UNDERSTANDING THE DYNAMICS OF HOUSEHOLD
ENTERPRISES IN EGYPT: BIRTH, DEATH, GROWTH
AND TRANSFORMATION

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Abstract

Micro and small household enterprises play an enormous role in growth and employment in developing economies such as Egypt. Despite the importance of household enterprises, little is known about the creation, survival, and growth of such enterprises. This paper examines the dynamics of household enterprises, using household panel data from 1998, 2006, and 2012 in Egypt. As well as identifying the patterns of enterprise creation, dissolution, and growth, the paper identifies the individual, household, and enterprise characteristics that contribute to these dynamics. The findings demonstrate that the recent economic downturn in Egypt had a strong negative effect on household enterprise survival as well as employment growth within surviving enterprises.

JEL Classification: D2, J2, J6

Keywords: Household Enterprises, Dynamics, Employment Growth

ملخص

المشروعات الأسرية متناهية الصغر والصغيرة تلعب دورا كبيرا في النمو وفرص العمل في الاقتصادات النامية مثل مصر. وعلى الرغم من أهمية المشاريع الأسرية ، فاننا لا نعرف سوى القليل عن إنشاء وبقاء، ونمو هذه الشركات. وتناولت هذه الورقة ديناميات المشاريع الأسرية، وذلك باستخدام بيانات المسح التتبعى الأسرى لأعوام 1998، 2006، و 2012 في مصر. وبالتعرف على أنماط إنشاء المؤسسة، وحلها ونموها، حددت الورقة الخصائص الفردية والأسرية والمؤسسية المؤثرة في هذه الديناميات. و تثبت النتائج أن الانكماش الاقتصادي الأخير في مصر كان له تأثير سلبي قوي على بقاء المؤسسة المنزلية، فضلا عن نمو العمالة داخل المشروعات الأسرية التي لا تزال قائمة.

1. Introduction

Micro and small household enterprises (MSEs) play an enormous role in developing economies such as Egypt. More than a quarter of employed Egyptians have membership or ownership in a household enterprise; they work as unpaid family workers, are self-employed, or are employers of others. These enterprises are also a substantial employer of wage workers. Almost two-thirds of Egyptians who engage in private wage work are working in enterprises with one to nine employees (Assaad & Krafft, 2015a).

Entrepreneurship and self-employment are considered crucial for creating jobs for the unemployed and ultimately creating successful businesses in the Middle East and North Africa (MENA) region (Abdou, Fahmy, Greenwald, & Nielson, 2010; Hattab, 2013; World Bank, 2013). Smaller (and younger) firms in particular are credited with higher employment creation (Ayyagari, Demirguc-Kunt, & Maksimovic, 2011). MSEs' growth is also linked to increases in productivity and the creation of jobs with higher wages and better benefits (Gatti, Angel-Urdinola, Silva, & Bodor, 2014). Thus, household enterprises have the potential to play a vital role in the economies of countries such as Egypt.

Despite the importance of MSEs to the economy and employment generation in Egypt and other developing countries, relatively little is known about the dynamics of this sector. This dearth of knowledge is primarily due to the sector's informality; research on small enterprises and their dynamics in developing countries tends to rely on formal or registered firms (Li & Rama, 2015; Loewe & Reeg, 2015), which comprise less than half of new businesses in Egypt (Hattab, 2013).[1] By using panel data on Egyptian households, including information on all their enterprises, this paper represents a substantial advance in understanding the dynamics of non-farm household enterprises and their role in the economy. Start dates for existing enterprises indicate that household enterprises may be one of the more dynamic sectors in the Egyptian labor market, but may also have been negatively impacted by the economic downturn that accompanied the January 25th, 2011 revolution (Rashed & Sieverding, 2015). This paper examines the dynamics of this important sector of the economy, providing insights that can help support and encourage their creation and growth.

Four main questions are addressed by this paper, focusing on the case of Egypt:

1. What are the patterns of non-farm household enterprise creation, survival, and growth?
2. How are these affected by enterprise, household, and individual characteristics, such as household assets or entrepreneur gender?
3. How have household enterprises been impacted by the economic downturns precipitated by the global financial crisis and the January 25th 2011 revolution?
4. What policies or programs could support the creation and growth of household enterprises?

2. Theories and Evidence on Enterprise Dynamics

There is a lack of clarity in the literature on MSE dynamics as to which firms fall under the MSE umbrella. Different definitions for "micro," "small," and "medium" firms abound in the literature, and some discuss small and medium enterprises (SMEs) while others discuss micro and small enterprises (MSEs), or a combination of the two (MSMEs). Country and international organizations vary in terms of how they define the different categories, although definitions tend to be based on the number of employees (Reeg, 2013). Because this paper focuses on Egypt, where almost half of private wage workers are in firms with fewer than five

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[1] For instance, the World Bank Enterprise Surveys target primarily registered (formal) firms with five or more employees (World Bank, 2015).

workers (Assaad & Krafft, 2015a), most of the firms in question therefore fall into some definition of "micro," and the literature for that dimension of enterprise development and dynamics is emphasized—although lessons from mid-sized firms are not necessarily irrelevant.

In developing countries, small and medium enterprises provide the majority of employment, and are important job creators (Ayyagari, Demirguc-Kunt, & Maksimovic, 2011). Dynamics in this sector tend to be vigorous, with high rates of entry and exit (churning) (Liedholm, 2002; Mead & Liedholm, 1998). Employment growth rates in MSEs are high, but also extremely variable across countries and across individual MSEs, with much of the growth in employment driven by a small share of firms, sometimes referred to as "gazelles" (Liedholm, 2002; Mead & Liedholm, 1998; Nichter & Goldmark, 2009).

In the literature, there are conflicting perspectives on how to interpret observed MSE dynamics, in part because firm dynamics are the result of the confluence of a number of different forces. Factors on the global through individual entrepreneur levels can affect enterprise dynamics. A helpful model for understanding the factors that can affect firm dynamics is an "onion" model, nesting macro, meso, and micro factors, including the entrepreneur, enterprise, business and social networks, and business environment (Figure 1). Although usually applied in regards to firm upgrading (Reeg, 2013), this model can be readily extended to other forms of firm dynamics, including the birth, survival, or destruction of firms. An important feature of the model is that the determinants are nested within the onion; the higher level factors affect the more micro factors. For instance, dimensions of the business environment, such as trade agreements, might affect the sectors into which entrepreneurs enter, while the characteristics of enterprises are unlikely to reciprocally affect trade agreements or the business environment.

The first, innermost level of determinants of enterprise dynamics in the onion model is entrepreneur (or potential entrepreneur) characteristics. Demographic and human capital measures of the individual(s) who own enterprises, such as gender, age, education, work experience, skills, and training, are often identified as key factors affecting entrepreneurship and firm dynamics in the literature (Fajnzylber, Maloney, & Rojas, 2006; Loewe & Reeg, 2015; Mead & Liedholm, 1998; Nagler & Naudé, 2014a, 2014b; Nichter & Goldmark, 2009; Reeg, 2013). Particularly for the self-employed and other micro-entrepreneurs, programs providing business training to (potential) entrepreneurs have been identified as interventions that are likely (but by no means certain) to help potential entrepreneurs begin businesses and increase firm growth (Cho & Honorati, 2013; Mano, Iddrisu, Yoshino, & Sonobe, 2012; McKenzie & Woodruff, 2014; Valdivia, 2015). Additionally, psychological factors, often referred to as "entrepreneurial orientation," such as individuals' attitudes towards risk, play a key role in enterprise dynamics (Frese, Brantjes, & Hoorn, 2002; Gürol & Atsan, 2006; Krauss, Frese, Friedrich, & Unger, 2005; Lee & Peterson, 2000).

Enterprise (or potential enterprise) characteristics also play a key role in the success of firms. Firm age, in particular, has received substantial attention in the literature, as new and younger firms tend to be particularly dynamic, and younger firms play a particularly important role in growth and job creation (Ayyagari, Demirguc-Kunt, & Maksimovic, 2011; Liedholm, 2002; Nichter & Goldmark, 2009). There is also debate as to what size of firms (even among MSEs) contributes the most to employment creation or has higher productivity (Ayyagari, Demirguc-Kunt, & Maksimovic, 2011; Beck, Demirguc-Kunt, & Maksimovic, 2005; Fajnzylber, Maloney, & Rojas, 2006; Nichter & Goldmark, 2009; Rijkers, Arouri, Freund, & Nucifora, 2014). The geographic location of the firm and the sector in which it operates are also

potentially relevant enterprise characteristics that may drive firm dynamics (Mead & Liedholm, 1998; Reeg, 2013).

Particularly for this paper, focusing on household enterprises, business networks and social networks are an important and interlinked force affecting enterprise dynamics. Business networks for MSEs can include aspects similar to those of larger firms, such as global value chains or firm clusters (Bair & Gereffi, 2001; Gereffi, 1999). Social networks, which can reduce uncertainty through trust and information, have been proposed as a key part of MSEs' success in global markets (Zhou, Wu, & Luo, 2007). More informal and local social networks can also play an important role in enterprise upgrading in some contexts (Loewe & Reeg, 2015), and may be particularly important in contexts where there are market failures (Nichter & Goldmark, 2009).

The business environment, broadly defined, is credited with a crucial role in MSE dynamics. The business environment encompasses many different dimensions (Reeg, 2013), including the macro-economy (economic growth, unemployment rates, exchange rates, trade), the political landscape (particularly its stability), the competitiveness (and completeness) of local and global markets, a country's legal, institutional and regulatory environment, and access to finance. All of these have been identified as important factors in MSE dynamics (Ayyagari, Beck, & Demirguc-Kunt, 2007; Beck, Demirguc-Kunt, & Maksimovic, 2005; Brunetti, Kisunko, & Weder, 1998; Fajnzylber, Maloney, & Rojas, 2006; Hansen, Rand, & Tarp, 2009; Liedholm, 2002; Mead & Liedholm, 1998; Nichter & Goldmark, 2009; Reeg, 2013).

The legal and regulatory framework as a determinant of enterprise dynamics has been particularly prominent in the literature. The "missing middle" debate often rests on whether there is a discontinuity in firm size at the point at which regulations kick in (Hsieh & Olken, 2014; Tybout, 2000). It is argued that firms may stay small (and informal) in order to avoid enforcement and dealing with costly taxes and regulations. Evidence from India demonstrates that increases in labor regulations decreased employment in formal firms, increased poverty, and shifted production into smaller, informal, unregistered firms (Besley & Burgess, 2004). When Brazil adopted a simplification of taxes for micro firms, it substantially increased firm formality and employment (Fajnzylber, Maloney, & Montes-Rojas, 2011). Calls for lowering the regulatory and tax burden on firms are a common part of policy proposals for promoting MSE and private sector development generally, particularly within the MENA region (Gatti, Angel-Urdinola, Silva, & Bodor, 2014; Krafft & Assaad, 2015; Stevenson, 2010). However, other evidence suggests that it is not so much the burden of regulation and taxation as failures in their enforcement, which entrepreneurs in Egypt complained of far more than regulation (Loewe & Reeg, 2015). Although much of the literature on MSEs and government focuses on the burdens of regulations, taxation, and poor enforcement, government can also have a positive influence on firm dynamics; a study of SMEs in Vietnam demonstrates that having the state sector as a customer, receiving temporary tax exemptions at start-up, and initial credit support from the government all helped firms grow (Hansen, Rand, & Tarp, 2009).

Access to finance (capital) receives an enormous degree of attention in the MSE literature, with a particular emphasis on how MSEs tend to lack access to finance. This has led to the explosion of interest in microfinance, which is primarily targeted to micro-entrepreneurs. The most recent balance of evidence from randomized controlled trials suggests, first, that microcredit take-up is moderate, suggesting access to finance is a moderate constraint, at least insofar as microfinance terms and conditions meet the needs of MSEs. Second, the evidence indicates that microcredit is on the whole likely to be beneficial (but not transformative) in terms of increasing business activity (Angelucci, Karlan, & Zinman, 2015; Attanasio, Augsburg, de Haas, Fitzsimons, & Harmgart, 2015; Augsburg, De Haas, Harmgart, & Meghir,

2015; Banerjee, Duflo, Glennester, & Kinnan, 2015; Banerjee, Karlan, & Zinman, 2015; Crépon, Devoto, Duflo, & Pariente, 2015; Tarozzi, Desai, & Johnson, 2015). Although access to finance has moderate impacts on MSE dynamics globally, since access to finance is particularly limited in MENA, including in Egypt, it may be a particularly important part of enterprise dynamics (El Mahdi, Osman, Hamed, et al., 2004; El Mahdi & Osman, 2003; El Mahdi & Rashed, 2007; Hattab, 2013; Loewe & Reeg, 2015; Rashed & Sieverding, 2015; Rocha, Farazi, Khouri, & Pearce, 2011; Stevenson, 2010).

Particularly in developing countries, the macroeconomic environment can have a key role in interpreting MSE dynamics. Individuals may be entering or exiting entrepreneurship, and thus creating or dissolving MSEs, as well as growing or shrinking MSEs due to either "push" or "pull" factors within the business and economic environment (Nagler & Naudé, 2014b). Being pushed into entrepreneurial activity can often be conceptualized as individuals undertaking entrepreneurial activities out of necessity, possibly due to shocks to income, job loss or insufficient job creation in the economy (for new entrants). Being pulled into entrepreneurial activity can be conceptualized as individuals taking advantage of new opportunities. Empirical evidence in Kenya suggests that the majority of household enterprises with under ten employees engage in entrepreneurial activity out of necessity, and the minority due to opportunities (Daniels, 1999). Shocks, such as illness, droughts, floods, or prices shocks have been shown to increase the probability of entrepreneurship in rural Africa (Nagler & Naudé, 2014b). Thus, while a dynamic MSE sector is generally lauded as a sign of a healthy economy, it may also be a sign of unstable or worsening household or macroeconomic conditions.

