

Business Advisory Services and Female Employment in an Extreme Institutional Context*

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ABSTRACT

Publicly funded business advisory services face pressure to demonstrate value-added effects among their assisted firms. Our research aims to measure the effectiveness of a business advisory program developed in a developed country and applied in an emerging economy with a male-dominated labor market. We also seek to determine the effects of increased professionalization resulting from advisory services. Comparing the business advisory services of a publicly funded organization with that of a matched sample, we observe an overall positive effect on job creation; however, this employment growth benefits males at the expense of females. We also find a reduction in unpaid family work and an increase in formal, full time employment but again, this professionalization and substitution effect mainly benefits male workers.

KEY WORDS: Business training; employment; entrepreneurship; institutional context

JEL CODE: D21, D24, L20, M13, O12

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INTRODUCTION

Small businesses are key drivers of broad-based, inclusive economic growth and job creation in both emerging and advanced economies. It has been noted that small and medium-sized enterprises (SMEs) in OECD countries represent approximately 99% of all firms and account for about 70% of jobs (OECD, 2017).¹ However, despite the crucial role of small businesses in the economy, a significant proportion of these businesses perform poorly as they face significant obstacles. A key obstacle is the acquisition of the knowledge needed to implement good management practices, or business skills. To overcome these obstacles, governments around the world are allocating public funding to provide subsidized assistance and training to entrepreneurs or small businesses (Cumming, 2007; Cumming and Fischer., 2012; Colombo, Cumming, and Vismara, 2016). As more public funding is allocated over time, the question of whether the programs actually foster entrepreneurial performance arises, and also, if they do so cost effectively.

Understandably, there has been extensive empirical work on the effects of publicly funded business advisory services. For example, by exploring the experience of the United States (US) over the last three decades, several studies have shown that outsider public sector assistance has positive effects on employment, sales, tax revenues, the number of business starts, and the rate of survival (Robinson, 1982; Chrisman, Hoy, and Robinson, 1987; Chrisman, 1989; Chrisman and Katrisha, 1994; Chrisman, 2017; Chrisman, Gateway and Donlevy, 2002). Our research is partly motivated by Chrisman et al. (2002) which looks at the effectiveness of outsider business advisory services for urban versus rural entrepreneurs or

¹ Similarly, SMEs in Chile represent 97% of businesses and provide around 66% of jobs (INE, 2018; Ministerio de Economía, Fomento y Turismo, 2017).

clients in the US. We are however more interested in determining the effectiveness of the same outsider business advisory designed for the US, to clients in a developing country. Just as Chrisman et al. (2002) sought to ascertain whether there is a need for entrepreneurial programs to be specifically designed for rural areas, we seek to do something similar in that we seek to ascertain if the effectiveness of such programs, and the increased professionalization of entrepreneurial firms advised, could be tempered by potential negative effects as they are applied in arguably less socially-developed, more male dominated labor economies. As public policy makers' main justification for investing public resources in government-sponsored business training programs has been that business growth may have broader benefits by increasing employment opportunities (Kosky and Pajarinen, 2013; Storey, 2000), we will for the purpose of our paper analyze the effects of business advisory services on employment, and more specifically on male versus female employment.

In this paper, our objective is to answer two main questions. First, do publicly funded business advisory services promote employment in emerging countries, thus suggesting success? Relatedly, do business advisory services in male-dominated labor markets favor male employment at the expense of female employment? Second, if we were to also measure success of business advisory activities by increased professionalization of entrepreneurial activity, are male or female workers more likely to reap the benefits? We will test our hypotheses by evaluating the impact of the advisory services of the United States Small Business Development Center (SBDC) program executed by the Technical Assistance Agency of the Ministry of Economy (SERCOTEC) in Chile. The introduction of the program in Chile responded to an agreement between presidents Bachelet and Obama, during the visit of Bachelet to Washington D.C. in 2014. One objective of the agreement was to expand the

relationship between Chile and the US by supporting the introduction of the US model of SBDCs in Chile. Thus, the introduction of the program in Chile was exogenous because it was not a response to any specific domestic event. The Chilean SBDC network, which covered 51 centers by 2018, is the largest one outside the US and has implied the investment of substantial public resources. Based on the US model, SERCOTEC's mission in Chile is to promote job creation, formalization, and sales growth of small business and aspiring entrepreneurs through improvements to their business administration, access to capital, technology, and market penetration. To achieve its objective, the SBDC program in Chile provides free one-on-one, long-term consulting assistance to clients.² Our paper studies the impact of this program by analyzing survey data collected from 485 small business entrepreneurs who were clients or prospective clients of the first 27 of the 51 SBDCs in Chile. We use a difference-in-differences model to carry out our empirical analyses.

We believe this paper adds to the literature on the effectiveness of outsider business advisory services, and more specifically the relationship between publicly funded business advisory services and employment in three ways. First, Chile provides a unique laboratory setting for evaluating these questions. Roughly 20% of the workers are self-employed or business owners (Cea et al., 2009) and nearly 30% of the labor force is informal in what can be considered a traditional male-dominated society. In this context, the study of the impact of the SBDC model in a country such as Chile is also attractive because small business owners in emerging countries often do not adopt good business practices that are standard in most developed countries (McKenzie and Woodruff, 2014). Second, we explore the impact of the

² Although the literature has recognized personalized business training as potentially significantly increasing the value-added of training (Bruhn et al., 2018; Karlan and Valdivia, 2011; Lafortune, Riutort, and Tessada, 2018), the SBDC model has only been rigorously evaluated in the United States (Chrisman and Katrishaen, 1994).

