

Workplace Flexibility and Entrepreneurship*

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Abstract

Working at home benefits workers with low fixed costs and the ability to engage in joint market and household production. We evaluate a large-scale reform in Singapore that allows the possibility of business creation at one's residential property and study whether the option of home-based entrepreneurship spurs entrepreneurial activities. Difference-in-difference estimate shows that the reform leads to a significantly higher level of business creation, implying that entry regulation with high fixed costs is an important factor that deters entrepreneurship. The effect is more pronounced for low-income individuals since they are more likely to be financial constraint. Additional new firms in response to the reform have a higher survival rate, choose industries with higher productivity and lower risk. The reform also encourages entrepreneurs to become serial entrepreneurs, and they open a larger business with similar survival rate for their second firm. These results show that the home office scheme effectively spurs entrepreneurial activities and attract more entry into self-employment without significantly lowering the average quality of the pool.

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I. Introduction

Entrepreneurship has long been recognized as a key mechanism for enhancing economic development. The value of supporting entrepreneurship is again confirmed as small businesses acted as one of the most powerful generators of new jobs in the path of global economic recovery from the “Great Recession”. Therefore, designing and evaluating policies to remove barriers to entry and foster entrepreneurship intrigues both policy makers and academics. A large body of studies are devoted to investigating factors that discourage entrepreneurship, which include regulation limit, access to capital and downside risk such as career concerns. At the same time, previous literature has documented substantial non-pecuniary benefits of self-employment such as enjoyment, control and flexibility, which explain the existence of significant earning differential between self-employment and paid employment (e.g. Hamilton, 2000;Hurst and Pugsley, 2012).

In this paper, we evaluate a large-scale reform that involves both dimensions of reducing the barrier and increasing non-pecuniary benefits to promote entrepreneurship, which is named “Home Office Scheme” and implemented in Singapore in late 2001. The reform is aimed at providing workplace flexibility for potential entrepreneurs and allowing them to set up new business in their homes. The reform provides substantial incentive to promote business creation in three aspects. The forefront benefit is that it reduces the fixed monetary cost that entrepreneurs used to face, including renting office space and commuting expenditure etc. Second, the option of workplace flexibility further enhances the non-pecuniary benefits of being an entrepreneur and allows for engagement in joint market and household production. Third, prior literature has found that social status of entrepreneurs and possible shame from a business failure is an important driving force for the interest in entrepreneurship (Begley and Tan,2001). The reform in this study helps obscure salience of possible business failure and thus avoid experiencing the consequent shame and humiliation. In other words, it reduces the cost of experimentation and enables entrepreneurs to work on an idea with fewer concerns about the possibly negative consequences. This is indeed supported by anecdotal evidence that entry into entrepreneurship increased following the reform¹.

The identification of the reform’s impact requires an estimate of the counterfactual level of entrepreneurial activities to filter out the effect of other potential macroeconomic shocks. Our empirical strategy exploits the variation in exposure to the scheme across industries. To ensure that the newly created business do not cause disturbance to the residential neighborhood, the scheme stipulated a negative list of industry type that are prohibited from home-based operation, which constitutes our control group. In contrast, the treatment group contains industries that are allowed under the scheme. Thus, the way that the reform was implemented lends itself to examination with a standard difference-in-difference estimation design.

We start our analysis by verifying the validity of our empirical design. We first confirm the identification assumption that both treatment and control groups should display changes in entrepreneurial activity in absence of the program. In addition, we show that the way of classifying treatment and control group is not related with industry-level response to fluctuations in the overall

¹ According to Skyline Singapore, “more than 3,000 homeowners have jumped on the bandwagon within the first month to run businesses such as computer design, IT accounting, management consultancy and software programming..”

economy. The difference-in-difference estimate suggest a positive and significant impact of the reform on new firm formation: firm creation grows by 23 percentage points more following the reform for the treated industries than the control group.

To investigate the possible channels, we show that the effect is more pronounced for low-income individuals, for whom entry regulation with high fixed costs is most likely to be the foremost barrier to entrepreneurship. However, we find no evidence that the treatment industries attract more married entrepreneurs who benefit more from the engagement in joint market and household production. Moreover, the reform encourages failed entrepreneurs to start a new business in the future. There, our results imply that entry regulation with high fixed costs is a barrier for firm creation, and support that reducing entry cost is important to encourage firm creation. We do not find evidence to support the explanation of the non-pecuniary benefits or obscuring salience of possible business failure.

The effective policy to promote entrepreneurship should not only be a short-term endeavor of facilitating entry but also the one that creates a healthy entrepreneurial ecosystem. We go beyond the focus on the level of entrepreneurial activities and investigate the welfare implication of the reform. In particular, we explore whether the home office scheme leads to a significant change in the quality of newly built firms. Survival analysis indicates that the newly created firms, while they start out in relatively small size, are as likely to exit in the first two years. More interestingly, they exhibit higher level of survival rate in the long horizon, choose industries with higher productivity and lower risk. Using a difference-in-difference design, we show that, in the long run, the home office scheme encourages the entrepreneurs to start a second firm, and the second firm is larger with a similar survival rate. The evidence indicates that the home office scheme effectively spurs entrepreneurial activities and attract more entry into self-employment without significantly lowering the average quality of the pool.

Finally, we investigate the aggregate impact of the reform and focus on broader outcomes such as commuting activities. The exercise is useful to better understand how the implementation of such reform can bring forefront benefits to entrepreneurs to promote business creation. To do this, we compute the geodetic distance from home to firm based on latitude/longitude coordinates and exploit its variation around home-office scheme for treated and control firms. We document that the program results in a sizable and negative impact on home-to-firm distance.

To the best of our knowledge, we are among the first to document that policy allowing for workplace flexibility can promote entrepreneurship and facilitate firm formation. Relative to the survey data in previous studies, the firm registry data is with little measurement error and allows us to draw conclusions at a more comprehensive scale. This approach significantly extends the existing literature, which focuses on the general relationship between working place flexibility on productivity and work-home balance (e.g., Kelly et al., 2014; Bloom et al., 2015). The breath of our dataset allows us to investigate the impact on public transportation commuting activities, which connects our study to the urban economic literature. Working from home greatly reduces the community activity and lower emissions (Bento, Cropper, and Mushfiq Mobarak, 2005).

We are contributing to the growing literature on barriers that discourage entrepreneurship and policy designed to facilitate entry. Limited access to finance is also viewed as a top factor that dissuades business creation and growth (Evans and Leighton, 1989; Holtz-Eakin et al., 1994; Hurst and Lusardi, 2004) and numerous studies document that relaxing financial constraint is successful in increasing entrepreneurship (Bertrand et al., 2007; De Mel et al., 2008; William R. Kerr, 2010; Kerr, Lerner, and Schoar, 2011; Andersen and Nielsen 2012; Adelino et al., 2015; Schmalz, Sraer, and Thesmar 2017). Besides financial constraints, entry barriers in regulation are also important factor. Existing studies have suggested evidence that country-level variation in entry regulation affect the entry rates across countries (Djankov et al., 2002; Klapper et al., 2006). Other studies focus on country-level reform on entry regulation and investigate how it affect with workers drawn into entrepreneurship (Mullainathan and Schnabl, 2010; Bruhn, 2011; Branstetter et al., 2014). In our paper, the reform allowing for home-based entrepreneurship in this paper is also equivalent to a form of monetary transfer to entrepreneurs in terms of reducing the operating cost of business creation (e.g. renting office space, commuting expenditure). Our study thus complements these studies by examining how removing barriers that reduce a significant amount of operating cost can increase firm creation. We document that these types of subsidies indeed spur entrepreneurial activities in the relevant industries.

Our paper is also related to the literature that takes the experimental view of entrepreneurship. Entrepreneurship is fundamentally about experimentation because the knowledge and skill set required are unlikely to be known in advance (Kerr, Nanda, and Rhodes-Kropf, 2014). Recent studies (Manso, 2016; Dillon and Stanton, 2017) have taken the theoretical approach to quantify the option value of experimenting entrepreneur ideas. The experimental perspective suggests that the foremost hurdle to entrepreneurship is the friction that discourages experimenting with ideas. These frictions include regulation barriers (Klapper, Laeven, and Rajan, 2006), technology (Ewens et al., 2017), financing risk (Nanda and Rhodes-Kropf 2013) or downside career concern (Hombert et al., 2017; Gottlieb et al., 2017). Our results suggest that allowing for workplace flexibility facilitate entrepreneurship by enabling entrepreneurs to experiment with ideas without incurring high level of fixed cost. This finding has important normative implications for government to design program and policy to reduce the cost of experimentation in general.

The remainder of the paper is organized as follows. Section II introduces the home-based entrepreneurship reform and III presents our data and empirical strategy. Section IV reports the results on the effect of the reform on entrepreneur activities. Section V presents the aggregate impact on house price and commuting activities. Section VI concludes.

II. The Home-based Entrepreneurship Scheme and Institution Details

Singapore developed a unique dual residential housing system: public housing is developed and managed by the Housing Development Board while private housing is generally administered by the Urban Redevelopment Authority. We evaluate a program implemented by Ministry of National Development of the Singapore government and aimed at reducing costs for potential entrepreneurs to start a new business. Specifically, under the scheme, small-scale businessmen and professionals

are allowed to set up new business in their homes. These changes take two steps: starting from November 2001, the Urban Redevelopment Authority launched a pilot Home-Based scheme allow small-scale businesses to operate from homes located in selected mixed zone areas. Later in 10 June 2003, the Housing & Development Board (HDB) and the Urban Redevelopment Authority (URA) jointly introduced the new Home Office Scheme that apply to all residential units. The general goal was to generate incentives for would-be entrepreneurs to create their own business.

The Singapore's office rents are relatively expensive in the world. According to one market research², in 2000, the monthly average price of office rent is 4.37 US dollar per sq ft per month. Assume that a small firm requires at least 100 sq ft, the rent cost would be about 437 US dollar per month. The scheme will also help to reduce the commuting time and transportation cost. Thus, the home office scheme will help to reduce a significant amount of operating cost for a small firm.

Under the Home Office Scheme, registration for home office authorization is easily done online, and entrepreneurs are able to commence their businesses immediately upon successful registration. Hence, this scheme is particularly suitable for startups that wish to minimize time and costs in setting up an office. In addition, business owners need not worry about the expiry of their home office authorization as the permit is valid for as long as the business remains in operation. Two important notes are worth mentioning with regards to the reform. First, business registration was forbidden under residential address prior to the scheme. The new policy furnishes entrepreneurs with the flexibility to conduct business from their homes. Second, the scheme also stipulated that homeowners must ensure that their small businesses do not cause disturbance to the neighbors or the residential neighborhood. As the enforcement, the policy requires all applications to go through the approval process and the use of residential property should not fall into a negative list of industry type that are not permitted. The list of non-permissible business enables us to get an estimate of the counterfactual level of entrepreneurial activities in the absence of the program.

III. Data and Empirical Strategy

We now describe the sources of our data and the construction of our main variables.

III.A. Sample and Data Sources

We use data primarily from two sources in this study. The basic data is obtained from the *Accounting and Corporate Regulatory Authority (ACRA)*, which is the regulation body to overview business entities. According to section 5 of the *Business Names Registration Act*, generally, all forms of businesses must be registered with the ACRA. Therefore, our registry data contains the universe of firm that are created from 1990 to 2015 in Singapore. For each newly built firm, the data include firm name, the industry that the firm operates in, the registry date as well as firm's legal status (Sole Proprietorship, Partnership or Company). It also provides the cease date for each firm which we use to conduct the survival analysis. More importantly, it provides the name and national identification number of the founders, which enables us to merge with the demographics

² <https://www.straitstimes.com/business/property/soaring-hong-kong-office-rents-are-now-triple-those-of-singapore>

data discussed below. To avoid any contamination of other relevant policies in the event window that may promote new firm formation, we focus our analysis on the period of January 1999 to March 2005. The ending period is chosen because an Act permitting registration of Limited Liability Partnership comes into operation in April 2005.

