Bank Expansion, Firm Performance, and Gender Gaps: Evidence from Vietnam

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via Female Entrepreneurship
YSEALI Academy, Fulbright University, and Asian Development Bank

A reflection as a YSEALI alumni

Figure 1: Fall 2015 YSEALI Academic Fellows on Social Entrepreneurship, University of Connecticut, US

What are your three biggest challenges as an entrepreneur?

Quick check on Reddit

What are your three biggest challenges as an entrepreneur?

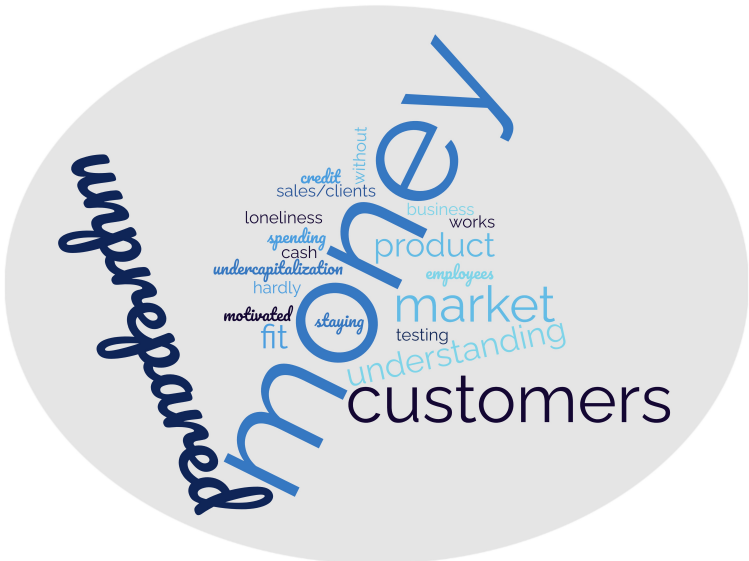

Figure 2: Biggest challenges as an entrepreneur

Source: Authors' collection from Reddit

What are your three biggest challenges as an entrepreneur?

- At least 83% of new businesses that hire are not accessing external private institutional capital (US)

