RESEARCH PROPOSAL:
Entrepreneurs' Wealth and Firm Dynamics

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Project Description

Many private-sector workers are employed by small, privately held firms.[1] Despite their relevance, so far economists have devoted little – but increasing – attention to how privately held firms (and especially those held and managed by the same person) finance themselves, respond to economic shocks and compensate their workers. This is for the simple reason that data on firms' financial status, ownership and workers' compensation are typically available only for publicly traded firms, which are often mandated to disclose such information by law. In contrast, data on small and micro enterprises are rare and less rich than those on publicly traded firms.[2]

My goal is to study the relationship between the private wealth of the owner and the way economic shocks affect small and privately held firms' and workers' outcomes. The idea that the private assets of the entrepreneur can affect business dynamics not new (see for example Gentry and Hubbard [2004]), however there is scant empirical evidence on the subject because it is rare to have joint information on the wealth of the entrepreneurs and the firm,[3] but I am in a unique position to investigate this topic thanks to the access to a rich set of Norwegian administrative data. Indeed, the data enable me to link high quality matched employer-employee data and firm balance sheets, together with information on the wealth of every shareholder of every Norwegian firm from 2004 to 2013.

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[1] In 2012, 50% of all private sector workers in the OECD countries were employed by firms with less than 50 employees. A similar figure holds for Norway, the country we focus on in this paper. In the United States, approximately 20% of the private sector workers are employed by firms with less than 20 employees and 40% by firms with less than 100 employees (see `http://www.census.gov/data/tables/2013/econ/susb/2013-susb-annual.html`). The figures are similar if we consider payroll rather than employees.

[2] Most existing studies on private firms look at the role of external investors, see for instance Lerner and Schoar [2004] and Kerr et al. [2011]. In contrast, in this project, I am primarily interested in entrepreneurs who finance their firm through their own wealth.

[3] Some examples looking at entrepreneurs' wealth and likelihood of remaining self-employed include Holtz-Eakin et al. [1993] and Cressy [1996]

Using the data, I will investigate questions such as: do private wealth improve firm performance? Namely, do wealthier entrepreneurs manage firms that survive longer and display higher profitability? Are the workers of such firms compensated differently? Do entrepreneurs have higher chances to reach the top of the wealth distribution?

Preliminary results that suggest that private wealth has a relevant impact on business performance. Since one can expect to find positive correlations between wealth and firm performance that are spuriously driven by other factors, I also developed a preliminary identification strategy that allows me to get closer to establishing the sign and magnitude of the causal relationship between wealth and firm outcomes. In the remainder of the proposal, I first describe my preliminary results and then outline how I intend to develop further my project, both in terms of identification and questions that I intend to explore.

Some Preliminary Results

So far, the results suggest that firms owned by wealthier entrepreneurs are: (1) founded larger, (2) perform better over their lifetime, and (3) display less sensitivity to sector specific shocks (implying that both firm and worker outcomes are less volatile, conditional on sector, size, age and many other observable firm characteristics).

To isolate the causal effect of wealth on firm performance I use an instrumental variable strategy. My instrument is what can be called a simulated instrument. More specifically, I fixed the portfolio composition of an entrepreneur 10 years before the firm started, and compute the wealth growth in the following five years only induced by aggregate changes in returns to financial assets. This growth does not come from decisions such as saving and portfolio re-balancing that might be correlated with the investment ability of the entrepreneur. I then use this exogenous measure of wealth to instrument for the actual wealth of the entrepreneur.

Table 1 shows some of the initial differences across firms founded by entrepreneurs in the top and bottom third of the wealth distribution. The comparison reveals some interesting patterns. In the first year of operations, firms founded by wealthy entrepreneurs are 9.3 percentage points less likely to operate in a low capital intensive sector (I follow the classification in Hurst and Lusardi [2004]), their initial book value of assets is more than twice that of the other group and have more employees. Moreover, the share of equity used to finance the assets of the firm is 60 percent higher for firms founded by wealthy entrepreneurs (21 percentage points against 13 percentage points).

As an illustration of the differences in performance, I find that the return on assets for firms owned by entrepreneurs in the top third of the wealth is 11 percentage points higher than the return on assets invested in firms owned by entrepreneurs in the bottom tercile of the wealth distribution, one year after the firm was founded. This difference decrease just slightly (to 9 percentage points) after eight years of firm life.