The second data source is a unique personal database containing demographic information on more than 2 million individuals in Singapore, constituting nearly 60% of Singaporean residents as of 2012 (Agarwal et al., 2017). The dataset contains demographic information such as gender, date of birth, race, marital status, housing address (public or private), and postal code. Using the unique personal identification numbers, we are able to cleanly match the firm registry database with the personal demographics database to obtain, with a high degree of accuracy, the demographic profile (including age, race, marital status, and gender) of every individual registered with each new firm. Compared with the survey approach to obtain demographic and personal information of the entrepreneurs in previous studies (e.g. SINE survey in Landier and Thesmar, 2009), our merged dataset contains a richer set of debtor demographic variables with less measurement error (i.e. Hurst, Li and Pugsley (2014) document evidence of underreporting by self-employed in U.S. household survey data).

III.B.1 Empirical Strategy

The biggest obstacle in evaluating the impact of the program on outcome variables is to get an estimate of the counterfactual level in the absence of the program in order to separate the effect from any other shock to macroeconomic fundamentals. An important aspect of the policy for our purpose is that it explicitly lays down the list of industries that are prohibited from home-based operation. This enables us to circumvent the obstacle by exploiting variation in exposure to HAMP and define the treatment and control groups using a standard difference-in-difference analysis. Specifically, firms that operates in the non-permissible sectors are ineligible for home office application and, therefore, can serve as a control group for the treatment group.

Our main difference-in-difference specifications to estimate the effect of the reform is as follows

$$Y_{j,t} = \alpha_0 + \alpha_1 \times T_j \times I(Post)_{j,t} + \alpha_2 \times X_{j,t} + \alpha_3 \times T_j \times Macro_t + \delta_t + \theta_j + \varepsilon_{j,t}, \quad (1)$$

$$Y_{j,t} = \alpha_0 + \alpha_{1_pre} \times T_j \times I(Pre)_{j,t} + \alpha_{1_post} \times T_j \times I(Post)_{j,t} + \alpha_2 \times X_{j,t} + \alpha_3 \times T_j \times Macro_t + \delta_t + \theta_j + \varepsilon_{j,t}, \quad (2)$$

Where $Y_{j,t}$ is represent industry-level outcomes like log number of newly created firms for industry j in month t . T_j takes a value of 1 for industries in the treatment group, those falling out of the forbidden list in the Home Office Scheme, and 0 for the control group. $I(Post)_{j,t}$ takes the value of 1 for the month after December of 2001 (the program period) and zero otherwise. $X_{j,t}$ contains time-varying industry-level controls including industry productivity defined as the change in value added per work in each industry. $Macro_t$ denotes variables to account for the macroeconomic environment. The standard errors are clustered at the industry level. The coefficient α_1 measures the effect of the program on the treatment group relative to the control group. Moreover, Equation

(2) implements a test of the validity of our difference-in-difference design, which requires α_{1_pre} to be statistically and economically insignificant from zero. $I(Pre)_{j,t}$ is a binary variable that equals to 1 for two-year period before the announcement (January 2000 to November 2001)

We also decompose the post-period dummy to study the dynamics of the response at the two stages of the reform.

$$Y_{j,t} = \alpha_0 + \alpha_{1_post_1} \times T_j \times I(Post_Stage_1)_{j,t} + \alpha_{1_post_2} \times T_j \times I(Post_Stage_2)_{j,t} + \alpha_2 \times X_{j,t} + \alpha_3 \times T_j \times Macro_t + \delta_t + \theta_j + \varepsilon_{j,t}, \quad (3)$$

where $I(Post_Stage_1)_{j,t}$ is a binary variable that equals 1 for the observations in first stage of reform period (December 2011 to June 2003) and zero otherwise; $I(Post_Stage_2)_{j,t}$ is a binary variable that equals 1 for the observations in second stage of reform period (July 2003 to March 2005) and zero otherwise.

III.B.2 Discussion of Identification Validity

We face two major concerns in the identification of our estimate. First, the identification of difference-in-difference estimate in the paper hinges on the validity of parallel trend assumption that requires that in the absence of the program, the difference between treatment and control group would display similar pattern in outcome variable during the period of the program. We provide evidence of this assumption by plotting the number of firm creation in Figure 1. As can be observed, there are no differential trends when we compare the treatment with the control group before the program. The second concern goes to the assumption that the way of classifying treatment and control group is not related with industry-level response to fluctuations in overall economy. If the assumption is violated, we might observe that industries in the treatment and control groups display different evolution even without the reform. To mitigate this concern, we include the interaction term of treatment group dummy and macroeconomic variables, $T_j \times Macro_t$, to capture the impact on outcome variables due to variation in the industry-level response to macroeconomic fluctuations. Another concern is that the Singapore government tends to choose the industries with high aggregate demand in the home office scheme. We argue that the concern is less of an issue for two reasons. First, as stipulated in the announcement, the negative list of industry type was specified in order to make sure that disturbance was minimized to the neighbors or the residential neighborhood due to the scheme. As the enforcement, the policy requires all applications to go through the approval process and the use of residential property should not fall into a negative list of industry type that are not permitted. Second, in Figure 1 we show that there are no significant differences in entrepreneurial activities between the treatment and control group during pre-policy period. Therefore, the demand in the treatment and control group during pre-policy period are likely to follow common trends.

[Insert Figure 1,2 here]

III.C. Summary Statistics

Table 1 presents the summary statistics for our sample. Panel A tabulates the mean, median, standard deviation, and quantile distribution of new firm creation for month-level aggregate accounts. Panels B and C report similar statistics for the variables that describe characteristics for newly created firms and entrepreneurs, the latter of which exclude foreigners due to data availability. From this table, we can see that number of new business created at the monthly frequency is 6,705 and the mean number of employment at origination is 3.3. On average, 7.4% of newly created business survived within the 2 years after origination, which is slightly higher to that reported in (Hombert et al,2017). After merging with the Singaporean demographics database discussed in III.A., we are left with statistically large sample that enables us to depict the characteristic of entrepreneurs. The typical entrepreneur in the sample is best characterized as the middle-aged female and this observation is largely consistent with prior studies.

[Insert Table 1 here]

IV. Results

We start our formal analysis by first estimating the impact of the reform on new business creation. Subsequently, we analyze heterogeneity in the response across different types of firms. We next examine the welfare implication of the reform and check the robustness of main finding with a falsification test.

IV.A. Effect on New Firm Creation

IV.A.1 Baseline Estimation

We start our analysis by first validating our research design. Specifically, we interact the pre- and post-reform period dummy $D(\text{Pre})$ with the treatment group indicator $D(\text{non-religious})$ as in Equation (2) and the estimate is shown in Column (1), Table 2. The coefficients on the interaction term of $D(\text{Post})$ and $D(\text{non-religious})$ suggests that the firm creation for the treatment group during the pre-reform period is on average 1.8 percentage points lower than the control group, which is small and statistically insignificant. This confirms the validity of the difference-in-difference design. However, the coefficients on the interaction term of $D(\text{Post})$ and $D(\text{Treatment})$ display a both statistically and economically significant effect: firm creation grows by 23 percentage points more following the reform for the treated industries than the control group. In particular, we estimate equation (1) using the log of number of new firm created in industry j at month t as the outcome variable.

Table 2, Column (2) estimates our main specification (Equation (1)) with only month and industry fixed effects and again we find positive and significant α_1 , which indicate that the reform indeed spur entrepreneurial activities. We go on to examine the sensitivity of α_1 , to the inclusion of other controls. Column (3) and (4) further include industry controls and account for industry exposure to macroeconomic fluctuations. The inclusion of these additional controls barely affects the estimate of α_1 . The fact that our estimate appears stable across specifications suggests that, to the

extent that the observable characteristics in our data are representative of unobservable, the estimate of α_1 , is not due to an omitted variable bias (Altonji et al. 2005).

The home office scheme is implemented in two phases: first in selected areas and then apply to all residential units. So we also investigate the dynamics of the impact at different stages by decomposing the post-reform period and interacting with dummy for treated industries. The estimated results are shown in Column (5) to (7) with controls included progressively. We find that the growth rate of newly created firms firm for the treated industries is significantly higher than the control group at both stages. Intuitively, we expect a bigger impact for the second phrase as it is implemented at a much larger scale. The evidence is consistent with this notion that the impact of the second stage exhibit much larger impact relatively. Overall, the result suggests that there are no significant differences in entrepreneurial activities between the treatment and control group during pre-policy period, and the number of new firms for the treatment group outrace only after the implementation of the home office scheme.

One concern of the above analysis is the measurement of business registration. For example, people might run un-registered business from home before the reform and then register after the reform. However, the institutional setting in Singapore suggests there is less incentive to do so. Registering with ACRA cost between 100 Singapore dollars to 300 Singapore dollars, depends on business types. However, if individuals choose to carry on business without registration, they will be subject to a fine up to \$10,000 or imprisonment for a term not exceeding 2 years or both. Moreover, they cannot enjoy government grant or tax exemptions for start-ups. They cannot open business account in the bank to apply for loans from banks. Thus, the low cost of registering a firm and high penalty provide less incentive to run un-registered business in Singapore.

[Insert Table 2 here]

IV.A.2 Robustness Check

In this section, we perform several robustness tests. We first verify the impact of home office scheme on the probably of newly created business having home as the office and explore one of forefront benefits that Home-office Scheme brings to entrepreneurs - less time and money spent on commuting by computing the geodetic distance from home to firm based on latitude/longitude coordinates. Then we apply equation (1) at the firm level to estimate the impact on home-to-firm distance. Table A2 presents the OLS results. As the coefficients on the interaction term of D(Post) and D(non-religious) suggests, the home office scheme leads to a significantly higher probability of new home-office business and at the same induces a negative effect on the home-to-firm distance. The estimate displays a both statistically and economically significant effect: entrepreneur of the firm created following the reform for the treated industries on average is 1.8 percent more likely to register his/her home as the office for the new business and face a shorter commuting distance than the control group by 0.19 kilometers. When we consider the sample mean, the estimates are equivalent to 9.89% increase in the probability of home-office business creation and is equivalent to 2.64% reduction in distance relatively. Overall, we show a consistent result

that the reform provides substantial incentive to promote business creation by reducing the cost related to commuting.

To address the concern that our baseline results in Table 2 are potentially driven by small and insignificant sectors due to the equal weight, we perform a weighted least squares regression by using the industry size as the weight. In a similar vein, we also re-estimate the main analysis by excluding those minor businesses in the forbidden list. The results are presented in Table A3 and both qualitatively and quantitatively similar. Second, to ensure we have a valid counterfactual in analysis of program evaluation, we construct a matched sample of industries in treated and control group that are observationally similar. Specifically, propensity scores are computed based on a logistic regression (Panel A of Table A4) using industry's risk and size. Then we perform the nearest neighbor propensity score matching based on the score. Throughout the robustness checks, our main findings remain the same and we leave the details to the online Appendix.

[Insert Table A2-A4 here]

We also perform a falsification test to further examine the robustness of the results. We examine the impact of the home office scheme by randomly assigning 81 industries into treatment and control group. This specification checks the validity of our design to identify the effect and exclude the possibility that we are establishing a spurious relation between the reform and entrepreneurial outcome. Table A5 reports the result for the falsification test. Specifically, instead of using the non-permissible list of sectors to define the treated industries, we create an indicator variable and randomly assign all industries into treatment and control group. We re-estimate the equation (1) based on this randomized sample. A positive and significant relationship would raise the concern that the documented impact is driven by simple spurious variation. However, the coefficients on interaction term in Table A4 are indistinguishable from zero and indicate that the identification of our main findings is not due to random variation.