SBDC program on total employment, and more specifically male versus female employment in an emerging, male-dominated labor market. Third, Chile's female labor participation is one of the lowest among OECD countries and the contribution of women in the workforce remains highly imbalanced. By 2016, the rate of female labor participation in Chile was only 48%, compared with a rate of male labor participation of 73%. As a result, female labor participation in Chile has the potential to be a key driver of growth. While increased employment may be deemed as a measure of success for the program, we need to also determine potential pitfalls. We analyze the *effect* on male versus female employment, which we think is a significant contribution because previous studies have only examined the impact of the SBDC program on the total number of workers hired by the SBDCs' clients, without distinguishing between them.

Second, we also explore different dimensions of employment such as formal work, full-time work, and unpaid family work to determine impact from a different perspective, that being the extent of professionalization of the firm resulting from the advisory services. In light of the ample empirical evidence of an overwhelming significance of family employment for SMEs (Cruz, Justo, and De Castro, 2012) and of a negative relationship between child labor and schooling (Edmonds, 2006), we believe the study of the impact of outsider business training, in addition to the extent by looking at professionalization, or the reduction of informal, unpaid family workers (mainly children and spouses) makes a significant contribution to the literature and has important policy implications. Therefore, we also further look at the potential substitution effect that could negatively affect informal female workers.

The findings in our study suggest the advisory services the SBDCs provide in Chile have a positive impact on job creation and professionalization, or employment formalization, which

is stronger for male workers. Specifically, the results find that the advised treated enterprises exhibited an increase in the number of workers, with male workers mainly benefiting from this success. We find increased professionalization as our data suggest more workers formally hired, and full-time workers, as well as a reduction in the number of unpaid family workers for treated businesses as compared to their untreated businesses. Our analyses also divide the workers between men and women. When analyzing male and female workers separately, we find that the effect on formal and full-time employment is particularly strong for male workers. Moreover, for the case of full-time work, we observe an increase in the number of male full-time workers and a decrease in the number of female full-time workers. Overall, this study supports the idea that business advisory services may have a positive impact in emerging countries, and that advisory services are contributing to the increased professionalization of SMEs. Our findings also support Thurik et al. (2008) in that entrepreneurship has become increasingly important to emerging economies as a source of formal employment creation in subsequent periods (the so-called “entrepreneurial” effect).³ Our findings suggest however that the effect is only particularly strong for male employment in emerging economies with male-dominated labor markets, possibly to the detriment of female workers. This may minimize the potential for underutilized female workers to be a key driver for growth, and therefore should be a concern for policy makers.

The layout of this paper is as follows: The next section reviews prior theory and research on the impact of business advisory services on employment, and derives the hypotheses to be tested. We continue by describing the research method used in this paper, including the

³ Some studies show a positive relationship between unemployment and start-up rates (the “refugee” effect), whereas other studies show a negative link between unemployment and start-up rates (the “entrepreneurial” effect). Thurik et al. (2008) find evidence of these two relationships using data from 23 OECD countries from 1974 to 2002, with the “entrepreneurial” effects being considerably stronger than the “refugee” effects.

description of the particular advisory service studied here, the data and the summary statistics. Thereafter we explain the empirical strategy based on a difference-in-differences estimator. The subsequent section reports our main results. The last section provides a discussion and conclusion.

BUSINESS ADVISORY SERVICES: RELATED RESEARCH, THEORY AND HYPOTHESES

Extant research has suggested that in addition to financial capital, the entrepreneurs' business skills or "managerial capital" may be important determinants of entrepreneurial firm growth.⁴ Given the considerable resources invested by governments in the provision of business advisory services, theories and prior research have also considered whether business advisory services are indeed conducive to entrepreneurial outcomes, and whether they can be cost-effective (Robinson, 1982; Chrisman, Hoy, and Robinson, 1987; Chrisman, 1989; Chrisman and Katrisha, 1994; Cumming and Fischer, 2012; Chrisman, 2017; Cumming et al., 2019). Chrisman and Katrisha (1994) study the performance improvements of long-term US clients who indicated the SBDC's assistance was beneficial. Their findings note that the satisfied established business owners and aspiring entrepreneurs who received counseling in 1990 generated roughly 65,000 new jobs and over \$3.7 billion in new sales in 1991.⁵ In terms of cost effectiveness, Cumming and Fischer (2012) looked at a Canadian business advisory program called the Investment Network program and noted the cost effectiveness of the program, in

⁴ See, for example, Bloom and Van Reenen (2007), Cumming and Johan (2009), Bruhn, et al. (2018), Cumming and Fischer (2012), and Cumming et al. (2019).

