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# La relation de clientèle banque-entreprise et la structure du pool bancaire dans un environnement corrompu :

**trois essais**

Hong Van Vu

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## **THÈSE**

**Pour obtenir le grade de Docteur en Sciences de Gestion**

Présentée et soutenue publiquement par

**Hong Van VU**

Le 28 septembre 2018

*Bank-firm relationship and the firm's bank pool structure  
in corrupt environment: three essays*

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## Table of Contents

<b>Remerciements .....</b>	<b>1</b>
<b>Table of Contents .....</b>	<b>5</b>
<b>List of Tables.....</b>	<b>7</b>
<b>List of Appendix .....</b>	<b>9</b>
<b>Résumé .....</b>	<b>10</b>
<b>Introduction générale.....</b>	<b>13</b>
i) Le cadre de la thèse .....	13
ii) Les questions de recherche : énoncé et motivation.....	17
iii) Une base de données originale.....	23
iv) Brève présentation des résultats .....	27
Référence .....	30
<b>General Introduction .....</b>	<b>35</b>
i) The framework of the thesis.....	35
ii) Research questions: statement and motivation .....	39
iii) An original database .....	44
iv) Brief presentation of results .....	48
Reference .....	50
<b>Chapter 1: Are Bank–Firm Relationships and Political Connection Substitutes or Complements? How Firms Maximize Credit Availability: The Case of Vietnam.....</b>	<b>55</b>
Abstract.....	55
1.1. Introduction .....	56
1.2. Literature review.....	61
1.3. Context of the study, data and variables.....	67
1.4. Empirical methodology .....	74
1.5. Results .....	78
1.6. Robustness Tests.....	83
1.7. Conclusion .....	84

Reference .....	86
<b>Chapter 2: Political connections, local corruption, and firm’s bank pool structures: Empirical evidence from Vietnam .....</b>	<b>105</b>
Abstract.....	105
2.1. Introduction .....	106
2.2. Literature review and hypotheses development .....	110
2.3. Context of the study, data and variables.....	113
2.4. Empirical methodology .....	119
2.5. Results .....	124
2.6. Robustness tests.....	130
2.7. Conclusion.....	131
Reference .....	133
<b>Chapter 3: Bank Integrity, Managerial Ethics and Firms’ Bank-Pool Structure: A Theoretical Approach and Empirical Evidence from Vietnam .....</b>	<b>146</b>
Abstract.....	146
3.1. Introduction .....	147
3.2. Model.....	151
3.3. Context of the Study, Data, and Variables .....	156
3.4. Methodology and Model .....	160
3.5. Results .....	163
3.6. Conclusion .....	165
Reference .....	167
<b>Conclusion générale .....</b>	<b>182</b>
<b>General Conclusion .....</b>	<b>185</b>
<b>List of Hypotheses .....</b>	<b>188</b>
<b>List of Equations.....</b>	<b>190</b>
<b>List of Abbreviations.....</b>	<b>191</b>
<b>Table of Contents .....</b>	<b>192</b>

## List of Tables

### Chapter 1:

Table 1. 1 Definition of variables and descriptive statistics .....	93
Table 1. 2 Credit Availability: Connected firms and the number of banking relationships ....	95
Table 1. 3 Credit availability: Connected firms operating in corrupt provinces and numbers of banking relationships.....	95
Table 1. 4 Credit availability and the role of relationships (Equation 1.1) .....	96
Table 1. 5 Credit availability and the role of bank relationships, political connections, and corruption (Equation 1.2) .....	98
Table 1. 6 Credit availability and the interaction effects of bank–firm relationships and political connections in corrupt provinces (Equation 1.3) .....	100
Table 1. 7 Bank–firm relationships and political connections (Equation 1.4).....	102
Table 1. 8 Robustness tests: Credit availability and the role of relationships, political connections, corruptions and its interactions (Equation 1.1, 1.2, 1.3, 1.4) .....	103

### Chapter 2:

Table 2. 1 Definition of variables & descriptive statistics .....	137
Table 2. 2 Proportion of connected banks: connected firms and other firms.....	139
Table 2. 3 Number of banks: Between connected firms that have MBRs with connected banks and firms that do not.....	139
Table 2. 4 Number of bank ownership types: Connected firms that have MBRs with connected banks and firms that do not .....	139

Table 2. 5 Firms' likelihood of having main banking relationships with connected banks (Equation 2.1).....	140
--	-----