[Insert Table A5 here]

We address the “infra-marginality” concern, that is the marginal propensity cannot be determined by examining the average outcome given potential omitted-variables problem (Anwar and Fang, 2006). In particular, for each industry in the treatment group, we adjust the growth rate based on that in control industries and plot the distribution of the adjusted monthly growth rate in firm creation in treated industries between pre-reform (January 1999 to November 2001) and post-reform period (December 2001 to March 2005) in Figure 3. As can be seen, the mode of distribution falls in the range of (0,30%], and more than 30% of industries in the treatment group experience higher growth rate by less than 30% after the reform, relative to the control group. These results suggest that the finding we document in IV.A.1 is unlikely to be driven by outliers.

[Insert Figure 3]

IV.B. Heterogeneity Test

Firm Size -- While the idea of home office benefits entrepreneurship by reducing fixed costs of starting a new business, it should work for sectors that conduct small-scale business without high level of personnel. This is also to comply with the requirement in the policy that the newly established businesses must not cause disturbance to the neighbors or the residential neighborhood. Therefore, we expect that the positive effect of the reform on entrepreneurship is mainly driven by firms with relatively small scale. To test this hypothesis, we classify our full sample of newly created business into two groups based on the size at registration. The new business is considered to be large (small) if the number of individuals is more than (equal or less than) three. We estimate our main specification for the two subsamples respectively and the results are shown in Panel A of Table 3. The coefficients on the interaction term at the most saturated specification is 0.230 (significant at the 1% level) for small-scale firms and -0.002 (insignificant) for firms with large number of employees. The evidence that the increase in new firm creation is mostly concentrated among small-scale business lends further support for the impact of home office scheme in driving the difference-in-difference estimate.

Prior Experience -- Novice vs Experienced Entrepreneurs We investigate heterogeneity of the response to the entrepreneurship stimulus program among different entrepreneurs. In particular, we compare the new business creation induced by Home Office Scheme among novice and experienced entrepreneurs. Novice sample include first-time entrepreneurs who do not have prior business experience. Prior studies document evidence of performance persistence in entrepreneurship: entrepreneurs with a track record of success are much more likely to succeed (i.e. Gompers et al.,2010). We further classify the sample of experienced entrepreneurs into Failures and Non-Failures depending on the status as of December 1998, which is right prior to the beginning of sample period. We run regression of Equation (1) to obtain estimates of α_1 for the three subsamples separately and report the results in Table 4. The results show that the home office scheme leads to a significantly higher entry into self-employment among first-time entrepreneurs than the counterparts. Decomposition based on past performance in Column 3 to 6 suggests that the reform seems to strengthen the ‘performance persistence’ effect and more successful experienced entrepreneurs get drawn into as a result.

[Insert Table 3,4 here]

IV.C. Possible Explanations

Why does home office scheme help to increase the firm creation? There are three possible explanations. First, the home office scheme reduces the entry cost that entrepreneurs used to face, including renting office space and commuting expenditure etc. Second, the option of workplace flexibility further enhances the non-pecuniary benefits of being an entrepreneur and allows for engagement in joint market and household production. Third, prior literature has found that social status of entrepreneurs and possible shame from a business failure is an important driving force for the interest in entrepreneurship (Begley and Tan,2001). The reform in this study helps obscure salience of possible business failure and thus avoid experiencing the consequent shame and humiliation. In other words, it reduces the cost of experimentation and enables entrepreneurs to work on an idea with fewer concerns about the possibly negative consequence.

According to the experimental perspective, the foremost hurdle to entrepreneurship is the cost related to experiment with new business ideas or projects. Allowing for workplace flexibility to promote entrepreneurship by reducing the entry costs of starting a new business, which includes expenses on renting office space and commuting expenditure etc. If the home office scheme increases the firm creation due to reducing the entry cost, the positive effect of the reform on the propensity to start a business is expected to be more prevalent among individuals with financial constraint where such fixed costs are more likely to be the barrier for individuals to enter entrepreneurship. We conduct two sets of analysis to examine the role of financial constraint. First, we exploit the difference in starting capital across sectors and follow Hurst and Lusardi (2004) to classify all industries into high/low-starting capital category. Specifically, Hurst and Lusardi(2004) assign industries in the PSID as either low-starting capital industries (construction and services) or high-starting capital industries (mining; manufacturing; transportation, communication, and public utilities; wholesale and retail trade; and finance, insurance, and real estate). For the two additional small business industries covered by PSID but not NSSBF data, agriculture and professionals, we follow their experimental approach by first including the two sectors into high-starting capital category and also conduct robustness check by classifying the into the low-group. Second, we use the community and their housing type to proxy for their financial constraint and study the impact of the scheme on the selection of new entrepreneurs based on these proxies. We collect the data on all communities where entrepreneurs live in our sample and use the community-level median income as the proxy for entrepreneur's financial constraint. A community is considered to be rich (or poor) one if the median income is higher (or lower) than the median of the distribution. In Table 5 we report the results from estimating Equation (1) to obtain estimates of α_1 for the two subsample tests separately. The results show that the effect of home office scheme is relatively higher among high-starting capital industries and entrepreneurs with financial constraint than the counterparts. We also conduct the robustness check of Table 5 by experimenting with the inclusion of these two industries into the low category and the results are reported in Table A6.

While the Singaporean demographics data does not provide us with the exact annual income for each individual, we take advantage of the special feature in Singapore to construct the individual-level measure of financial constraint. In Singapore, there are two main types of residential property: public housing and private housing. Public housing, or HDB apartments, because of heavy subsidy by the Singapore government, is offered with the strict eligibility criteria - only citizens with a family that have an income below the stipulated cap. Thus we can rely on the property type (HDB or private) to proxy for the individual's wealth. We use the ratio of HDB resident as the dependent variable in Column (1) of Table 6 and check whether the home office scheme changes the pool of new entrepreneurs by adding significantly more people with financial constraint³. We find that, compared to the control industries, the treatment industries attract more entrepreneurs living in the subsidized public housing (HDB). These results imply that entry regulation with high fixed costs

³ In Table A6 we provide further evaluation of the policy by examining its impact on the composition of new entrepreneurs. We find that newly created firms induced by the reform involves more "discouraged workers", namely the ratio of entrepreneurs young/old and minority group but we find no significant change in the composition of entrepreneurs by gender.

is a barrier for firm creation, and support that reducing entry cost is important to encourage firm creation.

If the home office scheme increases the firm creation due to reducing the non-pecuniary benefits, we should observe that the treatment industries attract more married entrepreneurs who benefit more from the engagement in joint market and household production. Similarly, we study the impact of the scheme on the selection of married entrepreneurs and present the results in Column (2) of Table 6. The coefficient is not statistically significantly from zero and with small economical magnitude. Therefore, we do not find evidence to support the explanation of the non-pecuniary benefits.

The third possible explanation is that the scheme helps obscure salience of possible business failure. This is especially relevant in the setting of Singapore as prior study has shown that ‘social status of entrepreneurship’ and ‘shame from business failure’ is what distinguish between East Asian and Anglo-Saxon cultures and do predict interest in entrepreneurship better in former case. Since there is no readily available measure to quantitatively pin down the extent of such salience, we design a test in the following spirit. Due to the workplace flexibility offered under the home-office scheme, entrepreneurs enjoy the reduction of failure salience if they created the business in the treated industries during the reform but failed afterwards. Therefore, we would expect that home-office scheme help facilitate future (second) firm creation among those entrepreneurs, especially when the first business is created in the treated industries. We focus on entrepreneurs whose first business was established during our sample period (January 1999 - March 2005) but failed afterwards. We then adopt a difference-in-difference design and compare the probability of second business creation between entrepreneurs who open the first business in the treated industry and control industry, before and after the reform. The results are reported in Table 7. In Column 1 the estimated effects on $D(FirstBusi_Post)$ is significant, suggesting that entrepreneurs with first business (but failed later) created post-reform in the control industries significantly increase the propensity to start a new business in the future, compared to those with first business (but failed later) before the reform. We do not find a statistically significant coefficient on the interaction term, $D(FirstBusi_Post)*D(FirstBusi_Treated\ Industries)$. Therefore, we do not find evidence to support the explanation that the reform help to obscure salience of possible business failure.

One concern is that individuals open business at home for tax benefit and it might provide different interpretation of our results. However, the tax benefit seems to be small in the setting of Singapore. First, the rule of tax filing and punishment to tax invasion is independent of whether the firm is registered at home or not. All firms need to report their profit to Inland Revenue Authority of Singapore (IRAS). Reporting one's income erroneously is treated as a serious offence punishable by law, regardless of it being intentional or not. The list of penalties includes a penalty and/or imprisonment. Second, income tax rate is relative low in Singapore and tax payable for most people is moderate due to personal tax relief. For example, the marginal tax rate for those with annual income of 80,000 Singapore dollar is 7%, and the average tax rate is 4.2%. The median income from work is about 48,672 Singapore dollar in 2016. The top 22.5% of taxpayers paid 90.4% of total personal income tax in the year 2016. For those with annual income less than 80,000

Singapore dollar, the average tax payable is only 549.9 Singapore dollars in 2016.⁴ Therefore, there is little tax benefit to start home based business.

In sum, we show that the effect is more pronounced for low-income individuals but find no evidence that the treatment industries attract more married entrepreneurs who benefit more from the engagement in joint market and household production. Thus, our results imply that entry regulation with high fixed costs is a barrier for firm creation, and support that reducing entry cost is important to encourage firm creation. We do not find evidence to support the explanation of the non-pecuniary benefits or obscuring salience of possible business failure.

IV.D. Quality of the Start-ups

Removing barriers to entrepreneurship has been a major objective for policy-makers to design programs. However, evaluating the welfare implication of the policy crucially depends on how individuals self-select into the entrepreneurship because there exists a substantial amount of heterogeneity for would-be entrepreneurs (Hombert et al,2017). We now explore whether the home office scheme leads to a significant change in the quality of newly built firms. We measure the quality of the firms by two different ways: survival rate for the first firm and the characteristics of the next firm. The first measure we focus on is how well the start-ups can survival in the following years. A high attrition rate (or low survival rate) indicate relative lower firm quality, or in other words, evidence that is less in favor of the welfare-enhancement of this policy.

IV.D.1 Survival Rate

We first use a Cox-proportional hazard model to explicitly incorporate the history for each firm before they are terminated. In the model we track all newly created firms during the sample period and consider two states depending on whether the firm is ceased or still alive. Regressions are estimated using month, firm's region and industry fixed effects. In Table 8 we present the estimate of hazard ratio using all newly created firm in our sample. As is evident in Panel A, the difference-in-difference result suggests that the exit rate of newly created firms after the home office scheme decreases by 29% relative to that of the comparable start-ups in the control industries. In Column (4) and (5), we report the estimates for firms created in the pre- and post-policy period separately. Before the policy, new firms in the treated industries are 8.8% more likely to exit than the control groups, consistent with existing cross-country evidence on small ventures. However, the start-ups induced by the reform exhibit lower cease rate by 23.1%.

We further assess the robustness of our results and investigate how the policy influences the firm's probability of exit in different time horizons. Specifically, we run OLS using dummies for start-up's survival during the first till five years. We present the estimates in Panel B. As can be observed, the coefficients on the interaction term are all positive and significant except for the first two years.

