Credit Negotiations

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Motivation

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- Credit negotiations can have real economic implications, especially for small firms that rely heavily on bank credit

Motivation II

- The organizational and negotiation literature defines negotiation power as the ability to influence outcomes, achieve goals, and persuade others to assist in reaching those goals, even if it goes against their own inclinations [1].

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Motivation II

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- The difference between typical bargaining power and this definition lies in the behavioral aspect.

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Motivation III

- The labor economics literature has highlighted gender differences in negotiation behavior. Main focus is the outcome of salary negotiations.

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- Goldsmith-Pinkham and Shue (2023) argue that *30%* of the gender wealth gap at retirement stems from differences in real estate returns caused by negotiation
- Women tend to prefer dealing with individual service providers, exhibit increased loyalty to them, and invest more in building relational capital [2].

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- These can lead to suboptimal business decisions (i.e. not persisting in negotiations).

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  3. The probability that a business owner applies for credit soon after a rejection from the bank (e.g., within one year).

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- In contrast, the bank has fixed processes and primarily dictates the usual loan characteristics when making the final decision.
- We further verify that these measures proxy negotiations by analyzing the final contract upon loan origination

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Female and Low – Income Entrepreneurs negotiate less vigorously

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- Additionally, we design an experiment around changes in firm ownership (selling the company) to someone of the opposite gender after a change in dependents
- We also confirm our findings using a selection (Heckman) model that further insulates our analysis against selection bias.

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- We find that university education and membership in the financial industry are important mediating factors of how income affects all three variables related to credit negotiations
- Important determinants which influence the effect of Gender include :
  1. The existence of an exit option (another bank with which the firm transacts)
  2. Whether the firm has research and development (R&D) expenses
  3. The firm's leverage

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- We focus on loan applications from small firms, as these businesses are owned and managed by applicants (business owners or decision-makers) whose financial and personal characteristics are closely linked to their firms.
- Focusing on majority owners largely isolates the loan negotiation process as a function of the owners' traits, thereby sidestepping agency problems.

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- A key variable in our analysis is the credit score assigned by the bank to each applicant. The credit score controls for the credit worthiness of the firm (and the owner) and allows us to isolate negotiation behavior.

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- *Change Bank* is a dummy variable equal to 1 if the firm obtains credit from a different major (regulated) financial institution (equal to 0 otherwise)
- *Reapply* is a dummy variable equal to 1 if the firm reapplies for credit from the bank within one year after a loan rejection (equal to 0 otherwise).

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- 45% of the rejected applicants reapply for a loan within a year

Summary Statistics - Negotiation Variables

	Obs.	Mean	St. dev.	Min.	Max.
Panel A. Sample used in equations of *Processing time*					
Processing time	135,872	40.44	36.13	2	185
Gender (Male = 1)	135,872	0.78	0.36	0	1
Income	135,872	11.07	0.43	9.85	13.25
Credit score	135,872	0.13	1.27	-2.94	3.00
Panel B. Sample used in equations of *Change bank*					
Change bank	357,056	0.28	0.17	0	1
Gender	357,056	0.76	0.39	0	1
Income	357,056	11.01	0.79	9.71	13.62
Credit score	357,056	0.14	1.35	-2.94	3.00
Panel C. Sample used in equations of *Reapply*					
Reapply	8,741	0.45	0.19	0	1
Gender	8,741	0.76	0.36	0	1
Income	8,741	10.85	0.37	9.85	11.78
Credit score	8,741	0.05	0.48	-2.94	0.89

Empirical Analysis

We estimate the following baseline model :

$$N_{i,t} = \alpha_k + a_1 G_i + \alpha_2 I_{i,t} + \alpha_3 C_{i,t} + \delta_i + \gamma_t + u_{i,t}$$

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- γ_t are time Fixed Effects
- C is the vector of time-varying controls, including the credit score & u is the disturbance

