Internet Appendix for **Entrepreneurial Wealth and Employment: Tracing Out the Effects of a Stock Market Crash**[*]

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Abstract

This document provides supplementary analyses and robustness tests, discussions, and explanations, which are referred to in Ring (Forthcoming). In particular, it provides a detailed discussion and descriptive statistics surrounding the use of different measures of employment growth.

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I General Appendix

A Business Owner Summary Statistics

Table I: Business owner characteristics

	count	mean	sd	p10	p25	p50	p75	p90
log(GFW)	4150	14.42	1.36	12.69	13.56	14.41	15.30	16.11
log(Earnings)	4150	12.88	1.00	11.86	12.73	13.04	13.37	13.70
Age	4150	52.38	10.94	37.00	45.00	53.00	60.00	65.00
Male	4150	0.85	0.36					
HighSchool	4150	0.91	0.28					
College	4150	0.45	0.50					
Owns $>$ 50% of a firm	4150	0.49	0.50					
# Firms owned	4150	1.26	0.70	1.00	1.00	1.00	1.00	2.00

All variables are measured as of end-of-year 2007. The unit of observation is the investor level. # Firms owned counts the number of firms where the owner owns $\geq$ 1% of the shares, including firms that may not be in the analysis sample. College indicates completed higher education. Earnings consist of wage and salary earnings plus any self-employment income.

B Norway and External Validity

This section discusses how Norwegian institutional features may affect the applicability of the findings in Ring (Forthcoming) to other countries.

With respect to the financial crisis, participation in global markets led Norwegian financial markets to see a similarly dramatic decline during 2008–09 as the rest of the world (Bernhardsen et al., 2009). However, the impact of the financial crisis on the real economy was weaker than in many other countries. This feature is typically attributed to the Norwegian government's strong fiscal response (OECD, 2014). Therefore, it seems likely that Norwegian firms faced a smaller reduction in demand, and were therefore were *less* reliant on financing from their owners than firms in worse-hit countries. This is useful to consider given the economic effects of even temporary demand shocks on firms (Hvide and Meling, 2020). It suggests that firms' reliance on owner financing and the real effects of adverse shocks to business owner wealth may be even more important in other settings.

More generally, the Norwegian business environment is comparable to, if not better than, that of most other developed countries (see, e.g., a series of reports by the World Bank that emphasize different features of the economic environment that firms face; World Bank 2006, World Bank 2008, World Bank 2014; and Thoresen et al. (2021) for a discussion of the impact of the wealth tax on firm liquidity). In 2006, for example, Norway placed 9th in the World Bank's overall "Ease of Doing Business" ranking, not far below the United States. In terms of ownership structure, there is a significant presence of family-owned firms, comparable to most other countries (Bøhren, Stacescu, Almli, and Søndergaard, 2019).

While employee turnover rates in Norway are relatively high and comparable to the U.S. (Bhuller, Kostol, and Vigtel 2021), a notable feature is the presence of mandatory notice periods of 1 to 3 months. This implies that workers are entitled to 1 to 3 months of salary after notification of dismissal is given. This lowers the net cost-saving benefit of layoffs relative to at-will employment countries, such as the U.S, and implies a potentially lower pass-through of economic shocks to existing workers in Norway. However, Norway is by no means an outlier in an international context. Firing costs, in terms of weeks of salary that must be provided after a layoff notice, is lower than, for example, Germany, the Netherlands, and the United Kingdom (World Bank, 2008).

Finally, the strong social safety net in Norway is unlikely to drive any of our findings. As in other countries, workers face considerable uninsured income risk (see, e.g., Fagereng, Guiso, and Pistaferri 2017 for a discussion). This is particularly true for entrepreneurs, who receive relatively more income from uninsured sources, such as dividends.

C Sample Construction

I describe the construction of my dataset below.

Holdings of listed stocks. I obtain data on stock portfolios and returns from the Stockholder Register. For listed stocks that are owned by firms, I iterate once on ownership links in order to attribute these shares to private individuals.[1] I use this data to calculate the two-year forward return, $R_{v,t,t+2}$ of an owner's portfolio, based on the owner's portfolio composition at time t (December 31st of that year). I drop a very small number of investors who own a large share ($\geq$0.5%) of a listed stock. Some securities have missing price data; I omit these, and owners who on average hold more than 3 such stocks.

Private firm ownership. I start with the Stockholder Register for limited liability companies, which is on the owner-firm-year level. I exclude all firms that have been or become publicly listed. The owner can be a firm, thus I iterate once on the ownership links to uncover individuals who own firms indirectly. I exclude firms for which I cannot attribute ownership to at least 75% of the shares in a company after this procedure.

Firm employment. I link all employees to firms using the Employer-Employee Register, which is on the firm-plant-employee-year level. I first aggregate all variables to the firm-employee-year level. I then merge this data with the Central Population Register and the National Education database, both of which are on the individual level. I merge this data again, on the firm-individual-year level with the stockholder register to distinguish between regular employees and owner-employees. I then aggregate this data to the firm-year level. I create means of education variables by weighting individuals by the duration of their within-year employment.

Firm-owner-year-level dataset. My main analysis dataset is then created by merging the private firm ownership dataset (firm-owner-year level) with the the employment data in order to establish whether the owner is employed (on the firm-employee-year level); I then obtain firm-level employment characteristics by merging with the firm-year level employment data (described above); I merge this with firm tax records (firm-year level); owner tax returns (individual-year level); owner education (individual level); owner gender and other demographics (individual level); and finally with the dataset on holdings of listed stocks (owner-year level), which is described above.

I obtain industry identifiers for firms from the tax returns, employer-employee register

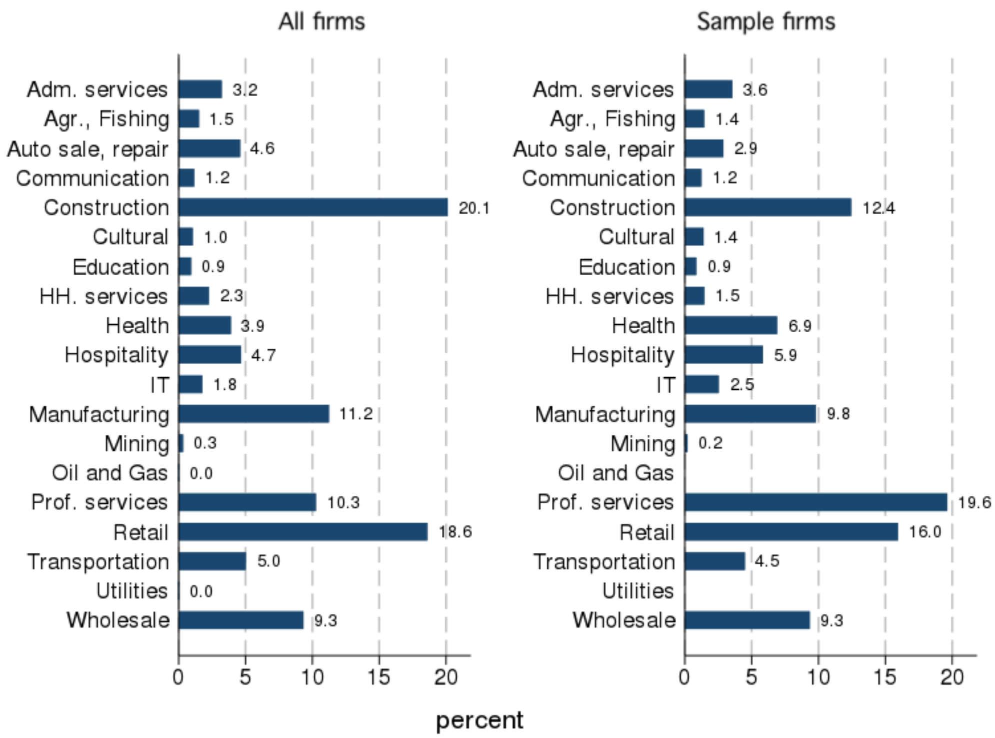
[1] Investors may choose to own stocks and other financial assets through LLCs for tax smoothing reasons.

and the stockholder register, in the form of NACE codes. NACE is the standard industry classification in the European Union and are based on the 4th revision of the U.S. ISIC classification system.