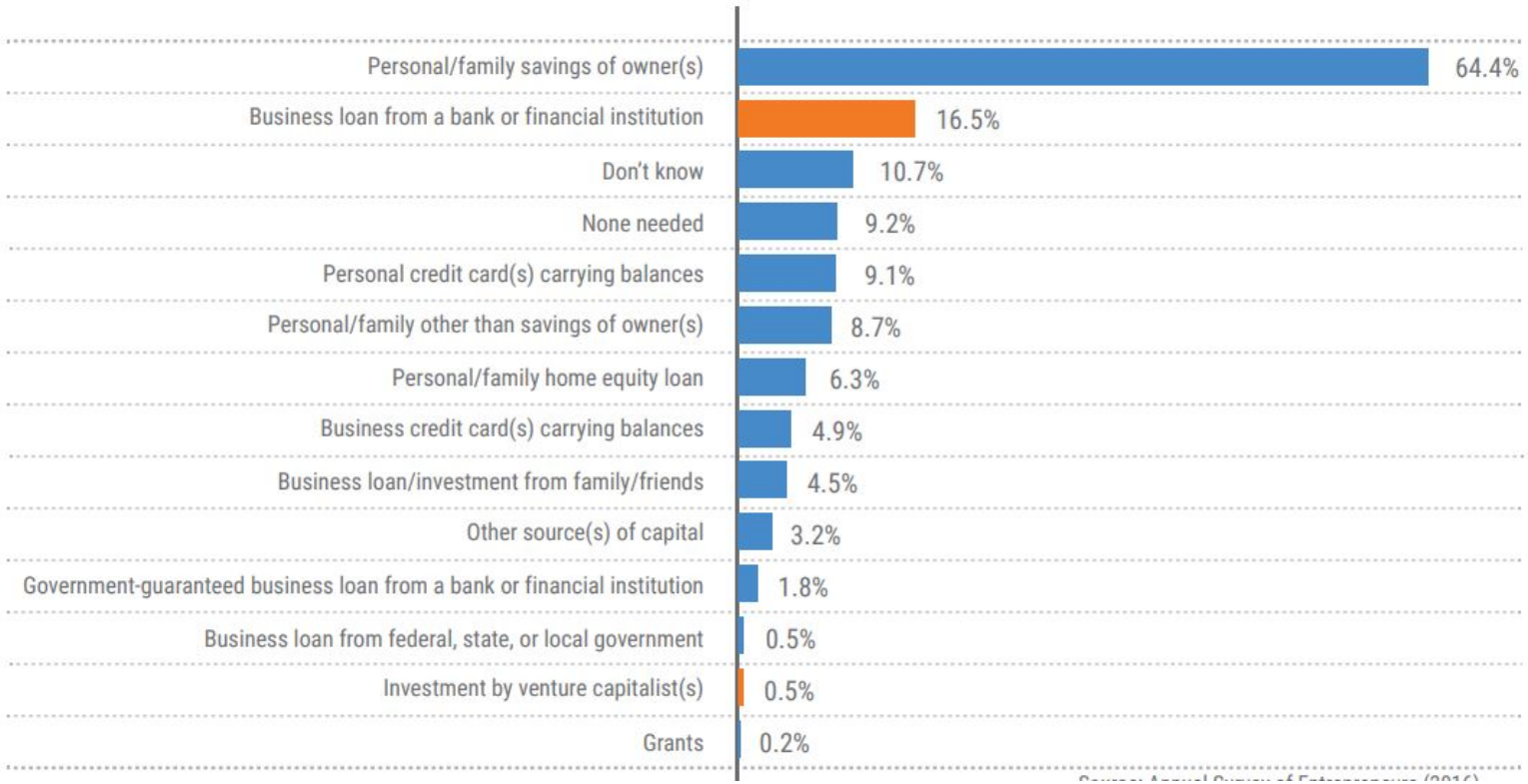

Figure 3: Sources of capital

Source: : Annual Survey of Entrepreneurs (2016)

Introduction and research question

Over the past few decades, the expansion of bank branches has played a pivotal role in enhancing financial development and access to finance (King and Levine, 1993; Burgess and Pande, 2005; Fafchamps and Schundeln, 2013; Celerier and Matray, 2019)

Introduction and research question

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However, less attention on within-country and gender-gap variations in financial access.

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Why bank branches expansion can help to increase financial access?

- Agglomeration economies: role of distance in investment (Helpman, 1984) or trade (Tinbergen, 1962; Krugman, 1991)
- Asymmetric information and transactions costs: adverse selection and moral hazard (Petersen and Rajan, 2002)
- Distance still matters!: even with the development of online financial technology services (Nguyen, 2019; Bonfim et al, 2021)

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But..

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But.. whether bank branches expansion can help to increase financial inclusiveness and reduce the gaps between women- and men-led firms to access to finance?

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But.. whether bank branches expansion can help to increase financial inclusiveness and reduce the gaps between women- and men-led firms to access to finance?

- women are less likely than men to own property, collateral requirement significantly hinder women-led firms' ability to access loans
- women-led firms may be less networked than their male counterparts and so derive less benefits from agglomeration
- women have greater domestic burdens and therefore have higher commuting costs (Rosenthal and Strange, 2012)

-> Bank branch expansion might help to solve the disparities

Research Questions:

- *Whether bank expansion matters for firm performance in Vietnam?*
- *Whether the benefits are different between women- and men-led firms?*

Preview of results

- When more banks are available, men-led businesses see a significant boost in both sales and the number of employees they can hire. That means, if there's a bank nearby, they can grow faster and bigger. It's what you might expect: better access to loans, better growth.

Preview of results

- When more banks are available, men-led businesses see a significant boost in both sales and the number of employees they can hire. That means, if there's a bank nearby, they can grow faster and bigger. It's what you might expect: better access to loans, better growth.

  But this story isn't the same for women-led businesses...

- No statistically significant impact on women-led firms on their sales or their ability to hire more employees. $\rightarrow$ deeper barriers preventing women entrepreneurs from fully benefiting from the same financial services.

Outline

Conceptual framework

Background: Banks expansion in Vietnam

Data

Empirical strategy

Results

Potential Mechanisms

Outline

Conceptual Framework

- Physical bank branches: (still) an important mode of bank access for firms, ex. US (Nguyen, 2019; Celerier and Matray, 2019), India (Garg et al., 2024), or Brazil (Fonseca and Matray, 2024)
- 79% of small business owners visited a branch at least once a week, with 24% making daily visits (Mercator Advisory Group)
- More access to bank services -> have better access to loans -> buy better inputs, expand to foreign markets, or adopt better technologies.

