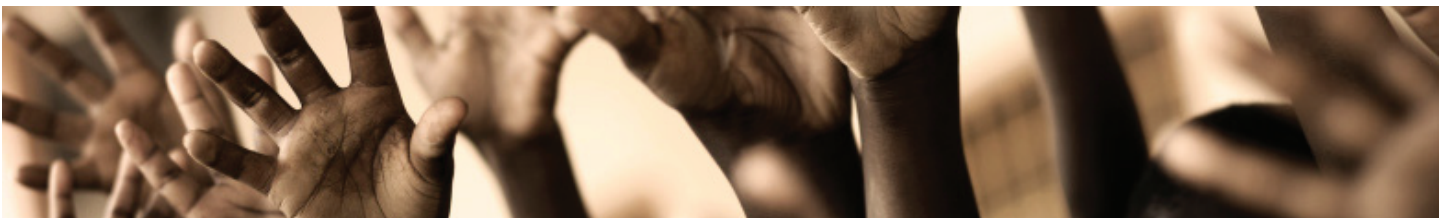# Risk Tolerance, Gender, and Entrepreneurship: The Palestinian case

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August 2015

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Risk Tolerance, Gender, and Entrepreneurship: The Palestinian case

Abstract

This paper analyzes the inter-relationships between entrepreneurial propensity, fear of failure (fof), and gender using the Global Entrepreneurship Monitor (GEM) Adult Population Survey (APS) data for 2009, 2010, and 2012 for a number of countries. The results show that the fear of failure, higher among women, negatively affects entrepreneurial status while the skill perception does the opposite. It is also found that gender increases the probability of fear of failure, although this result is not stable over time. Using the Conditional Mixed Process (CMP) specification, we find that gender and fof both reduce the predicted probability of entrepreneurship consistently over time. The only variable that consistently predicts fof and is significant is skill perception; its impact is negative. Policy implications of this research point to the importance of reducing the gender gap in entrepreneurship. Particularly, in order to encourage more females to be entrepreneurs, there is a need to improve their skill perception. This will reduce fof and increase entrepreneurial propensity. This could be achieved by many tools such as through networking and media coverage of success stories, etc.

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Acknowledgements

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1 Introduction

1.1 Context of the study

Entrepreneurship provides opportunities for many to achieve a higher standard of living and/or an employment opportunity not otherwise available. The availability of the Adult Population Survey (APS) for a large number of countries for many years provided researchers worldwide an opportunity to study the determinants of entrepreneurship and the characteristics of entrepreneurs. In Palestine, job creation is an especially acute problem; low female participation rates, oversized public employment, large budget deficits, and a weak private sector that is forcefully integrated with the Israeli economy all point to the need of strengthening the idea of job creation and entrepreneurship. Political instability in Palestine may be a contributing factor to risk intolerance. This paper aims at analyzing risk tolerance among Palestinian males and females and the potential impact of that on entrepreneurial activity rates along gender lines.

Although there is a large body of literature on the entrepreneurship, fear of failure (fof), and gender for developed countries; the literature on Palestine is virtually non-existent, not until 2009 when Palestine became a member of the Global Entrepreneurship Research Association (GERA). Since then descriptive analysis were done in the various Global Entrepreneurship Monitor (GEM) reports[1]. This will be the first paper to address the gender dimension of fof and total early stage activity rates using Palestinian data.

1.2 Research questions and objectives

The majority of studies on gender differences in risk attitude finds that women are more risk averse than men, some found that in certain situations, the reverse is true[2]. One of the common findings in the literature is that there is a gender gap in activity rates in favor of men; for the Palestinian 2012 data, male rates are almost twice that of females. It is also found that fear of failure (fof) is higher among females, which may lead to the inference that it is fof which is responsible for the lower activity rates for women[3]. Koellinger, Minniti, and Schade (2013) report that skill perception, fof, and social networks explain a substantial part of the gender gap in activity rates between men and women. They control for endogeneity of fof using instrumental variables, two stage least squares. Agier and Szafarz (2012), indicate

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[1] The Global Entrepreneurship Monitor (GEM) is an annual research program which was founded in 1998 to measure one of the main drivers of economic growth which is the entrepreneurship. Every year GEM collects reliable data on entrepreneurship from different countries using the same standard research instruments, that makes the comparison among these countries meaningful.

[2] Croson and Gneezy provide a literature review on experimental economics of gender differences in three dimensions: risk preferences, social preferences, and competitive preferences. A theoretical underpinning of why are there gender differences in risk tolerance is attributed to lower female utility from situations involving bad outcomes. Their feeling and experience of bad outcomes is more fear while for men it would be anger.

[3] Palestine GEM reports (2009) and (2010) indicate that Palestine has the highest fear of failure among factor driven countries.

that autonomy, risk taking, readiness for change, endurance, lack of emotionalism and low need for support, and bank loan officers rated women as significantly less likely successful entrepreneurs compared to men. Croson and Gneezy (2009) points that in situations where "competitiveness" is involved, women are found to be more risk averse than men. This hypothesis was tested by Bönte and Piegeler (2012) who found that male/female differences in risk attitudes contribute to the gender gap in latent and nascent entrepreneurship. A third study (Sepúlveda and Bonilla (2011)) was one of the few studies which addressed the question of what factors affect fof; they run a probit model and find that age, skill perception, gender, discontinuation, and to a lesser degree education all affect fof. This paper addresses the same issues but contributes by dividing the sample once along gender lines and uses CMP modeling to correct for simultaneity of Total Early stage Activity (TEA) and fof. We also use other country estimates to capture whether the results are Palestinian specific or a more general phenomenon. Koellinger, Minniti, and Schade (2013) report "We show that women are less confident in their entrepreneurial skills, have different social networks and exhibit higher fear of failure than men. After controlling for endogeneity, we find that these variables explain a substantial part of the gender gap in entrepreneurial activity. Although, of course, their relative importance varies significantly across countries, these factors appear to have a universal effect." In their analysis skill perception plays a more dominant role in explaining the gender gap in activity rates.

This paper will utilize the multinomial logit model which has the additional advantage of classifying entrepreneurs into four groups: not being entrepreneurs, nascent, baby business, and established business entrepreneurs. The set of explanatory variables may affect each of the stages differently relative to being non-entrepreneurs. Also, CMP analysis (Roodman 2009) treats the system as a Seemingly Unrelated Regression (SUR) instead of a multi-stage regression which improves efficiency. Unlike the approach used by Sepúlveda and Bonilla (2011), the benefit from applying this technique is that it considers the recursive nature of the model. While fof is expected to affect TEA, other factors affect fof using business discontinuation in set of explanatory variables for fof, but not in the TEA equation. We also use other country estimates to capture whether the results are Palestinian specific or a more general phenomenon. The next section provides a review of the literature followed by sample descriptives. Section IV describes the empirical model, section V gives the empirical findings and finally, section VI concludes.