Finally, I have also investigated whether entrepreneurs with deeper pockets are more likely to smooth external shocks to their firms using their personal wealth: if this is the case, this "buffer stock effect" would help explaining the results in the first part of the analysis. After identifying

the shocks as unexpected percentage changes in revenues (in a similar spirit of Guiso et al. [2005] and Lagakos and Ordonez [2011]), I show that wealthier entrepreneurs "insure" their firms against shocks. For example, upon experiencing a negative shock, firms owned by entrepreneurs in the top quartile of the wealth distribution are 2pp less likely to shut down than firms in the bottom quartile. Moreover, the employees of wealthy owners appear to be more insured against firm specific shocks. Figure 1 shows that the expected earnings growth of employees working for firms that experienced positive versus negative revenue growth tend to be more different when the firms' owner is the bottom quarter of the wealth distribution than in the top (13 percentage points against 7 percentage points).

More preliminary results are available on my website.

Further Work

To develop my project, I plan to move on two fronts.

Identification To improve the identification of the effects of wealth on firm performance, I requested access to three additional sets of data. First, I will have access to the IQ measurement that is available in Norway for all the educated population: this will allow me to control for the ability of the entrepreneurs in a more precise way and to reduce the concerns for the ability bias that can affect my estimates. Second, I will get access to complete inheritance data, which I plan to use to isolate exogenous variations in wealth while the firm is alive: I plan to compare the performance of the firm before and after an inheritance is received. As the amount of the inheritance could be correlated with genetic ability, or the decision of favoring the offspring expected to make good use of the family resources, I plan to interact that amount with the number of siblings, which should give me extra variation within level of family wealth. Finally, I will access data on lottery winnings, which will provide me with an alternative source of variation in wealth to exploit in my analysis.

Further Questions The first piece of extra research that I plan to develop consists in the comparison of firm performance before and after a big shock in wealth: does such a shock affect the performance of the firm? Does it reduce the sensitivity of the firms to sector level shocks? The second avenue that I plan to explore is about the connection of entrepreneurship and inequality. In another paper with coauthors [Fagereng et al., 2016], I document that there is substantial heterogeneity in the returns to assets even within homogeneous asset classes. Wealthier individuals are found to get higher returns from their assets. As one of the asset classes I observe form the Norwegian tax data is precisely the value of holding in private firms, I will try to establish whether these higher returns reflect the ownership of better performing firms. As I can observe most individuals for long periods of time, I will investigate whether their entrepreneurial activities act as an engine of social mobility, or whether the extent to which firms managed by wealthier individuals perform better makes entrepreneurship an activity that increases wealth inequality.

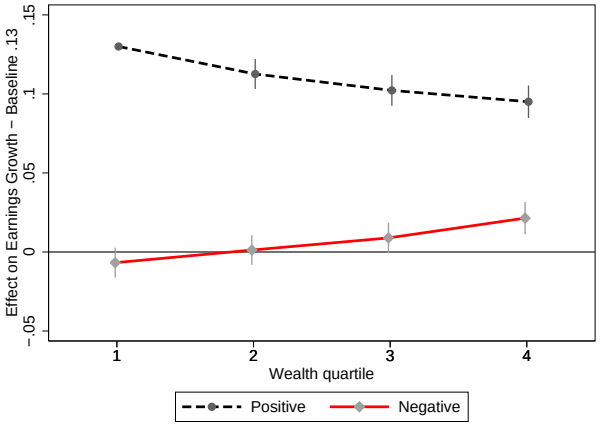
Table 1: Differences across firms founded by households with different private wealth

	Bottom 1/3	Top 1/3	Diff
Low cap.int. sector	0.39	0.30	0.093***
			(0.0086)
High cap.int. sector	0.55	0.61	-0.057***
			(0.0090)
Professional sector	0.057	0.093	-0.036***
			(0.0048)
Assets (1000)	302.9	667.6	-364.7***
			(62.4)
Assets (log)	11.9	12.4	-0.46***
			(0.021)
Equity/assets	0.13	0.21	-0.080***
			(0.0092)
Employees	4.84	5.22	-0.38***
			(0.10)

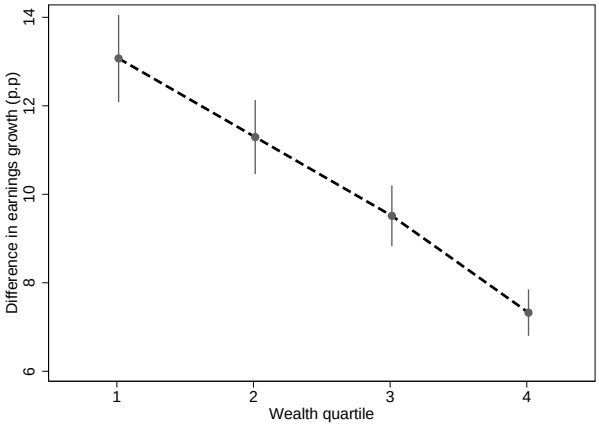
The summary statistics refer to firms whose main owner is a household in some year between 2005 and 2013, holds at least 10% of the firm' equity and has a managerial role in the board of the firm. The table highlights the differences across wealth groups: wealth is computed five years before the firm's start up year. Specifically, we compare the means of the summarized variables across entrepreneurs in the bottom third and in the top third of the wealth distributions