Hypothesis 1: Firms increased their sizes (sales and number of employees) with an increase of exposure to banks

Conceptual Framework

- Productivity of firms in developing countries are extremely low (Bloom et al., 2010)
- No meaningful correlation between financial development and either labor productivity or real wage growth Pagano and Pica, 2012)

Hypothesis 2: Firms do not gain in labor productivity with an increase of exposure to banks

Conceptual Framework

- When bank open more branches, there is an increase in female entrepreneurship (Garg et al., 2024)
- Women-led firms often face significant credit constraints due to characteristics of their firms or external factors
- Greater responsibilities in household chores and the prevalence of violence against women in many societies
- Women may also have greater domestic burdens and therefore have higher commuting costs (Rosenthal and Strange, 2012)

Hypothesis 3: Women-led firms benefit more with an increase in exposure to banks

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Banks expansion in Vietnam

- "Doi Moi" policy since 1986
- Replaced mono-tier banking system with four state-owned commercial banks (Ferrari and Tran, 2021)
- First wave of financial reforms: 1990s (legal framework, supervisory rules)
- Next, Vietnam's accession to the WTO in 2007 (open to foreign banks)
- Then, privatization in 2010, and restructuring policies in 2011 (Ferrari and Tran, 2021)

Banks expansion in Vietnam

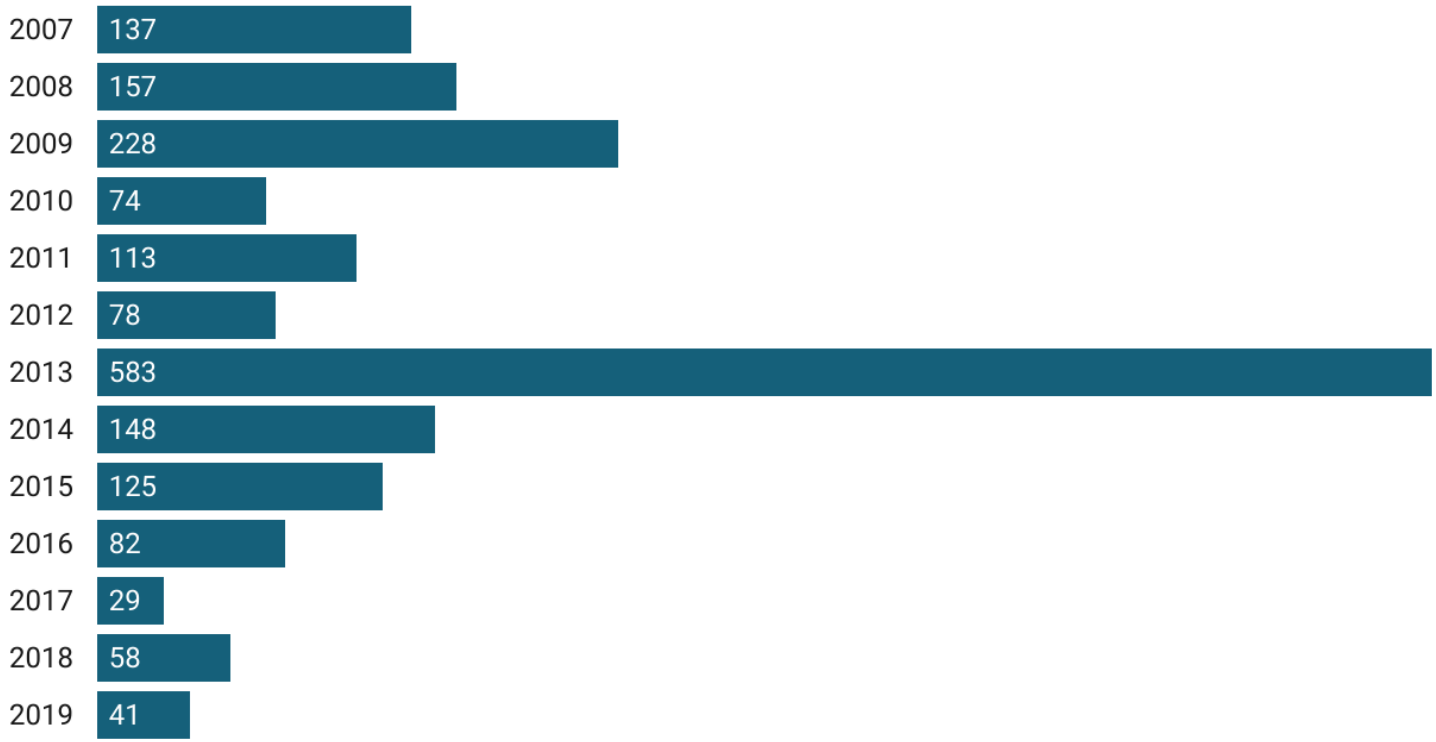

Figure 4: Number of new banks established from 2007 - 2019 in Vietnam

Source: Authors' representation based on manually collected data from banks' reports and their tax codes