Panel A. Processing time

	(1)	(2)	(3)	(4)
Gender	2.277***	2.247***	2.040***	2.359***
	(0.612)	(0.603)	(0.610)	(0.687)
Income	-3.300***	-3.374***	-3.389***	-4.374***
	(0.810)	(0.802)	(0.847)	(0.917)
Credit score	-14.874***	-14.402***	-14.432***	-15.502***
	(2.026)	(1.908)	(2.045)	(2.240)
Lambda				-0.182
				(0.230)
Observations	135,872	135,872	135,872	135,872
Adjusted R^2	0.84	0.84	0.91	–
Controls	No	Yes	No	No
Firm fixed effect	No	No	Yes	No
Year fixed effect	No	Yes	Yes	Yes

▸ Why is (3) a DiD estimate?

Panel B. Probability to change bank

	(1)	(2)	(3)	(4)
Gender	0.014***	0.013***	0.016***	0.027***
	(0.005)	(0.005)	(0.005)	(0.007)
Income	0.043***	0.043***	0.046***	0.050***
	(0.009)	(0.009)	(0.010)	(0.012)
Credit score	-0.026***	-0.018***	-0.018***	-0.040***
	(0.003)	(0.002)	(0.002)	(0.004)
Lambda				-0.319
				(0.326)
Observations	357,056	357,056	357,056	357,056
Adjusted R^2	0.63	0.63	0.74	–
Controls	No	Yes	No	No
Firm fixed effect	No	No	Yes	No
Year fixed effect	No	Yes	Yes	Yes

Panel C. Probability to reapply after rejection

	(1)	(2)	(3)	(4)
Gender	0.027**	0.027**	0.036***	0.051***
	(0.013)	(0.013)	(0.011)	(0.016)
Income	0.045***	0.045***	0.043***	0.047***
	(0.007)	(0.007)	(0.007)	(0.009)
Credit score	0.119***	0.097***	0.092***	0.147***
	(0.011)	(0.011)	(0.012)	(0.020)
Lambda				-0.109
				(0.265)
Observations	8,741	8,741	8,741	8,741
Adjusted R^2	0.61	0.61	0.69	–
Controls	No	Yes	No	No
Firm fixed effect	No	No	Yes	No
Year fixed effect	No	Yes	Yes	Yes

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To safeguard our analysis against such criticisms, we conduct robustness tests using a triple-differences model around a natural experiment

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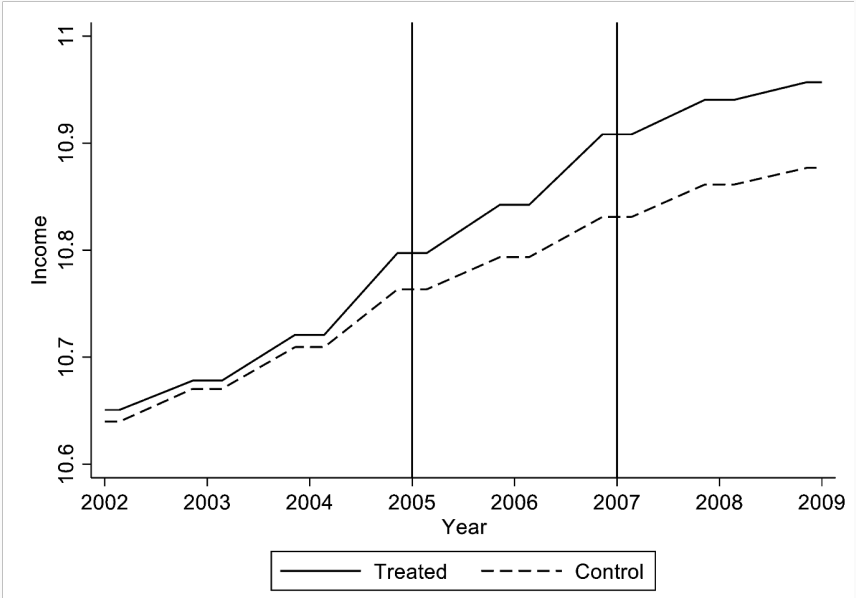
- The pre-treatment period spans from 2002 to 2004, and the post-treatment period is from 2007 to 2009 (We exclude 2005 and 2006 from the formal empirical analysis, as these are the years during which the tax cuts occurred)
- The first and most important check for the validity of this assumption is the illustration of parallel trends in the average income of the treated and control groups before treatment.