⁵ Chrisman also publishes a two-year-period evaluation report. The last version of the report analyzes performance improvements in the 2015-2016 period (Chrisman, 2017). The results indicate the long-term clients of the SBDC generated 96,095 new full-time-equivalent jobs and approximately \$6.4 billion in sales, which generated approximately \$22.11 in incremental tax revenues for every dollar expended on the program.

that early-stage entrepreneurial firms under the program raised Can\$6,545,000 in financing, while the program costs were totaled at only Can\$662,360. It is possible that in emerging markets, political pressure may exacerbate the need to show performance results associated with public funding in order to maximize the benefits of external finance associated with political influence (Cumming et al., 2015, 2016).

Other studies however have not found the impact of advisory services to be positive (Labrecht and Pirnay, 2005; Mole, Hart, Roper and Saal, 2008). Labrecht and Pirnay (2005) were unable to find evidence that publicly funded advisory services in Belgium had a significant impact on net job creation or sales. In contrast, Mole, Hart, Roper and Saal (2008) found that those firms that had received intensive advising in the UK experienced significantly greater employment, but not sales growth.

Our research is partly motivated by Chrisman et al. (2002) which looks at the effectiveness of outsider business advisory services for urban versus rural entrepreneurs in the US, and the mixed results from Labrecht and Pirnay (2005) and Mole et al. (2008). Our understanding of the research carried out in both developed and developing countries lead us to believe that further investigation regarding the impact of outside business advisory services on entrepreneurial firms in a developing country is warranted, more specifically in relation to employment (Venckuviene and Snieska, 2014; Kosky and Pajarinen, 2013; and Cancino, Bonilla, and Vergara, 2015). The study of the impact of the SBDC model in a country such as Chile is especially appealing as we know that small business owners in emerging countries often do not adopt good business practices that are standard in most developed countries (McKenzie and Woodruff, 2014). In a male-dominated labor market such as Chile, we are equally interested at how the success of the services may affect males and females differently.

Chile's female labor participation is one of the lowest among OECD countries and the contribution of women in the workforce remains highly imbalanced. By 2016, the rate of female labor participation in Chile was only 48%, compared with a rate of male labor participation of 73%. In terms of small business ownership, according to the 2017 Chilean Enterprise Longitudinal Survey, only 31% of the owners of small businesses are women, whereas 69% are men (Ministerio de Economía, Fomento y Turismo, 2019). Policy makers have identified female worker inclusion as a driver for growth, and as such we are interested in understanding whether female workers are benefiting from the success of the business advisory program. Unfortunately, weak institutional contexts favor short term planning as opposed to long term stability and growth (La Porta et al., 1998, 1999) and the benefits to male dominated hiring may favor short termism and risk taking at the expense of long-term stability (Cumming et al., 2015). We believe therefore that male workers are likely to benefit more from the success of the SBDC program.

We know that the evaluation of business training and entrepreneurship programs in emerging countries is challenging. On the one hand, several of these assessments have fallen within the category of monitoring rather than of impact evaluation (Storey, 2000) as they do not consider the performance of a control group of firms. On the other hand, as suggested by McKenzie and Woodruff (2014) who reviewed extant literature on the impacts of business training in developing countries, impact evaluations have tended to suffer from small sample sizes, short-term analyses, and problems with survey attrition and measurement.⁶

⁶ Several studies have attempted to identify the impact entrepreneurship programs on employment through quasi-experimental techniques. By combining matching techniques with a difference-in-differences estimator, Cancino et al. (2015) find a non-reimbursable cash subsidy to support the take-off of young SMEs in Chile increased the number of employees and sales. Also using a matching procedure, Almus (2004) find a German public start-up assistance program improved the average employment growth rate of young firms.

Studies such as Bruhn, Karlan, and Schoar (2018) and Karlan and Valdivia (2011) have implemented RCTs to assess the impact of entrepreneurship programs on SMEs' employment in Mexico and Peru, respectively.⁷ Although RCTs represent an important breakthrough in impact evaluation and the study of the adoption of better management practices, most public policies—such as the adoption of the SBDC model in Chile—are taking place without the aid of experiments and are not amenable to study via randomization. Therefore, we view our nationally representative quasi-experimental evidence on the relationship between consulting assistance and employment as complementary to the experimental evidence from RCTs, which usually focuses on a small set of communities. More importantly, we believe that our unique data enables us to overcome several of the problems identified above as we attempt to find out not only whether business advisory services designed for a developed country can be as successful in an emerging economy by measuring employment by those entrepreneurial firms advised by the SBDC in Chile, but also whether in the male dominated labor market, these benefits are more likely to be enjoyed by male versus female workers. We thus posit:

Hypothesis 1a. In an emerging economy, publicly funded business advisory services will be positively associated with employment growth, taking into account selection effects and endogeneity.

Hypothesis 1b. In a male-dominated emerging economy labor market, the effect of business advisory services on employment will be stronger for male workers than for female workers.

⁷ Bruhn, Karlan, and Schoar (2018) find a positive impact on employment in the long run. Karlan and Valdivia (2011) assess the impact of incorporating entrepreneurial training into a microcredit program and find the effect on workers is not economically meaningful.