A number of distinctive features of MENA labor markets and economies generally, and Egypt's specifically, are important context for understanding MSE dynamics. The labor market in Egypt in general is not dynamic, but rather rigid (Yassine, 2015). However, start dates for existing MSEs indicate that MSEs may be one of the more dynamic sectors of the Egyptian economy (Rashed & Sieverding, 2015). A study following a small sample of formal firms in Egypt found a high degree of churning as well as upgrading (Loewe & Reeg, 2015). While detailed studies of dynamics do not exist in Egypt, evidence from Tunisia indicates that MENA private sector firms suffer from weak links between productivity, profit, and employment creation, suggesting that what dynamics occur may not promote efficiency or growth. In Egypt, corruption and cronyism provide certain politically connected firms with access to opportunities and privileges, including policies to shield firms from competition that decreased private sector growth (Schiffbauer, Sy, Hussain, Sahnoun, & Keefer, 2015). Public sector employment is preferred by entrants (Barsoum, 2015), and although public sector employment has decreased, it has primarily been low quality, informal private sector jobs that have arisen in the place of public sector work (Assaad & Krafft, 2015a; Gatti, Angel-Urdinola, Silva, & Bodor, 2014). Attitudes towards entrepreneurship are quite positive, but the rates of entrepreneurship are low (Hattab, 2013; Sieverding, 2012; Wally, 2012). Lack of financial and marketing services, along with limited business information and little mentoring have been identified as major challenges even among successful entrepreneurs (Roushdy & Selwaness, 2014; Sieverding, 2012). Overall, a number of different forces in the economy and labor market are likely to drive MSE dynamics in Egypt.

3. Data and Methods

3.1 Data

In order to assess the dynamics of non-farm household enterprises, panel data following individuals, households, and enterprises over time are required. This paper therefore uses the

Egypt Labor Market Panel Survey (ELMPS) rounds of 1998, 2006, and 2012. The ELMPS surveys in 2006 and 2012 follow previous-round households, including individuals who split to form their own households, making it possible to track the dynamics of household enterprises over time.[2] With rounds in 1998, 2006, and 2012, it is possible to assess the dynamics of household enterprises over multiple periods.

The ELMPS surveys include detailed modules on household enterprises. Separate questions are asked regarding agricultural enterprises and non-farm (non-agricultural) enterprises. Because the data and dynamics are likely to be very different for agricultural enterprises, this paper focuses solely on non-farm enterprises. Any household that included an individual identified as an employer or as self-employed is asked about non-farm household enterprise activity. The 2006 and 2012 rounds in particular have rich information on the characteristics of the enterprise, including its economic activity, location of business, financing, net revenues, assets, and employees. The rich information on households and their members in the ELMPS will also be exploited to assess whether individuals' and households' characteristics affect household enterprise dynamics.

Previous research on enterprise dynamics in Egypt (Loewe, Al-Ayouty, Altpeter, et al., 2013; Loewe & Reeg, 2015) has relied on non-representative samples of formal firms (World Bank, 2015). Data on enterprise dynamics generally sample existing enterprises, and therefore miss the important dimension of enterprise creation. The strategy of this paper, relying on household survey data, therefore has several advantages. It is possible to analyze the creation of enterprises, because the data include individuals and households who are not engaged in an enterprise in one round, but are in the following round. Because the ELMPS data are nationally representative on a household level, they should also provide a representative picture of private household enterprises. The ELMPS includes both formal and informal enterprises; the latter are rarely captured in enterprise surveys and particularly studies of enterprise dynamics. All enterprises that are structured so that individuals within a household are employers (or self-employed) will be captured by this sampling frame. This definition includes joint ownership with other individuals and households; the only private enterprises that will be missing are those with more complex ownership structures, i.e. corporations with shareholders. Larger businesses are therefore not captured by this sample, but all forms of household-held enterprises are captured.

3.2 Measuring dynamics

To assess the dynamics of household enterprises, this paper first identifies the birth, survival, and closure of household enterprises over time within the panel. This necessitated creating a panel of enterprises, a process which, as found in other research (Vijverberg & Haughton, 2004), requires careful matching over time based on the enterprise's characteristics, as a household having *some* enterprise at two points in time does not mean it is the *same* enterprise. This paper then assesses these dynamics on a household enterprise basis (for instance, does a household enterprise survive from 2006 to 2012), a household basis (for instance, does a household start an enterprise between 1998 and 2006) and an individual basis (for instance, does an individual continue to engage in household enterprise work from 2006 to 2012). In the enterprise level analyses, enterprises are only considered to survive if at least one household member (for households present in both of a pair of rounds) still has an enterprise[3]

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[2] For more information on the ELMPS data see Assaad and Krafft (Assaad & Krafft, 2013), Barsoum (2009) and Assaad and Barsoum (2000).

[3] Because enterprises are not named in the questionnaire, and indeed may not have identifiable business names, it is not possible to identify if exactly the same enterprise persists.

of the same economic activity.[4] For individuals and households the dynamics of "persisting" (remaining in enterprise work in the same economic activity), "switching" (remaining in enterprise work, but in an enterprise of a different economic activity) and "exiting" (leaving enterprise work entirely) are examined, to tease out the dynamics of entrepreneurship overall from shifting sectors. While the number of household members engaged in the enterprise and outside employees working for the enterprise are quantified in the paper, it should be noted that the models of individual dynamics are specific to household members participating (or not) in their household's enterprise.[5]

Initially, the paper uses descriptive statistics to assess the birth, survival, and growth rates of enterprises and entrepreneurs, as there are no previous estimates of these household enterprise dynamics in Egypt. Descriptive statistics are also calculated in relation to individual, household, and enterprise characteristics as well as larger economic trends and changes over time.

This paper then estimates specific multivariate models for:

1. The formation of new household enterprises (among those individuals or households not previously engaged in household enterprises).
2. The survival or dissolution of household enterprises (on the enterprise level and for those individuals and households who engaged in such an enterprise in previous rounds).
3. The growth of household enterprises (for enterprises observed in two rounds), allowing for the decrease, stasis, or growth in the number of employees or household members engaged in the enterprise.

Most of these models are probit models for a binary outcome, such as opening an enterprise for those not previously in enterprise work or having an enterprise survive or close. Whether individuals or households that had engaged in enterprise work persisted, switched, or exited enterprise work is modeled with a multinomial logit. The model for growth of enterprises is estimated as an ordered probit model, comparing surviving enterprises that had (1) a decrease in the number of workers or (2) the same number of workers or (3) an increase in the number of workers. Marginal effects are presented to show the changes in probability related to the covariates for all of the models. Models are estimated separately for 1998-2006 and 2006-2012 in order to compare dynamics over the two periods.

3.3 Covariates

Individual, household and household enterprise characteristics are used to estimate what factors support the birth, survival, and growth of household enterprises. A careful review of the literature on household enterprise dynamics in both the Egyptian and global context (El Mahdi, Osman, Hamed, et al., 2004; El Mahdi & Osman, 2003; El Mahdi & Rashed, 2007; Fajnzylber, Maloney, & Rojas, 2006; Hansen, Rand, & Tarp, 2009; Loewe, Al-Ayouty, Altpeter, et al., 2013; Mead & Liedholm, 1998; Rashed & Sieverding, 2015) identified potential determinants of household enterprise dynamics. A number of characteristics were measured in the base of a pair of years, referred to as *t-1*, (so in 1998 for 1998 to 2006 dynamics) to best capture how characteristics in one period affect subsequent dynamics. Careful interpretation is therefore required; for instance, the wealth level of the household may be the result of having a profitable or struggling enterprise, rather than wealth independent of the enterprise. Some characteristics are also measured as changes over time,

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[4] Economic activities are identified on the one digit level using ISIC 4 coding.

[5] Household members participation in other households' enterprises as well as outside employees' participation in household enterprises cannot be tracked dynamically, since other households and individuals from outside the household are not tracked over time.

for instance whether rising wealth between one period and the next is related to enterprise dynamics. These changes are denoted as $\Delta_{t-1,\ t}$. Thus, this paper variously models the probability of dynamic enterprise outcomes ($\Delta y_{t-1,t}$) as a function, f, of individual, I, household, H, and household enterprise, E, characteristics and changes, as follows:

$$\Delta y_{t-1,t} = f(I_{t-1},\ \Delta I_{t-1,\ t},\ H_{t-1},\ \Delta H_{t-1,\ t},\ E_{t-1},\ \Delta E_{t-1,\ t})$$

On the individual entrepreneur level, the (categorical) education of individuals is included as an important measure of human capital. Age group is also included as a covariate, to distinguish the behaviors of labor market entrants, prime age workers, and older workers, as well as to account for potential years of work experience. The paper pays particular attention to the gender dynamics of household enterprises, as labor market behaviors and outcomes for men and women vary substantially in Egypt (Assaad & Krafft, 2015a, 2015b; Hendy, 2015). Other studies have demonstrated that family background plays an important role in labor market outcomes in Egypt (Assaad, Krafft, & Salehi-Isfahani, 2014; Assaad & Krafft, 2014a), particularly in terms of social networks in the private sector (Krafft & Assaad, 2015). As measures of social and business networks, controls for father's education (categorically) and father's work status when the respondent was 15 are included as potential determinants of enterprise dynamics. Another important dimension of socio-economic status and particularly of potential capital for enterprise purposes is the wealth quintile of the household.[6] Changes in relative household wealth, based on the standardized difference in the wealth factors compared across two periods are also incorporated into the model. Changes in household composition, specifically adding an adult member to the household or losing an adult (sometimes further specified as an adult who had worked on the enterprise) are also incorporated.

In terms of enterprise characteristics,[7] enterprise formality is incorporated into the model as a single measure, capturing whether the enterprise does any of the following: keeps accounting books, has a license, or is registered. The ownership structure, in terms of whether an enterprise is owned in partnership, is also examined. Enterprise location may matter for enterprise dynamics, and so this is examined categorically as the intersection of region and urban versus rural. Enterprise age is identified as an important determinant of enterprise dynamics, particularly growth, in the MSE literature (Ayyagari, Demirguc-Kunt, & Maksimovic, 2011; Liedholm, 2002; Nichter & Goldmark, 2009), and so categorical start dates of the enterprise are included as covariates. The (nominal) capital of the enterprise is measured categorically[8] and included as a covariate; the role of capital in MSEs drives the push for microfinance. The economic activity of the enterprise is examined, as particularly over different periods there may be differential opportunities for entrepreneurship and growth in different sectors. As measures of enterprise composition and size, covariates are included for whether the enterprise hires outside (non-household) employees, as well as the number of household and outside employees.

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[6] Based on the factor analysis of an asset index, similar to the work of Filmer and Pritchett (2001).

[7] For the models of individual and household dynamics, enterprise characteristics are the characteristics of the first (main) enterprise if the household happened to have multiple enterprises.

[8] The same nominal categories were used in the surveys over time, but represent different real values.

4. Results

4.1 Characteristics of enterprises, households with enterprises, and individuals engaged in enterprises

Around a fifth of households have a non-farm household enterprise in Egypt. Figure 2 shows how the percentage of households with enterprises and individuals engaged in enterprises has evolved over time. While in 1998, 20.4% of households had a non-farm enterprise, this rose slightly to 21.3% of households in 2006. The slight increase in enterprises from 1998-2006 is most likely to reflect "pull" factors as the labor market improved during this period, as evidenced by higher hours of work and employment rates in 2006 (Assaad & Krafft, 2015a). In 2012, the share of households with enterprises had fallen to 18.3%. In 2012, after the global financial crisis, the January 25th 2011 uprising, and the subsequent economic and political instability in Egypt, conditions in the labor market had deteriorated (Assaad & Krafft, 2015a, 2015b). The reduction in economic opportunities can be expected to decrease the "pull" of starting an enterprise but can also be expected to "push" vulnerable workers with other limited opportunities into starting an enterprise. Workers who were in self-employment or acted as employers reported that due to the uprising they experienced a fall in sales as well as some increases in costs (Assaad & Krafft, 2015a). This suggests that some of the decrease in household enterprises may also be due to enterprises that became non-viable and closed. The percentage of working age males and females engaged in non-farm enterprises has generally followed the time trends for enterprises overall, rising from 1998 to 2006 and then falling as of 2012. In 2012, 13.6% of males 15-64 participated in a non-farm enterprise and 2.4% of females 15-64 did so.[9]

The households that have non-farm enterprises in Egypt are different from households that do not have such enterprises along a number of dimensions and in ways that have evolved over time (Table 1). Households with enterprises are more likely to have prime-age heads (between 30 and 49 years of age). They are less likely to be headed by a female; while in 2012, 21% of households without an enterprise were female-headed, just 9% of households with an enterprise were female-headed. This may be due, in part, to the tendency for female headed households to result from a husband who has (temporarily) migrated abroad, and who is likely to be sending remittances back as a source of income (Wahba, 2015), obviating the need for other businesses or income sources.

Although there are more households in rural than urban areas, with a slightly widening difference over time, non-farm enterprises are primarily in urban households (although rural households are, of course, much more likely to engage in agricultural enterprises). As the share of households in rural areas has increased slightly over time, the share of enterprises in rural households has also risen. In terms of region, Lower Egypt, particularly urban Lower Egypt, is disproportionately represented among households with non-farm enterprises. Non-farm enterprises are disproportionately owned by wealthier households; while 14% of enterprises belong to households in the poorest quintile in 2012, 26% of enterprises belong to the richest quintile. There has been some shift towards fewer enterprises in the richest quintile of households over time.

Turning now to the characteristics of household members participating in their households' non-farm enterprises (Table 2), we see that individuals from age 30 up through 49 are disproportionately represented among those participating in enterprises, while those 50+ are

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[9] The percentage of males and females participating in enterprises is less than the percentage of households with enterprises because at least one, but not necessarily more than one or all members of a household actively participate in an enterprise. Participation of different individuals was identified based on a question as to who among the household worked on the enterprise within the past three months.

slightly over-represented and individuals under 15-29 are a smaller share of participants. Although the population is almost equally divided between males and females, the share of females among individuals participating in enterprises is just 15.5% in 2012. This represents a drop from both 1998 (16.5%) and 2006 (17.3%) and may be related to deteriorating economic conditions exerting less of a pull on women's labor.

In terms of educational attainment, although illiterates are slightly under-represented among those engaged in enterprises, those with less than an intermediate education are slightly over-represented. Intermediate graduates have a share among enterprise participants that is slightly below their share in the working age population; this group primarily attained vocational education, which is supposed to provide career skills, but does not appear to increase entrepreneurship, a fact other studies have noted as well (Krafft, 2013). University graduates are disproportionately represented among those engaged in enterprises.