D Industry composition of firms

Figure I: Industry Composition of Firms

The left hand side chart shows the distribution of firms in my data prior to implementing the restriction of a non-trivial stock market exposure. The right-hand-side chart shows the distribution of firms in my analysis sample. These are firms whose owners owned a non-trivial amount of listed stocks as of 2007.



E Firm-Owner Pair Statistics, Long version

Table II: Firm-Owner Pair Statistics, long version

	N	mean	sd	p10	p25	p50	p75	p90
Ownership(%)	4747	0.55	0.34	0.10	0.25	0.50	1.00	1.00
Ownership(%), excl. spouse	4747	0.51	0.33	0.10	0.25	0.50	0.90	1.00
WasOwner2004	4306	0.92						
WasOwner2006	4783	0.97						
OwnViaHolding	4747	0.35						
IncrOwnershipSince2004	3946	0.16						
DecrOwnershipSince2004	3946	0.11						
SameCity	4783	0.71						
SameCounty	4783	0.85						
SiblingOwners	3393	0.21						
ParentOwner	3393	0.17						
ChildOwner	3393	0.12						
Employed	4783	0.60						
EmploymentTenure	2669	11.75	8.47	2.00	5.00	10.00	18.00	24.00
Owner's pay (NOK)	2848	462214	256918	138860	304723	435033	596156	781988
% of Owner's Earnings	2848	0.96	0.16	1.00	1.00	1.00	1.00	1.00
$\text{Dividends}_t > 0$	4783	0.29						
$\text{Dividends}_t/\text{GFW}_t$	4162	0.05	0.12	0.00	0.00	0.00	0.02	0.15
$\text{Dividends}_{t+1,t+2}/\text{GFW}_t$	4162	0.17	0.47	0.00	0.00	0.00	0.14	0.47

OwnViaHolding is a dummy for whether any of the owner's shares were held through another LLC. Dummies for increases and decreases in ownership share are only defined for those who were owners in both 2004 and 2007. For non-100% owners, ParentOwner=1 if the owner is the parent of another shareholder. ChildOwner is for children of another owner. SiblingOwner is similarly defined if one of your siblings is present as an owner. Dividends are recorded as they appear on the owner's tax records. The USD/NOK exchange rate was approximately 6 in 2007.

E.1 Owner Stock Market Exposure and Firm Characteristics

Most of the identifying variation in my analyses will come from firms whose investors have larger stock market exposures. In order to inform my later discussion of external validity, I provide summary statistics of all the firms in my sample (first column), all firms in the analysis sample firms (second column), and by quartiles of stock market exposure firms (4 last columns) in Table III.

I find that sample firms (those whose owners have a meaningful exposure to the stock market in the form of holding listed stocks) are fairly similar to other firms. They tend to be slightly older, have a larger number of owners, fewer employees, and lower past employment growth. These differences in employment growth, however, are decreasing in the owner's stock market exposure.

The lower part of Table III provides the distribution of my continuous treatment variable, $\frac{Gains_{t+1,t+2}}{GFW_t}$ for my entire analysis sample, as well as by quartiles of stock market exposure.

Table III: Stock Market Exposure and Firm Characteristics

Means	All firms	Exposed	By Exposure (Stocks/GFW) Quartile 1	2	3	4
log(Assets)	14.96	14.89	14.98	14.89	14.89	14.81
Leverage (ST)	0.45	0.41	0.37	0.39	0.41	0.45
Leverage (LT)	0.11	0.09	0.07	0.08	0.09	0.11
Profitability	0.07	0.10	0.12	0.11	0.10	0.08
Firm Age	12.38	13.75	14.68	14.35	13.34	12.60
# Owners	2.22	2.76	2.57	2.71	2.84	2.90
# Owner-Employees	1.59	1.57	1.29	1.55	1.76	1.71
# Regular Employees	9.29	6.93	7.09	6.55	6.36	7.74
Empl. Growth$_{05,07}$	0.17	0.11	0.07	0.10	0.12	0.17
Investments$_{06-07}$/Assets$_{05}$	0.11	0.09	0.08	0.09	0.09	0.10

Employment Growth is measured as growth in number of days of within-year employment at the firm. I discuss this measure in greater detail in the Employment section of the paper. Investments include investments in vehicles, plant, property, and other fixed assets. Summary statistics are based on one observation per firm, and stock market exposure is assigned based on the owner with the largest ownership share.

E.2 Stock Market Exposure and Investor Characteristics

The main identifying variation in wealth comes from investors with greater exposure to the stock market. While I control for this exposure in my regression specifications, knowledge of how these investors differ from the less exposed may guide the interpretation of the results.

I find that business owners with positive stock market exposure are wealthier, older, more educated and have lower personal leverage. Once conditioning on positive exposure, I find that these differences are decreasing, except for education, which does not vary with stock market exposure. The observation that stock market investors are wealthier and less leveraged points in the direction that these investors, and likely also their firms, are less ex-ante financially constrained than the over-all population of firms.

Table IV: Stock Market Exposure and Investor Characteristics

Means	All owners	Exposed	By Exposure (Stocks/GFW) Quartile 1	2	3	4
Stocks/GFW	0.02	0.21	0.03	0.08	0.18	0.53
GFW, log	13.01	14.42	15.17	14.61	14.28	13.60
PersonalLeverage	0.44	0.29	0.20	0.26	0.30	0.41
Earnings, log	12.89	12.88	12.84	12.91	12.89	12.87
Age	46.90	52.38	54.87	52.86	51.58	50.21
Norwayborn	0.96	0.96	0.96	0.97	0.95	0.96
Male	0.77	0.85	0.87	0.86	0.84	0.84
HighSchool	0.86	0.91	0.92	0.93	0.91	0.89
College	0.29	0.45	0.46	0.45	0.43	0.45
st.dev($R_{t,t+2}$)		0.24	0.25	0.24	0.24	0.24
$Gains_{t,t+2}/GFW_t$						
sd		0.11	0.01	0.02	0.05	0.17
p1		-0.50	-0.04	-0.08	-0.19	-0.76
p5		-0.28	-0.02	-0.06	-0.14	-0.49
p10		-0.17	-0.02	-0.05	-0.12	-0.40
p25		-0.07	-0.01	-0.03	-0.07	-0.24
p50		-0.02	-0.01	-0.02	-0.04	-0.13
p75		-0.01	-0.00	-0.01	-0.02	-0.06
p90		-0.00	-0.00	-0.00	-0.01	-0.02
p95		0.01	0.00	0.01	0.01	0.04
p99		0.08	0.01	0.03	0.06	0.15

All variables are measured as of 2007. Personal Leverage is the ratio of debt to the sum of financial wealth and tax-implied real-estate wealth. Education dummies (HighSchool and College) are cumulative.