To further our discussion, we refer to research on the professionalization of firms, especially family firms (Chandler, 1990; Chittoor and Das, 2007; Gedajlovic, Lubatkin, and Schulze, 2004; Stewart and Hitt, 2012; and Chrisman, 2019). For the purposes of our research on nascent entrepreneurial firms in an emerging economy, we do not take to meaning the professionalization of firms as it is traditionally taken, which is the hiring of full-time, nonfamily employees, in addition to the delegation of managerial authority. We refer to professionalization for our purposes as both the hiring of full-time workers and also the reduction of unpaid family workers. The client forms of SBDC are arguably on the embryonic side of the evolutionary process of firm professionalization and therefore we believe that taking on of more formal, full-time workers could be one measure of business advisory success indicating increased professionalization (Sutter et al., 2017). Another measure is the reduction of unpaid family workers. This measure is interesting in view of the overwhelming significance of family employment for SMEs, especially informal, unpaid family workers who are mainly children and spouses (Cruz, Justo, and De Castro, 2012; Edmonds, 2006). Taking prior research on professionalization into account, it is reasonable to posit that, in an emerging economy with a male-dominated labor market, successful business advising of entrepreneurial firms will favor male employment growth at the expense of females.

We therefore posit as follows:

Hypothesis 2a. In an emerging economy, publicly funded business advisory services will be negatively associated with unpaid family work, and positively associated with formal, full time employment.

Hypothesis 2b. In a male-dominated emerging economy labor market, the effect of business advisory services on formal, full-time employment will be stronger for male workers than for female workers.

RESEARCH METHOD

Institutional research context: The Small Business Development Program in Chile

The SBDC program was created in the United States in 1977 with the main objective of increasing employment, sales, and tax revenues. To achieve its objective, the program provides aspiring and current small business owners no-cost one-on-one, long-term consulting advising and low-cost training services to their clients. The program covers general business skills and strategy training as well as client-specific problem-solving including business plan development, financial packaging, and lending assistance, exporting and importing support, and disaster recovery assistance, among others. In the US, the centers are funded in part through a partnership with the Small Business Administration (SBA) and are usually hosted by leading universities and state economic development agencies.

The success of the SBDC program in the US encouraged the University of Texas at San Antonio (UTSA) to export the model globally. Since 2003, UTSA has been supporting and advising foreign governments on how to adapt, implement, and establish networks of SBDCs in their respective countries (Institute for Economic Development, 2017). So far, the SBDC program has expanded—or is in process of expanding—to several countries in different regions of the world, including Africa (Tunisia), the Caribbean (Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Jamaica, Saint Kitts and Nevis, and St. Lucia), Central

America (Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, and Panama), North America (Mexico), and South America (Argentina, Chile, Colombia, and Peru).

In Chile, the program was established in October 2014 with the SBDC Certificate Training that transferred the SBDC methodology to local professionals. It was funded by the Embassy of the United States in Santiago, Chile and is executed by SERCOTEC in partnership with UTSA. The first center in Chile opened in the city of Valparaiso in October 2015. Since the beginning of the program in the country, centers throughout the Chilean territory have rapidly expanded. With 51 centers by 2018, the Chilean SBDC network represents one of the most comprehensive resources outside the US for small business. These centers have already helped more than 22,000 small businesses.

Data and sample

The empirical analysis conducted in this study is based on data collected from a survey of 485 small business entrepreneurs.⁸ The sample covers 224 entrepreneurs in the treatment group and 261 entrepreneurs in the control group—who were clients or prospective clients of the first 27 of 51 SBDCs in Chile.⁹

We conducted face-to-face interviews to survey the treated and untreated entrepreneurs at the premises of the participating centers. Our data-collection procedure and identification strategy exploit the fact that different SBDC-assisted clients are enrolled in the

⁸ Most studies that explore the effects of business training on performance consider between 200 and 400 entrepreneurs in each of the treatment and control groups. Sample sizes tend to be smaller in studies on specific industrial clusters (Mano et al., 2012; Sonobe et al., 2011).

⁹ These participating centers are located in the following cities: Arica, Iquique, Antofagasta, Copiapó, Vallenar, La Serena, Quillota, Independencia, Santiago, Valparaíso, San Bernardo, Melipilla, Santa Cruz, Talca, Cauquenes, Chillan, Cañete, Angol, Temuco, Valdivia, La Unión, Osorno, Puerto Montt, Coyhaique, Aysén, Puerto Natales, and Punta Arenas.

program at different dates, which allows us to construct observably similar treatment and control groups for a comprehensive set of pre-treatment observable variables without the use of matching techniques. To assess the impact of the assistance provided by the SBDC program on employment, we employ a difference-in-differences approach that compares differences in the evolution of the number of workers between a population of clients enrolled in the SBDC program at the beginning of the period under study (treatment group) and a population of prospective clients enrolled in the SBDC program right after the end of the period under study (the control group). We examine the medium-term impact of the SBDC program on the clients enrolled in any of the first 27 SBDCs in Chile between December 2015 and June 2016.

Our survey questionnaire collected information on basic demographic characteristics, entrepreneurs' employment and educational history, industry and history of the business, and the enterprises' number of workers. As previously mentioned, the number of workers is divided into four categories: (1) total workers, (2) formally hired workers, (3) full-time workers, and (4) unpaid family workers. Additionally, for each of these categories, we divide the number of workers between male workers and female workers.