Exogenous Shock to Income - Parallel Trends



Exogenous Shock to Income

Our formal analysis entails the following model :

$$N_{i,t} = \alpha_k + \alpha_1 G_i + \alpha_2 I_{i,t} + \alpha_3 W_{i,t} + \alpha_4 C_{i,t} + \alpha_5 I_{i,t} \times \text{TaxDecrease}_{i,t} + \alpha_6 I_{i,t} \times Post_{i,t} + \alpha_7 Post_{i,t} \times \text{TaxDecrease}_{i,t} + \alpha_8 \mathbf{I_{i,t}} \times \mathbf{TaxDecrease}_{i,t} \times \mathbf{Post_{i,t}} + u_{i,t}$$

- Tax Decrease equals 1 for the firms in the country issuing the tax cut
- Post is the before-after treatment dummy.

Panel A. Processing time			
	(1)	(2)	(3)
Gender	2.303***	2.244***	2.243***
	(0.610)	(0.624)	(0.620)
Income × Tax decrease × Post	-3.382***	-0.502	0.329
	(0.729)	(0.807)	(0.813)
Observations	29,255	29,141	29,047
Adjusted R^2	0.86	0.85	0.85
Panel B. Probability to change bank			
Gender	0.016***	0.016***	0.016***
	(0.003)	(0.002)	(0.002)
Income × Tax decrease × Post	0.038***	0.001	0.000
	(0.006)	(0.006)	(0.006)
Observations	76,810	76,810	76,810
Adjusted R^2	0.66	0.65	0.65
Panel C. Probability to reapply after rejection			
Gender	0.030**	0.029**	0.028***
	(0.011)	(0.011)	(0.011)
Income × Tax decrease × Post	0.048***	0.000	-0.000
	(0.005)	(0.005)	(0.006)
Observations	1,911	1,892	1,866
Adjusted R^2	0.69	0.67	0.67
Controls	Credit score	Credit score	Credit score
Year fixed effect	Yes	Yes	Yes

Exogenous Change in Owner's Gender

- Our sample allows us to delve even deeper by examining cases where changes in owner gender (through firm sales) occur following the arrival of the original owner's first dependent (the bank has information on entrepreneurs' dependents).
- We can utilize this shift in ownership to causally identify the effect of Gender on our negotiation measures.
- To accomplish this, we stack all the data from three years prior to and three years after each such sale on the same virtual year $t = 0$.
- This approach facilitates an even higher degree of exogeneity, as the decision to have a child is unlikely to be related to other unobservable firm characteristics (which are also not included in the credit score).

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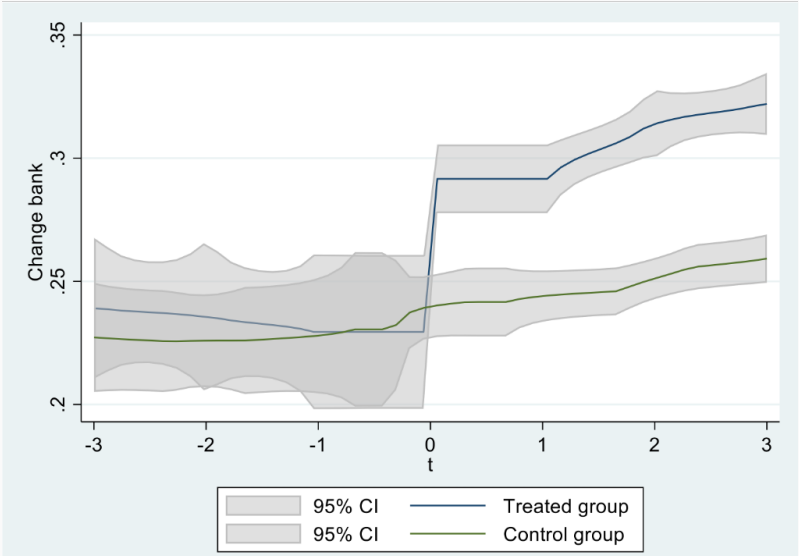