⁴ Authors' calculation based on data from IRAS. <https://www.iras.gov.sg/irashome/Publications/Statistics-and-Papers/Tax-Statistics/>

In other words, the additional firms created by the reform are as likely to exit during the first two years but exhibit much higher survival rate in a longer time horizon. The estimates are, once again, economically meaningful. For example, if we consider 5-year survival, the rate for the additional firms created by the reform is higher in absolute terms by about 5.4%, which is equivalent to 6.9% increase relative to the sample mean as reported in Table 1. Overall, we show a consistent result that the additional start-ups exhibit higher survival rate due to the benefit in fixed cost reduction.

To better differentiate between *ex ante* selection and treatment effect brought by the reform, we perform the firm's survival test across different industries similar as Table 5. Specifically, we separate all firms into groups with/without financial constraint based on the two measures we use in Section IV.C. The results are tabulated in Table 9. We find that the positive effect of home office scheme on the quality of start-ups mainly concentrates among firms with financial constraints. This is suggestive of treatment effect: the home office scheme not only motivates individuals with financial constraint by reducing the entry costs but also exerts positive influence on the firm's future performance as reflected by higher survival rate.

[Insert Table 8 and 9 here]

IV.D.2 Measurement

One concern of the survival analysis is the measurement of business closure. For example, if people who cease operating a business from a separate office are more likely to report a business closure to the registry than people who cease operating a business from their home, our survival results just reflect reporting bias rather than quality of business. We discuss the institutional setting of business closure in Singapore in more detailed. And these institutions suggest that the reporting is independent of whether the firm is registered at home or not.

Every person, before carrying on business in Singapore, must register with ACRA except for those who are exempted under the Business Names Registration Act. When registering with ACRA, one can choose from the following main business types in Singapore: Sole-Proprietorship, Partnership, Limited Liability Partnership (LLP) and Company⁵. The procedures to close a business entity depend on business types. For sole-proprietorships, partnerships and LPs, they must renew their registration every one or three years and pay the renewal fee. Carrying on the business after the expiry date is an offence under which the defaulter is liable to a fine, or imprisonment, or both. If they intend to close a business, they have the incentive to simply not renew their registrations to avoid renewal fee and other reporting costs.

For companies, they must file Annual Returns (AR)s and hold Annual General Meetings (AGMs). If the company fails to hold its AGM or file ARs on time, ACRA may offer companies an opportunity to pay a late lodgement fee, penalty, or consider persecuting the directors of the company in court. If they intend to close a business, they have the incentive to report to ACRA to avoid the cost of filing ARs and holding AGMs.

⁵ Limited Liability Partnership is only available for registration starting from April 2005, which is beyond our sample period.

Therefore, the institutional setting in Singapore suggest that there are incentives to report the business closure on time and the reporting bias is likely to be small. Even if there are reporting biases, it is independent of whether the firm is registered at home or not.

IV.D.3 Explanations

Why does the home office scheme increase the quality of new start-ups in terms of survival rate? First, the scheme reduces the fixed cost of rent and transportation for the start-ups and thus helps them to survive with low cost. Second, the scheme might attract individuals with more resources to start new business. However, we show that in Part IV.C. that the effect of home office scheme is relatively higher among entrepreneurs living in poor communities, and the treatment industries attract more entrepreneurs living in the subsidized public housing (HDB). Thus, our results do not support the explanation. Third, the scheme might encourage individuals to choose industries with high productivity and low risk. We investigate this hypothesis and present the heterogeneous effect of the scheme across different industry in Table 10. In particular, we compute the industry-level average of quarterly change in value added over the period of 1992 (the earliest date we have for industry productivity) to 1998 and define an industry to be with high/low productivity if its average in that period is above/below the median of the distribution. Similarly, we define the risk of an industry by calculating the average 1-year survival rate among businesses created before our sample period and comparing with the median of sample distribution. Panel A and B in Table 10 shows the comparison of estimated effects between these two types of industry classification, and indicates that business creation in high-productivity industry responded more strongly to the reform. The results confirm our notion and show that the response of new firm creation to the Home Office Scheme is particularly concentrated in industry high productivity and low risk.

[Insert Table 10 here]

IV.D.4 Additional Measure – Future Business Creation

The additional dimension to measure the quality of the start-ups is to look at the characteristics for the next firm in the long run. According to the experimental view, the first business creation often provides a good setting for the entrepreneur to experiment with new business ideas or projects, and allows them to learn from managing their own firms. Thus, the characteristics of the second firm also reflect the quality of the first firm after the scheme. We use the difference-in-differences approach and rely on the control group of entrepreneurs- those with first business creation in untreated industries- to identify the effect of business creation experience during home-office scheme period on the future entrepreneurial activities. Specifically, we focus on entrepreneurs whose first business was established during our sample period (January 1999 to March 2005) and carry out the DID regressions to study the impact of the reform on the creation of the second business. We compare the probability of second business creation between entrepreneurs who open first business in the treated industry and control industry, before and after the reform. The results are presented in Panel A of Table 11. The coefficient of the interaction term is positive and significant at the 1% level. The results show that entrepreneurs who open the first business in the treated industry after the reform are more likely to open the second business. Our findings imply that the reform encourages serial entrepreneurship.

We further restrict our sample to serial entrepreneurs, that is, those who established their second business. We carry out the DID regressions by examining second business's characteristics: (1) number of employees at origination; (2) survival rate (within 2 years). We progressively control for time, region and industry-fixed effects of the first and second business to remove the potential influence of time, region and industry-invariant city-level characteristics. We also further include time-varying industry control variables such as industry productivity. The estimations are tabulated in Panel B of Table 11 and the coefficient estimate on the interaction term, $D(FirstBusi_Post)*D(FirstBusi_Treated\ Ind)$, implies the impact of the home-office scheme on the quality of future business creation. In Models (1) and (2), we examine the number of employees whereas Models (3) and (4) focus on the survival rate. We can see that when the first business was created during the post-reform period and belonged to the treated industries, it leads to a significantly larger second business among serial entrepreneurs relative to the counterfactuals and — adding various control variables neither affects this relationship nor changes its level of significance. However, the survival rate remains similar between the two types of entrepreneurs. The results suggest that the home office scheme encourages serial entrepreneurs to open a larger business with similar survival rate.

[Insert Table 11 here]

Overall, we find that although the additional start-ups are likely to have financial constraint, they exhibit higher survival rate, choose industries with higher productivity and lower risk. Moreover, when the first firm is established after the scheme in the treatment industries, the entrepreneurs are more likely to start a second firm, and the second firm is larger with a similar survival rate. The evidence in this section indicates that the home office scheme effectively spurs entrepreneurial activities and attract more entry into self-employment without significantly lowering the average quality of the pool.

V. Conclusion

Entrepreneurship has long been embraced as a critical contributor to innovation, job creation and growth of overall economy (e.g. King and Levine, 1993; Guiso, Sapienza, and Zingales, 2004). Reducing the impediments to new business creation and promoting the entrepreneurial ecosystem has become the focus of both policy makers and academics in the policy design and analysis. Such policies come with a variety of forms including funding support, training, access to mentoring and expertise. In this paper, we examine a policy reform that facilitates entry into entrepreneurship by allowing for workplace flexibility. The availability of the option of home-based entrepreneurship reduces the fixed costs of starting a new business, and at the same time, enables would-be entrepreneurs to engage in joint market and household production. Relying on the difference-in-difference strategy, we find that the policy leads to a significant increase in the level of new firm creation, especially in the sector of small-scale business. Moreover, the effect is more pronounced for low-income individuals, for whom the access to capital is most likely to be the foremost barrier to entrepreneurship.

We also go beyond the focus on the level of entrepreneurial activities and investigate the welfare implication of the reform. While the additional firms induced by the policy start out relatively small at creation, they do not quickly fail but are as likely to exit during the first two years. More interestingly, our findings suggest that newly created firms exhibit much higher survival rate in a longer time horizon. In addition, the reform helps easing the labor market friction and attracting “discouraged workers”, who are shown to be marginally attached or disfavored in the labor market, into self-employment. Although we study the effect of an entrepreneurial policy reform in Singapore, our results propose a broader link that applies to all relevant settings. Our result highlights the importance of providing flexibility and also the necessity of accounting for heterogeneity in would-be entrepreneur’s ability in designing policies of entrepreneurship promotion.

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Figure 1 Business Creation: Treated vs Control

The figure plots the 12-month moving average of the number of business created in the treated and control industries from January 2000 to March 2005 (1999 does not appear because of the 12-month average). The vertical lines correspond to the reform period (1st stage, December 2001 to June 2003; 2nd stage, July 2003-)

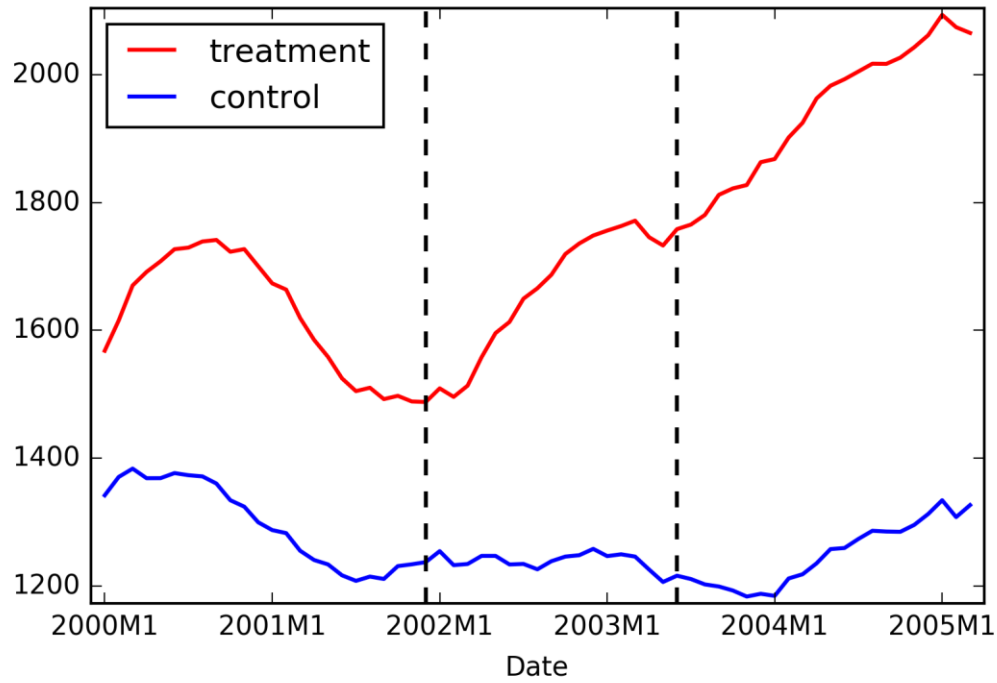


Figure 2 Distribution of Firm Creation in Treated vs Control Industries

The figure plots the regional distribution of *Treated Firm Creation Intensity*, defined as the ratio of number of firm created in treated industries to the total number in both treated and control industries within a Singaporean district, during our sample period (January 1999 to March 2005).