To rule out the possibility that a few “superstar winners” could influence the average statistics of entrepreneurs' performance (Rosen, 1981; Hamilton, 2000), we eliminated all observations with a value higher than the 99th percentile. Depending on how many observations were exactly in the 99th percentile, the number of dropped observations was between 5 and 12 in different specifications. Table 1 reports the descriptive statistics of the number of workers for the four categories used in this study. The table shows the enterprises in our final sample have between 0 and 12 workers, excluding the owner of the business. A large proportion of enterprises in our sample are self-employed workers, which is reflected in

the fact that the average number of workers is 1.46. The average number of formal workers and full-time workers are 0.82 and 0.68, respectively. Finally, the average number of unpaid family workers is 0.6, which is consistent with the stylized fact that family employment is significant for SMEs (Cruz, Justo, and De Castro, 2012).

Treatment group

This study explores the employment impact of counseling activities, by comparing the SBDC-assisted clients' (treatment group) change in the number of workers with the prospective SBDC clients' (control group) change in the number of workers. Although one might expect SBDCs' clients to make some changes relatively quickly after the advising sessions, we consider that the full impact of training may take some time. For this reason, we explore the medium-term effect by analyzing the number of workers between December 2015 and June 2017. Given that the SBDC model is based on permanent consulting advising, as part of the population of treated entrepreneurs, we only considered clients who satisfied three conditions. First, clients had to have enrolled in any of the 27 participating centers between October 5, 2015 (opening day of the first center in Chile), and April 30, 2016. Second, clients had to have an SBDC intervention of at least six months. Third, their last follow-up consulting session had to have occurred in May 2016 or afterwards. Under these criteria, the 27 participating centers provided long-term assistance to 2,099 clients.

We surveyed randomly sampled SBDC clients one by one on the centers' premises during July and September of 2017. We surveyed a nationally representative random sample of 285 clients in the treatment group. However, we only collected information on the number of workers for 224 SBDC-assisted clients.

Control group

To construct the control group, we surveyed all the entrepreneurs who applied to any of the participating 27 centers during June and September of 2017. Together with the application interview, we conducted our survey that considered historical information. The total number of surveys administered to prospective clients was 709. Of those surveys, only 261 surveys corresponded to prospective clients who already had a business, and therefore information on the number of workers, by the end of 2015. We also individually surveyed prospective SBDC clients at the centers' premises. To ensure the survey was correctly carried out and answered, we prepared a website with a tutorial video and detailed instructions with steps that the centers' staff should follow, as well as with protocols of delivering of survey.¹⁰

Balance and summary statistics

To illustrate the strategy employed to create a counterfactual group produced observably similar treatment and control groups, Table 2 reports basic summary statistics and tests of the difference of means between the two groups for a comprehensive set of pre-treatment observable variables across treatment and control groups. We observe limited statistically significant differences between controls and treatments. In fact, both groups are almost identical in terms of gender, area of residence, education, age, experience, and sector. The proportion of men is 48% in the treatment group and 51% in the control group. Although Chile is a male-oriented economy, half of the entrepreneurs in our sample are women. The main reason for this is that women in a male-oriented economy usually face more obstacles than men and, therefore, they are more likely to look for external assistance to overcome their

¹⁰ <http://www.sistemaspublicos.cl/encuestacentros>.

obstacles. In the treatment and control groups, the proportion of entrepreneurs who live in urban areas is 79% and 83%, respectively. Roughly 22% of the entrepreneurs in both groups completed secondary education, 11% did not complete high school, and 50% have a high school degree. The average age is 44.7 years in the treatment group and 43.4 years in the control group. Average experience is 5.7 years in the treatment group and 6.2 years in the control group—a difference that is not statistically significant at standard levels of confidence. Finally, most entrepreneurs work in the retail sector (20% in the treatment group vs. 21% in the control group).

Although assignment to treatment—that is, being assisted by a SBDC—is not random in the context of the SBDC program, note that treatment and control groups are balanced without the use of matching techniques. This balance is possible by exploiting the fact that different clients enrolled in the program at different dates. Moreover, by using prospective clients to construct the control group, this study aims to mitigate biases associated with unobservable differences between entrepreneurs in both groups, such as the motivation that incentives an entrepreneur to seek out business public assistance in a SBDC.

EMPIRICAL STRATEGY

Empirical evidence has demonstrated that macro-level factors such as economic conditions, technology progress, and political risk play a crucial role in determining entrepreneurial performance (Thai and Turkina, 2014). We therefore posit that job creation and firm professionalization through employment formalization by small businesses are both likely driven by underlying entrepreneurs' traits, enterprise characteristics, and macro-economic conditions. A way to mitigate biases from these spurious drivers is to focus on the number of

workers between the treated and untreated enterprises, before and after the intervention. As long as the evolution of the number of workers for SBDC-assisted clients and untreated enterprises change in a relatively similar way in the absence of the intervention—the parallel-trends assumption—the difference-in-differences estimator will identify the causal effect of the program.