Banks expansion in Vietnam

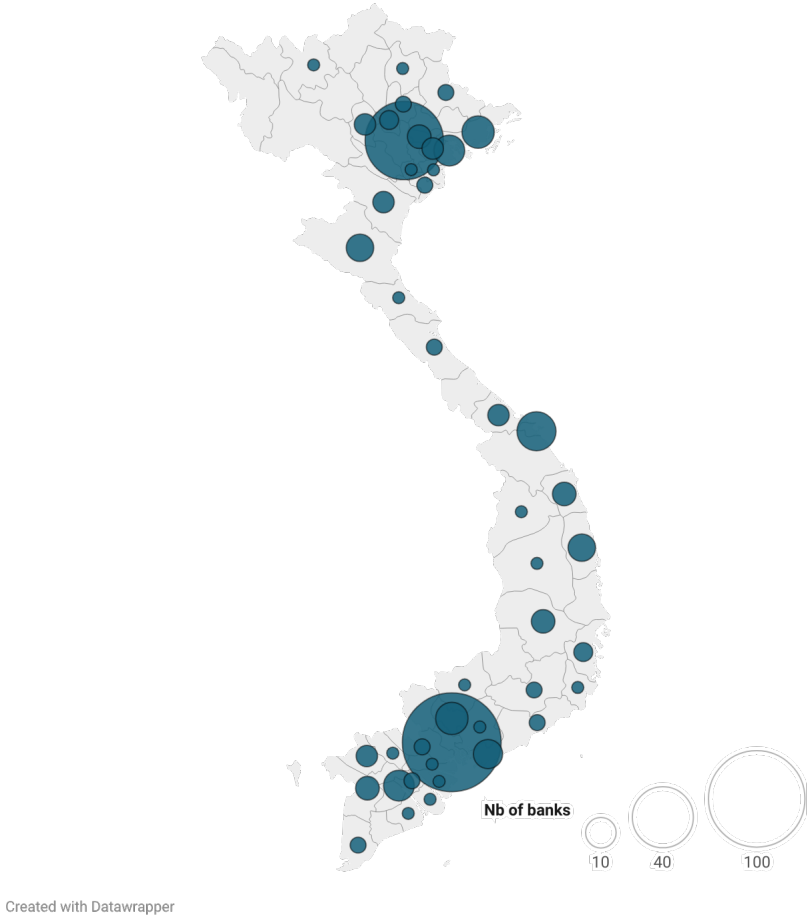

Figure 5: Map of bank branches in Vietnam in 2007

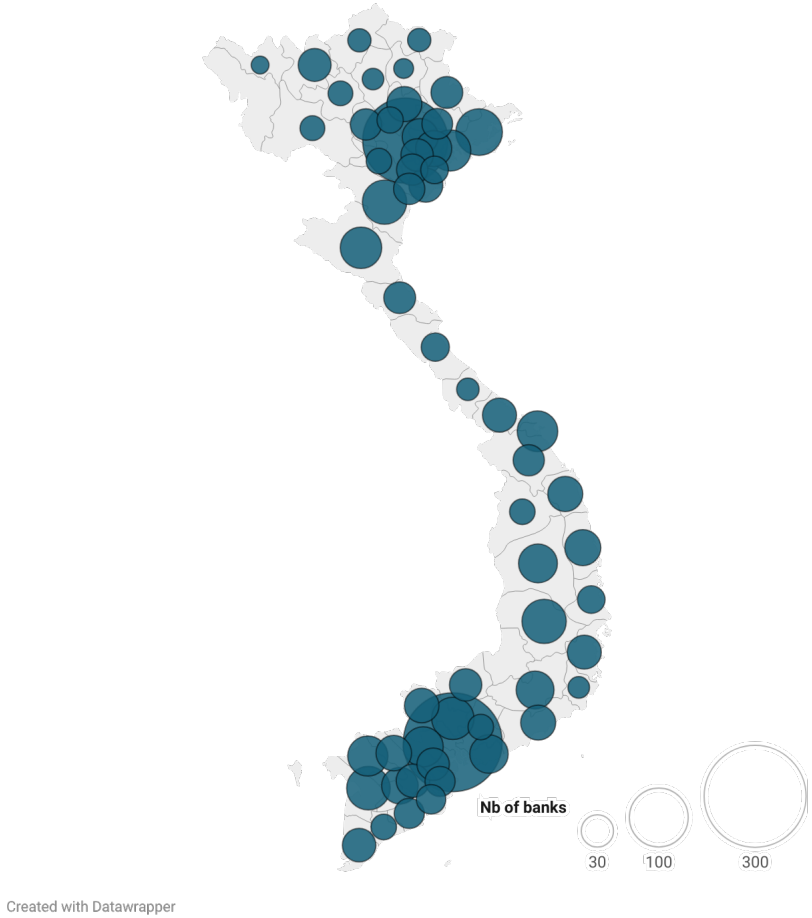

Figure 6: Map of bank branches in Vietnam in 2019)

Source: Authors' representation based on manually collected data from banks' reports and their tax codes

Outline

Data sources

Vietnam Enterprise Survey

- Information from all formal firms operating in Vietnam on their identification, industry activities, labor, and firms' outcomes
- Conducted by General Statistics Ofce of Vietnam, and is collected annually starting from 2000
- Focus on the period from 2007 - 2019
- Use information from year 2001 to have a baseline number of firms in each district in year 2001 to calculate the adjusted expansion of banks

Data sources

Banks dataset

- Use the dataset by Le et al. (2022) as a reference to identify which banks operating in Vietnam during our interested time period 2007 - 2019
- Then manually collect the data related to the branches of each firm, their address, and their established year
- Focus on the period from 2007 - 2019

Orbis dataset

- Collected by Bureau van Dijk (BvD) - a Moody's Analytics company
- Largest cross-country firm-level database that combines both, encompassing firms' financial statements, their real activity in terms of sales, employment, and investment, and most importantly, gender of the owner of the firm
- For Vietnam, with the most updated version of Orbis, we have more than 1,200,000 firms