2   Literature review

Research on risk attitudes and entrepreneurship has not settled the debate on risk tolerance of the entrepreneurs (Croson and Gneezy (2009)), nor has it determined gender dimension of risk tolerance. Diaz-Garcia and Jimenez-Moreno (2010) found no significant differences

between men and women with respect to the intention of firm creation. They argue that a negative perception by females of societal norm and the roles assigned to them enforces their fear of failure, hence acting as a deterrent to business creation. Robichaud, Zinger, and LeBrasseur (2007) did not find significant gender differences with regard to fear of failure despite the higher entrepreneurial rate for men. Other research has emphasized the difference between self-employment and entrepreneurship, Bengtsson et al (2012) shows that men are 1.5 times more likely than women to be self employed, but are 5 times as likely to be entrepreneurs. Distinctions in their study were drawn based on psychological attributes.

The link between fear of failure and risk tolerance can also be found in the literature, mostly owing to availability of the GEM APS data. Wagner (2004) reports that fof explains the entrepreneurship gender gap. Langowitz and Minniti (2007) find that females have a more negative perception of themselves in entrepreneurial activity than men do (including fear of failure), leading to a lesser entrepreneurial propensity. Koellinger, Minniti and Schade (2007) use APS data on 18 countries[4] to investigate the determinants of the decision to start a business. They use fof as a proxy for risk tolerance and find that entrepreneurs are less likely to express fof as a deterrent to entrepreneurship, but that it does negatively affect the decision to start a business. Romani, Atienza, and Amoros (2012) found evidence that there are gender differences in informal investments using Chilean GEM data. Ozdemir and Karadeniz (2009), postulate that economic instability and uncertainty in Turkey, as well as the Turkish culture (which considers failure as a learning process) mitigate the influence of fof on the likelihood of being an entrepreneur.

The literature on the determinants of risk tolerance and gender is less frequent; Sepúlveda and Bonilla (2011) are among the few that addressed this question. Their analysis also utilizes APS on Chile, they proxy attitude towards risk by fof. They use the probit model and conclude that being male, having more education, and better skill perception all negatively affect one's attitude towards risk, thus improving the likelihood of entrepreneurship. Gonzalez-Alvarez, Solis-Rodriguez and Guzman-Goyanes (2012) investigate the effect of social capital (as measured by knowing someone who setup a business in the last two years) and cognitive factors (self-efficacy (have the knowledge and skills needed to set up a business activity), and fear of failure) on new venture decisions. Their findings show that social capital and self-efficacy has positive impact on the new venture decision while the fof has a negative impact. The main contribution of this study is that the cognitive factors (self-efficacy and fear of failure) act as mediating variables between social capital and the decision to set up a business. Lee et al., (2004), and Wong and Lee (2005) also investigated the effect of perceptual variables on start-ups along gender lines.

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[4] Israel is the only country in the MENA region that is included among the 18 countries studied.

The literature on female entrepreneurship in Palestine is less extensive, but has a unique feature of being an economy under occupation. The impact of the Israeli occupation since the Oslo peace agreement of 1993 has had sever repercussions on the Palestinian economy. The Oslo agreement has come to existence following the first uprising (Intifada) late 1987. Since then a series of political unrest and upheaval has taken place; most notable are: the second Intifada (2002), the Gaza's wars "Operation Cast Lead" (2008-09), "Operation Pillar of Defence" (2012), and "Operation Protective Edge" (2014). Following each event, the Israeli occupation restricts labor and trade movements through checkpoints, the building of the West Bank Separation Wall, interruption of power supply, house demolitions, arrests and prolonged administrative detention, and targeted killing. The consequences of such practices are well documented in the literature[5] (Ministry of National Economy and Arij (2011)). These practices constitute impediments to investment and entrepreneurship. The increase of pessimism associated with political upheaval lowers the expected rate of returns and increases risk aversion. This ultimately lowers entrepreneurial propensity for both men and women. The effect on labor market is particularly profound, as employment in Israel drops drastically, worker remittances are reduced and job security at home becomes fragile.

The Women's Centre for Legal Aid and Counseling (2000) reported on the social and psychological impact of occupation practices in times of sever unrest and violence. Although this is one of the few studies available on the subject, it points not only on the direct impact of fear and distress from shelling and house demolitions, but also to domestic violence that women may experience during such periods as a result of lawlessness and disorder. As mentioned earlier, the Israeli restrictions affect Palestinian male employment in Israel the most. This raises male unemployment and this may push women for informal employment and possibly necessity entrepreneurial activities to support the family. The wars on Gaza resulted in thousands of deaths (women and children included). This loss of life is a threat to women's security and welfare.

Female entrepreneurs may be subject to stronger hardships compared to male entrepreneurs because of the political situation in Palestine. The Israeli occupation plays an essential role in failure, job loss especially for businesses managed by women. Many of them do not have access to raw materials because of the Israeli movement restrictions within governorate or between different governorates, roads blocks which lead to an increase the transportation costs as a result of using alternative roads, and obstruction of marketing their products especially for women who depend on others to do that on their behalf. Women who operate shops selling foodstuffs are subject to unfair competition where cheap products from Israel are sold in black markets. In other situations, women who work in crafts industries especially in tourist areas such as Bethlehem, Al-Quds are severely affected by closures. The

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[5] The ministry of the national economy along with the applied research Institute (Arij) published a report which documents the cost of the Israeli occupation to be roughly 85% of Palestinian GDP in 2010.

limits on available opportunities without risks or danger to women entrepreneurship will discourage females from entrepreneurial undertakings.

3   Methodology and data

3.1 Methodology

The analysis of this section begins by evaluating how fof and gender (among other variables) affect entrepreneurial propensity. A multiple category variable was constructed from non-entrepreneurs (j=1), nascent entrepreneurs (j=2), baby-business entrepreneurs (j=3), and established business entrepreneurs (j=4)[6]. This 4-category variable is used as the dependent choice variable with non-entrepreneurs being the base outcome. A multinomial logit regression model was estimated for a group of explanatory variables.

$$P_j = \frac{e^{z\alpha_j}}{1+\sum_j e^{z\alpha_j}} \qquad (1)$$

Equation (1) above gives the probability of selecting outcome j (P_j) as a non-linear function of the characteristics vector z_j (the elements of which are reported in Table 2) and the coefficient vector (α_j).The results of estimating equation (1) are shown in Table 2 below[7]. We also use equation (1) for the logit model where j =2; the base group is zero for individuals who report no fof and one for people who do. The logit model is estimated for the entire sample, males, and females.

Estimating an entrepreneurial dummy equation (TEA) and another perceptual dummy equation (fof) individually leads to biased estimates as fof is expected to suffer from endogeneity[8]. Koellinger, Minniti, and Schade (2013) estimate a recursive simultaneous-equation bivariate probit model using "knowing someone who started a business in the past 24 months" and "closed a business in the past 12 months" as instruments for the perceptual variable skill perception. They also used fear of failure as a second equation, but they do not report the results. They report that skill perception (*suskill*) is the only variable that resulted in an insignificant gender dummy in the nascent entrepreneurship equation. This result suggests that controlling for skill perception and correction for the possible endogeneity of *suskill* makes gender differences in entrepreneurial activity disappear.

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[6]Nascent entrepreneurs (suboanw) are those who answered yes to the question "are you actively involved in start-up effort, owner, no wages yet". Baby business (babybuso) entrepreneurs are those who manage and own a business that is up to 42 months old; and established business entrepreneurs (estbbuso) are those who own and manage a business that is older than 42 months. The base category is those who answered "no" to all these questions (being non-entrepreneurs).

