

Abstract

Essays in Public Economics

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This dissertation is a collection of essays written in preparation for the degree of Doctor of Philosophy in Economics. This abstract corresponds to Chapter 5 in Part 2, *On Behavioral Responses to Taxation*, that analyzes how the behavior of private agents responds to tax incentives. In Chapter 5 we study how entrepreneurs organize their firms and how taxation might influence this choice. We focus on the dynamic choice of organizational form for startup firms and we quantify the impacts of tax and non-tax advantages of incorporation. Results from estimating a dynamic discrete choice model show that static models underestimate fixed costs of reorganization while overestimating the non-tax advantages of incorporation. The revised estimates also lead to a substantive downward revision of the risk-taking incentive inherent in the flexibility to change organizational forms.

Executive Summary

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This summary reviews the Dissertation written in preparation for the degree of Doctor of Philosophy in Economics. The Dissertation consists of essays that are grouped into three parts that address three areas of public economics. This review first provides an overview of the papers in each part and proceeds to a more detailed summary of Chapter 5, on the effects of taxation on the effect of entrepreneurs' organizational choice.

Dissertation Summary

Part 1, *On the Effects of Government Spending at the Local Level*, includes two chapters co-authored with Philippe Wingender that analyze the effects of government spending at the local level. These chapters propose and exploit a new identification strategy to measure the causal impact of government spending on the economy. In Chapter 2 we use this strategy to estimate the short-term effects of government spending at the local level. Our estimates imply that government spending has a local income multiplier of 1.88 and an estimated cost per job of \$30,000 per year. In Chapter 3 we analyze the economic incidence of sustained changes in federal government spending at the local level. We develop a spatial equilibrium model to show that when workers value publicly-provided goods, a change in government spending at the local level will affect equilibrium wages through shifts in both the labor demand and supply curves. Our estimates of this model conclude

that an additional dollar of government spending increases welfare by \$1.45 in the median county.

Part 2, *On Behavioral Responses to Taxation*, includes two chapters that analyze how the behavior of private agents responds to tax incentives. In Chapter 4 we study how individuals respond to non-linear taxes. We use a laboratory experiment to document and characterize a behavioral deviation from the standard economic model and argue that this deviation from the rational benchmark has important consequences for the welfare analysis of non-linear pricing schemes and non-linear taxes as well as for policies that advocate the provision of information regarding marginal incentives. In Chapter 5 we study how entrepreneurs organize their firms and how taxation might influence this choice. We focus on the dynamic choice of organizational form for startup firms and we quantify the impacts of tax and non-tax advantages of incorporation. Results from estimating a dynamic discrete choice model show that static models underestimate fixed costs of reorganization while overestimating the non-tax advantages of incorporation. The revised estimates also lead to a substantive downward revision of the risk-taking incentive inherent in the flexibility to change organizational forms.

Part 3, *On Applied Econometrics*, is composed of a single chapter co-authored with Charlie Gibbons and Mike Urbancic and addresses the use of fixed effects in applied econometrics. Though common in the applied literature, it is known that fixed effects regressions with a constant treatment effect generally do not consistently estimate the sample-weighted treatment effect. Chapter 6 demonstrates the extent of the difference between the fixed effect estimate and the sample-weighted effect by replicating nine influential papers from the *American Economic Review*.

A Summary of Chapter 5: Taxation, Entrepreneurship, and the Choice of Organizational Form

This chapter studies the organizational form (i.e. partnership, C-corporation, etc..) dynamics of small and nascent firms. The choice of organizational form is an important margin as it determines whether firms have access to non-tax advantages such as limited liability and whether entrepreneurs can take advantage of tax rules that may reduce their personal income liability. To the extent that entrepreneurship should be encouraged through public intervention, researchers have recognized that these incentives can be provided via different rules of organizational forms. However, there has been a lack of theories that tie specific market failures to the use of organizational forms as the means of providing these incentives. This chapter develops two models where entrepreneurs are unable to capture the value of a positive externality to the economy and tie these specific market failures to policies that resemble organizational forms.