The education level of an individual's father is likely to be a signal of socio-economic class, and potentially access to capital to start a business. However, some of the patterns observed by father's education may be confounded by age. Individuals with illiterate fathers and fathers with less than an intermediate education are a disproportionate share of those engaged in enterprises. Family businesses clearly play a key role in forming one's own enterprise; individuals whose fathers were non-wage workers were particularly likely to be engaged in an enterprise. Over time, participants in non-farm enterprises have shifted from majority urban in 1998 (54.5%) to majority rural in 2012 (50.8%). Greater Cairo has seen a declining share of enterprise workers, while urban Lower and Upper Egypt have seen small fluctuations. It is rural Lower Egypt that has driven the increasing share of entrepreneurs who are rural over time. Wealth patterns at the individual level follow those at the household level, with individuals from wealthier households more likely to participate in enterprises, although there has been some slight equalization over time.

Among households with enterprises, most have a single enterprise (Table 3). In 2012, 94.9% of households with enterprises had just one, an increase from previous years which may further represent decreasing economic opportunities. Almost all the remaining households in 2012 (4.8%) have two enterprises; very few have three or four.

Around half of enterprises are in the wholesale and retail trades (Table 4). This share has declined slightly over time, from 51.4% of enterprises to 48.6% over 1998 to 2012. The share of enterprises in manufacturing has also decreased, from 16.7% to 13.5%. Over time, transportation and storage enterprises have become more common, rising from 7.6% of enterprises to 9.5%. Construction has also increased from 5.4% to 9.1% of enterprises, with most of the increase between 1998 and 2006. The share of accommodation and food service activities rose from 1998 to 2006 but then decreased as of 2012. The share of professional activities has been rising, and other service activities largely falling. These shifts in the economic activities of enterprises generally align with shifts in the labor market overall (Assaad & Krafft, 2015a).

Non-farm enterprises in Egypt are largely informal and increasingly so (Table 5). Informality is defined as having a license, registration, or accounting books. The share of enterprises that are formal has fallen from 55% in 1998 to 45% in 2012. Additional analyses demonstrate that just 43% of enterprises had a license in 2012, just 30% were registered and 15% had accounting books. Ownership structures have primarily been household based, with only 9-11% of enterprises owned in partnership.

Looking at the start year for enterprises provides the first illustration of potential enterprise dynamics. Enterprises tend to be relatively recently created. In 1998, 45% had been started

since 1990 and 29% in the preceding decade. In 2006, 31% had been created since 2000 and 34% in the preceding decade. In 2012, 15% of enterprises had been started in the preceding two years and 43% in the decade 2000-2009. Since the Egyptian labor market is generally not dynamic (Yassine, 2015), the patterns of enterprise starts suggest that enterprises are more dynamic than the labor market as a whole.

The most common location for an enterprise is a shop (36% in 2012), followed by one's own home (14%), street or similar vendors (14%), being a mobile worker (13%), transport-based (9%), and lastly an office/flat/building/rooms or workshop/factory (each 7%). Enterprises do tend to have some, potentially a lot, of capital. The share of enterprises with low capital is lower in 2012 than 2006; this suggests that the businesses that may have closed or not been opened in the aftermath of the revolution were disproportionately those without capital. This pattern also aligns with findings that many workers shifted from non-wage work to precarious, irregular work over the 2006-2012 period (Assaad & Krafft, 2015a).

As well as being majority household held, the majority of enterprises do not employ outside workers. Only 31% in 2012 employed outside workers. The share of enterprises that added workers in the past year rose from 16% in 1998 to 20% in 2006 before falling to 10% in 2012, likely as a result of the economic and political instability in the post-revolution period. At the same time, enterprises were less likely to lose workers in the past year in 2012 (12%) than in 2006 (15%). It may be that struggling enterprises closed down entirely, or that workers were easier to retain when their alternatives were limited. Recall questions were also asked about changes in the number of workers in the past three years. Here, there is a clear drop in the percentage of enterprises with an increase, from 12% in 2006 to 5% in 2012, and also a sharp rise in the percentage with a decrease, from 8% in 2006 to 18% in 2012. This suggests that some of the losses may predate the revolution, and stem from the economic slowdown around the global financial crisis as well.

The detailed questions on employment dynamics allow for an examination of the contributions of non-farm enterprises to the Egyptian labor market. Overall, in 1998 there were 15.2 million workers (market definition of economic activity). In 2006, this had risen to 21.1 million and by 2012 was 22.2 million (Assaad & Krafft, 2015a). Keeping in mind that individuals may hold multiple jobs, more than a third of workers (5.6 million) in 1998 were engaged in a household enterprise (Table 6). A third (7.2 million) were in enterprises in 2006. The share had dropped below 30% (6.4 million) as of 2012, a decrease in both relative and absolute terms, despite the overall growth in the number of the employed. These changes were primarily driven by decreases in the use of outside workers. While the number of enterprise workers from the household has risen over time, from 3.4 million in 1998 to 4.2 million in 2012, this has not been the case for outside employment. Outside employment rose from 2.2 million in 1998 to 3.1 million in 2006, but then fell to below even 1998 levels, just 2.2 million, by 2012. Questions about the number of workers added in the past year allow for investigation of the dynamics behind these levels. While 348,000 workers were added in 1998 and 519,000 in 2006, just 236,000 were added in 2012. The number of workers lost in 2012, 287,000, was similar to preceding years. In line with other evidence, this suggests that enterprise closures and lower levels of employee additions, rather than direct worker loses, are driving the lower levels of employment observed in 2012.

4.2 Patterns of enterprise dynamics

Enterprise dynamics can be examined on a number of different levels. The behaviors of individuals and households in terms of the dynamics of entering and persisting, switching or exiting enterprises are of interest, as well as directly the continuation of enterprises themselves. This section begins with an investigation of enterprise level dynamics and then

turns to individual and household dynamics. Table 7 presents enterprise dynamics in terms of creation and dissolution over 1998-2006 and 2006-2012. It is important to note that one period is eight years and the other six. Additionally, although the analysis is restricted to households captured in both rounds of a pair within the survey, individuals who left the household were not always tracked successfully and individuals who joined households were not usually previously observed, which may bias results. With those cautions in mind, a number of important patterns are nonetheless visible. First, enterprises are highly dynamic; 51.4% dissolved from 1998-2006 and 60.9% from 2006-2012. The higher rate in the shorter period confirms that enterprise dissolution has been a key contributor to the decreasing role of enterprises in the labor market. At the same time, a large share of enterprises are being created over time. Among the enterprises in 2006, 61.9% belonged to households that did not have an enterprise in 1998. A similar share (60.8%) was observed in 2012. Given that this is a shorter period from 2006 to 2012, but also since a number of enterprises were destroyed as of 2012 (and therefore not in the denominator), it is unclear if this is an improvement or decrement to the rate of dynamics.

Turning now to individual and household level enterprise dynamics (Table 8), allows a more detailed understanding of how individuals shift into and out of household non-farm enterprises (this analysis does not track outside employment since outside employees are not tracked individually over time in the ELMPS). The rate of entering household enterprise work, among those not previously so working, declined slightly from 4.3% in 1998-2006 to 3.6% over 2006-2012. Among those in enterprise work in 1998, by 2006, 44.3% persisted in enterprise work of the same activity; this rate was just 35.6% in the latter 2006-2012 period. While 16.1% of individuals switched to enterprise work of a different activity in the earlier period, only 11.2% did so in the later period. Higher rates of changing enterprises in the 1998-2006 period while still engaged in some sort of enterprise work may represent healthy shifting between sectors as opportunities arise. In line with greater persistence and switching in the earlier period, while 39.7% of individuals exited enterprise work entirely from 1998-2006, 53.3% exited entirely in 2006-2012. This higher rate of exit over the shorter period even for household members is notable as it is unlikely that household members were facing better labor market opportunities pulling them out of enterprise work into the waged labor market. More likely they were being pushed out of enterprise work because it was not a sufficient source of income. There is likewise a lower rate of households entering enterprise work (from 14.4% to 12.3%) over the two periods. The disparities in persisting, switching, and exiting enterprise work entirely over the two periods are smaller than for the individual dynamics, but similar in direction, indicating worsening dynamics but also that some household members may persist when others leave the enterprise.

4.3 Models of enterprise dynamics
4.3.1 Enterprise level dynamics
To assess the drivers of dynamics on the enterprise level, whether an enterprise closes between one round and the next is examined over 1998-2006 and 2006-2012. Covariates are included for enterprise characteristics in the base year, along with the characteristics of the household head and the household in the base year. Marginal effects from these probit models are presented in Table 9. Looking first at the characteristics of the head, gender does not have a statistically significant effect on the probability of enterprise closure. While female-headed households participate in enterprises less frequently, those that do participate have similar dynamics. There are significant age differences in both rounds with enterprises in households with older heads significantly more likely to close.

When the head was intermediate educated, compared to illiterate, in 1998-2006, the enterprise was significantly more likely to close, while in 2006-2012 there were no significant differences. Over 1998-2006 those heads with fathers with university education were significantly more likely to close their enterprises than those with illiterate fathers. Both of these dynamics may represent individuals with better education and opportunities moving out of enterprise work. No statistically significant father's employment status, regional or wealth differences held in either period for enterprise survival. This suggests that once an enterprise is formed, enterprise survival is not greatly contingent on where the enterprise is or the characteristics of the household.

Turning now to the characteristics of enterprises, there were significant differences in enterprise dynamics by formality in 2006-2012, with formal firms 13.9 percentage points less likely to close. Although the marginal effect was similar, 12.3 percentage points less likely to close in 1998-2006, this difference was not significant. In contrast, partnerships were significantly more likely to close in the earlier period but not the later period, although this may represent an unmeasured transition to non-household enterprises rather than closure. Location of work and start date showed no statistically significant differences. The capital of the enterprise did appear to matter in some cases. Although only occasionally statistically significant, higher enterprise capital decreased the probability of closure. This may be because more successful enterprises accumulate capital as well as capital acting as a buffer from economic shocks.

In the 1998-2006 period, enterprises with outside employees were significantly less likely to close, but this was not true over 2006-2012. This may be related to the general economic downturn and the observed pattern of higher rates of closure and less outside employment by 2012; firms with outside employees faced similar challenges during the economic downturn. Different patterns occurred in terms of closures by economic activity. In 1998-2006, compared to manufacturing firms other service firms were significantly more likely to close, while in 2006-2012 various professional activities firms were significantly less likely to close. This sector may be more durable during economic downturns.

4.3.2 Household level dynamics

When examining dynamics on the enterprise level, only closure (or survival) of the same enterprise can be observed. However, when moving to the household level of analysis, several different patterns can be investigated and compared: household entry into enterprise work, for those households not previously in such work, and for those households that had enterprises, the dynamics of persisting in the same activity, switching to another enterprise activity, or exiting enterprise work. Entrepreneurial households shifting into different enterprises but continuing to be entrepreneurs is a potentially efficiency enhancing dynamic. The models for these different outcomes over 1998-2006 and 2006-2012 are presented in Table 10.

Looking first at the characteristics of the household head and their relationship with enterprise dynamics, female headed households are significantly less likely to form enterprises, but not significantly more likely to exit enterprise work or switch activities. There are some significant differences in dynamics by age, with households with older heads significantly less likely to form enterprises in both periods compared to households with prime aged males. In 1998-2006 households with older heads were significantly less likely to persist in enterprises and significantly more likely to exit. In 2006-2012 although households with older heads were less likely to persist, the effect was halved compared to 1998-2006 and reflected a significantly greater probability of switching, not exiting.

In the earlier but not the latter period, households with university and above educated heads were significantly less likely to enter enterprise work, compared to illiterates, suggesting that

starting an enterprise tended to be an economic strategy for the less-educated. In the 1998-2006 period, households headed by more educated individuals were also significantly more likely to exit enterprise work; more educated individuals may leave for more desirable employment opportunities (i.e. formal jobs or ones in the public sector), which are essentially closed to the less educated (Assaad & Krafft, 2015a). In the 2006-2012 period, there were no significant differences by head's education, which may reflect limited opportunities for the educated to move to better jobs during the latter period.

For households that were not engaged in enterprise work in the base round, compared to having a head out of the labor force, households with an employed or self-employed head (likely in agriculture, since not in non-farm enterprises) were significantly less likely to enter non-farm enterprise work over 1998-2006. This effect dissipated by 2006-2012, and may reflect the necessity for multiple livelihood strategies among those previously relying on agricultural employment. In both periods, households with heads in public enterprise work were significantly less likely, while in 2006-2012 it is notable that those households whose heads in 2006 were irregular wage or informal private regular wage workers were significantly more likely to enter enterprise work; this too may reflect those in precarious employment turning to household enterprises as a livelihood strategy when their hours and job prospects worsened (Assaad & Krafft, 2015a).

Turning to socio-economic background, those households whose head had a father with university and above education in 1998-2006 were significantly more likely to exit enterprise work than those with illiterate fathers, suggesting, again, that those with somewhat less privileged backgrounds may rely on enterprises while those with more privileged backgrounds may regard enterprise work as a temporary occupation. Compared to those households headed by individuals whose fathers were public wage workers, those whose fathers were private wage workers were significantly more likely to enter enterprise work in both periods. Those households with heads who had private wage and non-wage worker fathers were significantly more likely to persist in enterprise work in 1998-2006, but not in the latter period. This further corroborates the role of enterprise work as an option for those from less privileged backgrounds, particularly in 1998-2006, with less differentiation over 2006-2012.

There are some interesting regional differences; compared to those in Greater Cairo, those households in every other region, but especially urban Lower Egypt were more likely to form enterprises over 1998-2006, but in 2006-2012 the only significantly difference was a lower probability in the Alexandria and Suez Canal region. This may reflect how economic conditions and opportunities in different regions were differentially affected by overall economic conditions. While in the earlier period, households in rural Lower Egypt were significantly more likely to exit and less likely to persist, in the latter period households in Alexandria and Suez Canal were significantly more likely to switch while households in urban and rural Lower Egypt were significantly less likely to exit; enterprises in these areas may have been more viable during the downturn over 2006-2012, or alternatives may have been more limited.