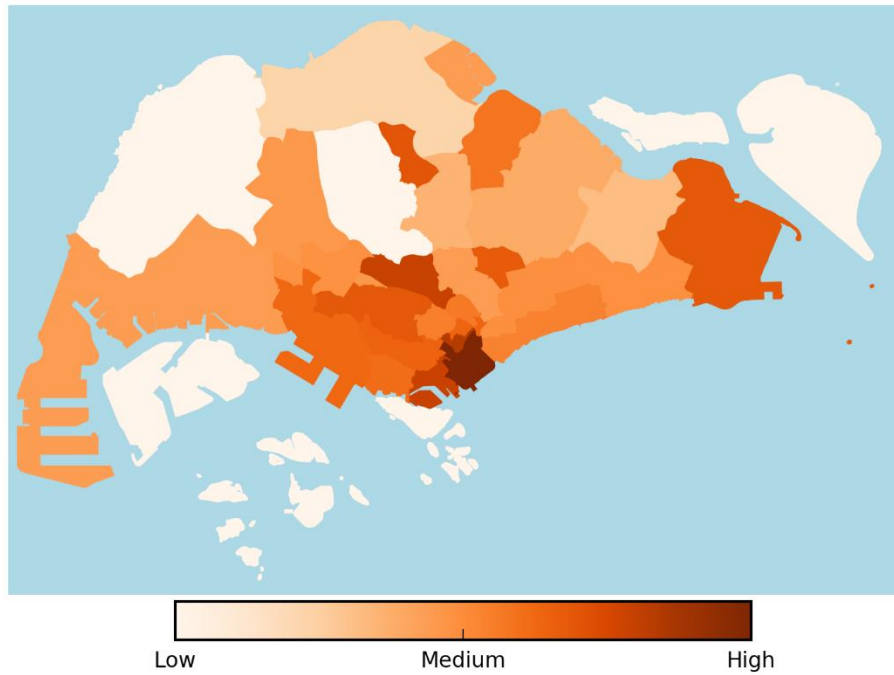


Figure 3 Distribution of Growth Rate in Firm Creation

The figure plots the distribution of the monthly growth rate in firm creation in treated industries between pre- (January 1999 to November 2001) and post-reform period (December 2001 to March 2005). The growth rate is adjusted based on that in control industries.

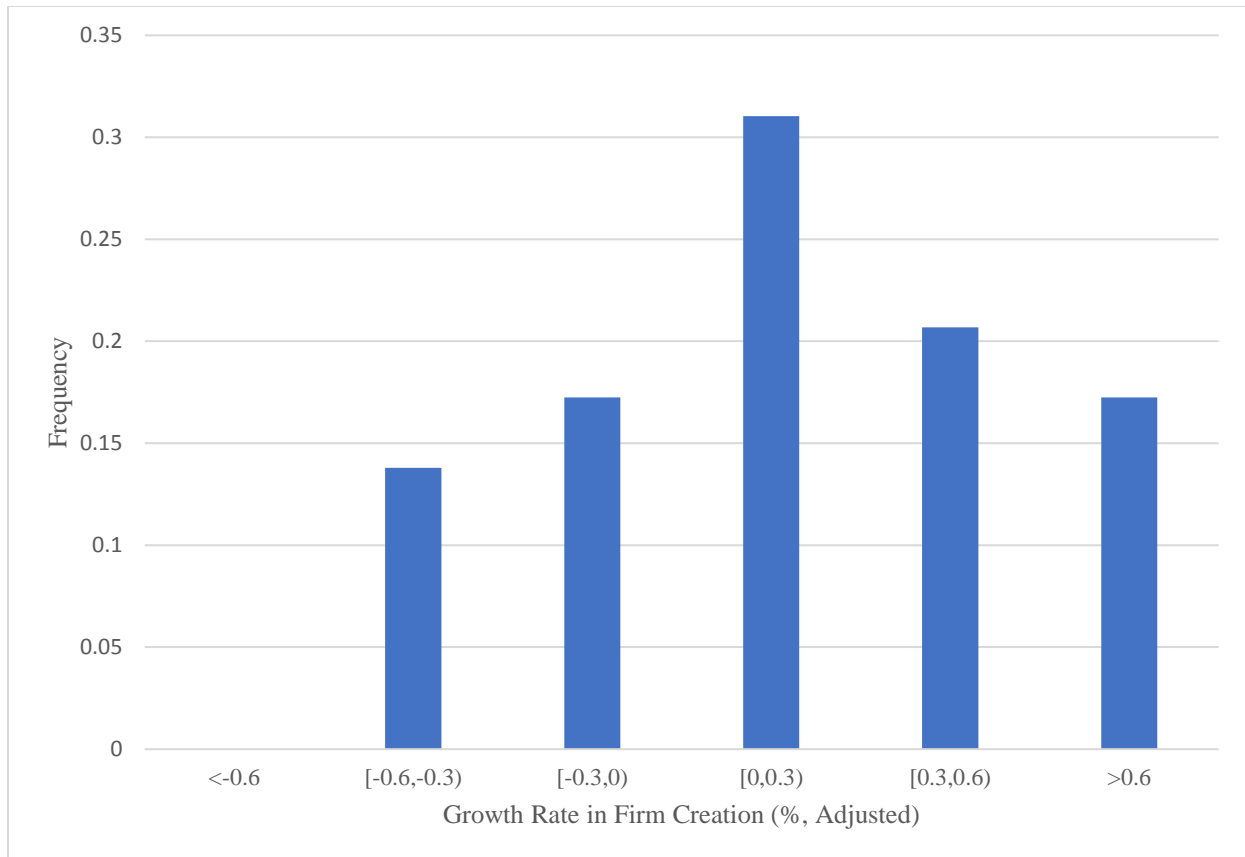


Figure 4 Survival Rate of New Business Created

The figure plots the Kaplan-Meier survival curve by treated and control group during pre-(January 1999 to November 2001) and post-reform period (December 2001 to March 2005).

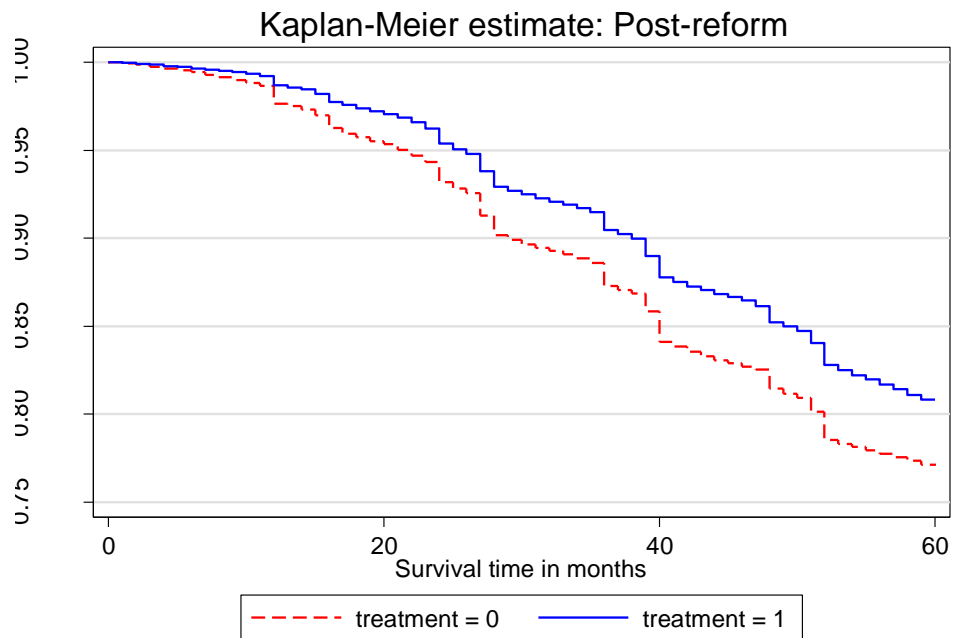
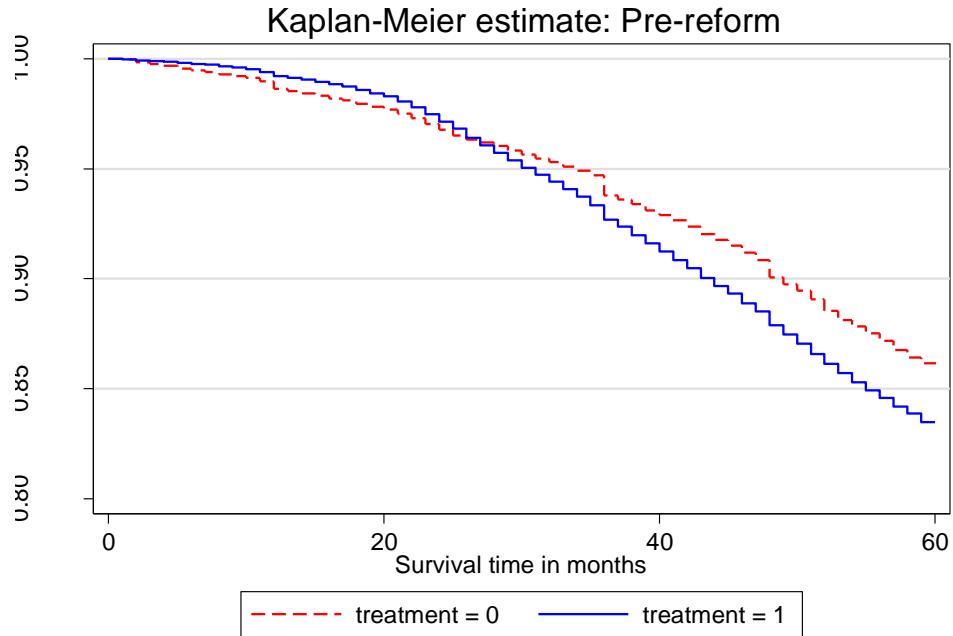
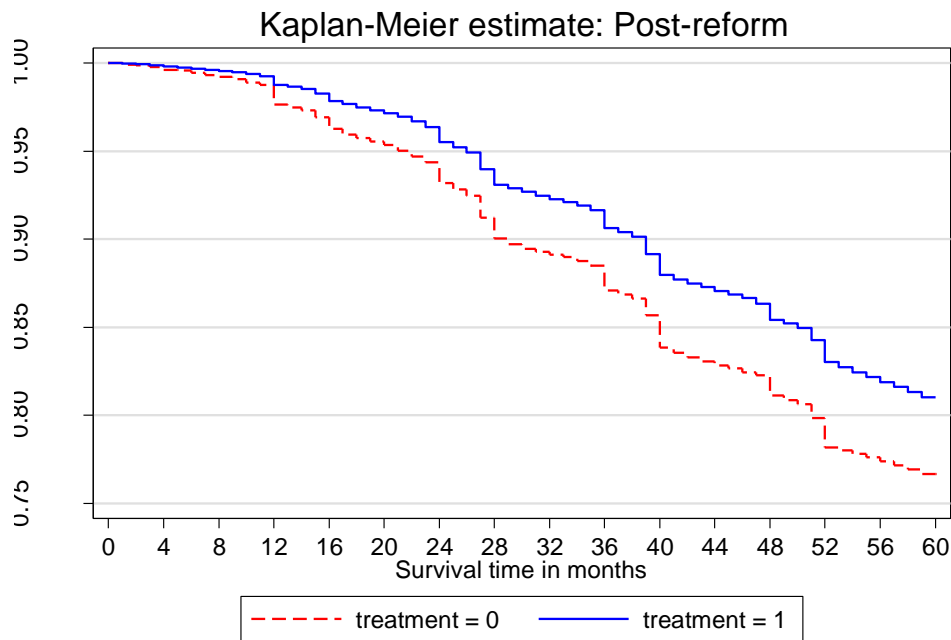
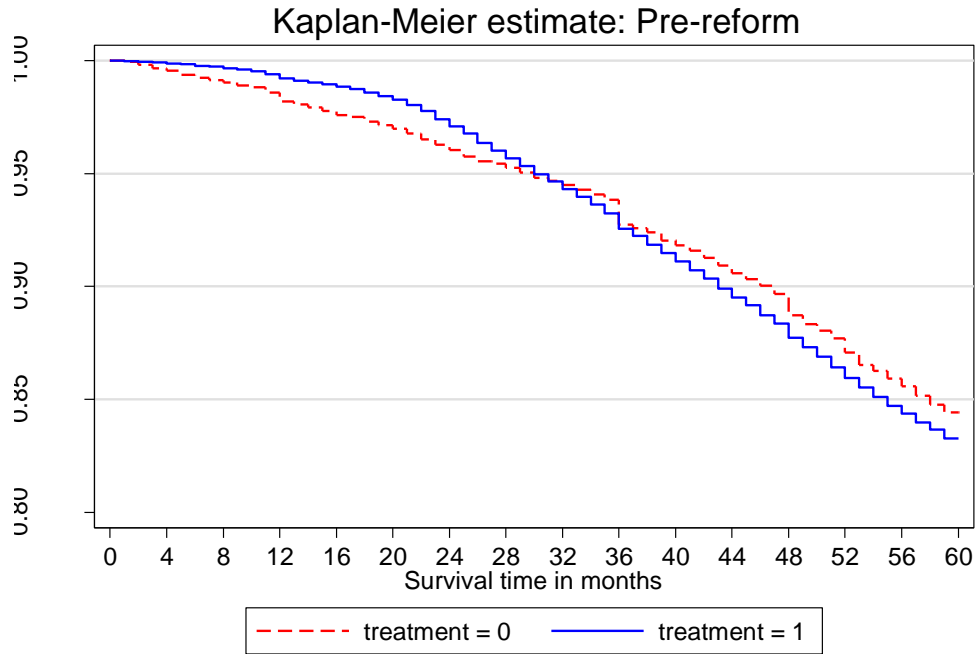


Figure 5 Survival Rate of New Business Created and Financial Constraint

The figure plots the Kaplan-Meier survival curve by treated and control group among low- or high-starting capital industries following Hurst and Lusardi (2004) during pre- (January 1999 to November 2001) and post-reform period (December 2001 to March 2005).