Figure 1: Employees outcomes and shocks to the firm revenues

(a) Earnings growth



(b) Earnings growth - difference



The graph plots the estimated β_d and δ_d (panels a and c) coefficients and their differences $\delta_d - \beta_d$ (panels b and d) in equation

$$
\begin{aligned}
y_{ijt} = \alpha + \sum_{d=1}^{4} \beta_d \mathbf{1}\left\{\Delta \hat{\epsilon}_{jt-1} < 0\right\} \mathbf{1}\left\{Quartile_{o(j),t} = d\right\} + \\
+ \sum_{d=2}^{4} \delta_d \mathbf{1}\left(Quartile_{o(j),t} = d\right) + X_{jt}\gamma \\
+ Demographics_{it}\zeta + u_{ijt} \qquad (1)
\end{aligned}
$$

They represent changes in individual earnings growth in response to firm level shocks of different sign, across the quartile of the owner's wealth. Wealth is computed excluding the value of the share of the firm directly held by the owner's household. The sample only includes firms whose main owner also seats in the board and has a managerial position. Only workers who received payments from the firm in year t and year $t-1$ are included (where t is the year of the shock).

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Curriculum Vitae

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EDUCATION

Ph.D. Candidate in Economics, Stanford University, Expected Completion: Spring 2017

M.S. in Economics, Bocconi University (Italy), 2008-2010 (Summa cum Laude).

Bachelor in Economics, Bocconi University (Italy), 2005-2008 (Summa cum Laude).

REFERENCES

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RESEARCH AND TEACHING FIELDS

Primary field: labor economics and entrepreneurship
Secondary fields: household finance

TEACHING EXPERIENCE

Spring 2016	Teaching Assistant - Prof. Luigi Pistaferri, Stanford University, Econ 102C (Undergraduate – Advanced Topics in Econometrics).
Spring 2015	Teaching Assistant - Prof. Mark Duggan, Econ1 (Undergraduate – Introductory Economics)

Winter 2015	Teaching Assistant - Marcelo Clarici Arias, Econ1 (Undergraduate – Introductory Economics)
Spring 2014	Teaching Assistant - Prof. Luigi Pistaferri, Stanford University, Econ 102C (Undergraduate – Advanced Topics in Econometrics).
Fall 2013	Teaching Assistant - Prof. Joseph Romano and Prof. Han Hong, Stanford University, Econ 270 (Graduate Econometrics – Core Sequence).
Spring 2011	Teaching Assistant - Prof. Margherita Cigola, Bocconi University, Quantitative Methods for Economics and Social Sciences.

RELEVANT POSITIONS

Fall 2012 - present	Research Assistant - Prof. Luigi Pistaferri (Stanford University)
Spring 2011	Research Assistant at Fondazione Rodolfo Debenedetti (frdb.org)
Fall 2010	Research Assistant - Prof. Giovanni Peri (UC Davis)
Fall 2009	Research Assistant - Prof. Vincenzo Galasso (Bocconi University)

SCHOLARSHIPS, HONORS AND AWARDS

2016-17	B. F. Haley and E.S. Shaw Fellowship for Economics (through a grant to the Stanford Institute for Economic Policy Research)
Spring 2016	Outstanding Teaching Assistant Award (granted by the Stanford Department of Economics, Undergraduate class, Advanced Topics in Econometrics)
Fall 2013	Outstanding Teaching Assistant Award (granted by the Stanford Department of Economics, Graduate class, Econometrics Core Sequence)
2011-13	Stanford Graduate Fellowship
2008-09	Bocconi Merit Award

PUBLISHED AND FORTHCOMING PAPERS

Heterogeneity in Returns to Wealth and the Measurement of Wealth Inequality
A. Fagereng, L. Guiso, and L. Pistaferri, *American Economic Review*, P&P (May 2016)

Lacking a long time series on the assets of the very wealthy, Saez and Zucman (2015) use US tax records to obtain estimates of wealth holdings by capitalizing asset income from tax returns. They document marked upward trends in wealth concentration. We use data on tax returns and actual wealth holdings from tax records for the whole Norwegian population to test the robustness of the methodology. We document that measures of wealth based on the capitalization approach can lead to misleading conclusions about the level and the dynamics of wealth inequality if returns are heterogeneous and even moderately correlated with wealth.