Variables

Baseline number of firms: number of firms in each district as of the year 2001
$\rightarrow$ reflects the economic activity and potential demand for banking services within each district

Number of banks in the district: focus on branches of banks (Chi nhanh), not transaction office (Phong giao dich).

$$AEB_{d,t} = \frac{Nb_{d,t}}{Nf_{d,2001}}, \tag{1}$$

- Nb_{dt}: number of banks in district d at time t
- $Nf_{d,2001}$: baseline number of firms in district d.

Variables

Firm performance:

- Sales, Number of employees
- Labour productivity

Other variables:

- Gender of the owner of the firm in the latest year from Orbis, then match with VES data based on tax id
- Other control variables: types of firms (foreign, state, or private domestic), whether they are in the Special Economic Zone areas, and the sector that they are in (from VES)

Descriptive statistics

Table 1: Summary statistics

	Female		**Male**		**All**	
	Nb of obs	Mean	Nb of obs	Mean	Nb of obs	Mean
Exposure to banks	364,971	0.0933	1,594,941	0.0928	1,959,912	0.0929

Descriptive statistics

Table 1: Summary statistics

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Exposure to banks	364,971	0.0933	1,594,941	0.0928	1,959,912	0.0929
Sales	364,971	33,474.22	1,594,941	48,270.13	1,959,912	45,514.86

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Sales	364,971	33,474.22	1,594,941	48,270.13	1,959,912	45,514.86
Number of employees	364,971	28.36	1,594,941	37.44	1,959,912	35.75

