

# **The (Lack of) Boundaries of Small Businesses**

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## **Overview and Motivation**

Small businesses are prevalent both in developed and emerging economies. For example, in the U.S., small firms employ 47.5% of the private workforce (Decker et al., 2014). In addition, 80% of these businesses are owner-operated (2016 Statistics of U.S. Businesses (SUSB)). Furthermore, the Covid-19 crisis and the programs introduced to subsidize small businesses (e.g., PPP that provided \$793 billion in loans and cash grants in the U.S. or the large-public credit guarantee program in Chile) have further shown the importance of understanding these owner-operated businesses.

However, despite the importance of these types of firms, there is little credible evidence for small private companies in developed economies to questions such as: How do small businesses respond in their financing choices to business shocks (e.g., cash flow shocks)? Who takes on the debt, the owner or the business? Is the response different in recessions? Does the type of business entity (e.g., sole proprietorship, LLC) matter in response to business shocks?

In addition, since the seminal work of Coase (1937), extensive theoretical literature has analyzed the determinants and consequences of firm boundaries (e.g., Williamson (1975), Grossman and Hart (1986), Holmstrom and Milgrom (1991)). However, less attention has been devoted to small businesses. In particular, since most businesses are owner-operated, an important question is to understand the "boundaries" of small businesses, for example, how are owners' and businesses' finances interrelated.

In this project, we study the "boundaries" of small businesses by looking at how small businesses and their owners' balance sheets are connected by estimating their responses to cash windfalls.

To provide credible estimates, first, in our research design, we will exploit a setting that provides a randomized assignment of cash to small businesses (i.e., retailers that sell jackpot-winning tickets in the U.S.). In particular, we exploit the bonuses that retailers earn when selling jackpot-winning lottery tickets, usually a percentage of the jackpot prize. Second, we compile a dataset that allows us a holistic view of small businesses and their owners to shed light on the interconnection of the balance sheet of the businesses and the entrepreneur (which are jointly determined in equilibrium).

## **Methodology**

### **- Research Design**

Our research design exploits the bonuses that in the U.S. retailers earn when selling jackpot-winning lottery tickets (Cespedes et al. (2021)). To incentivize retailers to sell lottery tickets, state lottery programs provide bonuses to retailers that sell jackpot tickets (i.e., prizes of at least \$40 million), usually as a percentage of the jackpot prize. Thus, the setting provides quasi-experimental variations in winning ticket bonuses of \$150,000 on average. This project's empirical design exploits the fact that the amount of the retailer's bonus is randomly assigned conditional on selling a winning jackpot. This variation will allow us to identify how the liabilities and the assets of these businesses and their owners change depending on the treatment intensity (i.e., bonus size).

The empirical specification is similar to that of individual-level studies that exploit lottery prizes (e.g., Imbens et al., 2001; Hankins et al., 2011). We will estimate the impact of receiving a winning ticket bonus through the following Equation:

$$y_i = \alpha_t + \tau_g + \beta \ln(\text{Bonus}_i) + \gamma X_i + \varepsilon_i \quad (1)$$

Where  $y_i$  is the outcome variable for retailer  $i$  within a given number of years after selling the winning ticket;  $\alpha_t$  is a set of fixed effects for the year in which the retailer sold the jackpot ticket (cohort fixed effects);  $\tau_g$  is a Powerball dummy variable;  $\ln(\text{Bonus}_i)$  is the log of one plus the winning ticket bonus that retailer  $i$  receives after taxes; and  $X_i$  is a set of retailer pretreatment covariates, such as the number of years in business, the number of connected establishments, real properties ex-ante, tax liens ex-ante, and  $\ln(\text{Median income})$  ZIP code.

The identifying assumption of the research design is that, conditional on selling a winning jackpot ticket and receiving the respective bonus, the retailer earns a commission independent of all the other initial variables that affect firm outcomes. In untabulated results, we find evidence that supports the identifying assumptions. In particular, in a randomization test, we find that the magnitude of the bonus is not correlated with retailers' pretreatment (or local and state) characteristics.