The choice of organizational form is an often-overlooked business decision. However, a thorough understanding of this characteristic is required to gain a better understanding of a number of important issues. First, the dynamics of organizational form are intrinsically linked to the distribution of gains, losses, and ensuing fiscal obligations across firms (e.g., Altshuler, Auerbach, Cooper, and Knittel, 2008). Second, the real option of reorganization is an incentive that encourages risk-taking and entrepreneurship (e.g., Poterba, 2002, Cullen and Gordon, 2006, 2007). Understanding the economic value of this option for the entrepreneur can help design incentives that may lead to the positive externalities associated with entrepreneurship. Third, individuals whose economic activity does not possess this positive externality can avoid taxation by choosing an organizational form that minimizes their tax obligations (e.g., Saez, Slemrod,

and Giertz, 2012). A better understanding of the fiscal tradeoff in providing incentives for entrepreneurship can improve the design of tax systems that account for this endogenous nature of the tax base with respect to tax parameters. Finally, the choice of organizational form determines whether firms can take advantage of myriad other tax incentives that may lead to increased understanding in the dynamics of research, investment, and employment (e.g., Davis, Haltiwanger, Jarmin, Krizan, Miranda, Nucci, and Sandusky, 2006).

The first model we propose analyzes the aggregation of information about a potential investment opportunity in a context of social learning. Entrepreneurs produce a positive externality whenever their actions reveal their information to future potential entrepreneurs. By refining the choice set of entrepreneurs to include different organizational forms, a system of separate personal and corporate income taxes can lead to an increase in social welfare, a more efficient aggregation of information, and a lower probability of informational cascades.

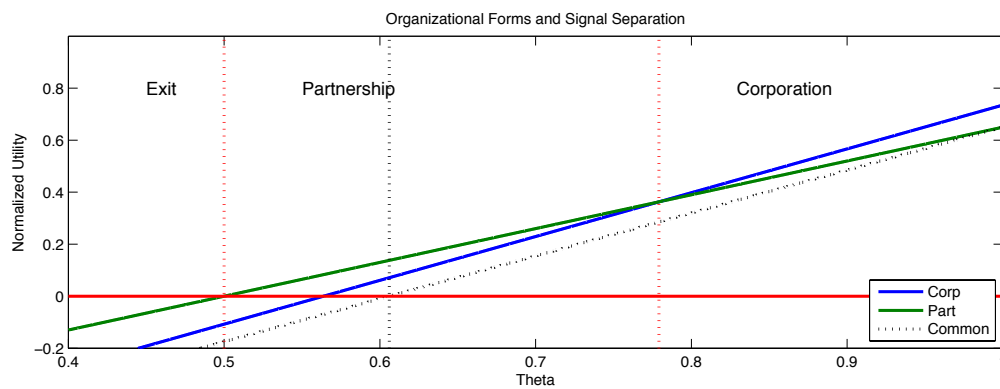


Figure 1 - Signal Separation via Organizational Form

In this model, we parametrize an entrepreneur's private information about the profitability of investing in a given industry by the expected value of the investment and assign it the Greek letter Theta, where a higher values

means a higher expected return and where a θ of 0.5 means that the enterprise would be profitable. Social learning occurs when entrepreneurs reveal their private information to other entrepreneurs who observe their actions, but not their information. In this model, we allow entrepreneurs to observe whether previous entrepreneurs invested in a given industry and what organizational form they chose.

The graph above displays the intuition of the main result of this model. In the common taxation regime, denoted by the dotted line, entrepreneurs decide to invest whenever their utility from doing so is positive, that is, whenever θ is above 0.6. However, if θ is between 0.5 and 0.6, entrepreneurs do not invest even though the investment might be profitable. The problem of herding in social learning occurs whenever a second entrepreneur received a private signal that θ is high but, observing the choice of the first entrepreneur and taking into account the information he infer from the first entrepreneur's choice, decides not to invest. In this model, the first entrepreneur's choices fail to transmit information if θ is between 0.5 and 0.6 under the common taxation regime.

Under a taxation regime that separates corporate and personal income, however, by revealing not only the decision to invest but also the type or organizational form, the information can be efficiently transferred and the problem of herding in social learning can be avoided. This result is novel in that it gives a new rationale for having a dual taxation system that discriminates between personal and corporate taxation as a means to solving an informational inefficiency problem that might limit the amount of entrepreneurship we observe in the economy.

The second model considers a situation where an entrepreneur has the potential of producing an innovation that can reduce production costs. Due to a failure of property rights, the entrepreneur is unable to capture the full

value of the innovation. This leads the entrepreneur to close the firm and forgo the potential innovation at an inefficiently early time. A policy is thus proposed where entrepreneurs are compelled to remain in operation via a combination of high personal tax rates that reduce the relative desirability of alternative employment and low corporate tax rates that increase the potential value of enterprise in the future.