Wealthier households are significantly more likely to enter household enterprise work, although the differences narrow somewhat in 2006-2012 compared to the earlier period. Notably, once they have enterprises, there are no significant differences by household wealth level in subsequent dynamics. This suggests that wealth affects entry but not persistence or success in enterprises, once formed. Although challenging to interpret, the relationship between changes in wealth between periods is notably associated with entry; a standard deviation increase in relative position was associated with a 3.5 percentage point higher

chance of entry in 1998-2006 and a 2.3 percentage point higher chance of entry in the latter period. This weakened relationship between wealth changes and entry over time may reflect more households entering enterprise work from a position of economic setbacks than economic successes, or lower profitability of enterprises in the latter period. Those households with greater changes in wealth were significantly more likely to switch enterprises over 1998-2006 and less likely to exit. This is likely to reflect taking advantage of economic opportunities in the earlier period. In contrast in 2006-2012, larger changes in wealth were associated with greater persistence and significantly less exit, to a larger extent than the earlier period. This may reflect households with successful businesses sticking with them as opportunities were limited, as well as households with closed businesses having suffered from substantial losses.

Demographic changes, specifically additions to the household of new adult members, significantly increased the chance of a household entering enterprise work, as well as significantly decreasing persistence and increasing exit over 1998-2006 but not 2006-2012. Particularly when new members are spouses, the 1998-2006 dynamic may reflect individuals moving to more secure wage work and thus being in a position to marry, a transition that was more difficult to secure in 2006-2012. Counter-intuitively, losing a household member significantly decreased the probability of switching in 1998-2006.

Turning now to enterprise characteristics, results on exits related to formality and partnerships in 1998-2006 persist from the enterprise-level models. Households with partnerships were also significantly less likely to switch in 2006-2012. Although there were not significant differences by location on the enterprise level, these do appear on the household level. Compared to businesses in one's own home, households in 1998-2006 were significantly less likely to persist if their primary business was in a workshop or factory, and significantly more likely to exit. Those in shops were significantly less likely to switch and more likely to exit, along with street and similar vendors and those in transport based trades. The investment in business infrastructure may make switching less feasible than for home based businesses. In 2006-2012, there were no significant differences for exiting enterprise work entirely, but those in shops or working in the streets were significantly more likely to persist and mobile and transport based workers significantly less likely to switch. This may represent individuals stuck in more marginal forms of work in the 2006-2012 period, unable to shift to other activities.

Compared to a reference category of "don't know" those who formed their enterprise recently were more likely to exit enterprise work entirely in 1998-2006. This may represent enterprise work as a temporary option and the healthy failure of some new enterprises. Over 2006-2012, only the most recently formed enterprises were significantly less likely to persist, but all but the oldest were significantly more likely to switch. The relationship between exiting and firm age was smaller and insignificant in the latter period; firms may have been failing regardless of age in the economic downturn, and also alternatives may have been limited for those with newer firms.

Households with higher capital were significantly less likely to exit enterprise work, but more likely to persist or switch (at moderate capital levels), in 1998-2006 but not in 2006-2012. This suggests that either high-capital enterprises also perished or individuals had to remain in low-capital, low-profit enterprises more frequently in 2006-2012. There were not significant differences in dynamics by the use of outside employment, but those with more household employees were significantly more likely to close in both periods, especially 2006-2012. Businesses that had absorbed large amounts of household labor may have been particularly vulnerable in the downturn.

The economic activity of the enterprise mattered little for exiting enterprise work entirely (only a negative and significant effect for professional activities in 2006-2012, as compared to manufacturing), but did matter substantially for whether a household switched economic activity. Compared to manufacturing, those households in accommodation and food services were significantly more likely to switch in 2006-2012, which may be related to declines in tourism associated with the economic downturn. A number of different activities were significantly less likely to persist in 1998-2006 (transportation and storage; accommodation and food service; other services) but their shifts in terms of switching and exiting tended to be mixed and not significant. Lastly, when the household lost an adult who has been in the enterprise, they were significantly more likely to switch and less likely to persist in the earlier period, but not the latter period, which may again represent a reduction in opportunities during the latter period.

4.3.3 Individual level dynamics

Focusing on individual level dynamics of enterprise participation (Table 11), identifies a number of important patterns in entrepreneurship. Characteristics are measured in the base of a pair of years or as changes from the base to subsequent period. Enterprise characteristics were based on the enterprise an individual participated in the most. Women were significantly less likely to enter enterprise work and significantly more likely to exit enterprise work. The probability of exit rose from 1998-2006 to 2006-2012, which may reflect women's more flexible labor being less utilized during the downturn. Compared to those 30-49, there are significantly lower probabilities of entering over time for those who are below 30 or older than 50. Older and younger workers were also significantly less likely to persist and more likely to exit in the earlier period, but only the younger worker effect continued in 2006-2012.

In both the 1998-2006 and 2006-2012 periods, those with less than intermediate education were significantly less likely to enter than illiterates, but there were no differences for those with more education. Compared to those who were illiterate, in the 1998-2006 period all other education levels, particularly secondary and university, predicted a higher probability of exit, while in 2006-2012 the effects were smaller and only significant for those with less than intermediate education and higher education for exiting, although all educated groups were significantly less likely to persist. Either enterprise work was becoming insufficient for the less educated or the more educated were becoming less able to transition out.

Large and significant differences occurred in both periods in terms of entry depending on base period employment status. Compared to those outside the labor force, unpaid family workers, the self-employed, and employers (largely in agriculture) were significantly less likely to enter in 1998-2006, but there were no significant differences for unpaid family workers or employers in 2006-2012 and the self-employed were significantly more likely to transition, potentially representing insufficient income from agriculture. Irregular wage workers and informal private wage workers were significantly more likely to enter in both periods, with larger effects in 2006-2012, and also a significant effect for formal private regular wage workers. While government workers were significantly less likely to enter in the earlier period and the unemployed significantly more so, these differences did not persist into 2006-2012. Overall, there was a clear shift over the two periods towards more precariously employed workers depending on household enterprises.

Those with intermediate or university educated, as compared to illiterate fathers were significantly less likely to enter in both periods. Those with university educated fathers were significantly more likely to exit in 1998-2006, likely to better job opportunities, but this effect disappeared by 2006-2012. Compared to those in Greater Cairo, individuals in urban Lower Egypt and urban Upper Egypt were significantly more likely to enter enterprise work over

1998 to 2006. Only the urban Lower Egypt difference remained significant in 2006-2012. Individuals were less likely to persist in rural Lower Egypt in 1998-2006 and more likely to switch in rural Upper Egypt and Alexandria and the Suez Canal. In the latter period higher switching in Alexandria and the Suez Canal region persisted, while those in rural Lower Egypt were significantly less likely to exit.

As in the models at the household level, there were significant differences in individuals entering or exiting enterprise work by their household wealth level. Entry was higher among wealthier households, more so in the latter period as wealthier families may have had businesses options that were relatively appealing during downturns. Only for the richest in 2006-2012 were individuals significantly less likely to exit; otherwise there were no dynamic differences. Changes in wealth were significant in both periods for individual entry into enterprises. As in the household models, wealth increases over time were associated with switches in 1998-2006 and persistence in 2006-2012.

If an individual lived in a household that already had an enterprise (but they had not previously been working in it) they were significantly more likely to enter enterprise work only in 1998-2006; existing household enterprises may have needed more labor in that period. Households adding a member were more likely to have individuals exit only in 1998-2006, as in the household models. The loss of an adult increased entry only in 2006-2012, and may reflect individuals shifting into enterprise work when becoming independent or losing a parent and gaining an inheritance. The relationships between enterprise characteristics and individual enterprise participation dynamics of exit are similar to those observed on the household and enterprise levels, and so are not detailed here.

4.3.4 Dynamics within enterprises: growth, stasis, contraction

Since surviving enterprises are the drivers of employment creation, the patterns and determinants of whether enterprises grow, remain in stasis, or contract are of great interest. Among enterprises of the same economic activity with at least one member of the same household continuing the enterprise, this section specifically examines growth in terms of whether the total number of workers (household members plus outside employees) engaged in the enterprise increased, remained the same, or grew. As the preceding dynamics as well as the reports of enterprise growth in Table 5 and Table 6 suggested, there are opposite patterns in enterprise growth dynamics over 1998-2006 compared to 2006-2012 (Table 12). While in the 1998-2006 period, only 16.6% of enterprises contracted, 52.0% remained the same size, and 31.4% grew, the opposite pattern was observed over 2006-2012, when just 13.5% of persistent enterprises grew, a similar 52.5% remained the same size, and 34.1% contracted.

The multivariate models identify a number of determinants of these patterns of growth comparing the periods 1998-2006 and 2006-2012 (Table 13). The unit of analysis is an enterprise, with the characteristics from the base of a pair of years for the enterprise, and the individual characteristics based on the highest-ranked[10] individual within the household who persisted in the enterprise. Notably, there are no significant differences by the sex of the highest-ranked individual, his or her age, or education. Although the differences for growth dynamics by own education, and therefore own human capital, were small and statistically insignificant, the differences by father's education (and socio-economic status) did show stronger patterns. Compared to those with illiterate fathers, those with highly educated fathers were significantly less likely to have their enterprise shrink or remain the same size in 1998-2006 and significantly more likely to have them grow. Those with fathers who were private

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[10] Rank is identified according to order in the household roster, with the usual order being the head, his or her spouse, and children in order or age, etc.

wage workers or non-wage workers were also significantly more likely to have their enterprises grow. The father's education and employment status effects became smaller and insignificant in 2006-2012, but may reflect the ability of enterprises to tap into useful social networks in the earlier period.

There were not significant differences in growth dynamics by region, and the only differences by wealth quintile were greater growth among those held by the poorest in 2006-2012, although this may represent poorer households falling back on enterprise work when other opportunities were limited.

There were significant differences by some enterprise characteristics; formality did not matter for growth. Enterprises owned in partnership were significantly more likely to remain the same size over 1998-2006 and shrink over 2006-2012. Especially in 2006-2012 firm location sometimes mattered significantly; compared to businesses in one's own home, mobile workers and street and similar vendors were significantly less likely to shrink and significantly more likely to grow. These rather more vulnerable work types may have grown in reaction to the economic downturn. Compared to firms with unknown start dates, in the 1998-2006 period older firms, especially the oldest, were significantly more likely to grow. This runs counter to the contention (based on data from formal firms) that new firms are the drivers of job creation (Schiffbauer, Sy, Hussain, Sahnoun, & Keefer, 2015). These patterns had dissolved by 2006-2012, possibly because other patterns were largely driving dynamics. The only significant differences in growth by capital were among the "don't know" responses, which were more likely to shrink and less likely to grow in 2006-2012.

One notable contrast across 1998-2006 and 2006-2012 was that those firms with outside employment showed no differences in growth dynamics over 1998-2006, but firms with outside employees in 2006-2012 were significantly more likely to shrink and significantly less likely to remain the same size or grow. Firms with outside employment, that have to pay wages, may be more likely to decrease outside employment during economic downturns. Because household members do not need to be paid in the same way or cannot exactly be fired, in economic downturns they may persist in enterprise work in the same numbers. Although there are not significant differences by economic activity in 1998-2006, in 2006-2012 wholesale and retail firms were significantly less likely to remain the same size, and other service firms were significantly less likely to grow and more likely to shrink. These firms may have persisted through the economic downturn but faced reduced demand leading to contraction.

5. Discussion and Conclusions

The MSE sector is crucial in Egypt and similar MENA countries due to a number of important economic patterns. For instance, Egypt, like many other countries in the region, has shifted from a model of state-led to market-oriented growth. While the public sector historically had provided an outsized share of employment, particularly for educated youth, public sector employment has been declining and the private sector must take up the slack (Assaad & Krafft, 2015a). Yet the distribution of firm sizes has remained essentially unchanged from 1998 to 2012, with the vast majority of employment in MSEs, particularly micro firms (Assaad & Krafft, 2015a). Youth unemployment is also a substantial problem in Egypt and throughout the region (Assaad & Krafft, 2015b; World Bank, 2013), along with challenges in terms of the quality of jobs youth do obtain (Assaad & Krafft, 2015a; Gatti, Angel-Urdinola, Silva, & Bodor, 2014; World Bank, 2013). Entrepreneurship is often proposed as the solution to creating jobs for the unemployed and ultimately creating successful businesses in the Middle East and North Africa (MENA) region (Abdou, Fahmy, Greenwald, & Nielson, 2010; Hattab, 2013; World Bank, 2013). Yet the research that exists on the dynamics of MSEs tends

to be limited to the fraction that are formal firms (Loewe & Reeg, 2015). Thus, the information on the dynamics of all non-farm household enterprises, both formal and informal, that this paper presents is a substantial contribution to understanding the role of the MSE sector.

Notably, the MSE sector is, for better or worse, one of the more dynamic sectors in the Egyptian economy. Comparing the dynamics over 1998-2006 and 2006-2012 shows that when overall economic conditions improve, the dynamism of the MSE sector leads to growth and employment improvements. Workers are "pulled" into the opportunities presented by MSEs in good times, but when conditions deteriorate, firms close and jobs are lost. The behaviors of the MSE sector appear to be much more closely linked to economic and labor market health than standard measures of cyclical behaviors, such as the unemployment rate, which is in fact largely a structural measure in Egypt (Krafft & Assaad, 2014). The patterns in the MSE sector in the period surrounding the revolution confirm that deteriorating conditions predated the revolution (Assaad & Krafft, 2015a), but were certainly exacerbated by the political and economic uncertainty that followed. Although not all MSEs provided sufficient livelihoods and many closed over the 2006-2012 period, the MSE sector appears to have played a particularly important role as a fallback for those who were in more precarious employment situations. Workers appear to have been "pushed" into MSEs particularly during the 2006-2012 period when irregular and informal employment became increasingly precarious and upward mobility was limited (Assaad & Krafft, 2015a).