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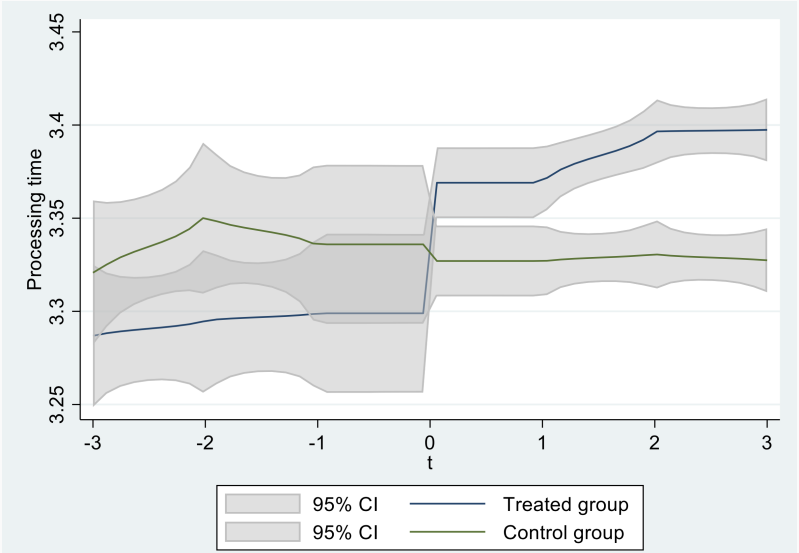

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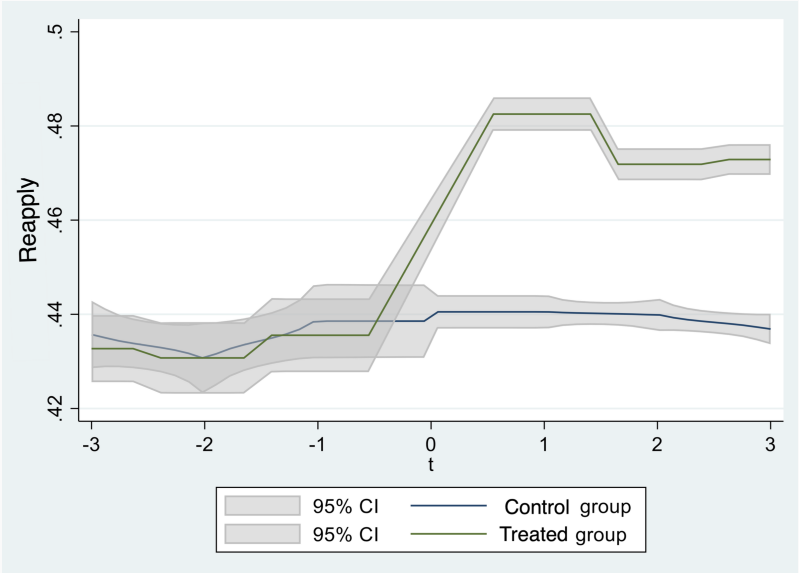