F Additional Summary Statistics

Table V: Firm Investments during 2008–09

	N	mean	sd	p1	p5	p10	p25	p50	p75	p90	p95	p99
Plant /Assets	3671	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.23
Property /Assets	3671	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Total Investments /Assets	3671	0.05	0.13	-0.28	-0.04	0.00	0.00	0.01	0.07	0.18	0.27	0.57

Total investments include net investments in R&D (e.g., acquisitions of intangibles), vehicles (cars, planes, ships, etc.), inventory and machinery, plant, and property. Only firms remaining in the sample until 2009 are included. Investment ratios are defined as the sum of net investments during 2008 and 2009, scaled by 2007 assets. These ratios are censored to be between -1 and 1.

Table VI: Employment Summary Statistics

	N	mean	sd	p10	p25	p50	p75	p90
2007 Employment								
# Owner-employees	4051	1.58	1.30	0.00	1.00	1.00	2.00	3.00
# Reg. employees	4051	6.96	11.99	1.00	1.00	3.00	7.00	15.00
Avg. Age	4051	40.53	10.71	27.00	33.00	40.00	47.40	55.50
Avg. Years of Edu.	4051	13.11	2.06	11.00	11.86	12.75	14.00	16.75
Employment Growth								
EG^D 05-07	3713	0.116	0.481	-0.314	-0.117	0.000	0.208	0.610
EG^D 07–08	4051	0.015	0.369	-0.332	-0.100	0.001	0.106	0.335
EG^D 07–09	4051	0.001	0.458	-0.500	-0.199	0.000	0.154	0.457
EG^D 07–10	4051	-0.028	0.498	-0.643	-0.281	-0.002	0.167	0.499
EG^D 07–10, Symmetric	4051	-0.161	0.593	-0.947	-0.328	-0.002	0.154	0.399
Decomposing EG^D 07–10								
New hires	4051	0.260	0.388	0.000	0.000	0.086	0.392	0.723
Separations	4051	-0.291	0.321	-0.750	-0.500	-0.250	-0.020	0.000

EG^D is days-of-employment-weighted employment growth, as defined in equation (4) in the main paper. The main employment growth measure considers growth from end-of-year 2007 to end-of-year 2010, and is denoted EG^D 07–10.

G Breakdown of firm liabilities

Table VII: Breakdown of firm liabilities

	Firm Age $\geq$ 10		Firm Age $<$ 10	
% of Assets	mean	median	mean	median
Equity				
PIC	14.24	8.86	14.09	8.46
RetainedEarnings	3.09	3.84	3.57	4.22
Long-term liabilities				
BankDebt	10.40	0.00	9.98	0.00
Owners	4.08	0.00	4.35	0.00
Other	3.61	0.00	4.71	0.00
Short-term liabilities				
BankDebt	2.64	0.00	2.48	0.00
Owners	7.01	0.00	6.42	0.00
Suppliers	13.55	7.71	11.99	6.11
Wages	8.15	6.31	7.66	6.20
Other	33.21	25.89	34.74	29.07

All variables measured in 2007. Sample is the superset of the analysis sample: It also includes firms with owner who do not hold listed stocks. PIC is Paid-in Capital. Other short-term debt includes payroll and value-added taxes.

H Financing, Placebo Regressions

I repeat the analysis on financing outcomes, keeping all the right-hand-side variables the same, but considering lagged financing outcomes (2005–06).

Table VIII: Financing, Placebo Regressions

	Financing Outcomes During 2005–06					
	ΔPaid-in-Capital > 0		Dividends/GFW		ΔInvestor Loans/GFW	
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Gains}_{08-09}/\text{GFW}_{07}$	-0.049	-0.077	0.100	0.118	0.176	0.187
	(0.103)	(0.100)	(0.116)	(0.152)	(0.141)	(0.177)
$\text{Gains}_{08-09}/\text{GFW}_{07}$ * Leverage		0.138		-0.025		-0.233
		(0.104)		(0.107)		(0.157)
$\text{Gains}_{08-09}/\text{GFW}_{07}$ * Cash/OpEx		-0.045		0.038		-0.094
		(0.120)		(0.229)		(0.290)
$\text{Gains}_{08-09}/\text{GFW}_{07}$ * Profitability		0.104		-0.043		-0.128
		(0.117)		(0.208)		(0.187)
mean(Y)	.13	.13	.171	.171	.005	.005
P, F, and V controls	Y	Y	Y	Y	Y	Y
FE	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R
R2	0.1407	0.1430	0.2161	0.2257	0.1457	0.1491
N	2956	2956	3153	3153	2953	2953

Standard errors are two-way clustered at the firm and investor level and are reported in parentheses. *, * and *** indicate significance at the 10%, 5%, and 1% levels, respectively. $Gains_{08-09}/GFW_{07}$ is amount of stock market gains the investor experienced during 2008 and 2009, fixing portfolio weights in 2007, scaled by 2007 Gross Financial Wealth. Interaction variables are scaled by their standard deviation, and are included as controls, as well as interactions with $Stocks/GFW$. Controls for lagged $Dividend/GFW$ ratio, and a dividend dummy, are included.

I Placebo Test: Returns and Profitability

If investors are biased towards selecting listed stocks that are geographically close or operate the same or related industries, correlations between stock market wealth shocks and firm outcomes may be confounded if my region and industry fixed effects do not fully capture this selection. For example, an investor may own an engineering consulting firm that specializes in the oil industry, but the industry code only specifies his or her firm as a structural engineering consultancy. This investor further owns a significant amount of oil-related stocks, which means that their stock portfolio and their firm may be subject to common shocks.

Changes in firm outcomes may be driven by both common shocks and the wealth losses suffered by the owner. It is thus challenging to appropriately test for the severity of common shocks. To circumvent this, I design the following placebo test. I focus on a sample of business owners whose stock market exposure is low. The purpose is to consider a sample of business owners who may own listed and private firms subject to common shocks, but where experiencing very negative stock returns have only an immaterial effect on their ability to provide financing. These individual investors may have a low stock market exposure due to having allocated more of their wealth to other sources, such as mutual funds, bonds, or deposits, rather than to listed stocks. Since I do not observe *which* mutual funds they hold, mutual fund returns are not included in their forward returns, $R_{v,08,09}$. This provides a meaningfully large set of investors, v, whose returns, $R_{v,08,09}$, can be used to construct a placebo test.

More specifically, I restrict the sample to owners with stock market exposures between 0.25% and 10% of their total financial wealth. I require at least 0.25% exposure to limit the number of investors with trivially small portfolios. This yields a sample of 5,648 firm-owner pairs.[2] I report the results in Figure II, where I find no significant correlation between stock returns and either concurrent or future revenue growth. A one standard deviation increase in 2008–09 returns (0.24) is associated with excess revenue growth inside a 95% confidence interval of about $\pm 0.5\%$. I perform the same exercise for changes in profitability, and similarly find no economically meaningful or statistically significant correlations. These results are presented in Figure III.

[2]In my analysis samples I only include investors with at least 1% exposure, here I include less exposed investors to increase the sample size and precision. Excluding the the investors with $< 1\%$ exposure yields the same results, but larger standard errors.

Figure II: Placebo Test: Correlation Between Portfolio Returns And Revenue Growth when Stock Market Exposure is Low

Results are obtained from regressing year-on-year revenue growth on portfolio returns. I provide the estimated coefficient on portfolio returns ($R_{v,08,09}$) from estimating the following equation: $(Revenue_{f,t} - Revenue_{f,t-1})/(0.5 \cdot Revenue_{f,t} + 0.5 \cdot Revenue_{f,t-1}) = \alpha_{n,t} + \alpha_{r,t} + \alpha_{n,t} + \beta_t R_{v,07,09} + \rho_t' P_{v,07} + \eta_t' V_{v,07} + \zeta_t' F_{f,07} + \varepsilon_{f,v,t}$, for t = 2008, ..., 2012. The analysis is limited to investors with a stock market exposure between 0.25% and 10% in 2007 and firms that do not own listed stocks. The blue dashed lines provide the 95% confidence interval.