Table 2. 6 Effects of having MBRs with connected banks of connected firms on numbers of banks (Equation 2.2) .....	142
--	-----

Table 2. 7 Effects of having MBRs with connected banks of connected firms on diversity of bank ownership types (Equation 2.3).....	144
--	-----

### **Chapter 3:**

Table 3. 1 Definition of variables.....	171
---	-----

Table 3. 2 Descriptive statistics.....	172
--	-----

Table 3. 3 Distribution of the number of bank international awards obtained during 2010–2012 .....	173
--	-----

Table 3. 4 Number of banks: Corrupt bank and ethical firm .....	174
---	-----

Table 3. 5 Number of banks: Honest bank and ethical firm .....	174
--	-----

Table 3. 6 Role played by the corruption of the main bank on the structure of the firm bank pool, for ethical or non-ethical firms (Equation 3.1).....	175
--	-----

Table 3. 7 Role played by the integrity of the main bank on the structure of the firm bank pool for ethical or non-ethical firms (Equation 3.2).....	176
--	-----

Table 3. 8 Influence of matching ethical firm–honest bank and non-ethical firm–corrupt bank on the structure of the firm bank pool (Equation 3.3).....	177
--	-----

## List of Appendix

### Chapter 3:

Appendix 1: Proof of proposition.....	178
---------------------------------------	-----

## Résumé

Cette thèse intitulée « *La relation de clientèle banque-entreprise et la structure du pool bancaire des entreprises dans un environnement corrompu : trois essais* » consiste en trois recherches sur le financement bancaire des entreprises.

Le premier essai met l'accent sur l'influence des relations bancaires et des connexions politiques sur l'accès des entreprises au crédit. Il utilise un ensemble de données collectées manuellement sur les moyennes entreprises vietnamiennes pour montrer que les relations bancaires (durée de la relation avec la banque principale et le nombre de banques) et les connexions politiques ont des effets complémentaires sur la maximisation de la disponibilité du crédit pour les entreprises. Cette recherche a des implications politiques pour les économies émergentes caractérisées par la corruption gouvernementale locale ; elle suggère que les décideurs politiques devraient préférer les systèmes bancaires transactionnels aux systèmes bancaires relationnels, et elle expose le côté obscur des relations bancaires.

Le deuxième essai examine les effets des connexions politiques et de la corruption locale sur les structures du pool bancaire des entreprises. En utilisant le même ensemble de données que dans notre premier essai, nous constatons que les entreprises politiquement connectées ont tendance à établir leurs relations bancaires principales avec les banques connectées. Nous constatons également que les entreprises connectées réduisent le nombre de banques et la diversité des types de propriétés des banques dans leurs pools bancaires lorsqu'elles établissent des relations avec les banques connectées ; ces entreprises maintiennent ces structures de pool bancaire lorsque la corruption est répandue dans leur province d'origine. Les résultats montrent que la corruption locale est associée positivement au nombre de banques et à la diversification des types de propriétés des banques.

Le dernier essai explore la structure du pool bancaire des entreprises dans les économies émergentes caractérisées par la corruption. Dans le modèle théorique proposé, les gestionnaires d'entreprise maximisent une fonction d'utilité attendue qui dépend à la fois de la valeur de l'entreprise et de la consommation personnelle. En fonction du poids qu'ils attribuent à chaque composante, les gestionnaires choisissent parmi trois structures du pool bancaire pour combiner un certain nombre de banques et le choix d'une banque principale plus ou moins corrompue. Le test de ce modèle repose sur un riche ensemble de données provenant d'entreprises

vietnamiennes que dans notre premier essai. Les résultats confirment que les entreprises et les banques sont de même niveau d'intégrité. En outre, les entreprises ont tendance à augmenter le nombre de banques dans le pool bancaire lorsqu'elles ne peuvent pas établir une relation avec une banque principale souhaitable.

**Mots clefs français :** La disponibilité du crédit, la relation de clientèle banque-entreprise, la structure du pool bancaire, la connexion politique, la corruption, l'éthique managériale.

## **Abstract**

This thesis entitled “*Bank–firm relationships and Firm’s Bank Pool Structures in Corrupt Environment: Three Essays*” consists of three research on the firms’ bank financing.