Panel A. Processing time			
	(1)	(2)	(3)
Income	-3.140***	-3.273***	-3.245***
	(0.815)	(0.809)	(0.802)
Gender × Dependant × Post	2.016***	0.004	0.001
	(0.605)	(0.005)	(0.005)
Observations	29,518	29,269	29,007
Adjusted R^2	0.85	0.84	0.84
Panel B. Probability to change bank			
Income	0.043***	0.043***	0.043***
	(0.002)	(0.002)	(0.002)
Gender × Dependant × Post	0.021***	-0.001	0.000
	(0.006)	(0.003)	(0.002)
Observations	76,810	74,714	72,607
Adjusted R^2	0.64	0.63	0.63
Panel C. Probability to reapply after rejection			
Income	0.043***	0.045***	0.045***
	(0.004)	(0.004)	(0.004)
Gender × Dependant × Post	0.035***	0.003	-0.000
	(0.011)	(0.003)	(0.003)
Observations	1,945	1,903	1,876
Adjusted R^2	0.63	0.61	0.61
Controls	Credit score	Credit score	Credit score
Year fixed effect	Yes	Yes	Yes

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$$O_{i,t} = d_k + d_1 \widehat{ProcessingTime} + d_2 \widehat{ExitOption}_{i,t} + d_3 \widehat{Reapply}_{i,t} + d_4 C_{i,t} + u_{i,t}$$

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Economic Outcomes - Loan Approval

	1 Loan approval	2 Loan approval
Processing time (partial prediction)	0.040**	0.041**
	(0.019)	(0.019)
Change bank (partial prediction)	0.083***	0.086***
	(0.029)	(0.030)
Reapply (partial prediction)	0.018*	0.019*
	(0.010)	(0.010)
Observations	135,872	135,872
Adjusted R^2	0.96	0.97
Controls	Credit score	Credit score
Firm fixed effect	No	Yes
Year fixed effect	Yes	Yes

Note : Coefficients are Standardized

Economic Outcomes - Firm Growth

	1 Firm ROA	2 Firm ROA	3 Firm growth	4 Firm growth
Processing time (partial prediction)	0.020***	0.018***	0.008***	0.008***
	(0.005)	(0.005)	(0.002)	(0.002)
Change bank (partial prediction)	0.018***	0.015***	0.012***	0.009***
	(0.004)	(0.004)	(0.003)	(0.003)
Reapply (partial prediction)	0.008**	0.007*	0.006***	0.006***
	(0.004)	(0.004)	(0.002)	(0.002)
Observations	135,872	135,872	135,872	135,872
Adjusted R^2	0.63	0.73	0.41	0.67
Controls	Credit score	Credit score	Credit score	Credit score
Firm fixed effect	No	Yes	No	Yes
Year fixed effect	Yes	Yes	Yes	Yes

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Meditation Analysis - Key Channels

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- Low-income individuals negotiate less vigorously (e.g., a lower probability of changing banks or reapplying soon after a rejected application) and experience longer processing times.

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- Similarly, female entrepreneurs demonstrate a lower probability of utilizing exit options and reinitiating negotiations post-rejection, although they have shorter processing times.
- Our baseline effects, which reflect more vigorous negotiators, are associated with a higher probability of loan origination, improved firm performance, and growth.
- We identify key mediating factors that shape credit negotiations, such as having a university education, being linked to the financial industry (which highlights financial literacy), and conducting R&D (indicating a focus on innovation).

Conclusion

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- We demonstrate that negotiation capacity matters for SME owners.

Questions?

Omitted-Variable Bias

Regarding unobserved heterogeneity (omitted-variable bias), our remedy first relies on some key characteristics of our dataset:

1. The applicant's credit score eliminates all omitted-variable bias from the supply side and leaves only relevant bias from asymmetric information between the lender and the borrower (e.g., adverse selection) affecting our results.
2. The inclusion of repeat loan applicants allows for the incorporation of firm fixed effects, which control for time-invariant firm characteristics and, when combined with year fixed effects, yield a DID estimate. (The treated firms are those that experienced a change in their owner's gender, due to the sale of the company, during our sample period. While the control firms are those that did not experience such a change.)

