RIETI Policy Seminar

September 26, 2019

Entrepreneurship, Innovation, and Finance:

New growth avenues in developed economies

新たな成長に向けたアントレプレナーシップ・イノベーション・ファイナンスの融合

基調講演／Keynote Speech

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What Have We Learned About SME Access to Finance?

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Presentation Overview

- Motivation
- Progression of research on SME finance
- Some useful prisms with which to view SME finance
- Some important unsettled issues
  - A top twelve list
- Conclusion

Motivation I

- **Growing academic interest in SME finance**
  - **Substantial progress in our understanding of how SMEs access external finance**
  - **Is the research tethered to the real world? – e.g.,**
    - **Bankers focus on the "how" of loan construction**
    - **Academics focus on the "why" of loan construction**
- **Big policy issues**
  - **SMEs are important, e.g.**
    - **70% of labor force in Japan is employed by SMEs; 2/3 in Europe; 1/2 in U.S.**
  - **A persistent "funding gap" in SME access to finance**
  - **Recent financial crisis-driven credit crunches in Japan, the U.S. and Europe**
- **Where is the frontier of our knowledge?**

Motivation II

- **Several comprehensive overview papers help us define "what we know" about SME finance**
  - **Berger and Udell (1998)**
  - **Udell (2015)**
- **Some comprehensive papers on subsets of the literature on SME Finance**
  - **e.g., *relationship lending* overviews (e.g., Boot 2002, Elysasiani and Goldberg 2004); a meta-analysis (Kysucky and Norden 2014)**
  - **e.g., *trade credit* (Giannetti, Burkart and Ellingsen 2011)**
- **These papers help us define "what we know"**
  - **I'll draw on some of these papers in this presentation as well as other recent literature**

Progression of Research on SME Finance

- **Phase I. The genesis - a confluence of research on:**
  - **Information-based theory of the bank (Diamond 1984, Ramakrishnan and Thakor 1984, Boyd and Prescott 1986)**
  - **Theoretical and empirical distinction between publically traded arms-length debt and intermediated debt for opaque firms, (e.g., Diamond 1991, 1993, Rajan 1992, and Houston and James 1996)**
  - **Literature on corporate finance (Jensen and Meckling 1976, Townsend 1979, Myers 1984, Myers and Majluf 1984)**

- **Phase II. Emphasis on contract terms, e.g.,**
  - ***Collateral* (e.g., Chan and Kanatas 1985, Besanko and Thakor 1987, Boot, Thakor and Udell 1991, Berger and Udell 1990)**
  - ***Covenants* (Berlin and Loeys 1988, Berlin and Mester 1993, Carey et al. 1993)**
  - ***Commitments* (e.g., Melnik and Plaut 1986, Avery and Berger 1991, Berger and Udell 1992)**

Progression of Research on SME Finance (cont.)

- **Phase III. Emphasis on soft information and relationship lending**
  - Relationship strength and pricing (e.g., Petersen and Rajan 1994, Berger and Udell 1995, Harhoff and Korting 1998)
  - Relationships and market power (Petersen and Rajan 1995)
- **Phase IV. More nuance, more complexity including, e.g.,**
  - *Institutions* matter (e.g., Stein 2002, Berger et al. 2005)
  - *Transactions lending* matters (e.g., Berger and Udell 2006, de la Torre, Martinez Peria and Schmukler 2010)
  - *Technological innovation* matters (e.g., Frame, Srinivasan and Woolsey 2001, Petersen and Rajan 2002)
  - *Macro shocks* matter (Jimenez et al. 2012, Iyer et al. 2013, Ferrando, Popov and Udell 2017)

Useful Prism #1: Lending Technologies

- **An extension of Phase IV**
- **Lending technologies (Berger and Udell 2002, 2006)**
  - **A *lending technology* is comprised of a combination of**
    - **Screening mechanisms (i.e., underwriting due diligence)**
    - **Contract structures**
    - **Monitoring strategies**
  - **Either transactions-based and/or relationship-based**
  - **Aligns with how banks *actually* underwrite loans**
- **Helps align research with practitioner behavior (i.e., the "*real world*")**

Lending Technologies

Figure 1
Lending Technologies

TECHNOLOGY	TYPE	BORROWER	INFORMATION
Relationship Lending	Relationship	Opaque	Soft
Financial Statement Lending	Transaction	Transparent	Hard
Asset-Based Lending/discounting	Transaction	Opaque	Hard
Factoring	Transaction	Opaque	Hard
Equipment Lending	Transaction	Opaque and Transparent	Hard
Leasing	Transaction	Opaque and Transparent	Hard
Real Estate-Based Lending	Transaction	Opaque and Transparent	Hard
Small Bus. Credit Scoring	Transaction	Opaque	Hard
Crowd Funding	Transaction	Opaque	Hard
Trade Credit	Transct/Reltnshp	Opaque and Transparent	Soft and Hard

