0.515)	(0.298)

Table 14: Continued

	Egypt						Turkey					
	Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)		Ln(Output)	
	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal
Electronic equipment					-0.0513	0.547*					-0.737	-0.193
					(0.528)	(0.290)					(0.532)	(0.306)
Electric equipment					1.199***	-0.0783					-0.272	-1.321***
					(0.322)	(0.214)					(0.571)	(0.419)
Mechanical equipment					-0.0863	0.0459					-0.298	-0.713**
					(0.353)	(0.237)					(0.504)	(0.327)
Constant	1.542*	-0.267	-1.126	-4.289***	-1.922*	-4.261***	5.617***	12.91***	1.683	21.66***	2.946	21.71***
	(0.920)	(0.650)	(1.034)	(1.114)	(1.032)	(1.122)	(1.275)	(0.570)	(3.100)	(3.625)	(3.024)	(3.626)
Lns1	1.700***		1.659***		1.639***		2.132***		2.069***		2.036***	
	(0.0188)		(0.0189)		(0.0187)		(0.0263)		(0.0239)		(0.0234)	
Lns2	1.677***		1.660***		1.657***		2.194***		2.183***		2.178***	
	(0.0135)		(0.0137)		(0.0136)		(0.0127)		(0.0127)		(0.0127)	
r1	-0.0631		-0.0627		-0.0488		0.192*		0.135		0.115	
	(0.108)		(0.106)		(0.0998)		(0.114)		(0.118)		(0.124)	
r2	-0.202***		-0.210***		-0.205***		3.333***		3.377***		3.471***	
	(0.0490)		(0.0500)		(0.0505)		(0.0791)		(0.0895)		(0.113)	
Observations	4580	4580	4529	4529	4529	4529	4503	4503	4503	4503	4503	4503

Notes: (i) Standard errors in parentheses. (ii) *** p<0.01, ** p<0.05, * p<0.1. (iii) Informality is defined as firms who do not have at least of aspect of informality, i.e. not having a commercial registration, or a business license or a tax card or a social insurance scheme.