The first essay focuses the influences of bank–firm relationships and political connections on firms’ access to credit. It uses a manually collected data set of Vietnamese medium-sized enterprises to show that bank–firm relationships (length of relationship with main bank and number of banks) and political connections have complementary effects on maximizing firms’ availability of credit. This research has policy implications for emerging economies characterized by local government corruption; it suggests that policymakers should prefer transactional banking systems to relationship banking systems, and it exposes the dark side of bank–firm relationships

The second essay investigates the effects of political connections and local corruption on the structures of firms’ bank pools. Using the same data set with our first essay, it finds that politically connected firms tend to establish their main bank relationships with connected banks. It also finds that connected firms reduce their numbers of banks and their diversity of bank ownership types in their bank pools when they achieve main bank relationships with connected banks; such firms maintain these bank pool structures when corruption is prevalent in their home provinces. Results demonstrate that local corruption is associated positively with number of banks and diversification of bank ownership types.

The last essay explores the structure of firms’ bank pools in emerging economies characterized by corruption. In the proposed theoretical model, firm managers maximize an expected utility function that depends on both firm value and personal consumption. According to the weight they assign to each component, managers choose among three bank pool structures to combine some number of banks and the choice of a main bank that is more or less corrupt. The test of this model relies on the same rich data set with our first essay. The results confirm that firms and banks match, in terms of their levels of integrity. Moreover, firms tend to increase the number of banks in the bank pool when they cannot achieve a relationship with a desirable main bank.

**Keywords:** Credit availability, bank–firm relationships, firm bank pool structure, political connection, corruption, managerial ethics.

## **Introduction générale**

### **i) Le cadre de la thèse**

#### **a) Économie et corruption**

Dans les systèmes économiques de type capitaliste, les firmes occupent une place importante dans le tissu économique. Elles interviennent à tous les niveaux et dans toutes les sphères de la société moderne en créant et en répartissant de la richesse. L'accès au crédit joue un rôle décisif dans la survie et le développement des firmes. Plusieurs facteurs peuvent expliquer la sensibilité des firmes à l'accès au crédit. Il s'agit notamment de caractéristiques propres aux firmes (par exemple sa taille, sa performance, sa stratégie, la diversification de ses activités) ou aux secteurs (par exemple le degré de concurrence). Mais une firme peut aussi activer son réseau de relations sociales pour obtenir des ressources financières utiles à son développement (emprunts, capitaux). Enfin, les dirigeants des firmes qui possèdent des connexions avérées avec le monde politique peuvent également les solliciter pour avoir un accès préférentiel au crédit.

Les banques sont importantes pour le financement de l'économie à tous les stades de développement et dans toutes les régions du monde. Le financement bancaire apparaît comme la principale source de financement pour les opérations et les investissements des firmes dans les pays développés, cela étant encore plus vrai dans les économies émergentes. Malheureusement, les systèmes bancaires ne fonctionnent pas toujours de manière efficace. En particulier, les systèmes bancaires peuvent être corrompus et être un frein à leur fonction première qui est d'allouer de façon efficiente des capitaux rares. Il s'agit d'un problème particulièrement grave dans les pays en développement et en transition qui ne disposent pas de lois adéquates, de règles prudentielles et d'institutions appropriées pour contenir suffisamment la corruption. La plupart des organisations internationales considèrent que la corruption est l'un des principaux facteurs qui influent sur le développement et la performance des firmes, en particulier les petites et moyennes entreprises (PME).

Dans les pays en développement, la corruption du système bancaire peut prendre des formes variées : financement de partis politiques ou octroi de « prêts » de mauvaise qualité. La corruption dans le secteur financier peut ainsi pénaliser les firmes saines et pérenniser indûment des firmes non performantes. Elle peut parfois s'appuyer sur la corruption de l'administration

et aboutir à influencer les décisions politiques en leur faveur, y compris jusqu'au plus haut niveau de l'État. La question du lien entre les entreprises et la politique est ainsi plus que jamais d'actualité, comme en témoignent certains scandales révélés par les médias.

### **b) Les petites et moyennes entreprises et accès au crédit**

Les petites et moyennes entreprises (PME) jouent un rôle fondamental dans la plupart des pays, en particulier dans les pays en développement. Les PME officiellement recensées contribuent pour 60 % à l'emploi total et pour les près de 40 % au revenu national dans les économies émergentes (World Bank, 2017). Ces entreprises font face à des difficultés spécifiques de financement de leurs projets d'investissement. Elles obtiennent moins facilement un financement bancaire que les grandes entreprises et pourtant en dépendent plus fortement, du fait de leur accès limité aux marchés de capitaux. En complément, elles mobilisent des fonds internes ou des fonds provenant d'amis et de la famille pour financer leur croissance. Dans les pays émergents, une part importante des PME n'ont pas accès au crédit formel (World Bank, 2017). Cet accès difficile au crédit bancaire constitue une contrainte importante pour la croissance des PME. Il est donc essentiel d'améliorer l'accès au crédit pour les PME afin de permettre à ces entreprises potentiellement dynamiques de croître et de créer des emplois.