[7]The low activity rate for women may raise concerns about the sample size for women. The number of observations for each of the regressions is included to handle this concern.

[8] Hamilton and Nickerson (2001) indicate the size and direction of endogeneity bias are often difficult to "predict ex-ante" . The direction and size of the bias depend on the question under consideration as they both depend on the quality of instruments as well as the correlation between the instruments and the error term.

Our descriptive analyses earlier shows that skill perception is lower among those with fof and higher among those who are risk tolerant. Thus skill perception should be used as an explanatory variable in the fof equation and the TEA equation. We correct for this endogeneity using Roodman's (2009) CMP model which estimates the system jointly as a seemingly unrelated regression (SUR). It treats equations as independent from one another, whereas errors are assumed to be jointly normally distributed. That is CMP is appropriate for models in which there is simultaneity, where the estimated coefficients are consistent and efficient. We use education and business discontinuation as instruments[9]. Table 6 presents the joint maximum likelihood SUR estimated coefficients.

3.2 Data and Descriptive Statistics

The GEM model aims at exploring the role of entrepreneurship in a country's growth, for this purpose, each country designs a data collection framework such that all strata of the population are well represented. The adult population survey covers population aged 18-64 and is collected by all countries at the same time and in the same way. The primary measure of GEM's entrepreneurial activity is the percent of the population 18-64 who are nascent and baby business entrepreneurs; this is called Total Early stage entrepreneurial Activity (TEA) rate. We utilize GEM's APS data which is collected either by phone or face to face interviews depending on the country.[10] The sample size for each country is roughly 2000 observations which is based on population census and stratified by age structure, gender, and governorate and possibly other stratification.[11] The sample design uses skip logic questions to identify entrepreneurs at the three stages of entrepreneurship.

The analyses were conducted for three countries: Palestine, Tunisia, and Israel; the choice of countries was motivated to check robustness of the results. In addition, the countries were chosen based on the level of development; Palestine is factor driven, Tunisia is efficiency driven and Israel is innovation driven. Geographic proximity of Israel to Palestine and cultural proximity of Tunisia to Palestine were also considered for the choice of those countries. Although other differences exist at the country level; Tunisia and Israel are independent, while Palestine is under a crippling Israeli occupation that makes the situation in Palestine unique.

Figure1. TEA and FoF rate across countries, Palestine, Israel and Tunisia

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[9] We used a set of variables which are expected to be correlated with fof, skill perception was correlated with the fof but it was more highly correlated with the error from the probit equation. For that reason we pooled the three together and calculated the correlations with fof and the residuals of the probit equation. The chosen instruments are those with the lowest correlations with the residuals from the outcome equation. The weak instrument test of Finlay and Magnusson (2009) is not applicable with IVPROBIT in our case because the endogenous regressor is not continuous.

[10] For Palestine and Israel the questionnaire is completed by a face to face interview, while for Tunisia it is done by phone.

[11] Israel also stratifies the sample based on whether they are Israeli Arabs, Immigrants from the Commonwealth of Independent States, or Veteran Jewish residents.
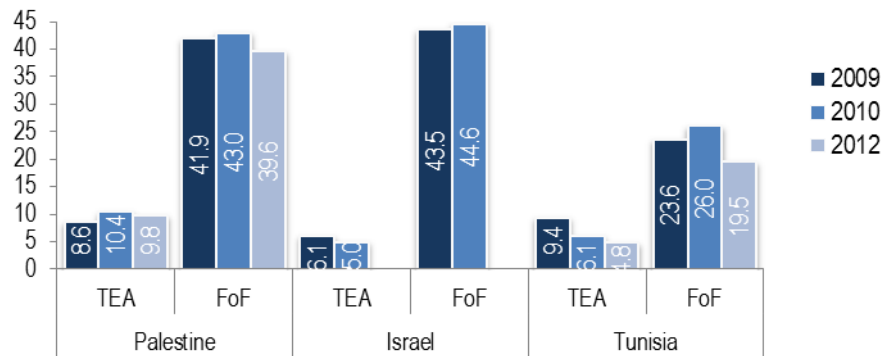
Cross country comparisons of entrepreneurial activity rates shows that Israel (which is innovation driven) has lower activity rates (at least for BB and EB[12]) than Palestine and Tunisia (factor driven and efficiency driven, respectively).

TEA rate in Palestine ranges from 8.6 percent in 2009, increased a little bit to 10.4 percent in 2010, then decreased to 9.8 percent in 2012. One of the possible reasons for this lower rate of TEA in Palestine is the higher level of fear of failure to start a business, political uncertainty, financing difficulties, and a host of cultural and educational reasons. It is expected that fof is negatively correlated with entrepreneurial activity levels, and thus affects job creation. However, in the APS, respondents were asked if fof would prevent them from starting a new business. In 2009 to 2012, 40-43 percent of Palestinians believed that fof will prevent them from starting a new business. Tunisia has lower rates than Palestine and Israel (see figure 1).

Risk tolerance is higher among males than females (2010 has similar results for men and women). It is found that a higher proportion of females (49% of the sample) will be deterred from starting a business by fof than is the case for males. The fof rate for men and women is 38% and 45%, respectively, in 2009. It is believed that this gap may explain the lower level of Total Early stage entrepreneurial Activity (TEA) among the female population (ranged from 3.3 percent in 2009 to 3.5 percent in 2012) in comparison with the male population (13.6 percent in 2009 increased to 16 percent in 2012).

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[12] Baby Business and Established Business respectively.

Figure 2. The fof rate in Palestine by gender, 2009-2012

Yes **No**

	Male 2009	Female 2009	Male 2010	Female 2010	Male 2012	Female 2012
No	62	55	58	56	64	57
Yes	38	45	42	44	36	43
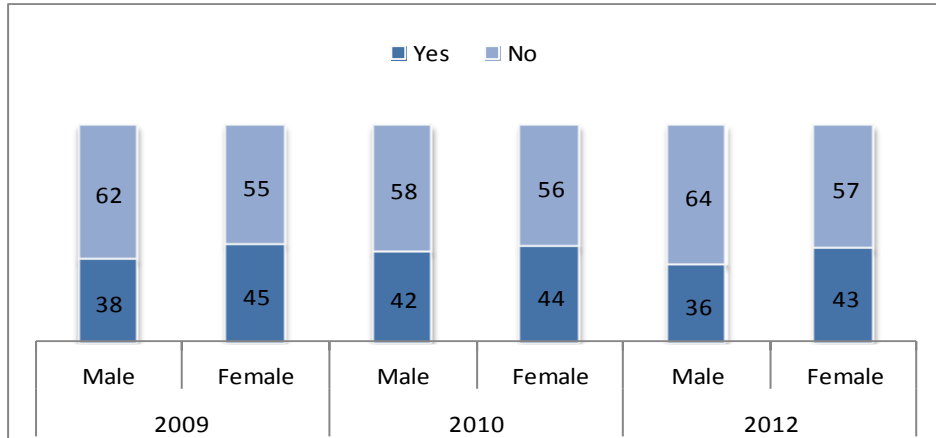
Source: Global Entrepreneurship Monitor (GEM) country reports 2009, 2010, 2012.