Descriptive statistics

Table 1: Summary statistics

	Female		Male		All	
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Exposure to banks	364,971	0.0933	1,594,941	0.0928	1,959,912	0.0929
Sales	364,971	33,474.22	1,594,941	48,270.13	1,959,912	45,514.86
Number of employees	364,971	28.36	1,594,941	37.44	1,959,912	35.75
Labor productivity	356,391	305.56	1,555,305	313.22	1,911,696	311.79

Outline

Empirical strategy - OLS

Approach: Exploit variation of establishment of banks across districts and time

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We examine the impact of exposure to banks on firm performance:

$$Y_{idt} = \alpha + \beta_1 \text{Exposure to banks}_{dt} + \delta_t + \zeta_i + \epsilon_{idt}, \quad (2)$$

- Y_{idt}: different firm performance indicators including: revenue, number of employees, and labor productivity - measured in log
- δ_t and ζ_i: time period and firm fixed effects
- ε_{it}: errors clustered at the firm level

Empirical strategy - IV

Issue: Banks tend to open branches in areas that show promising growth potential, with high business activity, and suggest future growth opportunities

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We implement an instrumental variable (IV) approach by instrumenting AEB_{dt} with $\overline{AEB}_{dt}$

$$\overline{AEB}_{jt)} = \frac{1}{4} \sum_{j \in r} \frac{Nb_{jt}}{Nf_{j,2001}}, \tag{3}$$

- g_{jt}: growth rate of output in district j at time t
- $Nf_{j,2001}$: baseline number of firms in district j.
- District j: 4 other comparable districts in terms of growth rate of output within the same region r where district d is located.

Outline

Hypothesis 1 - Support: Firms increased their sizes (sales and number of employees) with an increase of exposure to banks

	Estimates for revenue, number of employees, and productivity (2007-2019)					
	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Log revenue						
AEB	0.025***	0.025***	0.025 * **	0.153***	0.155***	0.155 * **
	(0.006)	(0.006)	(0.006)	(0.051)	(0.051)	(0.051)
First stage:						
$\overline{AEB}$				0.046***	0.046***	0.046***
				(0.002)	(0.002)	(0.002)
Observations	1,913,539	1,913,539	1,913,539	1,518,053	1,518,053	1,518,053
Anderson-Rubin Wald F Test				9.18	9.41	9.43
Panel B. Log number of employees						
AEB	0.010***	0.012***	0.012 * **	0.056***	0.057***	0.059 * **
	(0.004)	(0.004)	(0.004)	(0.027)	(0.027)	(0.027)
$\overline{AEB}$				0.046***	0.046***	0.046***
				(0.002)	(0.002)	(0.002)
Observations	1,917,191	1,734,065	1,734,065	1,521,068	1,521,068	1,521,068
Anderson-Rubin Wald F Test				4.26	4.54	4.76

Hypothesis 2 - Support: Firms do not gain in labor productivity with an increase of exposure to banks

	Estimates for revenue, number of employees, and productivity (2007-2019)					
	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C. Log labour productivity						
AEB	0.005	0.005	−0.0005	-0.082	-0.082	−0.082
	(0.005)	(0.005)	(0.006)	(0.322)	(0.060)	(0.060)
$\overline{AEB}$				0.047***	0.047***	0.047***
				(0.002)	(0.002)	(0.002)
Anderson-Rubin Wald F Test				1.87	1.85	1.88
Observations	1,688,827	1,688,827	1,526,818	1,350,400	1,350,400	1,350,400
Controls & sample restrictions:						
Province dummies	✓	✓	✓	✓	✓	✓
Foreign dummies		✓	✓		✓	✓
State dummies		✓	✓		✓	✓
Manufacturing			✓			✓

Hypothesis 3 - Refuse: Women-led firms do not benefit with an increase in exposure to banks