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Sample Representativeness

We examine whether :

1. Our bank's main characteristics (capitalization, liquidity, market value, and profitability) are similar to those of the other 31 systemic European banks (data from Compustat)
2. Our bank's rejection rate aligns with the cross-country euro-area average (data from the Survey of Access to Finance of Enterprises - SAFE)
3. The firms in our sample share similar characteristics with other similarly sized European firms (data from Orbis)
4. The share of female loan applicants closely corresponds to findings from related studies

◂ Robustness

Key Channels for Processing Time

	(1)	(2)	(3)	(4)	(5)
Gender	2.349***	2.286***	1.347***	0.826	1.327**
	(0.624)	(0.623)	(0.519)	(0.544)	(0.552)
Income	-2.113**	-2.009**	-3.465***	-3.264***	-3.166***
	(0.828)	(0.842)	(0.817)	(0.826)	(0.819)
University education	-1.725***				
	(0.465)				
Income × University education	-1.095**				
	(0.443)				
Financial industry		-2.527***			
		(0.431)			
Income × Financial industry		-1.394***			
		(0.339)			
Change bank			2.721***		
			(0.768)		
Gender × Change bank			1.014***		
			(0.304)		
R&D firm				2.129**	
				(1.007)	
Gender × R&D firm				1.183***	
				(0.208)	
High firm leverage					4.044***
					(1.146)
Gender × High firm leverage					0.816**
					(0.390)
Observations	135,872	135,872	135,872	135,872	135,872
Adjusted R-squared	0.85	0.86	0.86	0.87	0.86
Controls	Credit score	Credit score	Credit score	Credit score	Credit score
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Mediation analysis					
Effect via the mediation variable	0.27***	0.35***	0.27***	0.54***	0.18***

Key Channels for the probability to Change Bank

	(1)	(2)	(3)
Gender	0.015***	0.015***	0.009*
	(0.005)	(0.005)	(0.005)
Income	0.025***	0.027***	0.043***
	(0.008)	(0.008)	(0.009)
University education	0.036***		
	(0.012)		
Income × University education	0.018**		
	(0.008)		
Financial industry		0.091***	
		(0.020)	
Income × Financial industry		0.036***	
		(0.009)	
R&D firm			0.064**
			(0.029)
Gender × R&D firm			0.009***
			(0.003)
Observations	357,056	357,056	357,056
Adjusted R-squared	0.64	0.65	0.66
Controls	Credit score	Credit score	Credit score
Year fixed effect	Yes	Yes	Yes
Mediation analysis			
Effect via the mediation variable	0.17***	0.34***	0.64***

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Key Channels for the probability to Reapply after rejection

	(1)	(2)	(3)	(4)	(5)
Gender	0.030***	0.028***	0.020*	0.025**	0.019*
	(0.012)	(0.013)	(0.011)	(0.011)	(0.010)
Income	0.024**	0.029***	0.045***	0.045***	0.047***
	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
University education	0.047***				
	(0.014)				
Income × University education	0.029**				
	(0.014)				
Financial industry		0.116***			
		(0.037)			
Income × Financial industry		0.046***			
		(0.015)			
Change bank			0.071**		
			(0.033)		
Gender × Change bank			0.012**		
			(0.004)		
R&D firm				0.125***	
				(0.032)	
Gender × R&D firm				-0.025***	
				(0.008)	
High firm leverage					-0.038**
					(0.015)
Gender × High firm leverage					-0.022***
					(0.007)
Observations	8,741	8,741	8,741	8,741	8,741
Adjusted R-squared	0.61	0.63	0.61	0.63	0.63
Controls	Credit score	Credit score	Credit score	Credit score	Credit score
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Mediation analysis					
Effect via the mediation variable	0.16	0.34	0.22	0.58	0.25

References