The Palestinian APS data indicates that the fof level decreased with higher education levels. Table 1 provides Spearman's rank correlation coefficient for fof with the rest of the variables. The results in Table 1 reveal the following: Females are more likely to have fof than males; the coefficient is positive and significant for five out of eight cases. Second, knowing someone who started a business, positive skill perception, and optimistic expectations about starting a business are all negatively correlated with fof; this coefficient is negative and significant. The same can be said about education and income. The relations are stable overtime for the most part, although some exceptions are noticed.

Finally, skill perception; although more Palestinians think they have the skills to run a business than is the case for Tunisia and Israel, the gender gap in skill perception is highest in Palestine, followed by Tunisia and then Israel (see figure 3 below)[13].

Figure 3. Have the knowledge, skills and experience to start a business

Palestine			Israel		Tunisia		
2009	2010	2012	2009	2010	2009	2010	2012
56.1%	56.9%	59.4%	38%	40%	40%	53%	62%
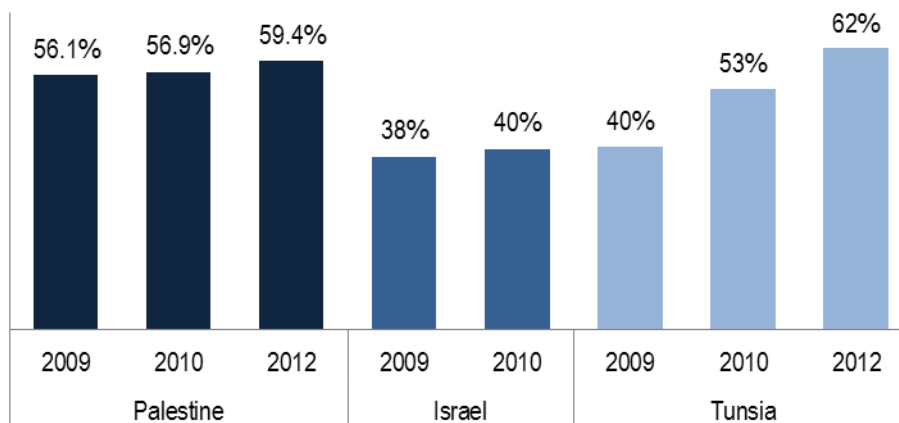
Source: Global Entrepreneurship Monitor (GEM) country reports 2009, 2010, 2012.

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[13] A test of difference in proportions in skill perception, fof, and TEA between men and women rejected the null of no difference at 5% or lower for all years; the fof difference is significantly different from zero at the 10% level in 2010 only.

The question of skill perception is a very important factor with respect to fof, the reason being if one believes he/she has the required skills to start a business, then there is little reason to be deterred by fof in starting a business. It is therefore expected that the skill perception will increase risk tolerance (decrease fof). Figure 4 indicates that believing that having the required skills reduces the fof factor mainly for men. This reflects that fewer females tend to believe that they have the required skills, implying a greater need for their training and education.
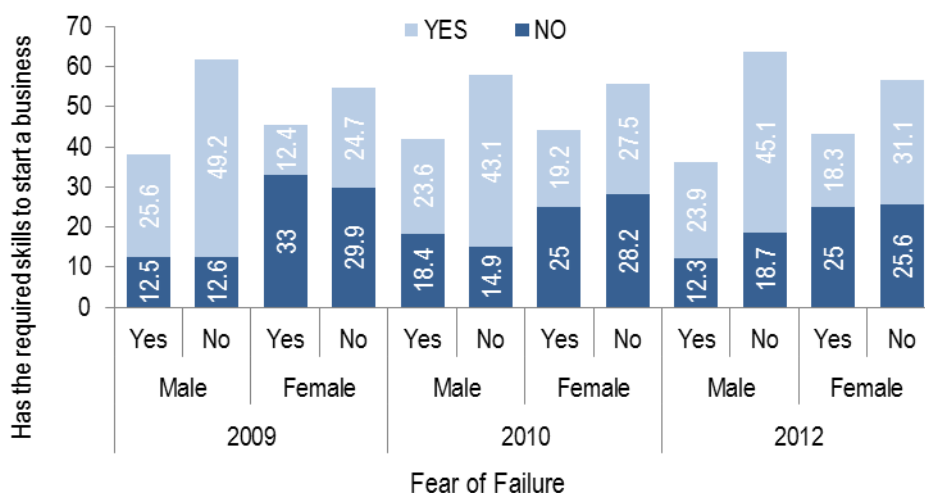
Figure 4. Fof rate in Palestine by skill perception and gender, 2009-2012

Source: Global Entrepreneurship Monitor (GEM) country reports 2009, 2010, 2012.

The fof factor may not only be responsible for reducing current entrepreneurial activity, but future intentions to start up a new business. Data shows that the risk aversion reduces the intention to start a business in the future. The probability of starting up a new business when fof is present is 10% for males and 5% for females in 2009. The probability of starting up a new business when fof is not present increases to 20% for males and 7% for females in the same year. These numbers increase significantly in 2010 and 2012.

The Spearman correlation coefficient is a non-parametric measure of statistical dependence between two variables. The signs and magnitudes of Spearman correlation are reported in table 1. Since the variable of interest is gender, it is found that being female is positively associated with fof; the coefficient is significant most of the time. Table 1 also shows that expecting to start a business in the next three years, knowing someone who started a business in the past two years and skill perception are almost always negatively correlated with fof and the relation is found to be significant for the majority of the cases. This robustness to country or time period should be noted. There are minor deviations in sign and significance for Israel and Tunisia, but very definitive for Palestine. Income and education warrant special attention. One would expect both to be negatively associated with fof. Risk averse individuals become less averse as wealth increases; education is also expected to reinforce skill perception and thus reduce fof. The results in table 1 show that income

correlation with fof is country specific; however it is not significant for Tunisia, and significant occasionally for Palestine and Israel. The same can be said about education, sometimes positive and significant and other times negative and significant.

4 Application and results

4.1 Entrepreneurship decision

Parameter estimates for model (1) as presented in table 2 are the multinomial log-odds of choosing an entrepreneurial class relative to not being an entrepreneur. Model fitting summary shows that the Wald χ^2 is significant; this implies that at least one of the regressors significantly affects entrepreneurial status. The Pseudo R^2 ranges from 21% to 44% which is a good fit for cross section data. Table 2 reports the coefficients for each stage of entrepreneurial phases relative to non-entrepreneurs. In what follows we present the various hypotheses to be tested for Palestine only for brevity. The estimation for Israel and Tunisia was done, but not reported. Marked differences will be pointed when noticed.

4.1.1 Hypothesis 1: Are females more or less likely to be involved in entrepreneurial activity?

The results show that for 2012, the coefficient is always negative and significant[14] for each of the entrepreneurial phases. Females are less likely to be in any of the entrepreneurial phases relative to being not an entrepreneur. For 2009, the coefficient is also negative, but not significant for any of the phases. To the contrary, for 2010, the coefficient has the unexpected sign and only significant for nascent entrepreneurs. In short, the evidence is mixed and the results do not seem to be robust to specification[15].