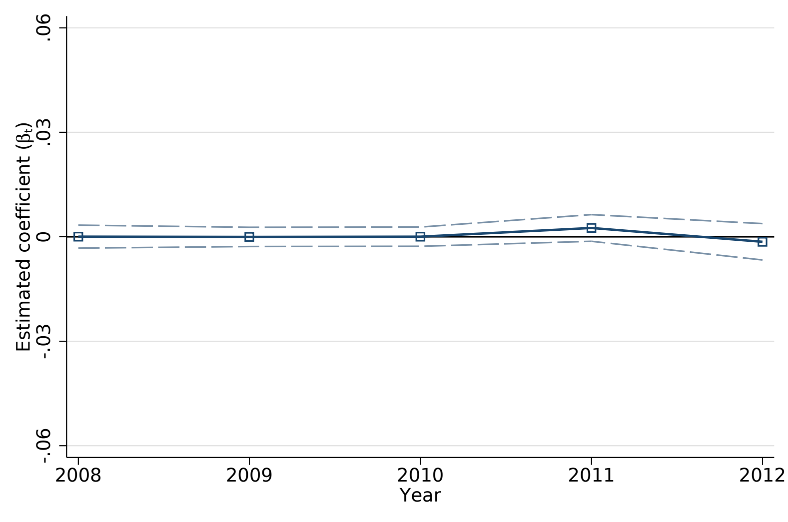
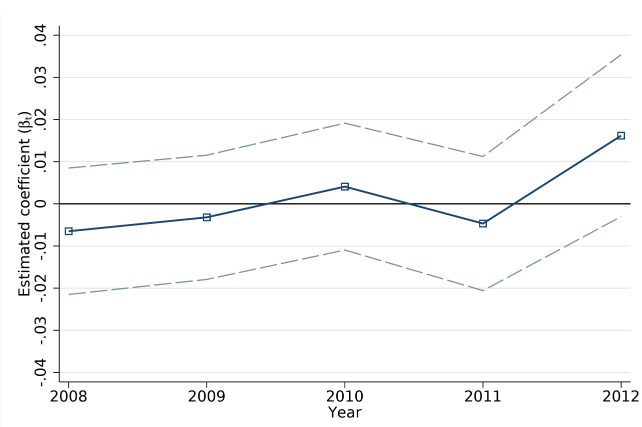


Figure III: Placebo Test: Correlation Between Portfolio Returns and Changes to Profitability for Owners with Low Stock Market Exposure

Results are obtained by estimating the following equation for each year t: $\Delta Profitability_{f,t} = \alpha_{n,t} + \alpha_{r,t} + \alpha_{n,t} + \beta_t R_{v,07,09} + \rho_t' P_{v,07} + \eta_t' V_{v,07} + \zeta_t' F_{f,07} + \varepsilon_{f,v,t}$. The plot shows the coefficient on the portfolio return from 2007 to 2009. The analysis is limited to investors with a stock market exposure between 0.25% and 10% and firms that do not own listed stocks.

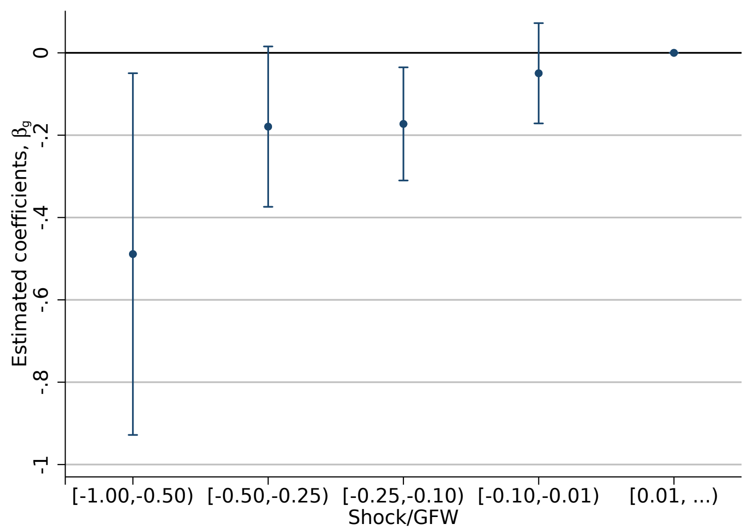


While these tests do not allow me to reject the presence of any selection issues, they do suggest that the severity of these issues is modest in this empirical setting.[3]

J Effects on Employment Growth by Wealth Shock Bins

Figure IV: Estimating effects of wealth shocks by bins

Results are obtained by performing the following regression for shock bin, $g \in G = \{(-1.00,-0.50),[-0.50,-0.25),[-0.25,-0.10),[-0.10,-0.01)\}$: $EG^D_{07,10} = \alpha_n + \alpha_r + \sum_g \beta_g \mathbb{1}\left[\frac{Gains_{v,08,09}}{GFW_{v,07}} \in g\right] + \gamma_1 \frac{Stocks_{v,07}}{GFW_{v,07}} + \gamma_2 \left(\frac{Stocks_{v,07}}{GFW_{v,07}}\right)^2 + \rho' P_{v,07} + \eta' V_{v,07} + \zeta' F_{f,07} + \varepsilon_{f,v}$, where the excluded category consists of firm-investor observation where the owner *gained* more than 1% of GFW.



K Quasi First Stage: Portfolio stickiness

My empirical approach assume that that investors experience returns from t to $t+j$ that depend on their portfolio composition at time t. If investors immediately sold off or reshuffled their portfolios right after time t, then the investors would not be affected by these intended returns. Since I do not observe within-year transactions of securities, only the yearly portfolio compositions, I construct the following test.

[3] This is not inconsistent with Døskeland and Hvide (2011) since I condition on county and industry fixed effects and consider a specific sample of investors (i.e., entrepreneurs).

Table IX: Testing Portfolio Stickiness

	Only non-missing $R_{08,09}$			Missing $R_{08,09} \equiv 0$		
	(1)	(2)	(3)	(4)	(5)	(6)
$\tilde{R}_{08,09}$	0.649***	0.600***	0.648***	0.584***	0.532***	0.586***
	(0.011)	(0.020)	(0.040)	(0.011)	(0.020)	(0.040)
Intercept	0.226***	0.291***	0.193***	0.231***	0.301***	0.188***
	(0.009)	(0.023)	(0.016)	(0.009)	(0.023)	(0.016)
$R_{07,08}$	All	<-60%	>-40%	All	<-60%	>-40%
F	3306.39	905.20	260.17	2590.61	700.84	218.08
R2	0.4572	0.3986	0.2272	0.3844	0.3263	0.1873
N	3928	1368	887	4150	1449	948

Standard errors are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. $\tilde{R}_{v,08,09}$ is the return of the portfolio based on the owner's 2007 portfolio composition.

I regress $R_{v,08,09}$, which is the owner's portfolio returns from 2008 to 2009, based on her 2008 portfolio composition, on $\tilde{R}_{v,08,09}$, which are the returns based on her 2007 portfolio composition.