Finally, the empirical specification of the owner-level analysis is similar to Equation (1).

## **- Setting**

Our empirical setting offers us a representative sample of the retail trade industry in the U.S. The small businesses in our sample are geographically diverse and cover various types of retailers. Moreover, the retail industry is a nontrivial proportion of small businesses, accounting for around

13% of the total small firms (SUSB), and is ranked second in the list of industries for entrepreneurs (Lazear (2004)).<sup>1</sup> In addition, in untabulated results, the business owners in our sample are comparable to the average entrepreneur in small businesses along dimensions such as gender, age, and business experience (Survey of Business Owners (SBO)). Although the entrepreneurs considered in our sample do not individually generate high impact or glamour as transformational entrepreneurs (Schoar, 2010), understanding the economic behaviors of these individuals is appealing given the prevalence of small businesses and the important implications for the greater entrepreneur population who collectively support a substantial share of employment and economic growth.

### **- Data Collection**

Concerning the data challenges, we hand-collected information on all retailers that sold winning Powerball (PB) and Mega Millions (MM) tickets from 2002 to 2021. Next, we complemented this data with public records information at the business and owner levels.

The final part of our data process is to match our current dataset with credit bureau data at the retailer and owner levels using the Consumer and Small Business Credit Panel from Experian. The proceeds of this grant, along with other grants and the research budgets of each of the authors, will allow us to acquire credit bureau data at the retailer and owner levels.

Overall, our new data set and empirical setting are well-suited to provide novel evidence for our research questions. In particular, our dataset will allow us to track the outcomes of both the owner and the existing business to obtain a comprehensive view of the interconnections of the balance sheet (e.g., financing decisions) of small businesses and their respective owners.

### **Contribution**

Our project bridges two strands of the literature that separately study the decision-making of entrepreneurs (e.g., Holtz-Eakin et al. (1994), Blanchflower and Oswald (1998), Hamilton (2000), Jensen et al. (2004), Andersen and Nielsen (2012), Bellon et al. (2019), and Barrot and Nanda (2020) and small businesses (e.g., De Mel et al. (2008), Karlan et al. (2015), and McKenzie (2017)). The main contribution of this project is that we will shed light on how the businesses' and owners' finance are connected. This topic is of interest since small business owners are not well-

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<sup>1</sup> According to Lazear (2004), the dominant industries that incorporate self-employed work are, in order, construction, retail trade, professional services, business services, and real estate.

diversified and typically hold much of their wealth in their businesses and depend on their firms for their labor incomes.

Our paper is also related to recent studies that have conducted surveys of small businesses and their owners in the early phases of the Covid-19 crisis (e.g., Bartik et al. (2020); Bartlett III and Morse (2020); Humphries et al. (2020), Kim et al. (2020)). We differ from these papers by providing novel evidence on how small businesses' and owners' balance sheets interrelate and how these effects change in different states of the economy. Finally, this project is related to Cespedes et al. (2021), which studied windfalls' impact on small business growth. Our project will add to the literature by providing novel evidence of owners' and businesses' financing decisions.

### **Expected Results**

Some of the expected findings are the following: how do small businesses respond in their financing choices to business shocks? Our prior in this case is that following a positive windfall to the business, we will see a reduction in small business debt on their balance sheet and the owners' balance sheet. However, we expect that this "pass-through" of the shock will depend on the firm's size (i.e., for bigger firms, we expect a lower or no reaction to how owners' debts from businesses shock). In addition, we expect this relationship to be strong in recessions relative to normal times. Relatively, to whether the type of business entity (e.g., sole proprietorship, LLC) matters, we expect to find substantial heterogeneity in how the firm and the owners respond across business types. For example, for sole proprietorships, we expect a close link between the shock response to owners and their businesses, which is probably not the case with LLL.

In the end, we expect these results to inform models of entrepreneurial entry and firm dynamics. Finally, we also expect some of the findings to not align with our priors (in a previous paper in the same setting, some of the results were surprising to us).

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