Panel A High-Starting Capital



Panel B Low-Starting Capital

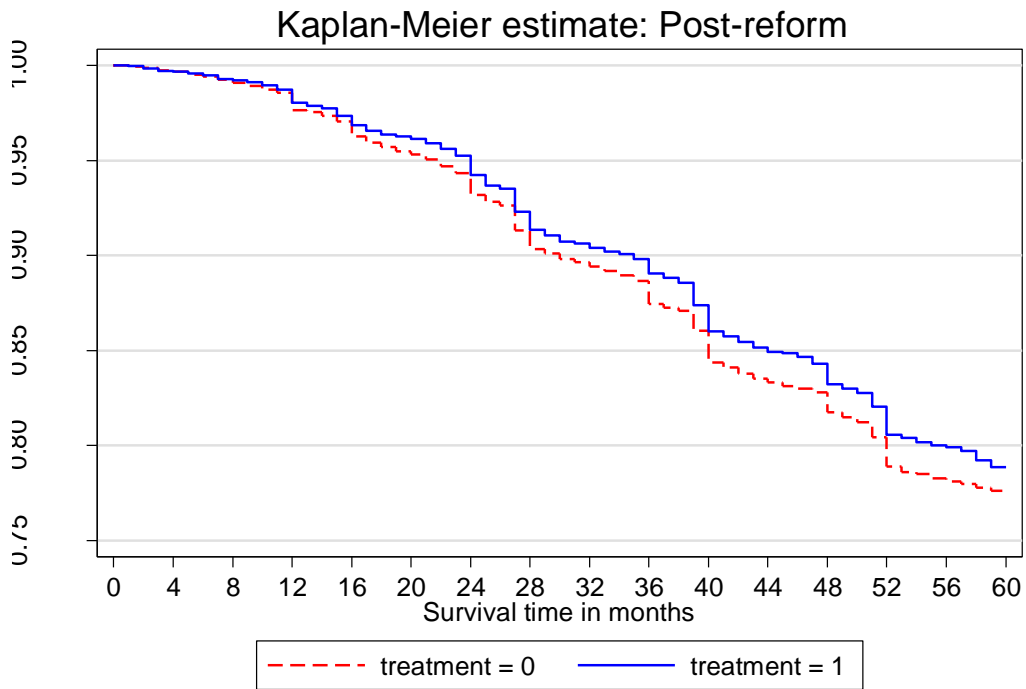
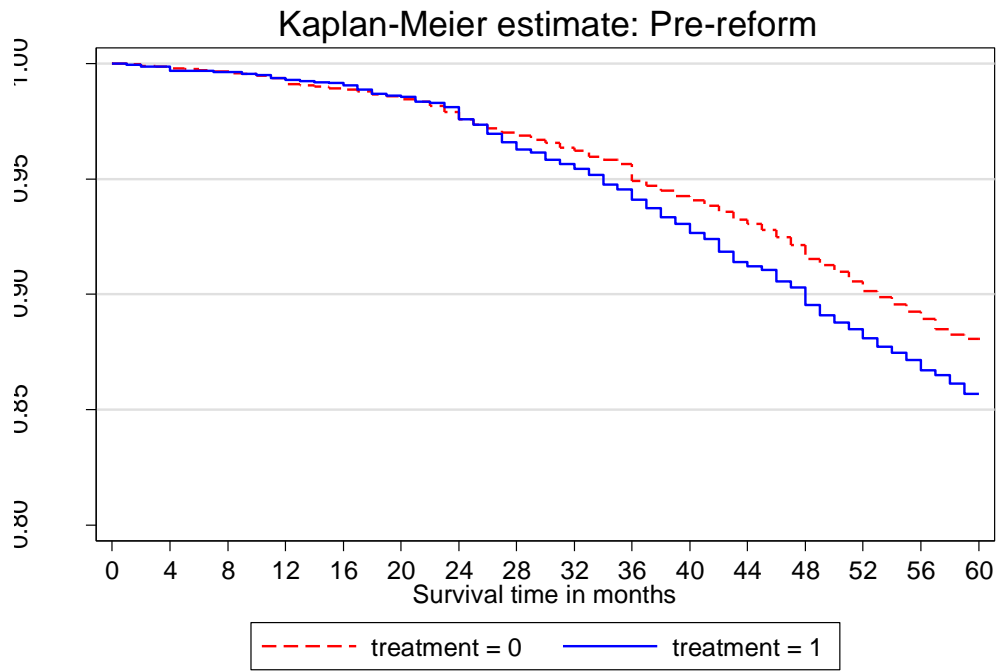


Table 1 Summary Statistics

The table report summary statistics for all new firms created during the sample period. Panel A report the industry-level statistics on business creation while Panel B and C presents the firm-level statistics on business's characteristics and entrepreneur demographics.

	N	mean	sd	p25	p50	p75
Panel A Industry-level						
Number of firms created (monthly)	6075	37.23868	90.12133	1	9	35
Panel B Firm Characteristics: Full Sample						
Entrepreneur plus employee at creation	124204	3.302	3.762	1	2	4
Employee at creation	124204	0.782	1.308	0	0	1
Survive during the first year	124204	0.954	0.21	1	1	1
Survive during first two years	124204	0.926	0.262	1	1	1
Survive during first three years	124204	0.882	0.322	1	1	1
Survive during first four years	124204	0.833	0.373	1	1	1
Survive during first five years	124204	0.782	0.412	1	1	1
Panel C Entrepreneur Demographics: Singaporean Sample						
Age	85770	39.535	8.714	33	39	45
Ratio of Young/Old	85770	0.224	0.373	0	0	0.5
Male	85770	0.666	0.401	0.5	1	1
Married	85770	0.585	0.439	0	0.667	1
Chinese	85770	0.898	0.289	1	1	1
Malay	85770	0.048	0.204	0	0	0
India	85770	0.039	0.184	0	0	0
Others	85770	0.014	0.106	0	0	0
Non-Chinese	85770	0.102	0.289	0	0	0

Table 2 Home Office Scheme and Business Creation

The table investigates the impact of the home-office scheme on firm creation. The sample includes 81 industries, January 1999 - March 2005, monthly. The sample period is selected to avoid the confounding effect of 97-98 Asian financial crisis and Singapore's Limited Liability Partnership Act of 2005 implemented in April 2005. *Pre* is a dummy equal to 1 for the observations during the period from 200001-20011, otherwise 0. *Post* is a dummy equal to 1 for the observations after the reform (200112-200503), otherwise 0. *Post_1_Stage* is a dummy equal to 1 for the observations in first stage of reform period (200112-200306), otherwise 0. *Post_2_Stage* is a dummy equal to 1 for the observations in second stage of reform period (200307-200503), otherwise 0. *Treated* is a dummy equal to 1 if the industry does not belong to the forbidden industry in the Home Office Scheme. *Industry productivity* is the change in value added per work in each industry. *GDP Growth* is the annual GDP growth in Singapore. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Log (1+number of new firms created in an industry at a month)						
Treated*Pre	-0.018 (0.052)						
Treated*Post	0.230 (0.083)	0.236 (0.074)	0.237 (0.073)	0.220 (0.072)			
Treated*Post_1_Stage					0.117 (0.060)	0.117 (0.058)	0.118 (0.057)
Treated*Post_2_Stage					0.344 (0.093)	0.344 (0.093)	0.343 (0.099)
Constant	2.203 (0.050)	2.203 (0.050)	2.204 (0.051)	1.148 (0.327)	2.203 (0.050)	2.204 (0.051)	2.202 (0.054)
Control for industry productivity	No	No	Yes	Yes	No	Yes	Yes
Treated*GDP Growth	No	No	No	Yes	No	No	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,075	6,075	6,075	6,075	6,075	6,075	6,075
R-squared	0.94	0.94	0.94	0.94	0.94	0.94	0.94

Table 3 Heterogeneity Test on Business Creation: Firm Size

The table explores the heterogeneity of the impact of the home-office scheme on business creation across different firm size. The sample includes 81 industries, January 1999 - March 2005, monthly. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Dependent Var. = Log (1+number of new firms created in an industry at a month)				
	>3 employees at creation		<=3 employees at creation	
Treated*Post	0.013 (0.032)	-0.002 (0.034)	0.247*** (0.073)	0.230*** (0.072)
Constant	0.235*** (0.045)	-0.377 (0.329)	2.182*** (0.049)	1.271*** (0.323)
Control for industry productivity	No	Yes	No	Yes
Treated*GDP Growth	No	Yes	No	Yes
Month FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	6,075	6,075	6,075	6,075
R-squared	0.67	0.67	0.94	0.94

Table 4 Heterogeneity Test on Business Creation: Novice vs Experienced Entrepreneurs

The table explores the heterogeneity of the impact of the home-office scheme on firm creation among Novice and Experienced Entrepreneurs. Novice sample include first-time entrepreneurs who do not have prior business experience. We further classify the experienced into two groups: failures and non-failures. The sample of failures include individuals who started business, then failed and remained as failures as of December 1998, which is right prior to the beginning of sample period in the main analysis. Similarly, the sample of non-failures include individuals who started their business in or before December 1998 and survived throughout the sample period of main analysis (i.e. do not exit at least till March 2005). The sample includes 81 industries, January 1999 - March 2005, monthly. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Novice			Experienced		
			Failures	Non-Failures		
Treated*Post	0.235*** (0.069)	0.219*** (0.067)	0.050* (0.025)	0.054** (0.027)	0.149** (0.061)	0.131** (0.062)
Constant	1.722*** (0.053)	-0.253 (0.350)	0.234*** (0.031)	0.457* (0.231)	1.030*** (0.050)	-0.616 (0.384)
Control for industry productivity	No	Yes	No	Yes	No	Yes
Treated*GDP Growth	No	Yes	No	Yes	No	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,075	6,075	5,850	5,850	6,075	6,075
R-squared	0.93	0.93	0.58	0.58	0.89	0.89