4.1.2 Hypothesis 2: Does fof negatively impact entrepreneurial propensity?

Statistical significance is found to be true only for established business entrepreneurs. In other words, risk intolerant individuals are less likely to be owning and managing a business that is more than 42 months old with a high degree of confidence. For nascent and baby business, fof is significant only for 2012; the significance level for 2010 and 2009 are low. It could be argued that if an individual does have fear of failure, there is a smaller probability of starting a business, but the chances are he/she it will discontinue[16].

4.1.3 Hypothesis 3: Does skill perception affect entrepreneurial propensity?

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[14] For the remainder of this section, significant levels refer to 10% or lower.

[15] For Israel, the sign of the gender coefficient was not uniformly significant for any of the phases and/or year; however, never significant. As for Tunisia, the estimation was possible for 2010 only. The coefficient was always positive but not significant.

[16] For Tunisia and Israel, the coefficient was not significant for any of the cases considered.

This is a positive yes; it is found to be the case for nascent entrepreneurs, baby business entrepreneurs, and established business entrepreneurs. The fact that the coefficient is always positive (except 2010 established business) and significant at the 10% or lower implies that individuals who perceive they have the skills necessary to run a business are more likely to be entrepreneurs.

In what follows we summarize the effect of other variables included in the regression. The results in table 2 give the probability of belonging to a certain phase relative to the base group (which is often graduate experience). Thus we should expect that the probability of any of the lower educational achievements relative to graduate study should be lower in belonging to nascent entrepreneurship, for example. The signs of the coefficients are consistently negative for 2009, and mixed for 2010 and 2012 across the three phases; they are never significant. The evidence on income is mixed, both in terms of significance and sign direction similar results are found for Tunisia and Israel.

Occupation (labor force status) is significant most of the time. Any status results into a lower probability of being an entrepreneur when compared to the control group (home maker) in 2009 and 2012; for 2010 the coefficients were positive and significant. Similar results were obtained for Tunisia and Israel. The odds ratios for any category in the occupation group are all very small implying that any category is 0.00001 times as likely to be an entrepreneur as homemakers.

Finally, business discontinuation may theoretically raise or lower the probability of entrepreneurship. It can raise the probability due to the experience one gets from it; on the other hand, discontinuation re-enforces the fear of failure. The data shows that this factor matters only to nascent entrepreneurship. This may be explained by the fact that nascent entrepreneurship is the first phase, but being in a baby business or established business implies that the entrepreneur has already overcome the fof factor. Thus, for the other two phases, the results are not significant. For Israel, discontinuation is often not significant; however, it was positive and significant for 2009 for baby business and established business. For Tunisia the results are mixed, the coefficient was significant and negative for 2010 for the established business phase[17].

4.2   Fear of Failure and Gender

Tables 3-5 provide the logit regression results with the dependent variable being fear of failure. Regression coefficients are to be interpreted as the effect of the change in one of the exogenous variables on the probability of belonging to a certain group. The Wald-chi square test is significant for all years at the 10% level or lower; pseudo R^2 ranges from 1.5% to 6.3%

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[17] The estimates for 2012 for Tunisia show a highly singular matrix; standard errors were not computable.

which is a characteristic of such models. Estimation is done for the entire sample to test the effect of gender and other variables on fof.

4.2.1   Hypothesis 4: Is there a difference in fof along gender lines?

Using the entire sample, the sign of the gender coefficient is positive for 2009 and 2012, but negative for 2010 and significant for 2012 only. This implies that females tend to have higher prevalence rates than males; however, the differences are random on the most part[18]. Using the male and female samples separately, it is found that the sign of each coefficient are similar on the most part, however, some differences are present[19],

4.2.2   Hypothesis 5: Does skill perception affect the probability of being risk tolerant?

This variable has been found to be significant in the multinomial regression and increases the probability of entrepreneurship. For fof, its effect is negative and significant for both men and women across the years (except for 2012 for men). This implies that believing in having the skills necessary to run a business lowers significantly the probability of being risk intolerant (which indirectly raises the probability of entrepreneurship).

4.2.3   Hypothesis 6: Does the household size affect risk attitudes for men and women differently?

The coefficient on household size is found to be qualitatively similar for men and women. For example, in 2009 it is positive for men and women; however, it is negative for 2010 and 2012. The coefficient is not significant for any of the years or sexes. Quantitatively, the magnitude of a change in household size is always larger for women than for men in absolute value. This implies females are susceptible to changes in household size with respect to risk behavior.[20]
The remaining variables show mixed results with respect to statistical significance and sign correctness. This may be a result of model specification and the high degree of collinearity resulting from the large number of dummy variables.

4.3   System Estimation (Conditional Mixed Process)

The majority of studies reporting on the determinants of entrepreneurial propensity use TEA as the dependent variable. We used the different stages of entrepreneurship in the multinomial logit to investigate whether the gender coefficient varies by stage. In this section, we report the joint maximum likelihood estimation of the TEA and fof equations. Table 6 reports the

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[18] The gender coefficient for Tunisia is positive for 2010 and 2012, but significant for 2010 only. For Israel, the coefficient is positive and significant for 2009, but negative and insignificant for 2010.
[19] The situation is different for Tunisia; in 2010 the coefficient on discontinuation is positive and significant for male and female, however, it is negative and insignificant in 2012. On the other hand, skill perception is negative and significant for both men and women in 2012, but negative and insignificant for both in 2010. For Israel, age plays a negative role, as men and women grow older they tend to become more risk averse. The rest of the variables have different sign coefficient whether they are significant or not. The coefficient also seems to be instable overtime.
[20] For Israel, the coefficient is positive but only significant for females in 2010; however, Tunisia has mixed results and never significant.

results for both equations; the results are more definitive with respect to gender. The female dummy has the expected sign and is significant for all the years. Being a female reduces the predicted probability of TEA entrepreneurship holding other predictor values constant. The results also show that believing in having the necessary skills to run a business increases the probability of entrepreneurship (for 2010 and 2012). Fear of failure is found to be significant in lowering the probability of entrepreneurship; thus the more risk aversion, the less entrepreneurial propensity. Age and quadratic age also have the correct signs and are significant (except for 2012). The income variable increase the probability of becoming an entrepreneur (when compared to lower income categories for 2012), the opposite is found in 2010 because the reference group is the highest 33rd percentile, which is logical. However, in 2009, the results have the wrong sign. Interaction terms were found to be significant for 2009 only; what this suggests is that being a female and having the perception of possessing the skills necessary to run a business increase the probability of entrepreneurship. The fof-skill interaction term is not significant in any of the years.[21]

The set of explanatory variables in the fof equation has the correct sign on the most part, but very few are significant. In particular, being a female increases the predicted probability of fof (being risk intolerant), but significant in 2012. The implication is that if females are less likely to be entrepreneurs, the chances are fof plays a minor role in that. What seems to be more important is the skill perception, it has a negative sign and is significant every year. The evidence on income supports the idea that higher income groups tend to have less fof compared to lower income groups.