	Estimates for revenue, number of employees, and productivity (2007-2019)		
	OLS		
	(1)	(2)	(3)
Panel A. Log revenue			
AEB	0.009	0.008	0.008
	(0.014)	(0.014)	(0.014)
Observations	356,250	356,250	356,250
Panel B. Log number of employees			
AEB	0.008	0.007	0.008
	(0.008)	(0.008)	(0.008)
Observations	356,806	356,806	356,806
Panel C. Log labour productivity			
AEB	-0.012	-0.012	−0.012
	(0.013)	(0.013)	(0.013)
Observations	314,298	314,298	314,298
Controls & sample restrictions:			
Province dummies	✓	✓	✓
Foreign dummies		✓	✓
State dummies		✓	✓
Manufacturing dummies			✓

Robustness Check

- Remove firms located in Special Economic Zones More info

Outline

Potential Mechanisms - Men-led firms only

- Men-led firms have higher probability of getting loans compared to women-led firms with an increase in exposure to banks
- If firms get loans, women-led firms have higher probability of adopt modern technologies, for example: Cloud computing technology, Advanced Robots, Additive manufacturing technology (3D printing), etc - with an increase in exposure to banks

	Estimates for potential mechanisms (2007-2019) - Men-led firms only		
	OLS		
	(1)	(2)	(3)
Panel A. Probability of getting loans			
Exposure to banks	0.013***	0.013***	0.013 * **
	(0.002)	(0.002)	(0.002)
Observations	1,495,827	1,495,827	1,495,827
Panel B. Technology adoption (conditional on getting loans)			
Exposure to banks	-0.006	-0.006	−0.006
	(0.022)	(0.022)	(0.022)
Observations	1,329	1,329	1,329
Controls & sample restrictions:			
Province dummies	✓	✓	✓
Foreign dummies		✓	✓
State dummies		✓	✓
Manufacturing dummies			✓

Potential Mechanisms - Women-led firms only

	Estimates for potential mechanisms (2007-2019) - Women-led firms only		
	OLS		
	(1)	(2)	(3)
Panel A. Probability of getting loans			
Exposure to banks	0.008*	0.008*	0.008∗
	(0.004)	(0.004)	(0.004)
Observations	309,999	309,999	309,999
Panel B. Technology adoption (conditional on getting loans)			
Exposure to banks	0.186***	0.186***	0.186 ∗ ∗∗
	(0.051)	(0.051)	(0.051)
Observations	259	259	259
Controls & sample restrictions:			
Province dummies	✓	✓	✓
Foreign dummies		✓	✓
State dummies		✓	✓
Manufacturing dummies			✓

Take-away Messages

- Main Results
  - Using data for Vietnamese firms from 2007 - 2019 and newly collected data for bank information, we demonstrate that **increasing exposure to banks has a positive impact on firms' revenue and number of employees, but not on firms' labor productivity.**
  - Quantitatively, we find that **one unit increase in exposure to banks increased firms' sales by 2.5 - 15.3%, and number of employees by 1.0 - 5.6%.**
  - **Driven by men-led firms**, and do not find any effects for women-led firms.
- Policy Implications
  - Women-led firms may experience more challenges in addition to distance to banks, for example implicit bias in getting credit, or not enough collateral property to getting a loan.
    $\rightarrow$ The importance of policies in dealing with additional biases that women-led firms have to experience

Reflection questions and Potential Future Research

- Reflection Questions
  - How have barriers to accessing finance impacted your business growth, and what steps could help overcome them?
  - What specific challenges do you face as women entrepreneurs in accessing financial services compared to men?
  - How can policymakers and financial institutions work together to close the gender gap in access to finance in your community?

Reflection questions and Potential Future Research

- Potential Future Research
  - Policies to support entrepreneurship/ female entrepreneurship
    - Support women's participation in the labour market: ex. lack of affordable day care and single-earner income tax policies
    - more formal and larger-scale initiatives
  - Place-Based Policies and Entrepreneurship (NBER)
    - Why are some regions (within-country and cross-country) engines of innovation and new business formation while others lag behind?
    - What policy tools can be leveraged to address regional disparities in business formation and innovation?
    - How are breakthrough ideas and innovations related to place?
    - What explains the rise of more recent global innovation hubs, such as those in India and China? And how it matters for Southeast Asian countries?
  - Data
    - Run RCTs
    - Surveys
    - Qualitative data (Interviews)
    - Observational data (Statistics Office, International Organizations)
    - Private firms data (Orbis, Patent data)

Thanks!