Les PME rencontrent des difficultés à mobiliser des fonds extérieurs en raison des coûts fixes élevés des transactions et d'un problème d'asymétrie de l'information. Stiglitz et Weiss (1981) ont mis au point un cadre élaboré pour montrer qu'il est possible que les entreprises, plus particulièrement les PME réputées plus opaques, soient rationnées sur les marchés du crédit. Ce rationnement du crédit réduit la disponibilité du crédit pour les entreprises et pénalise leur développement. Pour limiter les conséquences dommageables de l'asymétrie d'information, les théories fondées sur l'information transitant par les relations bancaires (Stein, 2002) suggèrent qu'une entreprise ayant des liens étroits avec une banque peut faire transiter davantage d'information en vue d'un meilleur accès au crédit. En effet, dans le cadre des prêts relationnels, les banques s'appuient sur des informations « qualitatives » recueillies par le biais de contacts répétés avec leurs clients-entreprises pour résoudre les problèmes d'opacité. En plus de l'interaction dans le temps, la relation bancaire s'exprime dans l'échange de produits financiers nombreux et aboutit à augmenter la disponibilité des fonds pour les entreprises (Petersen et Rajan, 1994).

De nombreux travaux récents cherchant à identifier les déterminants de la disponibilité du crédit indiquent que les entreprises ont généralement une banque principale, qui les contrôle et les aide à assouplir les contraintes financières (Aoki et al, 1994 ; Shikimi, 2013). L'entreprise peut toutefois étendre ses relations bancaires à d'autres banques lorsque la banque principale ne peut pas répondre à tous ses besoins. Les entreprises peuvent ainsi choisir de diversifier leurs relations bancaires pour atténuer les problèmes de « hold-up » caractéristiques d'une relation bancaire principale unique (Sharpe, 1990 ; Thadden, 1992). Ce choix est essentiel lorsque les marchés bancaires sont peu concurrentiels. Une autre explication d'un plus grand nombre de relations bancaires est la fragilité du système bancaire. L'entreprise peut vouloir assurer la stabilité du financement en maintenant un pool bancaire moins concentré. Ceci est souligné par Detragiache et al. (2000) qui suggèrent que la taille du pool bancaire peut effectivement être motivée par le souci des entreprises de se protéger contre le retrait prématuré des services de la banque en cas de difficulté financière, et que cet argument est d'autant plus fort que le risque d'antisélection est élevé. Par ailleurs, d'autres auteurs soulignent le nombre de relations bancaires peut également être déterminé par des différences dans l'intensité et l'efficacité du contrôle exercé par chacune (Carletti, 2004, Carletti et al., 2007), de même que par des problèmes de coordination (Bolton et Scharfstein, 1996).

La prise en compte de l'influence des connexions politiques et de la corruption sur l'accès au crédit modifie la stratégie traditionnelle de constitution du pool bancaire des firmes. Autrement dit, le financement bancaire est souvent détourné de son objet dans un contexte de corruption, ou exploité à des fins politiques. La littérature actuelle sur les effets de la corruption sur les prêts bancaires présente à cet égard des points de vue contrastés. Tout d'abord, les banques peuvent prêter davantage lorsque le cadre institutionnel ou juridique leur permet de retrouver tout ou partie de leurs dettes en cas de défaillance (Ongena et Smith, 2000). Mais la corruption peut a contrario diminuer la volonté de prêt de la banque en augmentant le coût du prêt pour les emprunteurs (La Porta et al., 1997 ; Beck et al., 2006, Weill, 2011). La corruption a également un impact significatif sur le comportement de l'entreprise en matière d'accès au crédit bancaire. Malgré la qualité du projet d'investissement, si le manager perçoit qu'il sera difficile d'obtenir le prêt dans un environnement caractérisé par la corruption, il peut être incité, en dehors de toute considération éthique, à verser des pots-de-vin (Fungacova et al., 2015 ; Levin et Satarov, 2000).