Table 5 Business Creation and Financial Constraint

Panel A explores the heterogeneity of the impact of the home-office scheme on firm creation across industries with high/low starting capital. The classification of high/low-starting capital industries follows Hurst and Lusardi (2004), which uses the 1987 NSSBF to designate industries in the SPID as either low- (construction or services) or high- (mining; manufacturing; transportation, communication, and public utilities; wholesale and retail trade; and finance, insurance and real estate) starting capital industries. For industries of agriculture and professionals, we adopt a similar approach in Hurst and Lusardi (2004) and experiment with the inclusion of these two industries into the high category. As robustness check, we also classify these two industries into the low category and the results are tabulated in Table A5. Panel B presents the heterogeneity test on the impact of the home-office scheme on firm creation among individuals with/without financial constraint. A community is considered to be rich (or poor) one if the median income is higher (or lower) than the median of the distribution. The sample includes 81 industries, January 1999 - March 2005, monthly. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Dependent Var. = Log (1+number of new firms created in an industry at a month)				
Panel A Industry's Starting Capital				
	Low Starting Capital		High Starting Capital	
Treated*Post	0.140 (0.166)	0.188 (0.162)	0.286*** (0.081)	0.245*** (0.076)
Constant	2.421*** (0.092)	0.737 (0.577)	2.126*** (0.059)	1.035*** (0.377)
Control for industry productivity	No	Yes	No	Yes
Treated*GDP Growth	No	Yes	No	Yes
Month FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	1,575	1,575	4,500	4,500
R-squared	0.95	0.95	0.94	0.94
Panel B Rich or Poor Community				
	Rich Community		Poor Community	
Treated*Post	0.175*** (0.060)	0.151** (0.058)	0.242*** (0.069)	0.233*** (0.069)
Constant	0.657*** (0.048)	-0.837** (0.367)	1.308*** (0.041)	0.240 (0.323)
Control for industry productivity	No	Yes	No	Yes
Treated*GDP Growth	No	Yes	No	Yes
Month FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	6,075	6,075	6,075	6,075
R-squared	0.86	0.86	0.91	0.91

Table 6 Business Creation and Entrepreneur Characteristics

The table examines the impact of home office scheme on the entrepreneur characteristics of new business created. Ratio of HDB/Married represent the proportion of HDB resident/the married among all founders for each newly created business. We focus on the sample of firms created by Singaporean when we can merge with the demographics data. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	Ratio of HDB	Ratio of Married
Treated*Post	0.022* (0.012)	-0.008 (0.007)
Constant	0.684*** (0.142)	1.247*** (0.164)
Industry productivity control	Yes	Yes
Treated*GDP Growth	Yes	Yes
Region FE	Yes	Yes
Month FE	Yes	Yes
Industry FE	Yes	Yes
Observations	85,770	85,770
R-squared	0.12	0.02

Table 7 Home Office Scheme and Future Entrepreneurial Activities

The table focus on entrepreneurs with the experience of first business failure and explores whether home-office scheme help facilitate the probability of entrepreneur’s future (second) firm creation via reduced salience of first business failure. Specifically, we focus on those entrepreneurs whose first business was established during our sample period (January 1999 - March 2005) but failed afterwards. Then we classify them into two groups based on the time of first business creation. $D(FirstBusi_Post)$ is equal to one for those who establish the first business in the and post-reform period (December 2001 – March 2005). $D(FirstBusi_Treated\ Industries)$ is equal to one if the first business created falls in the treated industries. Robust standard errors clustered by industry of first business are reported in parentheses. Superscripts of *, **, and *** indicate significance levels at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)
Dependent Var. = D (Second Business Created)			
D(FirstBusi_Post)	0.029*** (0.009)		
D(FirstBusi_Post) *D(FirstBusi_Treated Industries)	0.013 (0.013)	0.012 (0.014)	0.010 (0.014)
Constant	0.511*** (0.002)	0.590*** (0.024)	0.063** (0.028)
First Business Region FE	No	No	Yes
First Business Creation Month FE	No	Yes	Yes
First Business Industry FE	Yes	Yes	Yes
Observations	40,367	40,367	40,367
R-squared	0.01	0.01	0.01

Table 8 Quality of Business Created: Survival Analysis

Panel A of the table reports the estimated hazard ratios from Cox-proportional hazard models of firm exit. Estimates on discrete variables represents the effect from moving from zero to one. Panel B presents the OLS estimate of firm's survival. $D(Survival)$ is a dummy equal to 1 if the business survives during the first /two/three/four/five years. The sample includes all firms in the 81 industries created in the period of January 1999 - March 2005. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Panel A Hazard regression					
	Full Sample			Pre-reform	Post-reform
Treated				1.088*** (0.028)	0.769*** (0.013)
Treated*Post	0.704*** (0.021)	0.713*** (0.021)	0.664*** (0.022)		
Control for industry productivity	No	No	Yes	Yes	Yes
Treated*GDP Growth	No	No	Yes	Yes	Yes
Region FE	No	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	124,204	124,204	124,204	46,526	77,678
Panel B OLS regression					
	D(Survival)				
	1 year	2 years	3 years	4 years	5 years
Treated*Post	-0.004 (0.004)	0.007 (0.006)	0.032*** (0.010)	0.049*** (0.016)	0.054*** (0.018)
Constant	0.923*** (0.072)	1.041*** (0.088)	1.430*** (0.110)	1.512*** (0.181)	1.539*** (0.210)
Control for industry productivity	Yes	Yes	Yes	Yes	Yes
Treated*GDP Growth	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	124,204	124,204	124,204	124,204	124,204
R-squared	0.01	0.02	0.04	0.04	0.05

Table 9 Quality of Business Created and Financial Constraint

The table explores the heterogeneity of the impact of the home-office scheme on firm's survival across industries. $D(Survival)$ is a dummy equal to 1 if the business survives during the first /two/three/four/five years. The classification of high/low-starting capital industries follows Hurst and Lusardi (2004), which uses the 1987 NSSBF to designate industries in the SPID as either low- (construction or services) or high- (mining; manufacturing; transportation, communication, and public utilities; wholesale and retail trade; and finance, insurance and real estate) starting capital industries. For industries of agriculture and professionals, we adopt a similar approach in Hurst and Lusardi (2004) and experiment with the inclusion of these two industries into the high category. Panel B presents the heterogeneity test on the impact of the home-office scheme among individuals with/without financial constraint. A community is considered to be rich (or poor) one if the median income is higher (or lower) than the median of the distribution. The sample includes all firms in the 81 industries created in the period of January 1999 - March 2005. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
	D(Survival)				
	1 year	2 years	3 years	4 years	5 years
Panel A Industry's Starting Capital					
Panel A1 Low-Starting Capital					
Treated*Post	-0.010 (0.006)	-0.008 (0.012)	0.006 (0.016)	0.013 (0.020)	0.019 (0.022)
Constant	1.045*** (0.061)	1.252*** (0.083)	1.649*** (0.140)	1.832*** (0.179)	0.981*** (0.176)
Control for industry productivity	Yes	Yes	Yes	Yes	Yes
Treated*GDP Growth	Yes	Yes	Yes	Yes	Yes
Region, Month and Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	30,929	30,929	30,929	30,929	30,929
R-squared	0.02	0.03	0.05	0.05	0.06
Panel A2 High-Starting Capital					
Treated*Post	-0.005 (0.004)	0.005 (0.005)	0.034*** (0.013)	0.052** (0.022)	0.054** (0.023)
Constant	0.897*** (0.073)	0.974*** (0.084)	1.357*** (0.108)	1.450*** (0.201)	1.580*** (0.233)
Control for industry productivity	Yes	Yes	Yes	Yes	Yes
Treated*GDP Growth	Yes	Yes	Yes	Yes	Yes
Region, Month and Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	93,274	93,274	93,274	93,274	93,274
R-squared	0.01	0.02	0.03	0.04	0.05
Panel B Rich or Poor Community					
Panel B1 Rich Community					
Treated*Post	-0.008 (0.011)	0.003 (0.013)	0.025* (0.015)	0.031 (0.019)	0.027 (0.021)

Constant	0.781*** (0.111)	0.908*** (0.170)	1.151*** (0.150)	1.592*** (0.161)	1.813*** (0.176)
Control for industry productivity	Yes	Yes	Yes	Yes	Yes
Treated*GDP Growth	Yes	Yes	Yes	Yes	Yes
Region, Month and Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	13,071	13,071	13,071	13,071	13,071
R-squared	0.03	0.04	0.07	0.07	0.09
<hr/>					
Panel B2 Poor Community					
Treated*Post	-0.003 (0.007)	0.010 (0.008)	0.030** (0.013)	0.048*** (0.017)	0.051** (0.020)
Constant	0.948*** (0.108)	1.089*** (0.110)	1.534*** (0.126)	1.854*** (0.131)	2.085*** (0.129)
Control for industry productivity	Yes	Yes	Yes	Yes	Yes
Treated*GDP Growth	Yes	Yes	Yes	Yes	Yes
Region, Month and Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	32,895	32,895	32,895	32,895	32,895
R-squared	0.02	0.03	0.05	0.06	0.07

Table 10 Business Creation: Heterogeneity Test Across Industries

The table explores the heterogeneity of the impact of the home-office scheme on firm creation across industries. The industry with high/low productivity is defined based on the industry-level average of quarterly change in value added over the period of 1992 (the earliest date we have for industry productivity) to 1998. To define risk, we first for each industry calculate the average 1-year survival rate among businesses that started over the period of 1980 to 1998 and then define an industry as one with high (low) level of risk if its average survival rate is higher than the median of sample distribution. Results are similar when we use alternative time periods to construct the survival rate (i.e. within 2 ,3, 4 and 5 years). The sample includes 81 industries, January 1999 - March 2005, monthly. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Dependent Var. = Log (1+number of new firms created in an industry at a month)				
Panel A Industry-level Productivity				
	Low Productivity		High Productivity	
Treated*Post	0.167 (0.101)	0.169 (0.105)	0.223** (0.097)	0.201** (0.095)
Constant	2.447*** (0.071)	0.538 (0.455)	1.965*** (0.068)	1.351*** (0.476)
Control for industry productivity	No	Yes	No	Yes
Treated*GDP Growth	No	Yes	No	Yes
Month FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	3,000	3,000	3,075	3,075
R-squared	0.94	0.94	0.94	0.94
Panel B Industry-level Risk				
	Low Risk		High Risk	
Treated*Post	0.323*** (0.114)	0.305*** (0.108)	0.145 (0.088)	0.131 (0.092)
Constant	1.846*** (0.060)	1.397*** (0.382)	2.551*** (0.078)	0.899* (0.508)
Control for industry productivity	No	Yes	No	Yes
Treated*GDP Growth	No	Yes	No	Yes
Month FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	3,000	3,000	3,075	3,075
R-squared	0.91	0.91	0.95	0.95

Table 11 Learning by Venturing

In Panel A we investigate the impact of business creation experience during home-office scheme period on future entrepreneurial activities. Specifically, we focus on entrepreneurs whose first business was established during our sample period (January 1999 - March 2005) and classify them into two groups based on the time of first business creation. $D(FirstBusi_Post)$ is equal to one for those who establish the first business in the and post-reform period (December 2001 – March 2005). $D(FirstBusi_Treated)$ is equal to one if the first business created falls in the treated industries. Robust standard errors clustered by industry of first business are reported in parentheses. Panel B of the table examines the intensive margin by focusing on serial entrepreneurs in the above sample, that is, those who have the second business established, and makes comparison of second business's characteristics: (1) number of employees at origination; (2) survival rate within 2 years (results are similar using 1,3,4 or 5 years). Our analysis is focused on the treated industries. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

Panel A Extensive Margin Analysis: Probability of Second Business Creation			(1)	(2)
Dependent Var. = D (Second Business Created)				
D(FirstBusi_Post) *D(FirstBusi_Treated)			0.023*** (0.007)	0.022*** (0.007)
Constant			0.530*** (0.012)	0.425*** (0.049)
First Business Region FE			No	Yes
First Business Creation Month FE			Yes	Yes
First Business Industry FE			Yes	Yes
Observations			136,154	136,146
R-squared			0.01	0.01
Panel B Intensive Margin Analysis				
Dependent Var.	(1)	(2)	(3)	(4)
Number of employees D(survival within 2 years)				
D(FirstBusi_Post) *D(FirstBusi_Treated)	0.291*** (0.103)	0.261*** (0.091)	-0.001 (0.009)	-0.002 (0.008)
Constant	3.704*** (0.880)	6.872*** (2.098)	0.880*** (0.107)	-0.320*** (0.078)
Control for industry productivity	No	Yes	No	Yes
Second Business Region FE	No	Yes	No	Yes
Second Business Month FE	Yes	Yes	Yes	Yes
Second Business Industry FE	Yes	Yes	Yes	Yes
First Business Creation Month and Industry FE	Yes	Yes	Yes	Yes
Observations	52,165	52,165	52,165	52,165
R-squared	0.11	0.15	0.26	0.27

Online Appendix

Table A1 Type of Businesses/Uses that are not allowed

Panel A of the table presents the list of business/uses that are not allowed under the Home Office Scheme. Panel B tabulates the top five industries among treated and control group in terms of business creation during our sample period.