We have strong reasons to expect that entrepreneurs who seek out business advising in the SBDC program are different from those entrepreneurs who do not seek out outside assistance. To mitigate self-selection biases and create treatment and control groups relatively similar along observable (and unobservable) dimensions relevant for treatment, we exploit the fact that SBDC-assisted clients are enrolled in the program at different dates. Specifically, we consider in the control group only prospective clients of the 27 participating SBDCs. Note that despite the fact that the assignment to treatment was not random, this strategy created treatment and control groups that are balanced in their distribution of a comprehensive set of pre-treatment observable variables such as gender, area of residence, education, work experience, and economic activity.¹¹ Thus, techniques are not needed further as the strategy we used to construct our control group already created almost identical treatment and control groups in terms of observable characteristics. Finally, given that we did not need to conduct matching techniques to obtain a balanced sample of treatments and controls, we assume our strategy is also likely to create treated and untreated groups similar in unobserved

¹¹ This strategy assumes the date of enrollment of an entrepreneur in the SBDC program has an exogenous component. In fact, most of the SBDC clients indicated in a sequence of focus groups that they had not previously enrolled in the program, because they did not know it existed. This finding is consistent with the fact that this program is relatively new in Chile and has experienced a large increase in the number of clients since the opening of the first center.

characteristics, such as the motivation that incentivizes an entrepreneur to seek out public sector assistance through a SBDC.

Another concern is omitted variables. To mitigate omitted-variable bias, in all our models, we include entrepreneur fixed effects to provide more granular controls than a treatment dummy variable as in the traditional difference-in-differences approach. These fixed effects control for all the observable and unobservable time-invariant characteristics of the entrepreneur and the enterprise.

We identify the impact of the SBDC program on the number of workers through ordinary least squares (OLS) regressions that estimate our difference-in-differences model. We explore different types of workers: total workers, formally hired workers, full-time workers, and unpaid family workers. Econometrically, the specification of the regression is as follows:

$$Y_{it} = A_i + \beta Post_t + \gamma Post_t x Treatment_i + \varepsilon_{it}, \quad (1)$$

where Y_{it} denotes the number of workers of enterprise i at time t . A_i is an entrepreneur (enterprise) fixed-effects vector that controls for all observable and unobservable time-invariant factors that directly affect the number of workers of an enterprise. $Post_t$ is a binary variable equal to 1 if the observation corresponds to the post-treatment period. This binary variable controls for all the macro-level determinants of the performance of the small businesses, such as economic conditions and political risk.¹² $Treatment_i$ is a binary variable equal to 1 if an entrepreneur was assisted by a SBDC during the period under study, and 0 otherwise. ε_{it} denotes the error term. The parameter γ captures the change in the number of

¹² As a robustness check, we have tested whether our results are robust to the inclusion of center-year fixed effects to control for the businesses cycle in each geographic area. Our results remains qualitatively unchanged.

workers employed by assisted enterprises relative to the change in the number of workers employed by non-assisted enterprises, which may be attributed to the impact of the program.

In our identification strategy, we cannot rule out that one potential source of endogeneity in our estimations is the timing of entrepreneurs' enrollment in the centers. Entrepreneurs usually reach the centers when their business has problems they are not able to solve by themselves. According to a survey conducted with all directors of the centers in Chile (Valenzuela, Ramos, and Andrade, 2018), the main reason for the entrepreneurs enrolling in a center is the lack of external sources of capital. Given that most entrepreneurs who look for help in a SBDC may be facing significant obstacles and financial constraints, this potential source of endogeneity may likely be producing an attenuation bias of our results.

RESULTS

In this section, we report the results from estimating equation (1) by OLS. We report the results for different types of workers as our dependent variable: total workers, formally hired workers, full-time workers, and unpaid family workers. For each of these four categories, we also divide the number of workers into male workers and female workers. Overall, the findings reported in this section suggest the technical assistance provided by the SBDCs in Chile has positive effects in terms of job creation and professionalization indicated by employment formalization.

Impact on total workers

Table 3 reports the results of the impact of the advising assistance provided by the first 27 SBDCs in Chile on the number of workers, male workers, and female workers. In line with

the evidence for the impact of the SBDC program in the United States, and in accordance with Hypothesis 1a, the results reported in column 1 indicate the treatment group exhibited an increase in the number of total workers compared to the control group. This effect is statistically significant and economically meaningful. We find a positive impact of the intervention of 0.3 workers. This magnitude suggests roughly one in three businesses that take business training in a SBDC will hire an additional worker, compared to the untreated businesses. Considering that the average number of workers in our sample, excluding the entrepreneurs, is 1.46, this effect is very large in relative terms.¹³

Columns 2 and 3 also suggest a positive effect in both the number of male workers and female workers. The magnitude of the estimated coefficients is also economically meaningful, although statistically significant only at the 10% level. The drop in significance of these coefficients may be due to the smaller sample sizes of these variables or perhaps lower standard errors. The results suggest the effect on male workers is more than 50% larger than the effect on female workers, providing strong support for Hypothesis 1b.

There are at least two reason for the higher increase in male employment. The first is associated with the composition of the labor market in Chile, and therefore the supply of men versus women workers. As previously mentioned, the rate of female labor participation in Chile was only 48% in 2016, compared with a rate of male labor participation of 73%. Thus, the supply and availability of male workers is higher in a male-dominated labor market. The second reason is associated with some laws that make small firms less attractive for women.