Sur le plan local, et toujours dans un contexte de corruption, les fonctionnaires territoriaux influent également sur la demande et l'offre de crédit bancaire. D'une part, en biaisant les procédures de passation de marchés publics, ils interfèrent sur la qualité et la quantité des projets à financer. D'autre part, ils peuvent directement interférer avec les décisions d'octroi de crédit et donc avec l'offre de crédit bancaire (TI, 2013). En particulier, la corruption des collectivités territoriales peut aboutir à augmenter le financement des entreprises politiquement connectées (fonds publics, projets d'investissement social ou politique). Mais aussi, les collectivités territoriales et les fonctionnaires territoriaux peuvent s'activer auprès des banques et en faveur d'entreprises politiquement connectées i) pour réduire les exigences des banques en matière de garanties, ii) ou les inciter à offrir à ces entreprises des conditions de prêt spécialement avantageuses.

Sur le plan empirique, la plupart des chercheurs ayant investigué la relation de crédit bancaire dans un contexte de corruption conviennent que les entreprises politiquement connectées ont un ratio d'endettement plus élevé que les autres (Cull et Xu, 2005 ; Johnson et Mitton, 2003 ; Khwaja et Mian, 2005 ; Faccio, 2006). Ce constat soulève la question de savoir ce qui, dans les entreprises politiquement connectées, rend les banques plus disposées à leur accorder des crédits (Faccio, 2006). Un lien politique peut être interprété comme une relation particulière entre la banque et l'entreprise. Les entreprises tirent profit de ce lien d'au moins deux façons. Premièrement, les connexions politiques peuvent accroître la valeur de l'entreprise parce que la banque reconnaît que l'entreprise a des liens étroits avec les pouvoirs politiques (Fisman, 2001). Ceci contribue à augmenter la solvabilité de l'entreprise. Deuxièmement, par le biais de leurs connexions politiques, les banques peuvent obtenir davantage d'informations « qualitatives » sur l'entreprise. Cela contribue à réduire le coût des fonds pour les entreprises politiquement connectées. Terminons ce paragraphe en reconnaissant que, si pour l'instant nous avons insisté sur les effets d'un contexte de corruption en matière de financement bancaire des entreprises, la réalité nous oblige à observer que, dans la foulée de la crise financière de 2008, s'est développé un corpus considérable de recherches suggérant une relation positive entre la performance financière et l'engagement éthique de l'entreprise (Duarte et al., 2012, Kim et al., 2014).

La réalité de la corruption dans les pays émergents, l'influence des connexions politiques sur les décisions financières, - notamment la décision de crédit et l'accès au crédit

des PME, ainsi que l'importance de l'engagement éthique de l'entreprise, constituent le cadre général de cette thèse et des questions de recherche que nous adressons.

### **c) Le Vietnam**

À cette fin, nous avons choisi le Vietnam comme terrain d'étude. Tout d'abord, selon l'indice de perception de la corruption publié en 2016 par Transparency International (TI), le Vietnam est classé au 113<sup>e</sup> rang sur 176 pays. Deuxièmement, le gouvernement détient encore des participations dans certaines entreprises même après leur privatisation. Troisièmement, bien que le Vietnam soit une économie de transition en pleine croissance, le Parti communiste au pouvoir continue d'utiliser l'avancement des cadres comme outil pour maintenir le contrôle de l'appareil gouvernemental dans tous les secteurs économiques. Les nominations de plusieurs conseils d'administration, qu'il s'agisse de banques ou de sociétés, sont contrôlées par le gouvernement, ce qui pour les raisons précédemment évoquées, influe sur les décisions de prêt. Quatrièmement, les dirigeants d'entreprises sont souvent d'anciens dirigeants d'entreprises d'État. Ces managers entretiennent des liens personnels avec les décideurs au sein des banques et bénéficient d'un accès préférentiel au crédit, que ce soit au plus haut niveau ou dans leur interaction avec les responsables locaux. Enfin, soulignons que le Vietnam est en période de transition : d'une économie centralement planifiée, il se dirige vers une économie de marché. Par conséquent, ce pays constitue un excellent cadre expérimental pour analyser les spécificités des relations bancaires et les déterminants de la structure du pool bancaire dans des pays émergents caractérisés par un haut niveau de corruption.