5.1 Limitations

A number of limitations must be kept in mind when considering the findings of this paper. Although the inclusion of both formal and informal firms is an unusually broad sample, the sample is limited in two regards. First, the enterprises examined are solely non-agricultural enterprises. The dynamics of agricultural enterprises are likely to be quite different, as well as much more difficult to measure given agricultural seasonality. Second, the enterprises discussed are only household-held enterprises. Although this includes joint ownership structures, private enterprises with more complex ownership structures (corporations with shareholders) are not captured. Firms that upgrade from MSEs to corporations will appear to have dissolved in the data. However, this is a small share of enterprises—fewer than 10% of wage workers working in private sector firms were working for corporations or limited liability companies across all rounds, and since these tend to be larger companies, an even smaller share of enterprises falls into this category.

Caution is also warranted in interpreting the findings. For instance, household entry into enterprise work is associated with a relative increase in wealth, while household exit from enterprise work is associated with a relative decrease in wealth. It could be the case that households form enterprises when they accumulate more capital, or that forming an enterprise leads to profitable increases in wealth. Similarly, it could be the case that failing, unprofitable enterprises consume household resources, or that households close their enterprises and move into wage work when they experience some external wealth or income shock. The relationships identified in this paper cannot be interpreted causally, as reverse causality or external factors (omitted variables) could be driving the observed relationships. However, especially given the dearth of information on household enterprises, the patterns described in this paper represent an important step forward in understanding the dynamics of household enterprises in Egypt.

5.2 Policy recommendations

Given the vigorous dynamics observed within the MSE sector, an important question is how to promote the creation and growth of MSEs. As well as enabling MSEs to act as a safety net or fallback during downturns, policy must enable MSEs to close down when less productive

and shift sectors when entrepreneurs see new opportunities. Although by no means causal, the findings of this paper suggest a number of important dimensions. On the entrepreneur level, in line with other studies finding limited or no returns to education in the private sector (El-Araby, 2013; Krafft, 2013; Said, 2015), this paper demonstrated that an individual's education was largely irrelevant to enterprise dynamics, particularly enterprise growth. More educated individuals were overall somewhat less likely to enter and more likely to exit enterprise work. When alternatives become available, more educated individuals are likely to prefer, for instance, public sector work (Barsoum, 2015). Enterprises did offer either opportunities or a fallback position for less educated individuals otherwise in precarious employment situations, particularly during the more recent 2006-2012 period of economic downturn. Enterprises may be a particularly important route to economic opportunities for individuals whose background precludes access to formal or government jobs.

Wealthier households are more likely to have or start an enterprise. Beyond differences in entry, there are not large differences in survival or growth of firms by wealth, suggesting that, first, entry barriers such as capital may keep out the poor, but also, second, that there is a relatively level playing field in entrepreneurship once individuals enter. Particularly given concerns about social justice and unequal opportunities in Egypt and throughout the region, and given patterns of inequality of opportunity in the labor market are well-known (Assaad, Krafft, & Salehi-Isfahani, 2014; Assaad & Krafft, 2014b; Hassine, 2011, 2015), the MSE sector could play an important role in providing more equitable opportunities.

On the enterprise level, there are not strong patterns of growth dynamics in terms of firm size and in contrast to much of the literature, older (not younger) firms were more likely to grow, particularly during the more prosperous 1998-2006 period (Ayyagari, Demirguc-Kunt, & Maksimovic, 2011; Liedholm, 2002; Nichter & Goldmark, 2009). Formality was a predictor of firm persistence but not of firm growth, consistent with the finding that firm formality predicts the level of output but not productivity in Egypt (Abou-Ali & Rizk, 2015). These findings suggest that policies and programs can productively support MSEs regardless of their age, size, or formality. There are, however, some important dynamics in terms of enterprise persistence by firm capital. Much caution must be used in interpreting these differences; more successful firms may acquire additional capital, and thus prosper, while firms that are less viable may not gain capital and then close. However, it may also be that capital increases productivity and acts as a buffer against economic shocks in a way that could be enhanced by microfinance. Given the very limited financing for MSEs in Egypt (Rashed & Sieverding, 2015), this suggests financial services for MSEs could potentially be valuable.

Although it is difficult to quantify the business and social networks of firms, the results relating to father's education and work status suggest that, typically, those with well-connected (educated) fathers primarily availed themselves of those networks to find employment outside of enterprises; they were less likely to enter and more likely to exit, particularly in the 1998-2006 period when better alternatives were available. However, family social and business networks (as quantified by father's education and work status) were quite important in enterprise growth trends in the 1998-2006 period. These results are consistent with other studies showing that family background plays a large role in labor market outcomes in Egypt (Assaad, Krafft, & Salehi-Isfahani, 2014; Assaad & Krafft, 2014a), especially in terms of social networks shaping private sector employment opportunities (Krafft & Assaad, 2015). Policies and programs to provide MSEs with businesses networks separate from social networks could play a particularly important role in both MSE growth and equalizing opportunities for business success. For instance, a program that randomly offered small (1-4 employee) Egyptian rug firms the opportunity to export found that the links to new markets led to higher profits (Atkin, Khandelwal, & Osman, 2014).

Despite the contributions of entrepreneur background, enterprise characteristics, and networks to enterprise dynamics, by far the largest determinant of dynamics in the MSE sector was the contrast between 1998-2006 and 2006-2012. Thus the dynamics of the MSE sector are closely tied with the larger business environment. MSEs are highly sensitive to prevailing macroeconomic conditions, economic policy, and political stability. Enterprises acted as a critical fallback position for household members during the downturn of the 2006-2012 period. At the same time, the hiring of outside employees fell substantially, creating fewer jobs and thus contributing to the decline of economic opportunities during a time of economic weakness. If MSEs are to drive the growth of the Egyptian economy, the creation of jobs, and improvements in job quality, the sector will require not only supportive microeconomic programs and policies but a conducive macroeconomic environment. The MSE sector's dynamism can transform Egypt's economic landscape—but only if economic conditions are conducive to enterprise creation and growth.

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Figure 1: Determinants of Enterprise Dynamics
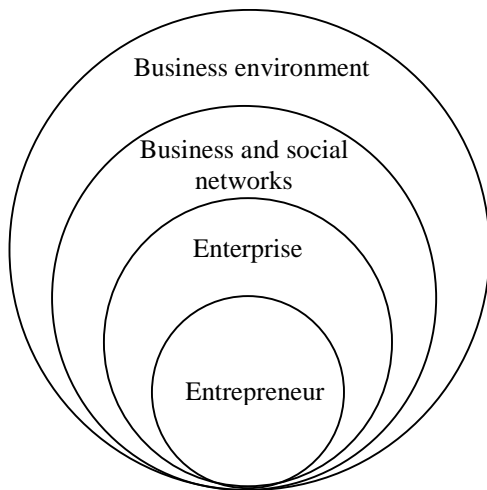
Figure 2: Percentage of Households With Non-Farm Enterprises, Percentage of Males (Ages 15-64), and Females (Ages 15-64) Participating in Non-Farm Enterprises
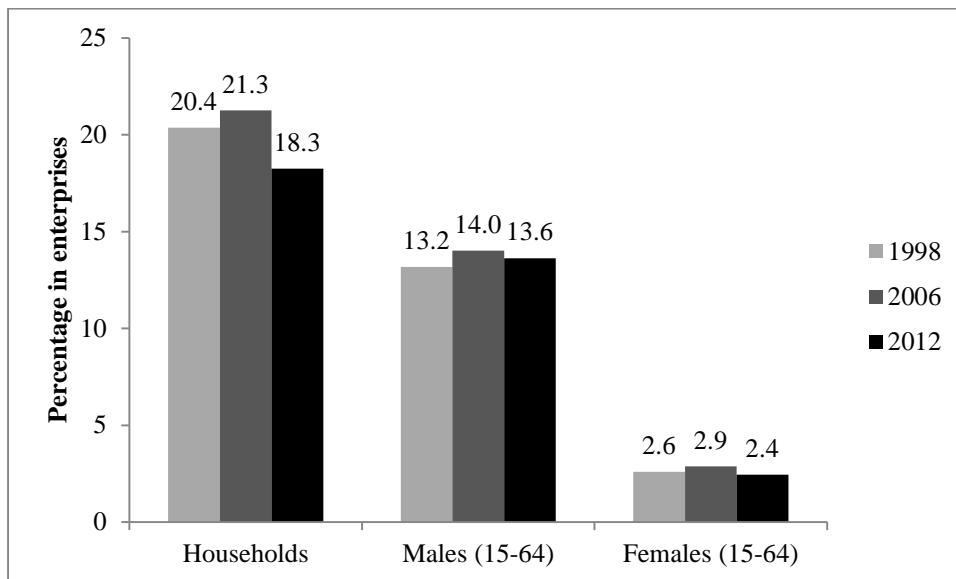
Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 1: Characteristics of Households by Non-Farm Enterprise Status and Year (percentages)

	1998			2006			2012		
	No ent.	Ent.	Total	No ent.	Ent.	Total	No ent.	Ent.	Total
Age group of head									
<30	7	3	6	10	8	10	13	9	13
30-49	47	54	48	43	51	45	45	53	46
50+	46	43	45	47	41	46	42	38	41
Sex of Head									
Male	82	92	84	79	89	81	79	91	81
Female	18	8	16	21	11	19	21	9	19
Urban/Rural									
Urban	46	55	48	47	55	49	45	52	46
Rural	54	45	52	53	45	51	55	48	54
Region									
Gr. Cairo	20	22	20	21	20	21	20	21	20
Alx, Sz C.	9	8	9	9	10	9	9	8	8
Urb. Lwr.	11	16	12	10	17	12	10	15	11
Urb. Upp.	7	10	7	7	9	8	7	8	7
Rur. Lwr.	31	27	30	31	26	30	32	30	31
Rur. Upp.	22	18	22	22	19	21	23	18	22
Quintiles of household wealth									
Poorest	22	14	20	21	15	20	21	14	20
Second	21	16	20	21	17	20	21	18	20
Third	20	20	20	20	20	20	20	20	20
Fourth	20	21	20	19	25	20	19	23	20
Richest	18	29	20	19	24	20	19	26	20
Total	100	100	100	100	100	100	100	100	100
N (observations)	3,753	1,063	4,816	6,455	1,896	8,351	9,866	2,194	12,060

Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 2: Characteristics of Individuals Aged 15-64 by Non-Farm Enterprise Status and Year (percentages)

	1998			2006			2012		
	No ent.	Ent.	Total	No ent.	Ent.	Total	No ent.	Ent.	Total
Age group									
<30	49	24	47	51	27	49	46	22	44
30-49	34	54	36	32	52	34	37	57	38
50+	16	22	17	17	22	17	17	21	17
Sex									
Male	47	84	50	46	83	50	46	85	49
Female	53	17	50	54	17	51	54	16	51
Educational Attainment									
Illiterate	32	30	32	28	27	28	24	22	24
Less than Intermediate	33	33	33	27	30	28	26	27	26
Intermediate	28	24	27	33	30	33	36	34	36
University & above	8	13	9	12	13	12	15	17	15
Father's highest education									
Illiterate	50	50	50	51	53	51	52	55	52
Less than Intermediate	35	41	36	33	38	33	28	34	29
Intermediate	9	6	9	10	6	10	12	7	12
University & above	5	4	5	6	4	6	7	4	7
Father's Employment Status (When Resp. 15)									
Public Wage	32	22	32	34	26	33	34	28	34
Private Wage	28	23	28	23	20	22	30	24	29
Non-wage	39	56	41	44	54	44	36	49	37
Urban/Rural									
Urban	44	55	45	44	53	44	44	49	44
Rural	56	46	55	56	47	56	57	51	56
Region									
Gr. Cairo	18	22	19	18	19	18	19	19	19
Alx, Sz C.	8	8	8	8	9	8	8	8	8
Urb. Lwr.	10	15	11	10	16	11	10	14	10
Urb. Upp.	7	9	7	7	9	7	7	9	7
Rur. Lwr.	33	26	32	32	26	32	31	31	31
Rur. Upp.	24	19	23	24	21	24	25	20	25
Quintiles of household wealth									
Poorest	19	13	19	20	15	19	19	14	19
Second	22	17	21	21	17	21	21	18	21
Third	22	19	21	20	20	20	21	21	21
Fourth	20	23	20	19	24	19	20	22	20
Richest	18	28	19	20	24	20	20	25	20
Total	100	100	100	100	100	100	100	100	100
N (observations)	13,510	1,258	14,768	21,707	2,167	23,874	27,677	2,388	30,065

Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 3: Number of Enterprises by Round, Households with Enterprises

Number of Enterprises	1998	2006	2012
1	93.2	92.7	94.9
2	6.1	6.6	4.8
3	0.7	0.6	0.2
4	0.1	0.1	0.1
Total	100.0	100.0	100.0

Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 4: Economic Activities of Enterprises by Round (percentages)

	1998	2006	2012
Manufacturing and related trades	16.7	16.3	13.5
Construction	5.4	8.6	9.1
Wholesale and retail	51.4	51.1	48.6
Transportation and storage	7.6	8.3	11.2
Accommodation and food service	3.8	4.6	3.8
Various professional acts.	7.2	7.6	9.5
Other service	7.9	3.5	4.3
Total	100.0	100.0	100.0
N (Observations)	1,138	2,040	2,312

Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 5: Characteristics of Enterprises by Round (percentages)

	1998	2006	2012
Formal			
No	45	51	55
Yes	55	49	45
Owned in partnership			
No	91	92	89
Yes	9	8	11
Start year			
Don't know	1	1	3
Before 1952	2	1	0
1952-1959	4	1	1
1960-1969	6	4	1
1970-1979	13	10	4
1980-1989	29	19	11
1990-1999	45	34	22
2000-2009	0	31	43
2010-2012	0	0	15
Location			
Own home	16	15	14
Shop	40	38	36
Office/flat/building/rooms	6	5	7
Workshop/factory	6	7	7
Mobile worker	15	15	13
Street and similar vendors	12	14	14
Transport based	5	6	9
Current (nominal) capital			
none	15	10	8
<LE500	14	18	17
LE500-999	12	12	10
LE1000-4999	18	19	18
LE5000-9999	10	15	16
LE 10000+	28	22	30
D.K.	4	4	2
Employ outside workers			
No	71	70	69
Yes	29	31	31
Add workers in the past year			
No	84	80	90
Yes	16	20	10
Lose workers in the past year			
No	88	85	88
Yes	12	15	12
Change in number of workers in past 3 years			
Increase	7	12	5
Decrease	6	8	18
No change	81	77	73
Enterprise is less than three years old	7	3	5
Total	100	100	100
N (Observations)	1,138	2,040	2,312

Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 6: Employment and Employment Dynamics in Enterprises by Round (in thousands)

	Total employment	Household member employment	Out of household employment	Workers added in the past year	Workers lost in the past year
1998	5,607	3,390	2,218	348	270
2006	7,185	4,091	3,094	519	312
2012	6,377	4,207	2,170	236	287

Note: Workers added and lost refer to outside employment.
Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 7: Enterprise Dynamics

	Percentage		N (Observations)	
	1998-2006	2006-2012	1998-2006	2006-2012
Share of enterprises that dissolve	51.4	60.9	828	1584
Share of enterprises that are new	61.9	60.8	1059	1547

Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 8: Individual and Household Level Enterprise Dynamics

	Percentage		N (Observations)	
	1998-2006	2006-2012	1998-2006	2006-2012
Individuals previously not in enterprise work				
Enter enterprise work	4.3	3.6	16400	27022
Individuals previously in enterprise work				
Persist in enterprise work of the same activity	44.3	35.6		
Switch to enterprise work of a different activity	16.1	11.2		
Exit enterprise work entirely	39.7	53.3		
Total	100.0	100.0	961	1748
Households previously not in enterprise work				
Enter enterprise work	14.4	12.3	2478	4578
Households previously in enterprise work				
Persist in enterprise work of the same activity	40.8	34.3		
Switch to enterprise work of a different activity	14.8	10.8		
Exit enterprise work entirely	44.5	54.9		
Total	100.0	100.0	772	1523

Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 9: Enterprise Level Models of Enterprise Exit, 1998-2006 and 2006-2012

Dependent variable: Enterprise closed
Cells are marginal effects from a probit model, standard errors in parentheses

	1998-2006 Close	2006-2012 Close
Sex (male omit.)		
Female	0.020	0.049
	(0.077)	(0.046)
Age group (30-49 omit.)		
<30	-0.033	0.012
	(0.121)	(0.047)
50+	0.097*	0.082**
	(0.044)	(0.032)
Education level (Illit. omit.)		
Less than Int.	0.044	0.044
	(0.054)	(0.036)
Intermediate	0.188**	0.028
	(0.068)	(0.043)
Univ. and above	0.059	0.042
	(0.090)	(0.064)
Father's educ. (illit. omit)		
Less than Int.	0.037	-0.009
	(0.046)	(0.033)
Intermediate	0.111	0.002
	(0.088)	(0.073)
University & above	0.343***	0.066
	(0.084)	(0.089)
Father's work status (public wage omit.)		
Private wage	-0.002	-0.044
	(0.067)	(0.044)
Non-wage	0.011	-0.035
	(0.058)	(0.038)
Region (Greater Cairo omit.)		
Alex. and Suez Canal	0.050	0.021
	(0.070)	(0.054)
Urban Lower	-0.017	-0.054
	(0.061)	(0.046)
Urban Upper	-0.001	-0.023
	(0.059)	(0.048)
Rural Lower	0.129	-0.064
	(0.069)	(0.048)
Rural Upper	-0.019	-0.038
	(0.080)	(0.050)
Wealth quintile (Poorest omit.)		
Poorer	0.094	0.004
	(0.080)	(0.048)
Middle	0.087	0.069
	(0.088)	(0.049)
Richer	0.026	0.049
	(0.089)	(0.051)
Richest	0.039	0.016
	(0.096)	(0.056)
Ent. formal		
Yes	-0.123	-0.139***
	(0.068)	(0.039)
Owned in partnership		
Yes	0.130*	-0.053
	(0.061)	(0.049)
Location (own home omit.)		
Shop	-0.076	-0.075
	(0.087)	(0.053)
Office/flat/building/rooms	-0.185	0.003
	(0.119)	(0.079)
Workshop/factory	0.164	-0.003
	(0.098)	(0.074)
Mobile worker	0.009	-0.031
	(0.103)	(0.057)
Street and similar vendors	-0.080	-0.095
	(0.087)	(0.054)
Transport based	-0.147	-0.018
	(0.154)	(0.103)
Start year (don't know omit.)		
Before 1952	-0.239	0.029
	(0.190)	(0.202)
1952-1959	-0.043	0.084

	1998-2006 Close	2006-2012 Close
	(0.173)	(0.186)
1960-1969	-0.098	0.112
	(0.171)	(0.168)
1970-1979	-0.049	0.057
	(0.159)	(0.155)
1980-1989	-0.110	0.091
	(0.154)	(0.151)
1990-1999	-0.035	0.188
	(0.154)	(0.149)
2000-2009		0.258
		(0.149)
Capital of enterprise (none omit.)		
<LE500	0.015	-0.071
	(0.080)	(0.052)
LE500-999	-0.228*	-0.108
	(0.090)	(0.057)
LE1000-4999	-0.012	-0.070
	(0.085)	(0.055)
LE5000-9999	-0.100	-0.151*
	(0.102)	(0.059)
LE 10000+	-0.052	-0.087
	(0.095)	(0.058)
D.K.	-0.105	-0.044
	(0.138)	(0.074)
Use outside emp.		
Yes	-0.131**	-0.017
	(0.050)	(0.034)
Economic activity (manuf. omit)		
Construction	0.029	0.027
	(0.129)	(0.064)
Wholesale and retail	0.059	-0.077
	(0.073)	(0.041)
Transportation and storage	0.191	-0.056
	(0.134)	(0.094)
Accommodation and food service	0.051	0.055
	(0.111)	(0.067)
Various professional acts.	0.168	-0.207**
	(0.120)	(0.079)
Other service	0.265**	0.027
	(0.085)	(0.076)
N (Obs.)	819	1584

Notes: *p<0.05; **p<0.01; ***p<0.001. Characteristics are from the base period. Individual characteristics are those of the household head in the base period.
Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 10: Household Level Models of Enterprise Entry and Exit, 1998-2006 and 2006-2012

Dependent variables: Entry model (not previously engaged in enterprise work): probit for household entered enterprise work
Dynamic model (previously engaged in enterprise work): multinomial logit for (1) household persisted (2) household switched, (3) household exited all enterprise work. Cells are marginal effects, standard errors in parentheses

	1998-2006 Enter	2006-2012 Enter	1998-2006 Persist	1998-2006 Switch	1998-2006 Exit	2006-2012 Persist	2006-2012 Switch	2006-2012 Exit
Sex (male omit.)								
Female	-0.054*	-0.046**	-0.077	0.045	0.032	-0.024	0.005	0.019
	(0.024)	(0.015)	(0.079)	(0.062)	(0.080)	(0.047)	(0.032)	(0.049)
Age group (30-49 omit.)								
<30	0.048	-0.005	-0.010	0.009	0.002	0.014	-0.004	-0.011
	(0.040)	(0.018)	(0.119)	(0.074)	(0.112)	(0.045)	(0.027)	(0.046)
50+	-0.050**	-0.043***	-0.129**	0.030	0.098*	-0.065*	0.058*	0.008
	(0.017)	(0.013)	(0.047)	(0.037)	(0.047)	(0.033)	(0.025)	(0.036)
Education (illit. omit.)								
Less than Intermediate	0.022	0.028	-0.024	-0.007	0.031	-0.050	0.016	0.033
	(0.026)	(0.016)	(0.057)	(0.038)	(0.051)	(0.038)	(0.022)	(0.039)
Intermediate	-0.042	-0.017	-0.229***	0.033	0.196**	-0.042	0.038	0.004
	(0.031)	(0.017)	(0.064)	(0.051)	(0.066)	(0.043)	(0.029)	(0.045)
University & above	-0.097**	-0.031	-0.070	-0.114**	0.184*	-0.083	0.057	0.026
	(0.030)	(0.020)	(0.094)	(0.043)	(0.088)	(0.056)	(0.053)	(0.066)
Employment status (OLF omit.)								
Self-Employed	-0.145***	0.044						
	(0.034)	(0.040)						
Employer	-0.110***	0.009						
	(0.033)	(0.020)						
Unpaid Fam. Wrk.	-0.098	-0.067*						
	(0.087)	(0.028)						
Irregular Wage	0.010	0.071*						
	(0.044)	(0.030)						
Informal Private Regular Wage	0.087	0.110***						
	(0.046)	(0.026)						
Formal Private Regular Wage	-0.058	0.029						
	(0.036)	(0.023)						
Public Enterprises	-0.082*	-0.048*						
	(0.033)	(0.019)						
Government	-0.051	0.006						
	(0.030)	(0.017)						
Unemployed	0.028	0.068						
	(0.070)	(0.068)						
Father's educ. (illit. omit)								
Less than int.	0.004	-0.016	-0.026	0.024	0.002	-0.036	0.021	0.015
	(0.020)	(0.013)	(0.044)	(0.032)	(0.046)	(0.031)	(0.021)	(0.033)
Intermediate	-0.013	-0.026	-0.040	0.056	-0.016	-0.046	-0.018	0.064
	(0.034)	(0.025)	(0.097)	(0.070)	(0.108)	(0.069)	(0.036)	(0.073)
University & above	0.012	0.004	-0.252**	0.067	0.185	-0.141	0.095	0.046
	(0.057)	(0.044)	(0.085)	(0.084)	(0.113)	(0.073)	(0.088)	(0.099)

	1998-2006 Enter	2006-2012 Enter	1998-2006 Persist	1998-2006 Switch	1998-2006 Exit	2006-2012 Persist	2006-2012 Switch	2006-2012 Exit
Father's work status (public wage omit.)								
Private wage worker	0.054*	0.030*	0.166**	-0.101	-0.065	0.023	-0.041	0.018
	(0.025)	(0.015)	(0.061)	(0.055)	(0.067)	(0.043)	(0.023)	(0.046)
Non-wage	0.012	0.020	0.109*	-0.079	-0.030	0.004	0.007	-0.011
	(0.021)	(0.014)	(0.051)	(0.054)	(0.057)	(0.037)	(0.024)	(0.040)
Region (Greater Cairo omit.)								
Alex. and Suez Canal	0.047*	-0.040*	-0.076	0.085	-0.009	-0.050	0.100**	-0.049
	(0.022)	(0.018)	(0.072)	(0.048)	(0.072)	(0.048)	(0.036)	(0.053)
Urban Lower	0.087***	0.025	-0.022	0.073	-0.051	0.056	0.041	-0.096*
	(0.024)	(0.021)	(0.066)	(0.044)	(0.062)	(0.045)	(0.028)	(0.049)
Urban Upper	0.070**	0.025	-0.039	-0.002	0.041	0.039	0.029	-0.067
	(0.023)	(0.020)	(0.064)	(0.037)	(0.064)	(0.048)	(0.030)	(0.051)
Rural Lower	0.057*	0.014	-0.185**	0.025	0.159*	0.090	0.035	-0.124*
	(0.025)	(0.019)	(0.068)	(0.045)	(0.070)	(0.048)	(0.029)	(0.050)
Rural Upper	0.066*	-0.004	-0.054	0.049	0.005	0.025	0.040	-0.066
	(0.029)	(0.020)	(0.084)	(0.053)	(0.085)	(0.051)	(0.033)	(0.054)
Wealth quintile (Poorest omit.)								
Poorer	0.025	0.039**	-0.055	-0.080	0.136	0.052	0.039	-0.091
	(0.022)	(0.014)	(0.086)	(0.063)	(0.086)	(0.048)	(0.029)	(0.051)
Middle	0.111***	0.061***	-0.023	-0.007	0.030	0.026	0.045	-0.070
	(0.028)	(0.016)	(0.091)	(0.063)	(0.089)	(0.050)	(0.030)	(0.052)
Richer	0.102***	0.087***	0.056	-0.080	0.024	0.039	0.052	-0.091
	(0.030)	(0.019)	(0.101)	(0.067)	(0.103)	(0.054)	(0.032)	(0.058)
Richest	0.136***	0.112***	0.073	-0.076	0.003	0.075	0.048	-0.123
	(0.038)	(0.024)	(0.109)	(0.071)	(0.108)	(0.060)	(0.038)	(0.064)
Change in wealth	0.035***	0.023***	0.015	0.033*	-0.048*	0.058***	0.004	-0.062***
	(0.009)	(0.006)	(0.023)	(0.016)	(0.022)	(0.015)	(0.010)	(0.015)
Household added an adult								
Yes	0.041*	0.040**	-0.096*	-0.015	0.111*	-0.054	0.017	0.037
	(0.017)	(0.012)	(0.045)	(0.034)	(0.045)	(0.030)	(0.020)	(0.032)
Household lost an adult								
Yes	-0.034	0.007	0.083	-0.098***	0.014	-0.034	-0.024	0.058
	(0.020)	(0.013)	(0.051)	(0.028)	(0.051)	(0.038)	(0.022)	(0.039)
Ent. formal								
Yes			0.107	0.048	-0.155*	0.074	-0.029	-0.045
			(0.064)	(0.037)	(0.069)	(0.038)	(0.025)	(0.041)
Owned in partnership								
Yes			-0.088	-0.060	0.148*	0.070	-0.053*	-0.017
			(0.057)	(0.031)	(0.059)	(0.048)	(0.023)	(0.049)
Location (own home omit.)								
Shop			-0.057	-0.171*	0.228**	0.128**	-0.066	-0.062
			(0.082)	(0.070)	(0.071)	(0.048)	(0.044)	(0.055)
Office/flat/building/rooms			0.043	-0.057	0.014	0.067	-0.029	-0.038
			(0.123)	(0.099)	(0.104)	(0.073)	(0.060)	(0.083)
Workshop/factory			-0.238**	-0.065	0.303**	0.069	0.023	-0.091
			(0.085)	(0.091)	(0.093)	(0.068)	(0.069)	(0.078)