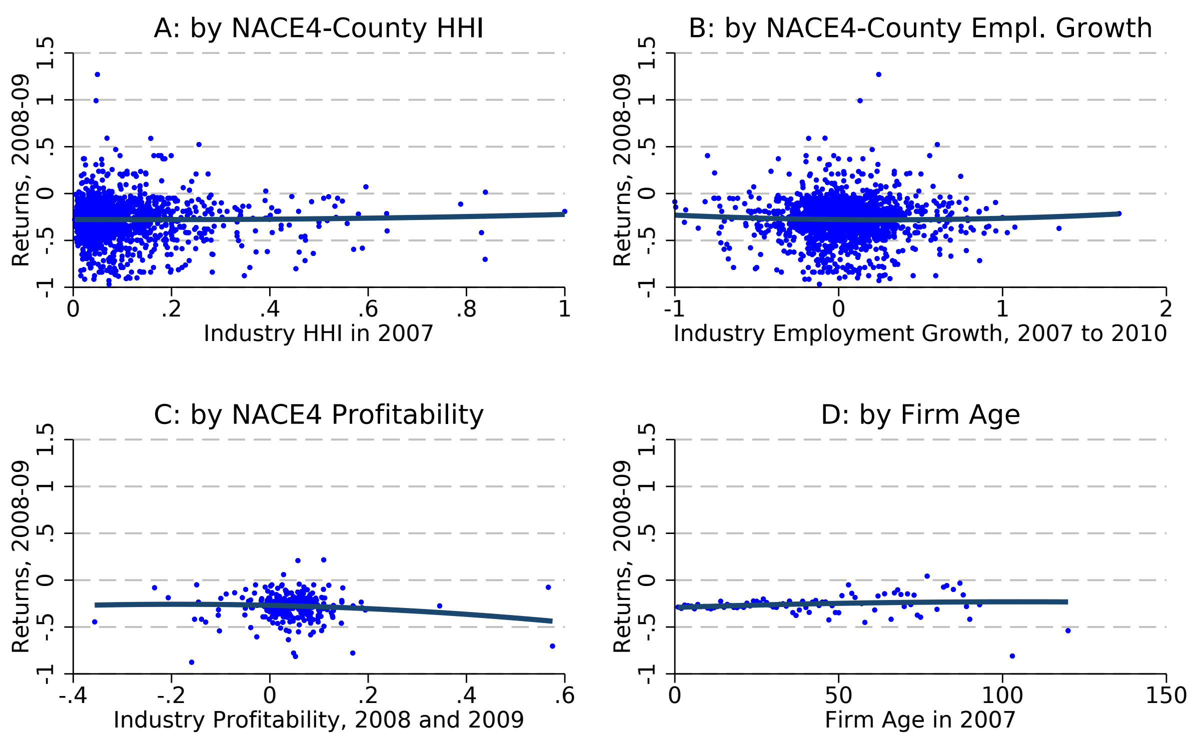
$$R_{v,08,09} = \pi_0 + \pi_1 \tilde{R}_{v,08,09} + \varepsilon_v \tag{1}$$

The "worst case scenario" would be if investors randomly reshuffle their portfolios with frequent intervals. This would imply that $\hat{\pi}_1 = 0$. If there were no transactions, I would find that $\hat{\pi}_1 = 1$. In Table IX below I report these estimates. In columns (1)-(3), I omit observations where $R_{v,08,09}$ is missing. These would be missing if the investors had exited the stock market. In columns (5)-(6), I replace missing portfolio returns with zeros. In order to inform us of whether portfolio stickiness varies with the experienced returns from 2007 to 2008, I also estimate $\hat{\pi}_1$ separately for investors who lost more than 60% or less than 40%. These returns are close to the 25th and 75th percentiles, respectively. How do I interpret the coefficients? A coefficient of π_1 would suggest that the investor had reshuffled a fraction $1 - \pi_1$ of her portfolio sometime during the year, and on average (assuming the average trade occurs July 1st) would not have experienced $0.5 \cdot (1 - \pi_1)$ of the predicted returns during that period. If I extend this to a two-year horizon, as in my empirical setting, I would expect the "non-compliance" to be approximately $2 \cdot 0.5 \cdot (1 - \pi_1) = 1 - \pi_1$. Alternatively phrased, I would expect a 2-year compliance of approximately π_1. Table IX suggests that this would be approximately 60%. I find a strongly positive intercept, $\hat{\pi}_0 > 0$, due to the fact that stock markets rose dramatically from 2008 and 2009. Thus, any investors who bought new stocks that were positively correlated with the market, but not perfectly correlated with her existing portfolio, would contribute to the estimated positive intercept.

K.1 Future Portfolio Returns by Firm and Industry Characteristics

Figure V: Portfolio Returns during 2008–09 and Industry and Firm Characteristics

Panels (A) through (D) plot portfolio returns, based on 2007 portfolio composition, against firm and industry characteristics. Panel (A) considers the HHI industry concentration measure at the within-county 4-digit NACE code level. Panel (B) considers the average employment growth rate during 2008–10. Panel (C) considers 4-digit NACE code level profitability (profits/revenues) during 2008 and 09. Panel (D) considers the age of the firm. In Panels (A) through (C) each scatter point indicates the mean returns within each county-industry cell. In Panel (D), each scatter point indicates the mean returns within a 1-year age bin. The solid navy-blue line is a quadratic fit, estimated by regressing portfolio returns on the x-axis characteristic for all owner-firm observations in the sample.

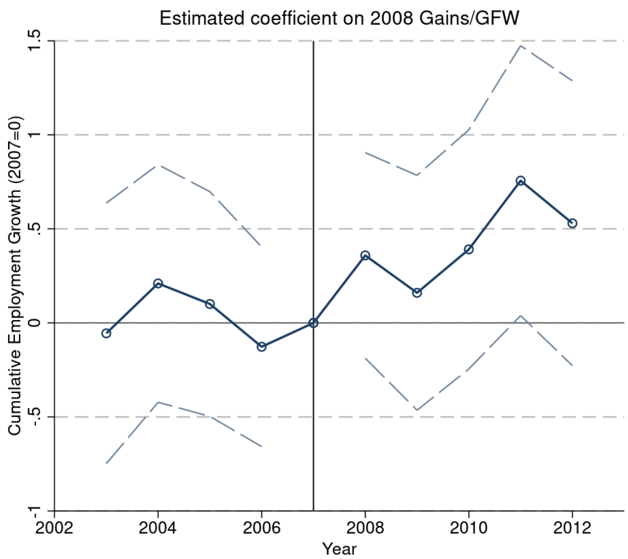


K.2 Cumulative Employment Effects using 1-year (rather than 2-year) Returns

In this subsection, I explore the effects of wealth shocks driven by 1-year portfolio returns. As discussed in the main text, 1-year returns are transitory. A return of $-e$ percentage points in excess of the market during 2008 is associated with a return of $+1.17e$ in excess of the market during 2009.

Figure VI: Cumulative Effects of (Transitory) 1-Year Portfolio Return Shocks

This figure shows the main results on employment growth when using 1-year forward returns to provide variation in wealth, rather than 2-year returns as in the main specification. The figure plots the coefficients on $Gains_{08}/GFW$ in regressions of cumulative employment from year t to 2007, $EG^D_{07,t}$. The point estimate for 2010 is analogous to that in column (6) in Table 4 in the main paper. Dashed blue lines provide 95% confidence intervals.



K.3 Investor Characteristics and Future Portfolio Returns

Table X examines whether portfolio diversification (measured as portfolio HHI), profitability, or educational attainment can predict (future) portfolio returns. The sample size reduction is caused by only keeping one firm per owner (highest ownership share) and running regressions on the business-owner level. In Column (1), I consider the HHI of the portfolio. This is the sum of squared portfolio weights. This reveals an insignificant relationship between diversification and the returns on the stocks in the portfolio. Columns (4)-(5) further shows an insignificant relationship between educational attainment and portfolio returns. In columns (2) through (6), I find that firm profitability does not predict stock market returns, either measured in 2007 or in 2009. If there is some individual fixed effect that affects both ability and firm performance, I would expect that stock returns correlated with ability, especially if the investor has been invested in the firm for a longer time period. In column (6), I limit to firm-owner pairs where the investor had already entered the firm during or before 2004, and still find that firm profitability as of 2007 does not predict superior stock market performance. Finally, if stock market returns are correlated with ability in my sample, I would expect a positive relationship between the owner's individual earnings or wealth level, and their stock market returns. However, I do not find any evidence of this.