### **ii) Les questions de recherche : énoncé et motivation**

La majorité des études théoriques ou empiriques qui traitent du financement des entreprises concerne les grandes entreprises, dont la propriété est largement diffusée et dont le financement est diversifié et varié. La plupart des données sur la disponibilité du crédit et la structure du pool bancaire se trouvent dans la littérature relative aux entreprises des pays développés. De plus, alors que les études sur les PME se développent de manière significative depuis plusieurs décennies, le travail sur le financement bancaire des PME dans les pays émergents reste une ombre pour la communauté scientifique, principalement du fait de la non disponibilité de données. L'objectif principal de cette recherche est d'approfondir notre compréhension du financement bancaire des PME (la disponibilité du crédit, la relation

bancaire, et la structure du pool bancaire) dans les pays émergents en présence de corruption et quand les acteurs sont politiquement connectés. Plus précisément, nous posons trois questions, chacune recevant une réponse par la voie empirique et/ou théorique dans trois essais successifs.

*Question 1 : Les relations de clientèle banques-entreprises et les connexions politiques sont-elles substituables ou complémentaires dans une perspective de maximisation de l'accès au crédit des entreprises ?*

Dans le premier essai, nous cherchons à comprendre les effets réciproques des relations de clientèle banques-entreprises et des connexions politiques des managers des firmes en termes d'accès au crédit pour les entreprises. Ces effets peuvent être posés en termes de substitution ou de complémentarité. On sait en effet que des relations de clientèle denses sont un moyen efficace de maximiser la disponibilité du crédit, particulièrement pour des PME réputées plus opaques (voir par exemple Petersen et Rajan, 1994 ; Berger et Udell, 2002 ; Boot, 2000 ; Cole, 1998 ; de Bodt et al., 2005 ; Ongena et Smith, 2000). Mais en même temps, un manager peu scrupuleux peut actionner ses connexions politiques en vue d'un même résultat. Dans le premier cas, il s'expose à un risque de hold-up, au sens de Sharpe (1990) à savoir un taux d'intérêt légèrement plus élevé. Dans le second, le hold-up est politique, en ce sens que ce manager sera redevable. Ces deux leviers sont-ils substituables ou complémentaires ? Voilà la question que nous adressons dans ce chapitre.

Dans ce chapitre, nous définissons classiquement la relation banque-firme en référence aux travaux de Ongena et Smith (2000) pour qui il s'agit d'un lien entre une banque et son client qui va au-delà de l'exécution des opérations financières simples et anonymes<sup>1</sup>. Cette conception est développée par Berger et Udell (2002) et Degryse et al. (2009) qui précisent que la prestation de services financiers par un intermédiaire financier contient deux éléments : investir dans l'obtention d'informations sur les clients et utiliser ces informations pour évaluer la rentabilité des projets d'investissement par le biais d'interactions répétées et multiples avec un même client et sur plusieurs produits financiers.

Un second concept important dans ce chapitre est la notion d'entreprise politiquement connectée. La littérature définit habituellement le lien politique comme un lien personnel entre un politicien et une entreprise spécifique, par le biais du mécénat, de l'actionnariat ou des cadres

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<sup>1</sup> En version anglaise: « the connection between a bank and customer that goes beyond the execution of simple, anonymous, financial transactions » (Ongena et Smith, 2000)

(Khwaja et Mian, 2005 ; Faccio, 2006). Les liens politiques peuvent aussi être établis par le biais de réseaux sociaux ou de relations longues avec les partis politiques (Ferguson et Voth, 2008 ; Goldman et al., 2009). Bertrand et al. (2008) incluent dans le sous-ensemble des entreprises politiquement connectées celles dont les administrateurs partagent la même formation avec le politicien concerné. Une définition élargie des liens politiques fait enfin référence à l'amitié, aux réseaux sociaux ou aux relations de longue date avec les partis politiques (Cohen et al., 2008 ; Nguyen, 2012). Parmi les autres types de liens politiques, mentionnons les dons aux campagnes électorales (Claessens et al., 2008), le lobbying (Hillman et al., 2004) et le lien avec l'entreprise ou l'industrie dans laquelle le politicien concerné travaille (Qin, 2011). Dans le cas du Vietnam, Malesky et Taussig (2009) définissent les connexions politiques en référence à la position sociale du manager de l'entreprise (qui peut être ancien fonctionnaire, ancien militaire, manager d'une entreprise d'État). Brunell (2010) utilise cette mesure des liens politiques dans ses recherches sur les effets des connexions politiques sur l'accès au crédit au Vietnam, tout comme Bertrand et al. (2008) et Fan et al. (2007). Dans cette thèse, nous assimilons l'entreprise et son manager quand nous parlons de connexion politique, considérant qu'une connexion politique, quand elle existe au sein d'une entreprise, est établie à son plus haut niveau et sur un plan personnel.