¹³ Several studies using micro-level data to explore the impact of business training on employment show very small and statistically insignificant effects. For example, Karlan and Valdivia (2011) find an increase of 0.02 workers, Valdivia (2015) reports a decrease of 0.06 workers from straight training, and Drexler et al. (2012) find an increase of 0.05 workers from standard training. These effects are not statistically significant at standard levels of confidence and they are not economically meaningful.

For example, the Chilean law requires a minimum of 20 women on a company's payroll before it has to provide a childcare center. Thus, women have more incentive to work in medium and large firms than in small firms. Although our regressions are very parsimonious, note that due to the inclusion of entrepreneur and time fixed effects, they are able to explain a large proportion of the variance in the number of employees, as shown by the adjusted R-squared.

Impact on formally hired workers

Table 4 reports the results of the impact of the SBDC program on the number of formally hired workers, formally hired male workers, and formally hired female workers. Consistent with Hypothesis 2a and one of the main objectives of the SBDC program in Chile—the promotion of formal employment—the results suggest a statistically significant and economically meaningful positive impact on the number of formally hired workers. The magnitude of the impact reported in column 1 of Table 4 suggests one in roughly four microenterprises that take business training in a SBDC will formally hire an additional worker in comparison to the control group. Therefore, the results reported so far indicate the public sector assistance provided by the SBDCs not only generates new jobs, but also new formal jobs. This finding is important for an economy such as Chile, where nearly 30% of the labor force is informal and its relation to small enterprises is significant (INE, 2018).

Consistent with Hypothesis 2b, columns 2 and 3 in Table 4 report evidence of a positive effect in both the number of male and female formally hired workers, with the effect on male workers being somewhat stronger than the effect on female workers. The results suggest the effect on male workers is more than 30% larger than the effect on female workers. These results contribute to the growing stream of research that shows the success of formalization

effects by institutional intermediaries hinges on a series of inter-related campaigns aimed at providing “institutional scaffolding” to encourage the transition from informality to formality (Sutter et al., 2017).

Impact on full-time workers

Table 5 reports the results of the impact of the SBDC program on the number of full-time workers, male full-time workers, and female full-time workers. The results from our difference-in-differences specifications reported in columns 1 to 3 indicate an insignificant effect on the total number of full-time workers, a positive and highly statistically significant effect on the number of male full-time workers, and a negative and significant effect on the number of female full-time workers, respectively. In absolute terms, the effect on males is twice the effect on females. Thus, these results suggest a substitution between male and female full-time workers, providing further evidence of Hypothesis 2b discussed earlier.

Impact on unpaid family workers

Finally, Table 6 explores whether the consulting advising provided by the SBDC program affected the number of unpaid family workers. The results indicate the treatment group exhibited a reduction in the number of unpaid family workers compared to the control group. Thus, our results provide further support for Hypothesis 2a. The effect is highly statistically significant for the number of unpaid family workers and for unpaid male family workers (probably, mainly male children). The effect is also negative, although smaller in magnitude and only significant at the 10% level, for unpaid female family workers (probably, mainly

female children and spouses).¹⁴ The results suggest the effect on male workers is more than three times larger than the effect on female workers. The magnitude of our results in column 1 suggests almost one in two microenterprises that take business training in a SBDC will comparatively reduce by one the number of unpaid family workers.

Our previous results are consistent with the mission of the centers of promoting formalization and are particularly important in light of the empirical evidence and policy implications of an overwhelming significance of family employment for MSEs (Cruz, Justo, and De Castro, 2012) and of a negative relationship between child labor and schooling (Edmonds, 2006). This results is in line

CONCLUSION

This study reports the findings of what we believe to be the first study of the impact of SBDC counseling activities on job creation and extent of professionalization indicated by employment formalization in a male dominated developing country, Chile. Although a rich body of research explores the impact of public sector assistance to small business entrepreneurs, to our knowledge, this study is the first that examines the impact of the SBDC program outside the US. This program, being developed by a developed country and implemented in a developing country is noteworthy as its proven success in the US leads us to ask if the same success could be replicated in an emerging economy. Chile represents a particularly interesting laboratory to study the impact of the SBDC program outside the US, because it has the largest network of centers in an emerging economy and it is a male dominated society. Our interest in determining the success of the program as measured by

¹⁴ According to Bonomelli (2017), in Chile, 9.5% of boys work and that 3.9% of girls and female adolescents work. Thus, 69% of all child labour is performed by boys.

increased employment is tempered by our concern that increased professionalization may lead to possibly mixed outcomes.

The evidence presented in this study suggests the assistance provided by the SBDCs are impactful as increased levels of employment opportunities are generated by firms advised by the SBDC. As hypothesized, this increase is significant for male workers. We also find that the firms advised also increase professionalization as more formal and full-time jobs are created, and unpaid family jobs are reduced. However, as our data suggests that the formal job creation is to the benefit of male workers, and potentially in substitution of female workers this finding may not necessarily support female labor participation in Chile which is thought to be potentially a key driver of growth for the Chilean economy.