Table X: Portfolio Returns and Portfolio Characteristics, Profitability, and Educational Attainment

$R_{v,2007,2009}$	Owner's first year in firm ≤ 2007					≤ 2004
	(1)	(2)	(3)	(4)	(5)	(6)
Portfolio HHI	0.0047	0.0043	-0.0012	-0.0007	-0.0013	0.0151
	(0.0122)	(0.0122)	(0.0125)	(0.0125)	(0.0127)	(0.0136)
Portfolio Variance	-0.0096	-0.0097	-0.0094	-0.0093	-0.0088	-0.0091
	(0.0077)	(0.0077)	(0.0076)	(0.0076)	(0.0076)	(0.0077)
Profitability		-0.0276		-0.0488	-0.0483	-0.0093
		(0.0255)		(0.0302)	(0.0312)	(0.0302)
$\text{Profitability}_{09}$			-0.0071	0.0037	0.0179	
			(0.0179)	(0.0197)	(0.0202)	
Educ = Highschool				-0.0008	-0.0019	-0.0134
				(0.0141)	(0.0143)	(0.0154)
Educ = College				0.0100	0.0112	0.0007
				(0.0142)	(0.0152)	(0.0164)
IndustryFE	-	-	-	-	Yes	Yes
RegionFE	-	-	-	-	Yes	Yes
r2	0.0082	0.0085	0.0080	0.0090	0.0461	0.0449
N	4150	4150	3866	3866	3862	3476

Standard errors are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. If a business-owner owns multiple firms, the Profitability variable is associated with the firm in which he or she has the highest ownership share. All RHS variables, except $\text{Profitability}_{09}$, are measured in 2007. The omitted education category consists of owners with educational attainment below highschool. All regressions include a linear control for stock market exposure, $\text{Stocks}_{07}/\text{GFW}_{07}$.

L Robustness

Table XI: GFW/OpEx thresholds and estimated employment growth effects

	Upper Bounds					
	1.50	1.60	1.70	1.80	1.90	2.00
Lower Bounds						
0.10	0.29	0.28	0.30	0.28	0.28	0.29
0.20	0.46	0.44	0.45	0.42	0.41	0.42
0.30	0.54	0.51	0.51	0.47	0.46	0.47
0.40	0.78	0.71	0.69	0.60	0.59	0.60
0.50	0.86	0.77	0.74	0.62	0.60	0.62

In the main analyses on real outcomes, the sample is restricted to firm-owner observations where the financial wealth (i.e., financing ability) of the owner is of a similar magnitude to the operating expenditures of the firm (which we can think of as proxying for financing needs). The lower bound for this ratio is 25% and the upper bound is 175% (100% ±75%) in the main specification. This table provides the estimated point estimates corresponding to column (6) of Table 4 when varying these lower and upper bounds.

M Additional controls for main employment growth regressions

Table XII: Additional Controls for Main Employment Growth Regressions

$EG^D_{07,10}$	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Gains}_{08-09}/\text{GFW}_{07}$	0.493**	0.422**	0.528**	0.544***	0.537**	0.474**
	(0.193)	(0.185)	(0.207)	(0.211)	(0.209)	(0.213)
Profitability	0.311***	0.072	0.322**	0.323**	0.259**	0.251**
	(0.118)	(0.143)	(0.130)	(0.131)	(0.123)	(0.125)
$\text{Profitability}_{10}$		0.191**				
		(0.080)				
$r_{v,05,07} - \bar{r}_{05,07}$			-0.037*	-0.046		
			(0.021)	(0.049)		
$(r_{v,05,07} - \bar{r}_{05,07})^2$				0.080		
				(0.130)		
$(r_{v,05,07} - \bar{r}_{05,07})^3$				0.020		
				(0.110)		
$(r_{v,05,07} - \bar{r}_{05,07})^4$				-0.072		
				(0.158)		
GFW/OpEx	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]
P,F,V controls	Y	Y	Y	Y	Y	Y
FE	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE**4**,R	NACE**5**,R
Cluster	F,V	F,V	F,V	F,V	F,V	F,V
R2	0.1341	0.1333	0.1462	0.1464	0.1745	0.1943
N	2496	2254	2187	2187	2455	2430

Standard errors are two-way clustered at the firm and investor level and are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. $Gains_{08-09}/GFW_{07}$ is amount of stock market gains the investor experienced during 2008 and 2009, fixing portfolio weights in 2007, scaled by 2007 Gross Financial Wealth. $\bar{r}_{05,07}$ is the mean portfolio returns from 2005 to 2007 for investors in the sample.

N Different measures of employment growth

Seasonality issues. Measuring employment in days of employment during a year addresses potentially important measurement issues related to using growth rates in end-of-year employment levels. Many firms, such as retailers, may have highly seasonal employment, with peak seasons falling during Christmas. This may lead to a downward bias in the effect of financial shocks on employment if peak-season employment is less sensitive to financial frictions due to, for example, high cash flow.

Turnover. My employment growth measure further offers potential advantages relative to using changes in the total of number of employees employed in the course of a given year. While such a growth measure would address the cyclicality issue, it would also count employee turnover as growth. By effectively weighting the number of employees by their days of employment, my measure in equation (4) in the main paper avoids this issue. It further avoids the issue of **high-income workers**, which would be the result of weighting employees by their salaries. Of course, salary-weighted employment could be the relevant variable in some settings. I explore this as an outcome in Appendix Q by considering total (non-owner) pay as well as subcontracting expenditures as outcome variables. In Table XIII, I show how my main results are affected when using these different measures of employment growth. This comparison suggests that both year-on-year growth and number-of-employee growth may understate the effect of financing shocks on labor demand.

Standard formula for growth. I choose to use the standard formula for percentage change, rather than the symmetric growth rate or log differences for two main reasons. First, using symmetric-growth rates for very small firms that move between 0, 1 and 2 employees can vigorously overstate employment decline. In Table VI, I find that the average employment growth rate from 2007 to 2010 in my sample increases in magnitude from -2.8% to -16.1% when using the symmetric growth rate.[4] Measuring growth rate using log differences has similar issues. Log differences are beneficial to reduce the impact of outliers in the presence of positive growth. However, when there is a *decline* in employment growth, it will increase magnitudes. My sample contains very few firms experiencing sizable positive employment growth, however, to minimize their impact, I bind employment

[4]Other studies using the symmetric growth rate (e.g., Chodorow-Reich 2014) or log differences in employment (e.g., Benmelech, Frydman, and Papanikolaou 2019) are likely much less affected by these issues due to having mostly large firms in their samples.

growth to be $\leq 200\%$.

I now explore whether my results are robust to changing the definition of employment growth. EG^N is defined similarly as EG^D, but does not account for the duration of employment within the year. EG^Y is year-on-year employment growth, considering the changes in the number of employees from December to December. In Table XIII, I find that my preferred measure of employment growth is the measure most sensitive to wealth shocks. Disregarding the employment duration (EG^N) lowers my coefficient by 24%, but reveals very similar heterogeneity with respect to firm age. Year-on-year employment growth is the measure least sensitive to wealth shocks. I provide intuition for these differences in the main text, and suggest that a reasonable preference ordering includes $EG^D \gtrsim EG^N \gtrsim EG^Y$ when the objective is to understand the effect of financing shocks on employment.