La question de l'effet des liens politiques sur l'accès au crédit a été étudiée à différents niveaux. Au niveau des pays, Beck et al. (2005) observent que la disponibilité du crédit des PME est plus faible dans les pays qui ont plus de banques publiques. Cette constatation est confirmée par La Porta et al. (2002), Barth et al. (2004) et Berger et al. (2004). Sapienza (2004) confirme que le crédit bancaire préférentiel est l'un des outils les plus influents que les hommes et femmes politiques utilisent pour signaler leur influence. Au plan local, les entreprises connectées peuvent bénéficier de taux d'intérêt plus bas (Infante et Piazza, 2014). Au niveau des banques, Dinç (2005) montre que le comportement des banques en matière de crédit est impacté par l'influence politique. Il rejoint en cela les conclusions de Beck et al. (2004). Les banques peuvent également faire pression sur les hommes politiques pour qu'ils agissent au mieux de leurs intérêts (Haber et al., 2003).

Au niveau de l'entreprise, les entreprises connectées obtiennent généralement de meilleures conditions de crédit que les autres (Slinko et al., 2004 ; Faccio, 2006 ; Faccio et Parsley, 2006 ; Goldman et al., 2009 ; Chaney et al., 2011 ; Khurana et al., 2012). Khwaja et Mian (2005) suggèrent qu'au Pakistan, les entreprises qui ont des liens politiques avec les

gouvernements locaux reçoivent de meilleurs prêts des banques publiques. Les connexions politiques peuvent aussi réduire les contraintes de financement des investissements, et réduire le coût de la dette des entreprises (Houston et al., 2011). Les connexions politiques avec les agences gouvernementales réduisent le temps d'obtention d'un crédit et de façon générale les obstacles à l'accès au crédit bancaire au Vietnam (Hansen et al., 2009 ; Le et al., 2006 ; Nguyen et al., 2012). Cependant, les entreprises connectées supportent aussi des coûts propres à la corruption ; l'interventionnisme politique altère également les pratiques managériales, ce qui nuit à la performance financière des entreprises (Fan et al., 2007). Récemment, des chercheurs ont soutenu que les connexions politiques ne peuvent pas se substituer aux institutions officielles du marché (Dixit, 2004 ; Faccio, 2006 ; Leuz et Oberholzer-Gee, 2006).

Ce premier essai est ainsi structuré. La première section évalue brièvement les effets de la relation banque-firme sur la disponibilité du crédit pour les entreprises dans le cas de PME vietnamiennes. La deuxième section évalue l'impact des connexions politiques de l'entreprise sur la disponibilité du crédit dans un contexte de corruption locale. Dans la troisième section, nous examinons les effets d'interaction entre les connexions politiques et les relations banques-firmes.

*Question 2 : Comment les firmes structurent-elles leur pool bancaire quand leurs dirigeants possèdent des connexions politiques et sont confrontés à la corruption du gouvernement local ?*

Dans ce deuxième essai, nous tentons de comprendre les mécanismes qui guident le choix de la structure du pool bancaire lorsque les dirigeants des entreprises possèdent différents degrés de liens politiques et sont confrontés à la corruption du gouvernement local.

Si la notion de pool bancaire est définie classiquement par le choix d'une banque principale autour de laquelle gravitent plusieurs banques secondaires, dans ce chapitre un nouveau concept apparaît, celui de corruption. Nous distinguons la notion de corruption de celle de connexion politique. Alors que cette dernière est établie et mesurée au niveau de la firme, la corruption est le contexte dans lequel évolue la firme<sup>2</sup>. À cet égard, nous rejoignons la Banque Mondiale qui définit la corruption comme étant « *l'abus de pouvoirs publics à des fins*

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<sup>2</sup> Avec une exception principalement présente dans le dernier essai: lorsque l'adjectif « corrompu » est attaché au nom commun « banque ».

*d'intérêt privé*<sup>3</sup>. La corruption politique ne conduit pas seulement à une mauvaise allocation des ressources, mais affecte également la manière dont les décisions sont prises. L'État, les gouvernements locaux, les fonctionnaires, les bureaucrates et les hommes et femmes politiques occupent des postes d'autorité qui leur permettent d'attribuer des droits sur des ressources publiques rares ; l'implication des fonctionnaires d'État dans la corruption s'analyse alors comme « *une forme d'échange social secret par lequel ceux qui détiennent le pouvoir tirent un avantage personnel* » (Sardan, 1999).