RESEARCH PAPERS

Entrepreneurs' Wealth and Firm Dynamics
Job Market Paper

Owners of privately-held firms typically invest a large amount of their personal wealth onto their firm. In principle, the wealth not invested in the firm may be used as a buffer to smooth shocks to the firm. Do we observe such buffer stock behavior among privately-held firm owners? Does such buffer stock behavior affect the firm performance? To address these questions, we use matched employer-employee data, together with information on the assets held by every shareholder of every Norwegian firm from 2004 to 2013. We document three facts: (1) Wealthy entrepreneurs start larger businesses and in sectors that requires high initial capital investment. (2) Entrepreneur's private wealth improves firm performance, lowers the exit rate, and increases profitability. (3) Firms owned by wealthy shareholders are less sensitive to revenue and value added shocks in many dimensions. Specifically, at the top of the owner's wealth distribution, survival rate, employment growth and employees' wage growth react less to the shocks than at the bottom. We discuss a model of the firm with costly external financing that rationalizes our results.

Heterogeneity and Persistence in Returns to Wealth
with A. Fagereng, L. Guiso, and L. Pistaferri

We provide a systematic analysis of the properties of individual returns to wealth using twenty years of population data from Norway's administrative tax records. We document a number of novel results. First, in a given cross-section, individuals earn markedly different returns on their assets, with a difference of 500 basis points between the 10th and the 90th percentile. Second, heterogeneity in returns does not arise merely from differences in the allocation of wealth between safe and risky assets: returns are heterogeneous even within asset classes. Third, returns are positively correlated with wealth. Fourth, returns have an individual permanent component that accounts for 60% of the explained variation. Fifth, for wealth below the 95th percentile, the individual permanent component accounts for the bulk of the correlation between returns and wealth; the correlation at the top reflects both compensation for risk and the correlation of wealth with the individual permanent component. Finally, the permanent component of the return to wealth is also (mildly) correlated across generations. We discuss the implications of these findings for several strands of the wealth inequality debate.

The Cyclicality of Employment Risk
with E. Blass-Hoffmann

We study how idiosyncratic earnings risk evolves over the business cycle in Italy and in the US. We distinguish between two sources of risk to annual earnings growth: changes in employment time (number of weeks of employment within a year) and changes in weekly earnings. Shocks to employment generate the tail distribution of annual earnings growth and account for the increased risk in recessions. In particular, an increase in the rate of separation and a decrease in the rate of hiring are responsible for the skewed annual earnings growth distribution observed in recessions. In contrast, the cross-sectional distribution of weekly earnings growth is relatively stable over the business cycle and exhibits little skewness. Thus, models that rely on cyclical idiosyncratic risk, should focus on cyclical employment risk rather than on cyclical wage risk.

Does Inventor Mobility Boost Knowledge Diffusion? Evidence from Patents Citations
with Pietro Tebaldi

R&D spillovers across firms have long been seen as a cause for faster innovation, with positive effects on productivity and growth (Griliches [1992], Bernstein and Nadiri [1988, 1989], Romer [1994]). Does inventors' mobility increase these spillovers? To answer this question, we develop two alternative statistical tests. We exploit the time variation in patents' citations and transfers of inventors between Californian firms in the period 1980-2008. Our results provide strong evidence that, following the move of one inventor from one firm to another, the R&D activities of the two firms become more interconnected.

Time to completion and labor market outcomes: Does the early bird really get the worm?
with Raffaele Saggio

This paper investigates how time to college completion affects subsequent labor market outcomes. We use a recent reform in which the Italian government consolidated the teaching offer in all universities in an attempt to decrease time to graduation. The reform was successful in reducing the proportion of students graduating late from a second level degree, but worsened a variety of post-graduation outcomes including earnings. Using this policy change as an instrumental variable, we find that late graduation is associated with better after graduation labor market outcomes. To disentangle the human capital effect of late graduation from working experience accumulated while still in college, we use revealed preferences restrictions on a student choice model. We believe that our findings have implications for the current policy debate as national governments are increasingly investing in public programs explicitly aimed at reducing time to graduation.

OTHER RESEARCH IN PROGRESS

Shifts in The Beveridge Curve during Severe Recessions
with Andres Drenik

Measuring familism in Italian professions
with Michele Pellizzari, Gaetano Basso, Andrea Catania, Giovanna Labartino and Paola Monti

Temporary Contracts and Wages: an IV Quantile Regression Analysis
MS Thesis