Table XIII: Different Measures of Employment Growth

	$EG^D_{07,10}$		$EG^N_{07,10}$		$EG^Y_{07,10}$		Tot. Pay Growth 07–10	
	(baseline)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\text{Gains}_{08-09}/\text{GFW}_{07}$	0.493**	0.133	0.388*	0.063	0.221	-0.041	0.276	-0.150
	(0.193)	(0.188)	(0.217)	(0.198)	(0.200)	(0.193)	(0.182)	(0.187)
* Firm Age <10		1.013**		0.981**		0.811*		1.164***
		(0.401)		(0.385)		(0.435)		(0.388)
GFW/OpEx	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]
LaggedOutcome	Y	Y	Y	Y	Y	Y	Y	Y
P, F, V controls	Y	Y	Y	Y	Y	Y	Y	Y
FE	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R
R2	0.1341	0.1370	0.1400	0.1436	0.1342	0.1365	0.1425	0.1468
N	2496	2496	2496	2496	2496	2496	2496	2496

Columns (1)-(2) uses the preferred employment growth measure, EG^D. These results are provided as a reference point. EG^N is defined similarly as my main employment growth measure, EG^D, but does not account for the duration of employment within the year. EG^Y is year-on-year employment growth, which considers growth from Dec-to-Dec in the number of employees.

O Effect on the Educational Composition of Workers

I report the educational-composition results in Table XIV. Column (1) reveals that there is no effect on average. However, when considering differential effects for young firms in column (2), I find that adversely affected young firms reduce the fraction of college-educated workers in their firm. Comparing columns (2), (4), and (6) show that the effect is driven by differences in educational attainment among new hires. A potential explanation for this is that more educated workers demand higher wages and offer delayed returns in terms of their contribution to firms' revenues and profits. This may be an investment constrained younger firms are unwilling to make. Also, perhaps surprisingly, I find that adversely affected mature firms *increase* the education level of new hires. This essentially serves to limit (or reverse) the educational gap between young and old firms, as young firms, on average, had 24% college educated workers, while older firms had 19%.

Table XIV: The Effects of Wealth Shocks on the Educational Composition of All, New, and Existing Workers.

	All workers 2010		New Hires		Existing Workers	
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Gains}_{08-09}/\text{GFW}_{07}$	0.049	-0.034	0.016	-0.459***	-0.072	-0.025
	(0.069)	(0.071)	(0.187)	(0.150)	(0.075)	(0.069)
* Firm Age <10		0.245*		1.180***		-0.176
		(0.131)		(0.236)		(0.170)
GFW/OpEx	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]
LaggedOutcome	Y	Y	Y	Y	Y	Y
P, F, V controls	Y	Y	Y	Y	Y	Y
FE	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R
R2	0.6748	0.6763	0.4187	0.4279	0.6579	0.6596
N	2036	2036	1274	1274	2036	2036

The dependent variable is the share of workers with a college degree. This is measured using the 2010 employee pool; considering all workers, workers who were present in 2007, and workers who were not present in 2007, in columns (1)-(2), (3)-(4), and (5)-(6), respectively. I include the 2007-valued fraction of workers with a college degree as a control. Standard errors are two-way clustered at the firm and investor level and are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

The finding of a reduction in the educational attainment among new hires is consistent with concurrent work by Barbosa, Bilan, and Célérier (2019). However, they also find that harshened financial constraints lead to an exit of more skilled workers, which does not appear to be the case in my setting.

P Local Credit Growth and Employment Effect

Table XV: Heterogeneous effects of wealth shocks on employment growth

$EG^D_{f,07,10}$	(1)	(2)	(3)	(4)
			Young firms only	
$\text{Gains}_{08-09}/\text{GFW}_{07}$	0.535**	0.533**	1.114***	1.123***
	(0.215)	(0.217)	(0.395)	(0.398)
* $\text{Credit Growth}_{07,09}$	0.051		-0.356	
	(0.266)		(0.433)	
* $\text{Credit Growth}_{07,09}$, residualized		0.043		-0.411
		(0.260)		(0.434)
P, F, V Controls	Y	Y	Y	Y
FE	NACE3,R	NACE3,R	NACE3,R	NACE3,R

Coefficients are estimated using equation (7) in the main paper. Credit growth from 2007 to 2009 is first calculated at the firm level as the symmetric growth rate of bank debt. It is then averaged at the municipality municipality level excluding firms that are in the regression sample. This municipality average value is then assigned to firms in the regression sample based on which municipality they are domiciled in. The credit growth measure is then normalized (mean deducted and divided by standard deviation). Observations in municipalities with fewer than 50 firms with a non-missing growth rate are dropped. In Column (2), 3-digit NACE industry fixed effects are taken out prior to averaging and normalizing. In columns (3)-(4), the coefficients on $Stocks/GFW$, $Gains/GFW$, and $Gains/GFW$* $\text{Credit Growth}_{07,09}$ are all interacted with $\mathbb{1}[FirmAge < 10]$.

Q Effects on Total Payroll and Subcontracting Expenditures

Table XVI: The Effects of Wealth Shocks on Total Payroll and Subcontracting Expenditures

	ΔTotalPay		ΔSubContracting	
	(1)	(2)	(3)	(4)
$\text{Gains}_{08-09}/\text{GFW}_{07}$	0.277	-0.147	-0.219*	-0.230
	(0.183)	(0.186)	(0.123)	(0.148)
* Firm Age $<$ 10		1.160***		0.053
		(0.389)		(0.245)
GFW/OpEx	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]
P, F, V controls	Y	Y	Y	Y
FE	NACE3,R	NACE3,R	NACE3,R	NACE3,R
R2	0.1436	0.1478	0.1535	0.1543
N	2496	2496	2271	2271

Total pay excludes salary or wage earnings for owners. ΔTotalPay and ΔSubContracting are scaled by 2007 total payroll. In column (3)-(4), I control for payroll-scaled subcontracting as of 2007. Standard errors are two-way clustered at the firm and investor level and are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

My main measure of employment growth considers the growth in number of employment days. This does not account for potential intensive-margin effects on wages. To address this, I consider the effect of wealth shocks on the cumulative payroll growth in column (1) of Table XVI. I find that a 10% wealth shock reduces payroll expenditures by 3 percentage points (t-stat = 1.63). This reveals a weaker effect than my baseline estimates (an effect of almost 5 percentage points). Rather than intensive-margin effects on wages, compositional effects, as those we found in section O, may thus play an important role. This becomes clearer when considering heterogeneity with respect to firm age in column (2). This reveals a forceful effect on the payroll expenditures for younger firms. The negative point estimate of -0.134 (t-stat=-0.72) for older firms, although statistically insignificant, is consistent with the finding that older firms increase their hiring of college-educated—and likely more expensive—workers. Relatedly, the point estimate for the young-firm interaction effect of 1.158 is larger than (although statistically similar to) the point estimate on employment growth. This is consistent with the result of a negative effect on the hiring of college-educated workers for younger firms.

Since firms facing difficulties in financing labor may find it easier to subcontract, over-all employment effects may be partially offset. I therefore consider the effects on subcontracting expenditures in columns (3)-(4). In column (3), I see that for the average firm, decreases in payroll are almost entirely offset by increases in subcontracting expenditures. Column (4) reveals that this is not the case for younger firms. While they too appear to increase subcontracting, increased subcontracting expenditures only offset payroll decreases by approximately 23%=(0.266-0.031)/(-0.134+1.158).