Useful Prism #2: SME Lending Channels

- **"SME Lending Channel" (Taketa and Udell 2007, Udell 2009)**
  - **An *SME lending channel* is a two dimensional concept**
    - **Lending technology offered by a type of financial institution/lender**
    - **SME lending channels useful for analyzing key aspects of SME finance, e.g.,**
  - **Connection between institutions and lending technologies (e.g., Stein 2002, Berger et al. 2005, Agarwal and Hauswald 2010)**
  - **What happens in a credit crunch (Jimenez et al. 2012, Iyer et al. 2013, Garcia-Appendini and Montoriol-Garriga 2013)**
  - **How credit crunches may be propagated (Cetorelli and Goldberg 2011, Popov and Udell 2011)**
  - **Crisis intervention efficacy (Uesugi, Sakai and Yamashiro 2006, Berger et al. 2014, Ferrando, Popov and Udell 2015)**

Figure 2
Japanese SME Lending Channels: Pre-Crisis (1990)

	City Banks	Regional Banks	Shinkin Banks	Gov't Affil. Banks	Non-Bank Shoko	Corporations
Relationship Lending		o	o	o	o	
Financial Statement Lending	o	o	o	o		
Factoring	o	o	o	o		
Leasing	o	o	o	o	o	
Equipment Lending	o	o	o	o	o	
Real Estate-Based Lending	o	o	o	o	o	
Trade Credit						o
Sogo Shosha Lending						o

Source: Taketa and Udell (2007)

Figure 3
U.S. SME Lending Channels (2015)

	Large Banks	Small Banks	Credit Unions	Large Commercial Finance Companies	Small Commercial Finance Companies	Internet	Corporations
Relationship Lending		o	o				
Financial Statement Lending	o	o	o				
Asset-Based Lending/Discounting	o	o		o	o		
Factoring	o	o		o	o		
Equipment Lending	o	o	o	o	o		
Leasing	o	o	o	o	o		
Real Estate-Based Lending	o	o	o				
Small Bus. Credit Scoring	o						
Crowd Funding	o					o	
Trade Credit							o

Figure 4
U.S. SME Lending Channels - 1990-92 Credit Crunch

	Large Banks	Small Banks	Credit Unions	Large Commercial Finance Companies	Small Commercial Finance Companies	Internet	Corporations
Relationship Lending		~					
Financial Statement Lending	x	~					
Asset-Based Lending/Discounting	x	~		o	o		
Factoring	x	~		o	o		
Equipment Lending	x	~		o	o		
Leasing	x	~		o	o		
Real Estate-Based Lending	x	~					
Small Bus. Credit Scoring							
Crowd Funding							
Trade Credit							o

Figure 5
U. S. SME Lending Channels - The Recent Financial Crisis

	Large Banks	Small Banks	Credit Unions	Large Commercial Finance Companies	Small Commercial Finance Companies	Internet	Corporations
Relationship Lending		x	o				
Financial Statement Lending	x	x	o				
Asset-Based Lending/Discounting	x	x		x	o		
Factoring	x	x		x	o		
Equipment Lending	x	x	o	x	o		
Leasing	x	x	o	x	o		
Real Estate-Based Lending	x	x	o				
Small Bus. Credit Scoring	x						
Crowd Funding	x					o	
Trade Credit							o

Unsettled Issues: The "Top Dozen"

1. Competition and SME access to finance
2. Hardening soft information
3. Confusion over collateral: *Inside* collateral v. *outside* collateral
4. Testing the SME lending channel paradigm
5. The value of audited financial statements
6. Identifying demand v. supply effects in a credit crunch
7. Countercyclical macro-prudential policy tools and SME lending
8. Efficacy of government guarantees
9. Cooperatives and SME lending
10. The role of trade credit
11. SME loan securitization
12. The potential role of fintech

Competition and SME access to finance

- **Two views (Rosen and Udell 2017):**
  - ***Traditional Market Power View:*** **lower competition => higher price of credit and less access**
  - ***Relationship Lending View:*** **lower competition => enhances relationship building (e.g., Petersen and Rajan 1995)**
- **However, the tension between these two views <u>only</u> applies to relationship lending – not transaction lending**
  - **This complicates empirical testing if the data can't distinguish between relationship lending and transaction lending**
- **Does competition inhibit access to finance? The evidence is "best described as mixed" (Rosen and Udell 2017)**
  - **Some papers find it does (e.g., Petersen and Rajan 1995; Bonaccorsi de Patti and Dell'Ariccia 2004) and some find that the opposite (Black and Strahan 2002; Degryse and Ongena 2007; Kysucky and Norden 2016)**
  - **Some find: no effect (Kano, Uchida, Udell and Watanabe 2011); depends on how completion measured (Carbo-Valverde, Rodriquez-Fernandez and Udell 2017)**