Appendix

Results - Men-led firms only

	Estimates for revenue, number of employees, and productivity (2007-2019)					
	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Log revenue						
AEB	0.028***	0.029***	0.029***	0.169***	0.170***	0.170***
	(0.007)	(0.007)	(0.007)	(0.051)	(0.056)	(0.056)
First stage:						
$\overline{AEB}$				0.046***	0.046***	0.046***
				(0.002)	(0.002)	(0.002)
Observations	1,557,289	1,557,289	1,557,289	1,234,384	1,234,384	1,234,384
Anderson-Rubin Wald F Test				9.19	9.27	9.28
Panel B. Log number of employees						
AEB	0.011***	0.011***	0.011***	0.049*	0.050*	0.051*
	(0.004)	(0.004)	(0.004)	(0.027)	(0.030)	(0.030)
First stage:						
$\overline{AEB}$				0.046***	0.046***	0.046***
				(0.002)	(0.002)	(0.002)
Observations	1,560,385	1,560,385	1,560,385	1,236,927	1,236,927	1,236,927
Anderson-Rubin Wald F Test				2.74	2.83	2.92
Controls & sample restrictions:						
Province dummies	✓	✓	✓	✓	✓	✓
Foreign dummies		✓	✓		✓	✓
State dummies		✓	✓		✓	✓
Manufacturing dummies			✓			✓

Results - Men-led firms only

	Estimates for revenue, number of employees, and productivity (2007-2019)					
	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C. Log labour productivity						
AEB	0.009	0.009	0.009	-0.073	-0.072	-0.072
	(0.006)	(0.006)	(0.006)	(0.066)	(0.066)	(0.066)
First stage:						
$\overline{AEB}$				0.047***	0.047***	0.047***
				(0.002)	(0.002)	(0.002)
Anderson-Rubin Wald F Test				1.20	1.19	1.19
Observations	1,374,529	1,374,529	1,374,529	1,098,261	1,098,261	1,098,261
Controls & sample restrictions:						
Province dummies	✓	✓	✓	✓	✓	✓
Foreign dummies		✓	✓		✓	✓
State dummies		✓	✓		✓	✓
Manufacturing dummies			✓			✓

Robustness Check - Remove firms located in Special Economic Zones

	Estimates for revenue, number of employees, and productivity (2007-2019)					
	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Log revenue						
AEB	0.018***	0.019***	0.019***	0.158***	0.160***	0.160***
	(0.006)	(0.006)	(0.006)	(0.051)	(0.051)	(0.051)
First stage:						
$\overline{AEB}$				0.045***	0.045***	0.045***
				(0.002)	(0.002)	(0.002)
Observations	1,858,647	1,858,647	1,858,647	1,473,669	1,473,669	1,473,669
Anderson-Rubin Wald F Test				9.31	9.57	9.57
Panel B. Log number of employees						
AEB	0.003	0.003	0.003	0.057**	0.059**	0.059***
	(0.004)	(0.004)	(0.004)	(0.028)	(0.028)	(0.028)
First stage:						
$\overline{AEB}$				0.046***	0.046***	0.046***
				(0.002)	(0.002)	(0.002)
Observations	1,861,678	1,861,678	1,861,678	1,476,121	1,476,121	1,476,121
Anderson-Rubin Wald F Test				4.29	4.61	4.76
Controls & sample restrictions:						
Province dummies	✓	✓	✓	✓	✓	✓
Foreign dummies		✓	✓		✓	✓
State dummies		✓	✓		✓	✓

Robustness Check - Remove firms located in Special Economic Zones

	Estimates for revenue, number of employees, and productivity (2007-2019)					
	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C. Log labour productivity						
AEB	0.013**	0.013**	0.013**	-0.084	-0.084	-0.084
	(0.006)	(0.006)	(0.006)	(0.062)	(0.062)	(0.062)
First stage:						
$\overline{AEB}$				0.047***	0.047***	0.047***
				(0.002)	(0.002)	(0.002)
Anderson-Rubin Wald F Test				1.88	1.86	1.86
Observations	1,640,599	1,640,599	1,640,599	1,310,993	1,310,993	1,310,993
Controls & sample restrictions:						
Province dummies	✓	✓	✓	✓	✓	✓
Foreign dummies		✓	✓		✓	✓
State dummies		✓	✓		✓	✓
Manufacturing dummies			✓			✓