	1998-2006 Enter	2006-2012 Enter	1998-2006 Persist	1998-2006 Switch	1998-2006 Exit	2006-2012 Persist	2006-2012 Switch	2006-2012 Exit
Mobile worker			0.010	-0.084	0.074	0.094	-0.114**	0.020
			(0.102)	(0.087)	(0.080)	(0.055)	(0.044)	(0.061)
Street and similar vendors			0.042	-0.202**	0.160*	0.152**	-0.053	-0.099
			(0.089)	(0.068)	(0.078)	(0.051)	(0.045)	(0.057)
Transport based			0.055	-0.231**	0.176	0.124	-0.144**	0.021
			(0.149)	(0.072)	(0.145)	(0.105)	(0.047)	(0.108)
Start year (don't know omit.)								
Before 1952			-0.192	-0.091	0.283	-0.230	0.141	0.088
			(0.191)	(0.128)	(0.168)	(0.198)	(0.081)	(0.204)
1952-1959			-0.169	-0.063	0.232	-0.050	0.048	0.003
			(0.172)	(0.116)	(0.150)	(0.177)	(0.045)	(0.176)
1960-1969			-0.055	-0.110	0.165	-0.297	0.134*	0.163
			(0.170)	(0.105)	(0.151)	(0.164)	(0.060)	(0.166)
1970-1979			-0.195	-0.099	0.294*	-0.152	0.039*	0.113
			(0.156)	(0.106)	(0.136)	(0.151)	(0.016)	(0.151)
1980-1989			-0.146	0.000	0.145	-0.176	0.121***	0.055
			(0.153)	(0.104)	(0.132)	(0.148)	(0.026)	(0.148)
1990-1999			-0.236	-0.071	0.306*	-0.272	0.120***	0.152
			(0.152)	(0.103)	(0.131)	(0.145)	(0.017)	(0.146)
2000-2009						-0.332*	0.112***	0.220
						(0.146)	(0.021)	(0.146)
Capital of enterprise (none omit.)								
<LE500			0.041	0.063	-0.104	0.046	-0.009	-0.037
			(0.069)	(0.042)	(0.075)	(0.055)	(0.034)	(0.056)
LE500-999			0.270**	0.105*	-0.375***	0.062	-0.016	-0.046
			(0.090)	(0.052)	(0.082)	(0.059)	(0.036)	(0.060)
LE1000-4999			0.173*	0.069	-0.242**	0.006	0.024	-0.030
			(0.074)	(0.039)	(0.078)	(0.055)	(0.039)	(0.058)
LE5000-9999			0.283**	0.116*	-0.399***	0.092	0.006	-0.098
			(0.089)	(0.053)	(0.088)	(0.060)	(0.037)	(0.061)
LE 10000+			0.208*	0.161**	-0.369***	0.056	-0.007	-0.049
			(0.085)	(0.052)	(0.085)	(0.058)	(0.038)	(0.062)
D.K.			0.367**	0.061	-0.428***	-0.028	0.025	0.003
			(0.124)	(0.058)	(0.117)	(0.070)	(0.063)	(0.080)
Use outside emp.								
Yes			0.067	-0.000	-0.066	0.040	-0.014	-0.026
			(0.054)	(0.040)	(0.054)	(0.036)	(0.020)	(0.038)
Number of outside employees			-0.003	0.002	0.001	-0.000	0.004*	-0.004
			(0.008)	(0.004)	(0.008)	(0.006)	(0.002)	(0.006)
Number of household employees			-0.134**	-0.027	0.161***	-0.215***	-0.047	0.262***
			(0.048)	(0.049)	(0.040)	(0.048)	(0.026)	(0.044)
Economic activity (manuf. omit)								
Construction			0.036	-0.007	-0.029	-0.049	0.039	0.009
			(0.134)	(0.059)	(0.127)	(0.062)	(0.057)	(0.070)
Wholesale and retail			-0.079	0.014	0.066	0.080	-0.032	-0.048
			(0.076)	(0.039)	(0.069)	(0.041)	(0.026)	(0.044)

	1998-2006 Enter	2006-2012 Enter	1998-2006 Persist	1998-2006 Switch	1998-2006 Exit	2006-2012 Persist	2006-2012 Switch	2006-2012 Exit
Transportation and storage			-0.257*	0.097	0.161	-0.019	0.165	-0.146
			(0.118)	(0.098)	(0.130)	(0.089)	(0.096)	(0.096)
Accommodation and food service			-0.212*	0.185	0.027	-0.054	0.142*	-0.087
			(0.103)	(0.126)	(0.120)	(0.068)	(0.067)	(0.082)
Various professional acts.			-0.134	0.053	0.082	0.233**	0.027	-0.260**
			(0.127)	(0.083)	(0.121)	(0.085)	(0.050)	(0.081)
Other service			-0.301***	0.334***	-0.033	0.000	0.002	-0.002
			(0.075)	(0.061)	(0.076)	(0.081)	(0.052)	(0.087)
Household ent. lost an adult								
Yes			-0.198*	0.295*	-0.096	-0.009	0.095	-0.087
			(0.098)	(0.133)	(0.090)	(0.087)	(0.068)	(0.087)
N (Obs.)	2442	4538	739	739	739	1462	1462	1462

Notes: *p<0.05; **p<0.01; ***p<0.001. Enterprise characteristics are from the main enterprise in the base period. Individual characteristics are those of the household head in the base period.
Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 11: Individual Level Models of Enterprise Entry and Exit, 1998-2006 and 2006-2012

Dependent variables: Entry model (not previously engaged in enterprise work): probit for individual entered enterprise work
Dynamic model (previously engaged in enterprise work): multinomial logit for (1) individual persisted (2) individual switched, (3) individual exited all enterprise work
Cells are marginal effects, standard errors in parentheses

	1998-2006 Enter	2006-2012 Enter	1998-2006 Persist	1998-2006 Switch	1998-2006 Exit	2006-2012 Persist	2006-2012 Switch	2006-2012 Exit
Sex (male omit.)								
Female	-0.065***	-0.052***	-0.128*	-0.038	0.166**	-0.154***	-0.035	0.190***
	(0.006)	(0.004)	(0.052)	(0.042)	(0.056)	(0.033)	(0.023)	(0.038)
Age group (30-49 omit.)								
<30	-0.021**	-0.020***	-0.200***	0.078	0.122*	-0.153***	0.031	0.122***
	(0.007)	(0.005)	(0.051)	(0.041)	(0.051)	(0.031)	(0.022)	(0.033)
50+	-0.030***	-0.034***	-0.132**	0.017	0.115*	-0.066	0.020	0.046
	(0.008)	(0.005)	(0.048)	(0.036)	(0.049)	(0.035)	(0.025)	(0.037)
Education (illit. omit.)								
Less than Intermediate	-0.016*	-0.015**	-0.112*	-0.080	0.193***	-0.090*	-0.002	0.092**
	(0.007)	(0.005)	(0.048)	(0.041)	(0.045)	(0.035)	(0.024)	(0.036)
Intermediate	0.001	-0.004	-0.222***	-0.033	0.256***	-0.104**	0.027	0.077
	(0.009)	(0.005)	(0.060)	(0.051)	(0.060)	(0.040)	(0.028)	(0.040)
University & above	0.003	0.008	-0.158	-0.123	0.282**	-0.172***	0.027	0.145*
	(0.014)	(0.008)	(0.082)	(0.067)	(0.091)	(0.050)	(0.044)	(0.056)
Employment status (OLF omit.)								
Self-Employed	-0.042***	0.058**						
	(0.006)	(0.020)						
Employer	-0.026*	-0.003						
	(0.011)	(0.007)						
Unpaid Fam. Wrk.	-0.029***	0.013						
	(0.009)	(0.008)						
Irregular Wage	0.028*	0.054***						
	(0.013)	(0.012)						
Informal Private Regular Wage	0.060***	0.063***						
	(0.015)	(0.009)						
Formal Private Regular Wage	0.017	0.025**						
	(0.014)	(0.009)						
Public Enterprises	-0.015	0.001						
	(0.011)	(0.009)						
Government	-0.018*	0.001						
	(0.007)	(0.005)						
Unemployed	0.044**	0.014						
	(0.014)	(0.009)						
Father's educ. (illit. omit)								
Less than int.	-0.006	0.000	-0.006	0.049	-0.043	0.027	0.007	-0.034
	(0.006)	(0.004)	(0.042)	(0.032)	(0.041)	(0.030)	(0.020)	(0.031)
Intermediate	-0.019*	-0.017***	-0.025	0.019	0.005	-0.042	0.003	0.039
	(0.008)	(0.005)	(0.088)	(0.051)	(0.094)	(0.057)	(0.035)	(0.060)
University & above	-0.036***	-0.015*	-0.216*	0.080	0.135	-0.079	0.137	-0.058
	(0.006)	(0.007)	(0.084)	(0.076)	(0.105)	(0.074)	(0.078)	(0.085)

	1998-2006 Enter	2006-2012 Enter	1998-2006 Persist	1998-2006 Switch	1998-2006 Exit	2006-2012 Persist	2006-2012 Switch	2006-2012 Exit
Father's work status (public wage omit.)								
Private wage worker	0.009	0.002	0.079	-0.095*	0.015	0.013	-0.011	-0.002
	(0.006)	(0.005)	(0.060)	(0.038)	(0.059)	(0.041)	(0.025)	(0.043)
Non-wage	0.006	0.003	0.019	-0.017	-0.002	0.013	0.017	-0.029
	(0.006)	(0.004)	(0.053)	(0.038)	(0.053)	(0.034)	(0.021)	(0.036)
Region (Greater Cairo omit.)								
Alex. and Suez Canal	0.014	-0.009	-0.024	0.099*	-0.075	-0.047	0.080*	-0.033
	(0.007)	(0.005)	(0.064)	(0.047)	(0.064)	(0.046)	(0.035)	(0.050)
Urban Lower	0.022**	0.012*	0.010	0.045	-0.056	0.051	0.033	-0.084
	(0.007)	(0.006)	(0.055)	(0.035)	(0.055)	(0.043)	(0.027)	(0.046)
Urban Upper	0.018*	0.011	-0.050	0.020	0.030	0.042	0.026	-0.068
	(0.007)	(0.006)	(0.056)	(0.033)	(0.057)	(0.044)	(0.029)	(0.046)
Rural Lower	0.006	0.008	-0.145*	0.060	0.085	0.075	0.035	-0.110*
	(0.007)	(0.006)	(0.062)	(0.040)	(0.061)	(0.045)	(0.027)	(0.046)
Rural Upper	0.009	0.001	-0.007	0.100*	-0.093	0.052	0.018	-0.069
	(0.008)	(0.006)	(0.073)	(0.045)	(0.072)	(0.047)	(0.031)	(0.049)
Wealth quintile (Poorest omit.)								
Poorer	-0.002	0.004	-0.070	-0.038	0.108	0.037	0.050	-0.087
	(0.007)	(0.004)	(0.076)	(0.049)	(0.078)	(0.045)	(0.027)	(0.047)
Middle	0.016*	0.015**	-0.047	0.022	0.024	-0.003	0.039	-0.036
	(0.008)	(0.005)	(0.085)	(0.054)	(0.085)	(0.047)	(0.027)	(0.049)
Richer	0.022*	0.019**	0.016	-0.015	-0.001	0.033	0.040	-0.073
	(0.009)	(0.006)	(0.091)	(0.062)	(0.097)	(0.051)	(0.029)	(0.053)
Richest	0.009	0.021**	0.024	-0.015	-0.009	0.067	0.065	-0.132*
	(0.010)	(0.007)	(0.099)	(0.068)	(0.101)	(0.057)	(0.038)	(0.059)
Change in wealth	0.006*	0.008***	0.006	0.032*	-0.038	0.057***	0.000	-0.057***
	(0.003)	(0.002)	(0.020)	(0.013)	(0.021)	(0.014)	(0.010)	(0.014)
Household had an enterprise								
Yes	0.043***	0.006						
	(0.008)	(0.003)						
Household added an adult								
Yes	-0.001	0.002	-0.065	-0.029	0.095*	-0.033	0.030	0.003
	(0.005)	(0.003)	(0.040)	(0.029)	(0.039)	(0.027)	(0.019)	(0.028)
Household lost an adult								
Yes	0.009	0.037***	0.032	-0.043	0.011	-0.040	-0.026	0.066
	(0.005)	(0.005)	(0.044)	(0.030)	(0.044)	(0.033)	(0.021)	(0.034)
Ent. formal								
Yes			0.126*	0.001	-0.126*	0.079*	-0.013	-0.066
			(0.059)	(0.038)	(0.062)	(0.035)	(0.023)	(0.037)
Owned in partnership								
Yes			-0.125*	-0.083**	0.207***	0.053	-0.059**	0.006
			(0.055)	(0.032)	(0.058)	(0.047)	(0.021)	(0.048)
Location (own home omit.)								
Shop			0.016	-0.068	0.052	0.069	-0.064	-0.005
			(0.078)	(0.048)	(0.074)	(0.049)	(0.044)	(0.052)
Office/flat/building/rooms			0.013	0.093	-0.106	0.030	-0.050	0.021