Hardening soft information

- **What are the boundaries to hardening soft information?**
  - **Much research indicates that it is problematic for large banks to communicate soft information internally (e.g., Stein 2002; Berger, Miller, Petersen Rajan and Stein 2005; Kano, Uchida, Udell and Watanabe 2011) and the primacy of the loan officer (e.g., Uchida, Udell and Yamori 2012).**
- **Discretion is often quantified/codified in bank risk ratings.**
  - **Is this hardening soft information?**
  - **"One can always create a numerical score with soft information [but this] in and of itself doesn't make the information hard"**
    - **a "potential line of future research" Liberti and Petersen (2017)**
- **Has technology hardened soft information?**
  - **Did SBCS "harden" soft information?**
  - **Only one paper has looked "inside" a hierarchical bank and found direct evidence of problems communicating (Filomeni, Udell and Zazzaro 2018)**

Confusion over collateral: Inside collateral v. outside collateral

- **Conceptual problem**
  - **Inside collateral = assets pledged by the *firm***
  - **Outside collateral = pledged assets not owned by firm**
  - **“inside” collateral ≠ “outside” collateral**
- **Theory – empirical disconnect**
  - **Most theory papers focus on just outside collateral**
  - **Not much theory on inside collateral**
    - **Can’t explain inside collateral in a single lender model (e.g., Kiyotaki and Moore 1995, and Bernanke, Gertler and Gilchrist 1996)**
  - **Many empirical models can’t distinguish between two types in their data (e.g., Fed’s STBL data)**
    - **Thus, these papers cannot test theory that applies to just one type**

Testing SME lending channel paradigm

- Challenges in identifying lending technologies in existing data (e.g., Uchida, Udell and Yamori 2007; Berger and Black 2009)
  - For example, the problem of distinguishing between inside and outside collateral (e.g., Aki 2013, Calomiris, Larrain, Liberti and Sturgess 2017, Ono, Uchida, Udell and Uesugi 2019)
  - Moreover, banks don't identify the lending technology on their financials statements (don't even identify the originating department)
- This same problem makes it difficult to identify changes in lending channels during a credit crunch
  - Some channels likely contract (e.g., a decline in small bank lending likely associated with contraction in relationship lending)
  - But some evidence of lending channels expanding
    - Commercial finance ABL increased in U.S. 1990-92 credit crunch (Udell 2009)
    - Trade credit expanded during recent crisis (Garcia -Appendini and Montoriol-Garriga 2013, Carbo-Valverde, Rodriguez-Fernandez and Udell 2016, Norden, Udell and Wang 2019)

The value of audited financial statements

- **Key factor in financial statement lending**
  - **Audited statements a necessary condition for covenants**
  - **Defines the difference between opaque and transparent firms**
  - **Defines the "financial statement lending technology"**
- **Sometimes data has information on financial statement quality (e.g. Berger et al 2005, Popov and Udell 2011, Uchida, Udell and Watanabe 2013, Illueca, Norden, Pacelli Udell and Wang 2018)**
  - **Some data distinguishes among auditors (Illueca et al. 2018)**
- **Insufficient research on benefit/cost trade-off of getting an audit (Carey, Knechel and Tanewski 2013). Here's what we know:**
  - **Large firms get audits (Allee and Yohn 2009)**
  - **Mixed results on audits improving credit access (Jiangli et al 2008, Allee and Yohn 2009, Cassar et al 2014, Kim et al 2011, and Agarwal et al 2015**
  - **Mixed results on whether audits lower rates (Blackwell et al 1998, Allee and Yohn 2009, Minnis 2011, Cassar et al 2014, Agarwal et al 2015)**
  - **How does trade-off vary across countries?**

Identifying demand v. supply effects in a credit crunch

- Natural experiments (e.g., Khwaja and Mian 2008, Peek and Rosengren 1997)
- Several strategies used in this crisis, e.g.,
  - Fixed effects in multi-bank settings (e.g., Jimenez et al. 2011)
  - Loan applications (e.g., Puri, Rocholl and Steffen 2011)
  - Disequilibrium model (Carbo-Valverde et al. 2014)
  - Survey data (e.g., Ferrando, Popov and Udell 2019)

Which works better?

- Other strategies?
- Firms in some countries single-bank borrowers (e.g., U.S), some countries multi-bank borrowers (e.g., Italy, Spain)

Do results from latter apply to former?