The nature of the externalities we analyze are dynamic in that the socially optimal choice for the entrepreneur to close the firm or switch organizational forms differs from the entrepreneur's choice in the timing of this decision. Focus is given to the tax advantages to entrepreneurs from the different organizational forms and to dynamic considerations that can lead a firm to select a form of organization that does not take full advantage of static tax preferences. The project develops a theoretical model that challenges a number of results in the literature including the role of fixed costs and the impact of taxation on the choice of organizational form.

A firm's organizational form determines how the venture's gains and losses are affected by tax parameters and whether corporate or personal income tax rules are applicable. The flexibility to choose and later modify legal forms is a real option that indirectly incentivizes the creation of firms but may be subject to costs of reorganization. The object of this project is to quantify the effect that different forms and levels of taxation as well as costs of reorganization have on the dynamics of organizational form. In particular, this chapter analyzes the choice of legal form taking into consideration dynamic and uncertainty considerations as well as fixed costs of changing organizational form.

An empirical model shows that estimations that ignore dynamic aspects of the choice of organizational form lead to downwardly-biased estimates of the fixed costs of reorganization, upwardly biased estimates of

the non-tax advantages of incorporation, and, in turn, overestimations of the risk-taking incentive inherent in the flexibility to change organizational forms. Estimates from a dynamic discrete choice model using the Kauffman Firm Survey provide revised calculations of these important parameters.

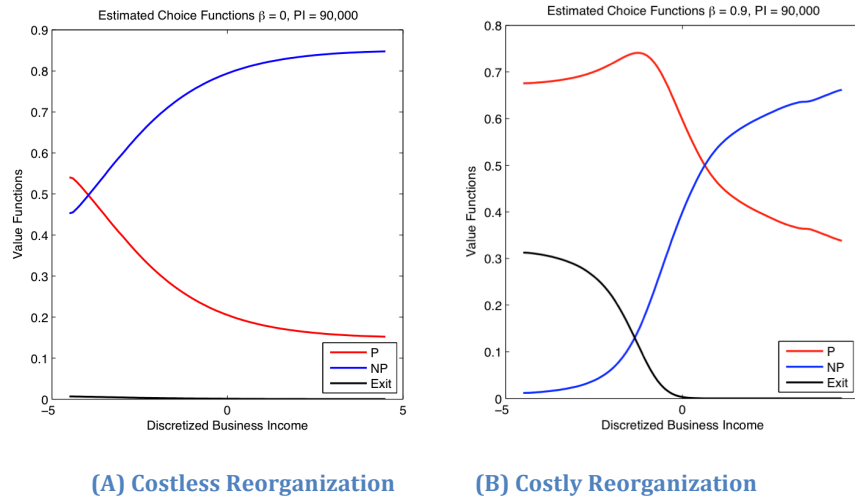


Figure 2 - Empirical Estimates of Reorganization

The main result from the empirical estimation can be observed in Figure 4. The two panels of the figure present the estimated transition probabilities between three outcomes of nascent firms: exiting, organizing in a pass-through form (denoted by P, e.g. partnership), or organizing in a non-pass-through form (denoted by NP, e.g. corporation). The first panel presents estimates that assume there are no reorganization costs. This panel presents very simple dynamics where a significant number of firms organize as corporations (blue line) even for low values of business income. These estimates correspond to the extant view that ignores costly reorganization and has the drawback that it misses important features of the data, namely that the probability of firms exiting drops sharply for low values of business income and that firms tend to initially organize as partnership if they expect to have business losses in initial years. The second panel captures this intuition first by having a sharp drop in the probability of exiting, by having an initially high number of firms in the partnership form (red line) and by

having a sharp rise in the number of firms organizing as corporations (blue line) as business income increases. By providing richer dynamics of how firms choose their organizational form, the dynamic estimation is then used to quantify the value of tax incentives associated with these organizational forms.

Conclusions

This chapter proposes a view of the choice of organizational form that focuses on the role of uncertainty, dynamics, and fixed costs of reorganization. A theoretical model shows that, relative to the case without costs of reorganization, the value of the firm-creating incentive is smaller, the effect of taxes on the timing of reorganization is larger, and the foregone tax incentives from delaying incorporation is larger. In addition, the model shows that smaller costs of reorganization can rationalize the distribution of organizational forms. Estimates from a dynamic discrete choice model suggest that excluding dynamic considerations in the estimation of the fixed costs of organization and non-tax advantages of incorporation may lead to biased estimates. These estimates also have large impacts on the estimated value functions, transition rates, and the risk-taking incentive for entrepreneurship inherent in the flexibility of reorganization. By considering these dynamic issues, this chapter improves our understanding of the effects of taxes on entrepreneurship and provides revised estimates of meaningful policy-relevant parameters.

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