The policy implication of this study is that while the SBDCs do make an important contribution to the economy by helping established small and medium-sized enterprises create new formal job opportunities in growing firms, this is limited to the male work force. There is a possibility that the benefits of increased male participation may be tempered by the potential substitution effect as our data notes a reduction in female worker participation. The reduction of informal unpaid family workers does indicate the increased professionalization of firms advised by the SBDC. While the promotion of formal jobs by government agencies is important in countries such as Chile given the prevalence of informal work and small enterprises, policy makers should seek to determine why female workers are being disadvantaged by the increased professionalization.

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Table 1
Descriptive Statistics

	Obs.	Mean	Median	Std. Dev.	Min.	Max.
Workers	955	1.46	1	1.98	0	12
Formal workers	961	0.82	0	1.44	0	8
Full-time workers	962	0.68	0	1.43	0	8
Unpaid family workers	960	0.60	0	1.20	0	7

Notes: This table reports descriptive statistics of the number of workers for the four categories used in this study: total number of workers, total number of workers with a formal contract, total number of full time workers, and total number of unpaid (informal) family workers.

Table 2
Treatment Group versus Control Group

		<u>Treatment Group</u>		<u>Control Group</u>		<u>Mean Differences</u>
		<u>Mean</u>	<u>Std. Dev.</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Test (p-value)</u>
Gender	Male	0.48	0.50	0.51	0.50	0.29
Area of Residence	Urban	0.79	0.41	0.83	0.38	0.12
Education	Primary Education	0.04	0.21	0.07	0.26	0.05
	Secondary Education Incomplete	0.05	0.23	0.05	0.23	0.90
	Secondary Education	0.21	0.41	0.23	0.42	0.68
	Higher School Incomplete	0.11	0.31	0.12	0.32	0.58
	Higher School	0.54	0.50	0.51	0.50	0.31
	Postgraduated	0.04	0.20	0.02	0.12	0.02
Age	Years	44.68	10.62	43.41	12.04	0.23
Experience	Years of Work	5.80	8.51	6.25	7.69	0.35
Activity Sector	Agriculture	0.09	0.29	0.11	0.31	0.36
	Mining	0.02	0.15	0.02	0.15	0.95
	Industry	0.09	0.29	0.08	0.27	0.54
	Construction	0.03	0.16	0.05	0.23	0.04
	Retail	0.20	0.40	0.21	0.41	0.62
	Transportation and Telecommunication	0.02	0.15	0.05	0.23	0.01
	Services and Administration	0.04	0.20	0,05	0.21	0.67
	Social Work, Community and Personal Services	0.17	0.38	0.13	0.33	0.05
Observations		224		261		

Notes: This table reports basic summary statistics and tests of the difference of means between a comprehensive set of pre-treatment observable variables across treatment and control groups. The variables associated with gender, area of residence, education, and activity sector are dummy variables.

Table 3
Impact on Total Workers

Workers	(1) Total	(2) Male workers	(3) Female workers
Year 2017	0.337*** (0.095)	0.169** (0.075)	0.165*** (0.053)
Treated x Year 2017	0.314** (0.140)	0.201* (0.110)	0.130* (0.078)
Observations	955	963	964
Adjusted R-squared	0.709	0.712	0.685
Entrepreneur fixed effects	YES	YES	YES

Notes: This table reports the estimates from equation (1). Outcome variables are the total number of workers (Total), the number of male workers (Male workers), and the number of female workers (Female workers). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 4
Impact on Formally Hired Workers

Formal workers	(1) Total	(2) Male workers	(3) Female workers
Year 2017	0.125** (0.054)	0.086* (0.048)	0.038 (0.040)
Treated x Year 2017	0.226** (0.102)	0.132* (0.070)	0.098* (0.059)
Observations	961	966	967
Adjusted R-squared	0.730	0.762	0.651
Entrepreneur fixed effects	YES	YES	YES

Notes: This table reports the estimates from equation (1). Outcome variables are the total number of formally hired workers (Total), the number of formally hired male workers (Male workers), and the number of formally hired female workers (Female workers). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 5
Impact on Full-Time Workers

Full-time workers	(1) Total	(2) Male workers	(3) Female workers
Year 2017	0.236*** (0.044)	0.027 (0.039)	0.209*** (0.036)
Treated x Year 2017	0.109 (0.092)	0.217*** (0.057)	-0.105* (0.062)
Observations	962	967	965
Adjusted R-squared	0.775	0.827	0.595
Entrepreneur fixed effects	YES	YES	YES

Notes: This table reports the estimates from equation (1). Outcome variables are the total number of full-time workers (Total), the number of full-time male workers (Male workers), and the number of full-time female workers (Female workers). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 6
Impact on Unpaid Family Workers

Unpaid family workers	(1) Total	(2) Male workers	(3) Female workers
Year 2017	0.488*** (0.078)	0.390*** (0.044)	0.098** (0.038)
Treated x Year 2017	-0.461*** (0.087)	-0.364*** (0.063)	-0.098* (0.056)
Observations	960	963	964
Adjusted R-squared	0.671	0.392	0.793
Entrepreneur fixed effects	YES	YES	YES

Notes: This table reports the estimates from equation (1). Outcome variables are the total number of unpaid informal family workers (Total), the number unpaid informal male family workers (Male workers), and the number of unpaid informal female family workers (Female workers). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.