Countercyclical macro-prudential policy tools and SME lending

- **Important policy topic**
  – **Various tools: LTV, DTI, capital buffers, dynamic provisioning**
- **Direct effect: dampen risk-taking (e.g., LTV caps), dampen price increase (LTV caps), smooth credit supply (capital buffers, dynamic provisioning)**
- **Indirect effect (unintended consequences) including credit access**
- **Evidence – incomplete and mixed**
  – **<u>Efficacy</u>**
    - **e.g., LTV cap would not have worked in Japan (Ono, Uchida, Udell and Uesugi 2019)**
    - **e.g., dynamic provision helped in Spain during crunch (Jimenez et al. 2017)**
  - **<u>Unintended consequences</u>:**
    - **e.g., Spain (Illueca, Norden and Udell 2015);**
    - **e.g., Japan (Ono, Uchida, Udell and Uesugi 2019)**

Efficacy of government guarantees

- Ubiquitous (Cressy 2000, 2002)
  - Motivated by market imperfections
- Relatively little research
  - Some evidence of benefits to
    - Real activity (Craig, Jackson and Thomson 2005, Hancock, Peek and Wilcox 2007)
    - Decreasing pro-cyclicality (Hancock, Peek and Wilcox 2007)
    - Mitigating effects of macro shocks (Uesugi, Sakai and Yamashiro 2006, Wilcox and Yasuda 2010)
- More and better research needed
  - Which schemes work best in which environments?
  - Which schemes work in crises?
  - Improved methodology for gauging efficiency gains (or losses ala DeMarco 2002)

Cooperatives and SME lending

- Relatively little research
  - Important component of global financial system
  - Deregulation, e.g., product & spatial in U.S.
  - Different governance mechanism
  - No broad analysis of connection between governance and behavior for co-ops ala Laeven and Levine for banks (2009)
- Good news/bad news?
  - Good news:
    - Applying literature on higher purpose (e.g., Handy and Katz 1998, Thakor and Quin 2014)
    - Coops lend more at better rates (Angelini, Di Salvo and Ferri 1998, Becchetti, Ciciretti and Paolotonio 2014)
  - Bad news:
    - Expense preference behavior (Mester 1989)
    - Political capture (Illueca, Norden and Udell 2014)

The role of trade credit

- **Trade credit ubiquitous**
  - **Second most important source of external SME debt finance (Berger and Udell 1998, Dermirguc-Kunt and Maksimovic 2001)**
  - **Important safety valve (Garcia-Appendini and Montriol-Garriga 2013, Carbo-Valverde, Rodriguez-Fernandez and Uell 2014)**
- **Claims that it is enormously expensive – 44% per annum (e.g., Petersen and Rajan 1994)**
  - **Not consistent with its importance and the evidence (e.g., Miwa and Ramseyer 2008, Giannetti, Burkart and Ellingsen 2011)**
- **Many theories, but its still unresolved (see Udell 2015)**
  - **Mixed evidence on trade creditors being relationship lenders mixed (e.g., Uchida, Udell and Watanabe 2013, McMillan and Woodruff 1991)**
  - **Meta-analysis on trade credit may be appropriate**
  - **Lack of insight into how trade credit underwritten**

SME loan securitization

- **Securitization began with GNMA pass-throughs in 1968**
- **Some SME securitization in the U.S., *but***
  - **"direct" securitization very limited – soley SBA's 7(a) program (Berger and Frame 2005)**
    - **Standardization appears critical (Wilcox 2011)**
  - **"indirect" may be more much more important (i.e., funding from entrepreneur's *personal* property (Wilcox 2011))**
- **Significant activity in Europe including new initiatives**
  - **2014 ECB Asset-backed Securities Purchase Program**
  - **SME securitizations represent half of European market**
  - **But declined in crisis**
- **What is the potential**
  - **What SME loans can be securitized?**
  - **Why is most European SME securitization still on bank B/Ss?**
  - **Will fintech fuel new SME loan securitization?**

The potential role of fintech

- **Potentially disruptive technology**
  - **In U.S. significant number of below-prime and "underserved" borrowers (Mach, Carter and Slattery 2014, Li 2016, Schweitzer and Barkley 2017, Jagtiani 2019)**
  - **Nontraditional data increasingly used (Jagitani and Lemieux 2019, and Hughes, Jagtiani and Moon 2019)**
    - **Divergence from FICO scores**
  - **Most loans under $40,000 (Jagtiani 2019)**
    - **Small business lending (SBL) (< $100,000) declining**
    - **However, largest banks' SBL up**
- **Will fintech replace (SBL) above $100,000?**
  - **Is fintech SBL just replacing small business credit scoring?**
  - **Can fintech replace relationship lending based on soft info?**
  - **What about "Bigtech"?**

Conclusion

- **We've learned a lot**
- **There's more to learn**
- **Need more convergence between academic world and practitioner world**
- **Have I got the right top 12 *unsettled issues*?**