Panel A List of forbidden business/uses	
a) Maid Agency/Employment Agency	
b) Contractors Business	
c) Car Trading Business	
d) Commercial School	
e) Sales/marketing office involving conducting seminars/talks for large number of customers	
f) Courier Business	
g) Manufacture/Preparation/Processing of products and goods.	
h) Ophthalmic dispensing/Pharmacy/Medical or dental clinics/Veterinary medicine	
i) Card reading/Palm reading or fortune telling in any form	
j) Funeral chapels or homes	
k) Mausoleums	
l) Shop use and any form of retail activity including pet shop.	
m) Food catering/Restaurants	
n) Conducting of dress making/embroidery lessons	
o) Repair of household appliances, electrical products, footwear, etc.	
p) Beauty/Hair-Dressing/Massage therapy services	
Panel B Top 5 industries among treated and control group	
Treated group	Control group
Computer Programming, Consultancy and Related Activities	Retail Trade
Office Administrative, Office Support	Food and Beverage Service
Activities Auxiliary to Financial Service and Insurance	Construction Activities
Financial Service Activities, Except Insurance and Pension	
Funding	Personal Service Activities
Wholesale Trade	Education

Table A2 Impact on the Probability of Home-office Business and Commuting Distance

The table reports the impact of the home-office scheme on the home-to-office distance. *D(At Home)* is an indicator variable that equals one if the business is registered using the home address. *Distance* is the geodetic distance in kilometers and calculated based on latitude/longitude coordinates. *Post* is a dummy equal to 1 for the observations after the reform (200112-200503), otherwise 0. *Treated* is a dummy equal to 1 if the industry does not belong to the forbidden industry in the Home Office Scheme. *Industry productivity* is the change in value added per work in each industry. *GDP Growth* is the annual GDP growth in Singapore. Robust standard errors clustered by industry. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	D(Home Office)		Distance	
Treated*Post	0.016*	0.018**	-0.188**	-0.192**
	(0.009)	(0.009)	(0.082)	(0.079)
Constant	0.150***	-0.153	7.429***	10.166***
	(0.015)	(0.094)	(0.191)	(1.149)
Control for industry productivity	No	Yes	No	Yes
Treated*GDP Growth	No	Yes	No	Yes
Month FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	121,147	121,147	121,147	121,147
R-squared	0.03	0.03	0.02	0.02

Table A3 Robustness Check on Business Creation Test

The table reports the robustness test for the estimation in Table 2 by (1) performing a weighted least square using the industry size; (2) excluding minor sectors in the forbidden list, including Card reading/Palm reading or fortune telling in any form, Funeral chapels or homes and Mausoleums. The sample includes 81 industries, January 1999 - March 2005, monthly. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Dependent Var. = Log (1+number of new firms created in an industry at a month)				
	Weighted by Industry Size		Excluding Minor Sectors	
Treated*Post	0.286*** (0.088)	0.262*** (0.085)	0.236*** (0.074)	0.220*** (0.072)
Constant	1.933*** (0.059)	0.859** (0.347)	2.202*** (0.050)	1.147*** (0.327)
Control for industry productivity	No	Yes	No	Yes
Treated*GDP Growth	No	Yes	No	Yes
Month FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	6,075	6,075	6,075	6,075
R-squared	0.93	0.93	0.94	0.94

Table A4 Robustness Check: Propensity Score Matching

The table report the impact of the home-office scheme on firm creation for the matched sample. The matching methodology is the nearest neighbor propensity score matching based on industry's risk and size. To define risk, we first for each industry calculate the average 1-year survival rate among businesses that started over the period of 1980 to 1998 and then define an industry as one with high (low) level of risk if its average survival rate is higher than the median of sample distribution. Size is defined similarly based on the number of people for each firm at origination. Panel A presents the results of the propensity score matching logistic regression and Panel B reports the estimation on business creation based on the matched sample. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

Panel A Propensity Score Matching Logistic Regression		
	(1)	
Large Industry	0.332 (0.319)	
Risky Industry	0.054 (0.319)	
Constant	-0.564* (0.312)	
Observations	81	
R-squared	0.011	
Panel B Home Office Scheme and Business Creation: Matched Sample		
	(1)	(2)
	Log (1+number of new firms created in an industry at a month)	
Treated*Post	0.227*** (0.076)	0.205*** (0.074)
Constant	2.196*** (0.055)	0.739** (0.342)
Control for industry productivity	No	Yes
Treated*GDP Growth	No	Yes
Month FE	Yes	Yes
Industry FE	Yes	Yes
Observations	4,350	4,350
R-squared	0.94	0.94

Table A5 Falsification Test – Randomizing the treated industries

The table presents the falsification test for the impact of the home-office scheme on firm creation. The sample includes 81 industries, January 1999 - March 2005, monthly. The treated industries is randomly selected. *Treated* is a dummy equal to 1 if the industry does not belong to the forbidden industry in the Home Office Scheme. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
Dependent Var. = Log (1+number of new firms created in an industry at a month)			
Treated*Post	-0.070 (0.071)	-0.070 (0.071)	-0.067 (0.070)
Constant	2.203*** (0.051)	2.194*** (0.053)	0.667* (0.377)
Control for industry productivity	N	Y	Y
Treated*GDP Growth	N	N	Y
Month FE	Y	Y	Y
Industry FE	Y	Y	Y
Observations	6,075	6,075	6,075
R-squared	0.94	0.94	0.94

Table A6: Robustness Check on Heterogeneity Test Across Industries-Starting Capital

The table reports the robustness check of Table 5 by following the approach in Hurst and Lusardi(2004) and experimenting with the inclusion of the two small business industries covered by PSID but not NSSBF data, agriculture and professionals into the low category. The sample includes 81 industries, January 1999 - March 2005, monthly. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Dependent Var. = Log (1+number of new firms created in an industry at a month)				
	Low Starting Capital		High Starting Capital	
Treated*Post	0.177 (0.118)	0.173 (0.134)	0.245*** (0.089)	0.209** (0.083)
Constant	2.472*** (0.080)	0.985* (0.505)	2.017*** (0.064)	0.877** (0.415)
Control for industry productivity	No	Yes	No	Yes
Treated*GDP Growth	No	Yes	No	Yes
Month FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	2,475	2,475	3,600	3,600
R-squared	0.95	0.95	0.94	0.94

Table A7 Business Creation and Entrepreneur Characteristics

The table examines the impact of home office scheme on the additional measures of entrepreneur characteristics of new business created. The mid-aged sample include individuals with age from 35 to 55. Column 1 includes all firms in the 81 industries created in the period of January 1999 - March 2005 and Column 2-5 focus on the sample of firms created by Singaporean when we can merge with the demographics data. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Ratio of Singaporean	Ratio of Mid-Aged	Ratio of Non-Chinese	Ratio of Male
Treated*Post	0.009** (0.004)	-0.025** (0.012)	0.008* (0.004)	0.019 (0.011)
Constant	1.135*** (0.046)	1.049*** (0.087)	0.246 (0.151)	0.670*** (0.157)
Industry productivity control	Yes	Yes	Yes	Yes
Treated*GDP Growth	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	124,204	85,770	85,770	85,770
R-squared	0.13	0.02	0.04	0.05

Table A8 Quality of Business Created: Heterogeneity Test Across Industries

The table explores the heterogeneity of the impact of the home-office scheme on firm's survival across industries. $D(Survival)$ is a dummy equal to 1 if the business survives during the first /two/three/four/five years. The industry with high/low productivity is defined based on the industry-level average of quarterly change in value added over the period of 1992 (the earliest date we have for industry productivity) to 1998. To define risk, we first for each industry calculate the average 1-year survival rate among businesses that started over the period of 1980 to 1998 and then define an industry as one with high (low) level of risk if its average survival rate is higher than the median of sample distribution. The sample includes all firms in the 81 industries created in the period of January 1999 - March 2005. Robust standard errors clustered by industry are reported in parentheses. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
	D(Survival)				
	1 year	2 years	3 years	4 years	5 years
Panel A Industry-level Productivity					
Panel A1 Low Productivity					
Treated*Post	-0.005 (0.006)	0.001 (0.011)	0.022 (0.018)	0.034 (0.026)	0.040 (0.034)
Constant	0.994*** (0.050)	1.159*** (0.064)	1.573*** (0.104)	1.826*** (0.127)	1.033*** (0.129)
Control for industry productivity	Yes	Yes	Yes	Yes	Yes
Treated*GDP Growth	Yes	Yes	Yes	Yes	Yes
Region, Month and Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	62,300	62,300	62,300	62,300	62,300
R-squared	0.02	0.02	0.04	0.05	0.06
Panel A2 High Productivity					
Treated*Post	-0.004 (0.005)	0.009* (0.005)	0.039*** (0.013)	0.060** (0.024)	0.062** (0.025)
Constant	0.915*** (0.076)	0.979*** (0.090)	1.325*** (0.109)	1.369*** (0.223)	1.611*** (0.219)
Control for industry productivity	Yes	Yes	Yes	Yes	Yes
Treated*GDP Growth	Yes	Yes	Yes	Yes	Yes
Region, Month and Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	61,903	61,903	61,903	61,903	61,903
R-squared	0.01	0.02	0.03	0.04	0.04
Panel B Industry-level Risk					
Panel B1 Low Risk					
Treated*Post	0.000 (0.004)	-0.002 (0.005)	0.008 (0.010)	0.013 (0.017)	0.018 (0.025)
Constant	1.051*** (0.050)	1.136*** (0.061)	1.391*** (0.103)	1.474*** (0.146)	1.124** (0.448)
Control for industry productivity	Yes	Yes	Yes	Yes	Yes

Treated*GDP Growth	Yes	Yes	Yes	Yes	Yes
Region, Month and Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	33,484	33,484	33,484	33,484	33,484
R-squared	0.01	0.02	0.02	0.03	0.03
Panel B2 High Risk					
Treated*Post	-0.007 (0.005)	0.009 (0.007)	0.038*** (0.010)	0.058*** (0.014)	0.063*** (0.016)
Constant	0.886*** (0.083)	1.006*** (0.100)	1.429*** (0.124)	1.530*** (0.215)	1.658*** (0.226)
Control for industry productivity	Yes	Yes	Yes	Yes	Yes
Treated*GDP Growth	Yes	Yes	Yes	Yes	Yes
Region, Month and Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	90,719	90,719	90,719	90,719	90,719
R-squared	0.01	0.02	0.04	0.04	0.05