5 Conclusions and policy implications

This research addresses fof as the main variable of interest; however, its interrelatedness with entrepreneurial activity and gender were the motivating factors. Entrepreneurship is an investment that requires the use of resources for potential profits. Many variables affect this decision alongside the ones used in this study, most important of which is the expected rate of return and interest rates. This potential caveat has implications for the results pertaining to the multinomial logit results; lack of data at the micro level was behind these variable exclusions. The multinomial logit was chosen (as opposed to logit) because fof is expected to vary along the various phases of entrepreneurship. For this reason, estimates were performed

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[21] The results for Tunisia were not encouraging, convergence was achieved for 2010 only; none of the variables was significant in explaining TEA; however, some were for fof. For example, gender and having discontinued a business in the past year increases fof, while skill perception, knowing somebody who started a business reduces the probability of fof. For Israel, convergence was achieved for 2009 and 2010. In 2009, only three variables were significant: fof and age square reduce the probability of TEA entrepreneurship, while age increases it. In 2010, only highest 33rd income percentile is significant at the 5% level or lower in reducing the probability of TEA relative to the lowest income group. For fof in Israeli data, nothing is significant except age and age-square.

with and without endogeneity correction.[22] We also address the factors which are expected (based on theoretical and empirical models) to affect fof, focusing on whether gender increases or decreases this propensity.

The various GEM reports and the literature reviewed point to a negative correlation between gender and entrepreneurial activity. Although the descriptive statistics seem to point in that direction, multinomial logit results do not give definitive answers. On the most part, the coefficients were negative, but significant for some years and not others. The implication is that designing policies to encourage entrepreneurship is state of the world dependent. In other words, other important variables need to be addressed along with gender, particularly labor force status, education, and fof. As it turns out, fof was found to reduce the probability of being an entrepreneur, particularly in the EB stage. The evidence suggests that Policy intervention is needed to work on the fof factor, especially for women. While skill perception is an important factor and increases the probability of relative odds for each of the reported phases, the case is not as clear cut for business discontinuation. The probability of being a nascent entrepreneur increases if the individual discontinued a business in the past 12 months.[23] Business discontinuation does not play a significant role for baby business and established business.

Moving to the fof regression, we find evidence that risk tolerance is lower for women than for men (higher fof); this, however, is not significant for all years or countries. The results in tables 3-5 show that females' and males' coefficients are alike only for education and skill perception. The belief that one has the required skills to run a business lowers the probability of fof. In addition, being in the lowest or middle 33rd percentile increases the probability of fof for both. We also find education affects fof in a similar manner for men as it does for women in 2010 and 2012; although the sign is different for each of the years.

Our results of the CMP regression point to the importance of gender as an explanatory variable in predicting the entrepreneurial decision which is not in line with the finding of Koellinger et al (2013). This suggests that even after controlling for fof as a potentially endogenous variable, gender differences still exist in total early stage activity rates. However, gender differences in fof are not significant. On the other hand, skill perception is highly significant in lowering fof. We also find the fof has a bigger impact on TEA than skill perception. The conclusion that emerges from these analyses is that the gender gap in activity rates is partly explainable by education, and perceptual variables and that differences in fof are unobserved.

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[22] Two stage least squares was performed using probit in the first stage where fof was regressed on all the variables in the multinomial logit in addition to knowing somebody who started a business in the past two years, the predicated values are used in the second stage for the multinomial logit. The results (which are not reported for brevity) show that for 2009 and 2012, hardly any of the coefficients switched signs, leading us to believe that qualitatively, the reported results are adequate. A few coefficients did switch signs for 2010.
[23] The coefficient was negative and significant for 2010 only.

Policy implications of this research point to the importance of reducing the gender gap in entrepreneurship. Particularly, in order to encourage more females to be entrepreneurs, there is a need to improve their skill perception. This will reduce fof and increase entrepreneurial propensity. This could be achieved through networking and media coverage of success stories. On the other hand, programs aimed at middle aged individuals increases their probability of becoming entrepreneurs relative to other age groups.

Moreover, improving skill perception or enhancing self-efficacy can be achieved through four key sources, as mentioned by Bandura (1992), which are: Learning by doing, modelling, social persuasion, and judgments. In other words, self-efficacy can be potentially enhanced through providing opportunities to conduct feasibility studies, develop business plans, and participate in running simulated or real business, which in turn reduces fof among females and encourage them to be entrepreneurs.

There are some other potential factors that might have a significant effect on skill perception, and entrepreneurship propensity in Palestine. Cultural contexts, such as, religion, local traditions and expectations towards female role, might have a greater influence, mainly in rural areas, on females' entrepreneurial perception, and they might reduce their entrepreneurship propensity. Thus policy makers should take these factors into consideration when conducting policies, and they should adopt policies that mitigate the effect of cultural contexts factors. This might be done through; education, vocational education, increasing access to finance sources, and special awareness programs about women and their role. In addition, government should support and adopted females entrepreneurs and businesses, this increases their self-confidence and encourages them to start their own business.

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Statistical Annex

Table 1. Spearman bivariate correlation of fof with other variables

Variables	2009			2010			2012	
	Pal.	Tun.	Isr.	Pal.	Tun.	Isr.	Pal.	Tun.

Expects to start-up in the next 3 years	-.065**	.	0.026	-.092**	-.079**	.081**	-.066*	-.111**
Knows a person who started a business in the past 2 years	-.061**	0.045	-0.05	-.089**	-.057*	0.037	-.134**	-0.03
Has the required knowledge/skills to start a business	-.107**	0.071	-.105**	-.121**	-.121**	-0.01	-.177**	-.224**
What is your gender?	.075**	0.095	.092**	0.013	.163**	0.012	.074*	.084**
Would you be willing to indicate the range that best describes your age?	0.025	-0.03	0.056	0.026	0	-.060**	-0.01	-.065**
Discontinued a business in the past 12 months, business was NOT continued	-0.01	.	0.023	-.071**	0.036	.045*	-0.01	-0.03
GEMHHINC. GEM income recoded into thirds	-.074**	-0.02	-.136**	-0.01	0.02	-0.02	-.091**	-0.06
GEMEDUC. GEM harmonized educational attainment	0.003	-0.04	-.088**	-0.01	.062**	-0.02	-.072*	.052*

** Significant at the 1% level
*Significant at the 5% level

Source: Global Entrepreneurship Monitor (GEM) country reports 2009, 2010, 2012.