Q.1 Robustness to Different Weighting Approaches

Table XVII: Robustness to Weighting Scheme

$EG^{D}_{07,10}$	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Gains}_{08-09}/\text{GFW}_{07}$	0.493**	0.433**	0.431**	0.553**	0.429**	0.602***
	(0.193)	(0.196)	(0.187)	(0.219)	(0.196)	(0.232)
Weighting	Stocks	Own %	Stocks	Stocks	-	-
DownweightPS	Y	-	-	-	-	-
OnlyOneInv	-	-	-	-	Y	Y
IncludePS	Y	Y	Y	-	Y	-
GFW/OpEx	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]	[0.25,1.75]
P, F, V controls	Y	Y	Y	Y	Y	Y
FE	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R
R2	0.1341	0.1452	0.1286	0.1441	0.1312	0.1485
N	2496	2479	2496	1981	2085	1655

Standard errors are two-way clustered at the firm and investor level and are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. $Gains_{08-09}/GFW_{07}$ is amount of stock market gains the investor experienced during 2008 and 2009, fixing portfolio weights in 2007, scaled by 2007 Gross Financial Wealth. Column (1) represents the main specification and is provided as a reference. Here, I weight by stocks which implies weighting by the amount of stock wealth the investor has relative to the total stock wealth of all investors who also own shares in the firm and are in the regression sample. In column (2), I instead weight by ownership share. In column (3), I again weight by owners by their stock holdings, but omit the down weighting of Professional Services (PS) firms. In column (4), I still weight owners by stock holdings, but completely drop PS firms. In column (5), I include PS firms, do not down weight them, but only keep one investor per firm. OnlyOneInv implies that per firm I only select investors whose non-downweighted weight was $> 50\%$, leaving me with one observation per firm. IncludePS indicates whether I included Professional Services firms (NACE2 codes 69-75).

I show that the main results are highly robust to different weighting schemes in Table XVII. In particular, I show that results are somewhat *stronger* when completely omitting professional services (PS) firms that are overrepresented in my sample.

Column (1) provides results from the baseline specification for comparison. Column (2) weights by ownership share. If a firm only appears in the sample with one investor owning $< 100\%$, then this firm will be down-weighted relative to other firms. Column (3) does not downweight professional services. Column (4) excludes professional services. Columns (5)-(6) do not use weighting: Instead I select only one investor per firm. The selection criteria is that this weight, when not downweighting professional services, was

$> 50\%$. Columns (5) and (6) differ in that column (6) excludes professional services.

R Additional robustness tests and tables

Table XVIII: Wealth Shocks and Lagged Observables: Including Portfolio Variance as an Explanatory Variable

	(1) Profitability	(2) log(Assets)	(3) Leverage	(4) Cash/OpEx	(5) log(Firm Age)	(6) Frac. College
$\text{Gains}_{08-09}/\text{GFW}_{07}$	-0.032	-0.337	-0.049	0.016	0.117	0.044
	(0.024)	(0.218)	(0.049)	(0.041)	(0.157)	(0.060)
$\text{Stocks}_{07}/\text{GFW}_{07}$	-0.143***	-0.851***	0.351***	-0.418***	-0.452**	0.043
	(0.031)	(0.261)	(0.053)	(0.051)	(0.181)	(0.060)
$(\text{Stocks}_{07}/\text{GFW}_{07})^2$	0.091**	0.597**	-0.240***	0.304***	0.307	-0.006
	(0.036)	(0.300)	(0.061)	(0.057)	(0.212)	(0.070)
P. Variance	-0.003**	0.046***	0.014***	0.001	-0.023	0.005*
	(0.001)	(0.015)	(0.003)	(0.003)	(0.016)	(0.002)
$\text{Stocks}_{07}/\text{GFW}_{07}$ * P. Variance	0.038***	-0.002	-0.027	-0.022	-0.158*	-0.027
	(0.011)	(0.098)	(0.027)	(0.026)	(0.086)	(0.020)
mean(Y)	.096	14.927	.498	.228	2.424	.195
sdev(Y)	.146	1.15	.234	.252	.777	.304
FE	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R	NACE3,R
R2	0.154	0.200	0.124	0.192	0.114	0.272
N	4750	4750	4750	4750	4750	4750

See related Table 2 in main text. Standard errors are two-way clustered at the firm and investor level and are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. $Gains_{08-09}/GFW_{07}$ is amount of stock market gains the investor experienced during 2008 and 2009, fixing portfolio weights in 2007, scaled by 2007 Gross Financial Wealth.

Table XIX: Financing and Employment Effects when Including Returns as an Explanatory Variable

	ΔPaid-in-Capital > 0	$\text{EG}^{D}_{07,10}$
	(1)	(2)
$\text{Gains}_{08-09}/\text{GFW}_{07} = \frac{Stocks_{07}}{GFW_{07}} * R_{07,09}$	0.166*	0.609**
	(0.091)	(0.239)
$R_{07,09}$	-0.012	-0.055
	(0.023)	(0.054)
GFW/OpEx	All	[0.25,1.75]
P, F, V controls	Y	Y
FE	NACE3,R	NACE3,R
R2	0.1310	0.1259
N	3722	2208

Table XX: Robustness: Generalized Propensity Score Matching Approach and Granular Fixed Effects Approach

Panel A: Generalized Propensity Score Matching

$y = \mathrm{EG}^{D}_{07,10}$	(1)	(2)
$Gains_{08-09}/Stocks_{07}$	0.509***	0.505***
	(0.177)	(0.181)
$Gains_{08-09}/Stocks_{07} \times GPS$	-0.062	-0.036
	(0.062)	(0.050)
GPS	0.003	0.005
	(0.009)	(0.008)
N	2496	2496
R2	0.13	0.13
Original Estimate	0.493**	

Panel B: Granular Fixed Effects Approach

$y = \mathrm{EG}^{D}_{07,10}$	(1)	(2)	(3)	(4)	(5)	(6)
$Gains_{08-09}/Stocks_{07}$	0.527**	0.524*	0.472*	0.520***	0.654***	0.913**
	(0.253)	(0.297)	(0.271)	(0.195)	(0.201)	(0.403)
FE Bins						
Stocks/GFW Bins	10	20	10	10	20	10
×Portf. Var Bins				10	20	10
×NACE FEs	2-digit	2-digit	3-digit			2-digit
Original Estimate	0.493**					

Panel A provides the estimated coefficient on wealth shocks ($Gains/GFW$) using a Generalized Propensity Score (GPS) Approach. The GPS is estimated using the .ado file written by Bia and Mattei (2008). In column (1), the GPS is computed using all the baseline control variables (including P, F, and V). In column (2), I also include dummies to indicate membership in 100 portfolio bins: 10 portfolio variance bins for each 10 exposure (Stocks/GFW) bins, analogous to column (4) of Panel B. **Panel B** provides the estimated coefficient on wealth shocks ($Gains/GFW$) with different fixed-effects specifications. All regressions include the main set of control variables used in the draft (P, F, and V controls). The dependent variable is employment growth from 2007 to 2010, $EG^{D}_{07,10}$. Column (1) takes out unobserved heterogeneity within 10 exposure ($\mathrm{Stocks}_{07}/\mathrm{GFW}_{07}$) bins for each 2-digit NACE code. Column (2) similarly includes 20 such fixed effects bins for each 2-digit NACE code. Column (3) instead includes 10 exposure bins for each 3-digit NACE code. Column (5) sorts observations into 10 exposure bins and then 10 (ex-ante) portfolio variance bins for a total of 100 bins and compares households within these bins. Column (6) increases doubles the granularity for both exposure and portfolio variance, and takes fixed effects for 400 bins. Column (6) takes out fixed effects for 10 exposure bins crossed with 10 portfolio covariance bins for each 2-digit NACE code.

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