	1998-2006 Enter	2006-2012 Enter	1998-2006 Persist	1998-2006 Switch	1998-2006 Exit	2006-2012 Persist	2006-2012 Switch	2006-2012 Exit
			(0.109)	(0.087)	(0.103)	(0.074)	(0.054)	(0.076)
Workshop/factory			-0.201*	0.039	0.161	-0.032	-0.010	0.042
			(0.085)	(0.078)	(0.101)	(0.064)	(0.060)	(0.069)
Mobile worker			-0.079	0.106	-0.027	0.027	-0.094*	0.067
			(0.092)	(0.077)	(0.078)	(0.056)	(0.045)	(0.058)
Street and similar vendors			0.058	-0.061	0.003	0.054	-0.073	0.018
			(0.081)	(0.062)	(0.077)	(0.050)	(0.043)	(0.053)
Transport based			0.050	-0.068	0.018	-0.021	-0.124*	0.145
			(0.146)	(0.075)	(0.153)	(0.100)	(0.052)	(0.100)
Start year (don't know omit.)								
Before 1952			0.293	-0.127	-0.167	-0.052	0.085	-0.033
			(0.180)	(0.103)	(0.178)	(0.194)	(0.134)	(0.195)
1952-1959			0.068	-0.070	0.003	0.055	-0.039	-0.017
			(0.164)	(0.104)	(0.168)	(0.178)	(0.112)	(0.169)
1960-1969			0.181	-0.099	-0.081	-0.038	0.025	0.013
			(0.155)	(0.098)	(0.162)	(0.158)	(0.109)	(0.150)
1970-1979			-0.002	-0.083	0.085	0.021	-0.047	0.026
			(0.148)	(0.098)	(0.158)	(0.149)	(0.098)	(0.141)
1980-1989			0.061	0.015	-0.075	0.009	0.033	-0.042
			(0.146)	(0.099)	(0.154)	(0.144)	(0.099)	(0.136)
1990-1999			-0.010	-0.016	0.026	-0.061	0.021	0.040
			(0.146)	(0.097)	(0.155)	(0.143)	(0.099)	(0.134)
2000-2009						-0.110	0.033	0.077
						(0.143)	(0.098)	(0.135)
Capital of enterprise (none omit.)								
<LE500			0.044	0.047	-0.091	0.080	0.005	-0.085
			(0.071)	(0.047)	(0.075)	(0.053)	(0.029)	(0.053)
LE500-999			0.256***	-0.009	-0.247**	0.076	0.014	-0.090
			(0.077)	(0.042)	(0.076)	(0.058)	(0.033)	(0.057)
LE1000-4999			0.088	0.051	-0.138	0.017	0.043	-0.061
			(0.071)	(0.047)	(0.076)	(0.052)	(0.034)	(0.054)
LE5000-9999			0.243**	0.002	-0.245**	0.094	0.023	-0.117*
			(0.091)	(0.048)	(0.087)	(0.057)	(0.034)	(0.058)
LE 10000+			0.124	0.117*	-0.241**	0.041	0.017	-0.058
			(0.080)	(0.056)	(0.082)	(0.055)	(0.034)	(0.058)
D.K.			0.242*	-0.073	-0.169	0.022	0.042	-0.064
			(0.101)	(0.045)	(0.101)	(0.069)	(0.056)	(0.078)
Use outside emp.								
Yes			0.101*	-0.000	-0.100*	0.038	-0.032	-0.006
			(0.050)	(0.036)	(0.048)	(0.033)	(0.018)	(0.035)
Economic activity (manuf. omit)								
Construction			0.107	-0.095	-0.012	-0.076	0.011	0.065
			(0.121)	(0.056)	(0.113)	(0.054)	(0.050)	(0.062)
Wholesale and retail			-0.031	-0.075	0.105	0.094*	-0.041	-0.053
			(0.069)	(0.046)	(0.062)	(0.037)	(0.025)	(0.039)
Transportation and storage			-0.156	-0.086	0.243	0.056	0.077	-0.133

	1998-2006 Enter	2006-2012 Enter	1998-2006 Persist	1998-2006 Switch	1998-2006 Exit	2006-2012 Persist	2006-2012 Switch	2006-2012 Exit
			(0.126)	(0.063)	(0.133)	(0.097)	(0.077)	(0.091)
Accommodation and food service			-0.119	0.151	-0.033	-0.012	0.143*	-0.131
			(0.092)	(0.101)	(0.093)	(0.061)	(0.065)	(0.074)
Various professional acts.			-0.070	-0.024	0.094	0.169*	0.072	-0.241**
			(0.123)	(0.086)	(0.117)	(0.075)	(0.058)	(0.076)
Other service			-0.318***	0.394***	-0.077	-0.039	0.010	0.030
			(0.066)	(0.062)	(0.065)	(0.071)	(0.048)	(0.076)
Number of outside employees			-0.001	-0.000	0.001	0.003	0.003	-0.006
			(0.005)	(0.004)	(0.006)	(0.005)	(0.002)	(0.005)
Number of household employees			0.009	-0.021	0.012	-0.006	-0.067***	0.073**
			(0.027)	(0.027)	(0.026)	(0.023)	(0.018)	(0.023)
Household ent. lost an adult								
Yes			-0.130	0.063	0.067	-0.011	0.050	-0.038
			(0.068)	(0.062)	(0.075)	(0.068)	(0.057)	(0.070)
N (Obs.)	13559	21128	938	938	938	1740	1740	1740

Notes: *p<0.05; **p<0.01; ***p<0.001. Enterprise characteristics are from the main enterprise worked in the base period. Individual characteristics are from the base period.
Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 12: Enterprise Growth among Surviving Enterprises, 1998-2006 and 2006-2012

	Percentage	
	1998-2006	2006-2012
Share of enterprises that survive that:		
Contract	16.6	34.1
Remain the same	52.0	52.5
Grow	31.4	13.5
N (Observations)	409	624

Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012

Table 13: Enterprise Level Models of Enterprise Growth among Surviving Enterprises, 1998-2006 and 2006-2012

Dependent variable: Ordered enterprise contraction, statsis, or growth in number of workers (employees + household members)
Cells are marginal effects from an ordered probit model, standard errors in parentheses

	1998-2006 Shrank	1998-2006 Same size	1998-2006 Grew	2006-2012 Shrank	2006-2012 Same size	2006-2012 Grew
Sex (male omit.)						
Female	0.023	0.009	-0.032	-0.054	0.018	0.036
	(0.042)	(0.014)	(0.057)	(0.056)	(0.016)	(0.041)
Age group (30-49 omit.)						
<30	0.008	0.003	-0.011	-0.033	0.012	0.020
	(0.054)	(0.020)	(0.074)	(0.049)	(0.017)	(0.032)
50+	-0.019	-0.010	0.029	-0.034	0.013	0.021
	(0.033)	(0.018)	(0.051)	(0.047)	(0.017)	(0.030)
Education (illit. omit.)						
Less than Int.	0.012	0.005	-0.016	-0.007	0.003	0.005
	(0.041)	(0.016)	(0.057)	(0.051)	(0.018)	(0.032)
Intermediate	-0.020	-0.011	0.031	0.012	-0.005	-0.007
	(0.052)	(0.029)	(0.081)	(0.060)	(0.023)	(0.037)
Univ. and above	-0.033	-0.020	0.053	0.052	-0.022	-0.030
	(0.063)	(0.042)	(0.104)	(0.084)	(0.038)	(0.046)
Father's educ. (illit. omit)						
Less than Int.	0.016	0.006	-0.022	-0.017	0.007	0.010
	(0.036)	(0.013)	(0.049)	(0.041)	(0.016)	(0.025)
Intermediate	-0.053	-0.038	0.091	-0.092	0.027	0.065
	(0.074)	(0.075)	(0.148)	(0.076)	(0.015)	(0.063)
University & above	-0.162***	-0.474***	0.636***	-0.150	0.027	0.123
	(0.028)	(0.059)	(0.068)	(0.089)	(0.015)	(0.098)
Father's work status (public wage omit.)						
Private wage	-0.197*	-0.054	0.251***	-0.019	0.008	0.010
	(0.079)	(0.038)	(0.072)	(0.057)	(0.026)	(0.031)
Non-wage	-0.141	-0.005	0.146*	-0.058	0.023	0.035
	(0.081)	(0.023)	(0.064)	(0.050)	(0.022)	(0.029)
Region (Greater Cairo omit.)						
Alex. and Suez Canal	0.039	0.023	-0.062	-0.019	0.005	0.014
	(0.050)	(0.030)	(0.078)	(0.073)	(0.018)	(0.055)
Urban Lower	0.057	0.029	-0.087	0.090	-0.037	-0.053
	(0.046)	(0.028)	(0.072)	(0.055)	(0.022)	(0.034)
Urban Upper	0.086	0.034	-0.120	-0.011	0.003	0.008
	(0.050)	(0.027)	(0.072)	(0.060)	(0.016)	(0.044)
Rural Lower	0.028	0.018	-0.047	0.059	-0.022	-0.037
	(0.051)	(0.033)	(0.084)	(0.058)	(0.021)	(0.037)
Rural Upper	0.018	0.013	-0.031	0.019	-0.006	-0.013
	(0.051)	(0.036)	(0.086)	(0.063)	(0.020)	(0.043)
Wealth quintile (Poorest omit.)						
Poorer	0.050	0.011	-0.061	-0.105*	0.047	0.059*
	(0.057)	(0.019)	(0.072)	(0.051)	(0.025)	(0.028)
Middle	-0.039	-0.023	0.061	-0.090	0.042	0.049
	(0.054)	(0.028)	(0.081)	(0.061)	(0.028)	(0.034)
Richer	-0.012	-0.005	0.017	-0.096	0.044	0.053
	(0.063)	(0.028)	(0.090)	(0.062)	(0.029)	(0.034)
Richest	-0.023	-0.012	0.035	-0.091	0.042	0.049
	(0.065)	(0.031)	(0.096)	(0.068)	(0.031)	(0.037)
Ent. formal						
Yes	0.025	0.012	-0.037	0.017	-0.007	-0.011
	(0.054)	(0.029)	(0.083)	(0.047)	(0.018)	(0.029)
Owned in partnership						
Yes	0.068	0.017*	-0.085	0.129	-0.065	-0.064*
	(0.083)	(0.009)	(0.088)	(0.076)	(0.047)	(0.030)
Location (own home omit.)						
Shop	-0.021	-0.008	0.029	-0.107	0.052	0.056
	(0.070)	(0.023)	(0.092)	(0.078)	(0.042)	(0.037)

	1998-2006 Shrank	1998-2006 Same size	1998-2006 Grew	2006-2012 Shrank	2006-2012 Same size	2006-2012 Grew
Office/flat/building/rooms	0.247	-0.063	-0.184	0.140	-0.096	-0.045
	(0.155)	(0.080)	(0.096)	(0.121)	(0.088)	(0.035)
Workshop/factory	-0.056	-0.030	0.086	-0.013	0.008	0.006
	(0.078)	(0.054)	(0.128)	(0.122)	(0.070)	(0.052)
Mobile worker	-0.081	-0.056	0.137	-0.184*	0.069	0.114**
	(0.064)	(0.048)	(0.105)	(0.072)	(0.038)	(0.044)
Street and similar vendors	0.029	0.005	-0.034	-0.182*	0.069	0.113*
	(0.075)	(0.015)	(0.088)	(0.078)	(0.038)	(0.048)
Transport based	-0.136*	-0.172	0.309	0.000	-0.000	-0.000
	(0.066)	(0.109)	(0.158)	(0.125)	(0.073)	(0.052)
Start year (don't know omit.)						
Before 1952	-0.451*	-0.006	0.457**	-0.024	0.012	0.011
	(0.201)	(0.160)	(0.149)	(0.268)	(0.140)	(0.128)
1952-1959	-0.422*	0.048	0.374**	0.030	-0.017	-0.013
	(0.200)	(0.153)	(0.134)	(0.244)	(0.135)	(0.109)
1960-1969	-0.363	0.105	0.258**	0.140	-0.090	-0.050
	(0.202)	(0.136)	(0.097)	(0.235)	(0.136)	(0.102)
1970-1979	-0.406*	0.069	0.337***	-0.093	0.041	0.052
	(0.199)	(0.138)	(0.094)	(0.221)	(0.116)	(0.106)
1980-1989	-0.354	0.109	0.245***	-0.062	0.030	0.033
	(0.196)	(0.136)	(0.070)	(0.213)	(0.115)	(0.099)
1990-1999	-0.323	0.119	0.204**	-0.066	0.031	0.035
	(0.198)	(0.134)	(0.072)	(0.214)	(0.115)	(0.100)
2000-2009				-0.116	0.048	0.068
				(0.215)	(0.115)	(0.101)
Capital of enterprise (none omit.)						
<LE500	0.062	0.025	-0.087	0.046	-0.014	-0.032
	(0.054)	(0.031)	(0.080)	(0.066)	(0.019)	(0.047)
LE500-999	0.043	0.021	-0.064	0.016	-0.004	-0.011
	(0.064)	(0.035)	(0.097)	(0.072)	(0.019)	(0.053)
LE1000-4999	-0.041	-0.042	0.083	0.081	-0.029	-0.052
	(0.052)	(0.046)	(0.097)	(0.072)	(0.023)	(0.050)
LE5000-9999	0.004	0.003	-0.007	0.046	-0.014	-0.031
	(0.065)	(0.044)	(0.109)	(0.080)	(0.024)	(0.056)
LE 10000+	0.065	0.025	-0.090	0.051	-0.016	-0.035
	(0.075)	(0.036)	(0.109)	(0.087)	(0.027)	(0.060)
D.K.	-0.099	-0.179	0.279	0.260*	-0.139	-0.121*
	(0.056)	(0.124)	(0.168)	(0.120)	(0.079)	(0.053)
Use outside emp.						
Yes	0.003	0.001	-0.004	0.288***	-0.153***	-0.135***
	(0.046)	(0.021)	(0.067)	(0.059)	(0.042)	(0.022)
Economic activity (manuf. omit)						
Construction	0.021	0.017	-0.038	0.059	-0.015	-0.044
	(0.101)	(0.073)	(0.173)	(0.098)	(0.029)	(0.071)
Wholesale and retail	0.042	0.029	-0.071	0.108	-0.034*	-0.073
	(0.048)	(0.040)	(0.088)	(0.061)	(0.014)	(0.049)
Transportation and storage	0.122	0.043	-0.165	0.016	-0.003	-0.013
	(0.109)	(0.036)	(0.131)	(0.090)	(0.017)	(0.073)
Accommodation and food service	0.144	0.041	-0.185	0.154	-0.058	-0.096
	(0.140)	(0.041)	(0.139)	(0.109)	(0.053)	(0.062)
Various professional acts.	-0.059	-0.092	0.151	-0.128	-0.021	0.149
	(0.060)	(0.114)	(0.171)	(0.076)	(0.034)	(0.099)
Other service	0.116	0.043	-0.159	0.234**	-0.107*	-0.127*
	(0.086)	(0.037)	(0.106)	(0.089)	(0.049)	(0.051)
N (Obs.)	405	405	405	624	624	624

Notes: *$p<0.05$; **$p<0.01$; ***$p<0.001$. Enterprise characteristics are from the base period. Individual characteristics are from the highest-ranked individual in the roster engaged in the enterprise in both periods.
Source: Author's calculations based on ELMS 1998, ELMPS 2006, ELMPS 2012