Table 2. Multinomial logit regression results (Palestine) - Nascent Entrepreneurs

Variables		2009		2010		2012	
		Coeff.	P-value	Coeff.	P-value	Coeff.	P-value
fear of failure		0.023	0.962	-0.221	0.257	-0.918	0.000
Age		-0.007	0.763	-0.002	0.847	0.005	0.637
Female		-0.020	0.975	0.479	0.046	-0.966	0.001
Education	None	-2.381	0.239	-0.199	0.509	-1.103	0.140
	Some Secondary	-1.656	0.356	(omitted)		-0.666	0.343
	Secondary	-1.744	0.304	0.154	0.538	-0.246	0.724
	Post Secondary	-0.561	0.740	-0.179	0.521	-0.120	0.862
	Graduate Exp.	(omitted)		-0.057	0.928	(omitted)	
Occupation	Full Time Emp.	-6.360	0.000	1.720	0.000	-2.555	0.000
	Part Time Emp.	-5.835	0.000	1.790	0.000	-2.841	0.000
	Self-empl.	-5.261	0.002	3.667	0.000	(omitted)	
	Seeking empl.	-7.429	0.000	1.124	0.005		
	Retired/Disabled	-5.386	0.001	1.330	0.009		
	Student	-5.899	0.000	0.135	0.799		
	Home Maker	(omitted)		(omitted)			
Income	Lowest 33rd %	-0.194	0.800			-0.659	0.019
	Middle 33rd %	-0.550	0.378	-0.210	0.306	-0.703	0.010
	Highest 33rd %	(omitted)		(omitted)		(omitted)	
Have the necessary skills to run a business		1.783	0.021	1.576	0.000	1.251	0.000
Household Size		0.016	0.851	0.029	0.406	-0.029	0.493
Discontinued a business in the past 12 months		1.300	0.030	-1.454	0.063	0.916	0.017
Constant		2.258	0.432	-5.533	0.000	1.148	0.262

Base outcome is not being an entrepreneur. The control groups are: for education is graduate experience (some secondary for 2010), for occupation home maker (self employment for 2012), and highest 33rd percentile for income. The number of classes is not always the same, no data in the first 33rd percentile of income in 2010. The number of observations, Wald χ^2, and Psuedo R^2 are: 1142, 1948, 1992; 8406.98, 16240, 442.47; and 0.4777, 0.214, 0.357 for 2009, 2010, and 2012 respectively. Model estimates were obtained with robust standard errors option.
Source: Global Entrepreneurship Monitor (GEM) country reports 2009, 2010, 2012.

Table 2 continued. Multinomial logit regression (Palestine) -Baby Business Entrepreneurs

Variables		2009		2010		2012	
		Coeff.	P-value	Coeff.	P-value	Coeff.	P-value
fear of failure		-0.501	0.243	-0.238	0.427	-0.558	0.062
Age		-0.018	0.285	0.008	0.607	-0.015	0.271
Female		-0.384	0.519	0.203	0.600	-0.804	0.047
Education	None	0.519	0.730	-0.259	0.623	-0.288	0.747
	Some Secondary	-0.644	0.653			-0.154	0.862
	Secondary	0.987	0.486	0.137	0.739	0.370	0.668
	Post Secondary	0.688	0.623	0.168	0.662	0.440	0.600
	Graduate Exp.	(omitted)		-15.703	0.000	(omitted)	
Occupation	Full Time Emp.	-7.652	0.000	3.029	0.000	-3.317	0.000
	Part Time Emp.	-8.809	0.000	2.551	0.007	-6.162	0.000
	Self-empl.	-22.329	0.000	4.530	0.000	(omitted)	
	Seeking empl.	-8.035	0.000	0.820	0.448		
	Retired/Disabled	-8.378	0.000	-13.037	0.000		
	Student	-8.309	0.000	0.552	0.658		
	Home Maker	(omitted)		(omitted)			
Income	Lowest 33rd %	-0.427	0.525			-0.479	0.204
	Middle 33rd %	-0.380	0.437	-0.773	0.015	-0.184	0.588
	Highest 33rd %	(omitted)		(omitted)		(omitted)	
Have the necessary skills to run a business		1.371	0.035	1.175	0.003	0.983	0.009
Household Size		-0.028	0.735	0.011	0.857	-0.079	0.183
Discontinued a business in the past 12 months		-0.073	0.922	0.433	0.452	0.230	0.661
Constant		4.362	0.063	-6.771	0.000	1.645	0.212

See notes to the first page of Table 2
Source: Global Entrepreneurship Monitor (GEM) country reports 2009, 2010, 2012.

Table 2 continued. Multinomial logit regression (Palestine) - Established business Entrepreneurs

Variables		2009		2010		2012	
		Coeff.	P-value	Coeff.	P-value	Coeff.	P-value
fear of failure		-0.862	0.056	-0.647	0.071	-1.272	0.001
Age		0.045	0.024	0.077	0.000	0.043	0.001
Female		-0.940	0.234	0.221	0.664	-0.753	0.106
Education	None	-0.860	0.456	-0.349	0.496	-1.190	0.312
	Some Secondary	-0.175	0.865			0.143	0.899
	Secondary	-0.259	0.807	0.220	0.645	0.197	0.860
	Post Secondary	-0.054	0.957	0.375	0.442	-0.308	0.785
	Graduate Exp.	(omitted)		-0.033	0.977	(omitted)	
Occupation	Full Time Emp.	-7.442	0.000	0.177	0.792	-3.534	0.000
	Part Time Emp.	-8.073	0.000	-0.613	0.578	-5.457	0.000
	Self-empl.	-23.000	0.000	0.604	0.468	(omitted)	
	Seeking empl.	-7.682	0.000	0.992	0.100		
	Retired/Disabled	-7.211	0.000	0.822	0.238		
	Student	-22.083	0.000	-13.668	0.000		
	Home Maker	(omitted)		(omitted)			
Income	Lowest 33rd %	-0.425	0.584			-1.153	0.003
	Middle 33rd %	-0.706	0.194	-0.804	0.027	-0.318	0.382
	Highest 33rd %	(omitted)		(omitted)		(omitted)	
Have the necessary skills to run a business		1.501	0.005	-0.604	0.082	0.651	0.091
Household Size		0.010	0.920	0.171	0.002	-0.001	0.986
Discontinued a business in the past 12 months		0.128	0.855	0.469	0.456	-0.569	0.436
Constant		2.962	0.206	-7.756	0.000	-0.275	0.859

See notes to the first page of Table 2

Source: Global Entrepreneurship Monitor (GEM) country reports 2009, 2010, 2012.

Table 3. Logit regression results (Palestine), dependent variable fof (2009)

Variable		All		Male		Female	
		Coeff.	P-value	Coeff.	P-value	Coeff.	P-value
Age		-0.001	0.891	-0.002	0.820	0.0001	0.990
Female		0.146	0.387				
Education	None	0.189	0.410	0.285	0.374	-0.150	0.669
	Some Secondary	0.411	0.017	0.431	0.059	0.135	0.635
	Secondary	0.369	0.039	0.534	0.024	-0.121	0.683
	Post Secondary	(omitted)		(omitted)		(omitted)	
	Graduate Exp.	(omitted)		(omitted)		(omitted)	
Occupation	Full Time Emp.	0.601	0.005	0.681	0.004	0.277	0.594
	Part Time Emp.	0.132	0.617	0.155	0.585	-0.588	0.523
	Self-empl.	0.627	0.068	0.638	0.096	-0.032	0.974
	Seeking empl.	0.561	0.021	(omitted)		0.679	0.103
	Retired/Disabled	0.162	0.527	-0.308	0.350	0.863	0.079
	Student	0.758	0.002	0.747	0.006	0.130	0.835
	Home Maker	(omitted)		(omitted)		(omitted)	
Income	Lowest 33rd %	0.428	0.004	0.756	0.001	0.137	0.499
	Middle 33rd %	0.118	0.389	0.163	0.411	0.073	0.708
	Highest 33rd %	(omitted)		(omitted)		(omitted)	
Have the necessary skills to run a business		-0.775	0.000	-0.761	0.000	-0.751	0.000
Household Size		0.026	0.170	0.021	0.441	0.030	0.275
Discontinued a business in the past 12 months		0.001	0.995	0.089	0.729	-0.221	0.549
Constant		-1.159	0.007	-1.078	0.020	-0.641	0.285
Number of Observations		1606		885		721	
Wald Chi-square		109		61		41	
Psuedo R^2		0.056		0.063		0.045	

Model estimates were obtained with robust standard errors option.
Source: Global Entrepreneurship Monitor (GEM) country reports 2009, 2010, 2012.

Table 4. Logit regression results (Palestine), dependent variable fof (2010)

Variable		All		Male		Female	
		Coeff.	P-value	Coeff.	P-value	Coeff.	P-value
Age		0.004	0.423	0.005	0.429	0.004	0.514
Female		-0.081	0.563				
Education	None	1.014	0.040	0.992	0.081	1.701	0.103
	Some Secondary	0.929	0.057	0.765	0.173	1.768	0.088
	Secondary	0.957	0.050	0.780	0.163	1.783	0.085
	Post-Secondary	1.086	0.025	0.947	0.088	1.879	0.067
	Graduate Exp.	(omitted)		(omitted)		(omitted)	
Occupation	Full Time Emp.	-0.168	0.357	0.155	0.801	-0.279	0.327
	Part Time Emp.	-0.301	0.174	0.159	0.803	-0.987	0.024
	Self-empl.	-0.189	0.393	0.225	0.723	-0.554	0.161
	Seeking empl.	-0.111	0.546	0.137	0.826	0.082	0.788
	Retired/Disabled	0.056	0.820	0.149	0.819	0.572	0.206
	Student	-0.160	0.438	0.095	0.886	-0.123	0.627
	Home Maker	(omitted)		(omitted)		(omitted)	
Income	Lowest 33rd %						
	Middle 33rd %	0.085	0.385	0.040	0.783	0.144	0.297
	Highest 33rd %	(omitted)		(omitted)		(omitted)	
Have the necessary skills to run a business		-0.475	0.000	-0.763	0.000	-0.228	0.090
Household Size		-0.018	0.317	-0.004	0.884	-0.033	0.188
Discontinued a business in the past 12 months		0.314	0.110	0.237	0.392	0.471	0.104
Constant		-0.887	0.154	-1.054	0.228	-1.918	0.073
Number of Observations		1948.000		971		977	
Wald Chi-square		44		63		24	
Psuedo R^2		0.017		0.029		0.018	

Model estimates were obtained with robust standard errors option.
Source: Global Entrepreneurship Monitor (GEM) country reports 2009, 2010, 2012.

Table 5. Logit regression results (Palestine), dependent variable fof (2012)

Variables		All		Male		Female	
		Coeff.	P-value	Coeff.	P-value	Coeff.	P-value
Age		0.006	0.120	0.004	0.477	0.006	0.358
Female		0.175	0.104				
Education	None	-0.659	0.116	-0.755	0.126	-0.515	0.570
	Some Secondary	-0.262	0.526	-0.467	0.331	-0.008	0.993
	Secondary	-0.470	0.256	-0.564	0.242	-0.308	0.732
	Post Secondary	-0.410	0.320	-0.335	0.484	-0.508	0.571
	Graduate Exp.	(omitted)		(omitted)		(omitted)	
Occupation	Full Time Emp.	0.080	0.655	-0.081	0.677	1.145	0.019
	Part Time Emp.	0.162	0.325	0.024	0.899	0.877	0.031
	Self-empl.	(omitted)		(omitted)		(omitted)	
	Seeking empl.						
	Retired/Disabled						
	Student						
	Home Maker						
Income	Lowest 33rd %	0.300	0.020	0.488	0.008	0.151	0.410
	Middle 33rd %	0.043	0.744	0.102	0.586	-0.004	0.982
	Highest 33rd %	(omitted)		(omitted)		(omitted)	
suskill		-0.280	0.004	-0.142	0.331	-0.357	0.009
Household Size		-0.007	0.681	-0.007	0.793	-0.012	0.635
discent		0.231	0.269	0.401	0.107	-0.262	0.498
Constant		-0.469	0.357	-0.218	0.712	-0.775	0.458
Number of Observations		1992		996		996	
Wald Chi-square		39		18		28	
Psuedo R^2		0.015		0.014		0.021	

Model estimates were obtained with robust standard errors option.
Source: Global Entrepreneurship Monitor (GEM) country reports 2009, 2010, 2012.

Table 6. Conditional Mixed Process (ML SUR) estimates of the TEA equation

Variables	2009 Coeff.	2009 p-value	2010 Coeff.	2010 p-value	2012 Coeff.	2012 p-value
Total Early-stage Entrepreneurial Activity						
Female	-0.338	0.007	-0.327	0.053	-0.664	0.000
Skill perception	-0.589	0.001	0.057	0.825	0.529	0.039
Know somebody who started a business	-0.021	0.806	0.282	0.002	0.086	0.250
Fear of failure	-2.365	0.000	-1.600	0.000	1.745	0.000
Interaction terms						
Skill perception-gender	0.277	0.025	0.132	0.427	0.118	0.484
Skill perception-Fear	0.621	0.006	0.159	0.494	-0.248	0.135
Age	0.060	0.004	0.055	0.010	0.011	0.565
age square	-0.001	0.003	-0.001	0.018	-0.0001	0.641
Middle 33rd percentile	-0.198	0.093	-0.201	0.011	0.201	0.011
Highest 33rd percentile	-0.204	0.043			0.481	0.000
Constant	-0.337	0.396	-0.993	0.064	-1.479	0.000
Fear of Failure						
Female	-0.003	0.969	0.005	0.940	0.119	0.059
Secondary or lower	0.048	0.662	-0.092	0.222	-0.192	0.022
Post secondary	0.168	0.034	-0.059	0.503	0.021	0.740
Skill perception	-0.428	0.000	-0.317	0.000	-0.189	0.004
Age	0.029	0.151	0.011	0.529	0.025	0.107
age square	-0.0004	0.153	-0.0001	0.600	-0.0003	0.169
Know somebody who started a business	-0.038	0.667	-0.031	0.650	-0.097	0.151
Middle 33rd percentile	-0.210	0.068	-0.005	0.945	-0.169	0.013
Highest 33rd percentile	-0.307	0.002			-0.243	0.005
Discontinued a business in the past year	-0.057	0.596	-0.310	0.017	0.251	0.035
Constant	-0.339	0.391	-0.088	0.785	-0.638	0.037
Number of Observations	1026		1530		1692	
Chi-Square	114.39		171.55		212.77	
P(Chi-Square)	0		0		0	

The dependent variable is involvement in early stage entrepreneurial activity (TEA). The control groups are: Male for gender, does not have the belief that he/she has the skills to run a business, fof will not deter individual from starting a business, and lowest 33rd percentile except for 2010, the middle is compared for the highest 33rd percentile.