La littérature actuelle sur les effets de la corruption sur les prêts bancaires présente des points de vue multiples éventuellement contradictoires. En raison de l'incertitude des décisions de justice pour les banques, la corruption peut diminuer la volonté des banques de prêter (La Porta et al., 1997 ; Beck et al., 2006, Weill, 2011). La corruption a également un impact significatif sur le comportement des entreprises en matière de demande de crédit bancaire. Malgré la qualité d'un projet d'investissement, si les managers perçoivent qu'il sera difficile d'obtenir un prêt en faisant confiance aux mécanismes contractuels usuels et que l'environnement économique est caractérisé par la corruption, ils peuvent être davantage incités à verser des pots-de-vin (Levin et Satarov, 2000 ; Fungacova et al., 2015).

Il existe plusieurs mesures de la corruption. Weill utilise l'enquête menée par Transparency International (TI) et la Fondation Information pour la démocratie (en version anglaise : Information for Democracy Foundation [INDEM]) pour définir les niveaux de corruption en Russie en 2002 (Weill, 2011). Beck et ses collaborateurs (2004) définissent la corruption bancaire à partir de réponses aux questions d'une enquête administrée au niveau de la banque et de l'entreprise. Anaere (2014) utilise deux indices : l'indice de perception de la corruption (CPI) de TI (Corruption-CPI), et l'indice de corruption (Corruption-WB) développé par la Banque Mondiale. Dans notre thèse, nous mesurerons la corruption au niveau de la province.

Ce second essai est ainsi structuré. La première section modélise la probabilité que l'entreprise ait une banque principale qui soit politiquement connectée (par exemple une banque d'État). Nous identifions les raisons pour lesquelles les entreprises ayant des liens politiques choisissent une banque politiquement connectée comme banque principale. Dans la deuxième

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<sup>3</sup> « Helping Countries Combat Corruption : The role of the World Bank » — Selon les termes du conseiller juridique général de la Banque, Ibrahim Shihata. <http://www1.worldbank.org/publicsector/anticorrupt/corruptn/cor02.htm>

section, nous analysons les effets du choix d'une banque principale connectée sur le nombre de banques au sein du pool bancaire de l'entreprise lorsque celle-ci opère dans une province corrompue. Enfin, à partir de nos résultats précédents, nous examinerons les effets des connexions politiques et de la corruption sur la diversification des types de propriétés des banques (au sens de Berger et al., 2007).

*Question 3: Comment les firmes structurent-elles leur pool de banques quand les dirigeants des firmes ont un degré d'engagement éthique variable et qu'ils font face à des banques plus ou moins corrompues ?*

Dans ce dernier essai, nous développons une analyse des déterminants de la structure du pool bancaire dans des conditions données d'engagement éthique du manager des firmes et de corruption des banques.

Le financement bancaire est une transaction à forte intensité de confiance entre un emprunteur et sa banque du fait même que le prêt est accordé en contrepartie de remboursements futurs liés au rendement du projet de l'emprunteur et du comportement opportuniste de l'emprunteur (Guiso et al., 2008). Certains articles analysent l'effet spécifique des mesures fondées sur la confiance sur les décisions financières, notamment les prêts informels (Karlan et al., 2009). Le jugement des banques sur la fiabilité des emprunteurs joue un rôle central dans la décision de prêt.

Selon Mayer et al. (1995), il existe trois déterminants de la confiance dans les prêts bancaires : la capacité des entreprises à rembourser le prêt qui peut être objectivement évaluée, et deux facteurs subjectifs : la bienveillance, et l'intégrité de l'emprunteur (Bews et Rossouw, 2002). La bienveillance et l'intégrité se différencient au même titre que l'empathie se distingue de l'engagement dans le champ de la philosophie. La bienveillance comme l'empathie considèrent que la prise en compte du bien-être d'autrui participe à notre propre bien-être ; ce n'est pas le cas de l'intégrité et de l'engagement qui relèvent de la volonté.

La bienveillance s'entend comme la mesure dans laquelle les emprunteurs n'agiront pas de manière opportuniste et ne profiteront pas de la fragilité du prêteur pour en tirer des possibilités de profit à court terme (Mayers et al., 1995). Plus l'emprunteur est opportuniste, plus les risques de défaillance augmentent. Un emprunteur qui s'engage au plan éthique est celui dont le comportement internalise sa préoccupation pour l'intérêt de toutes les parties

prenantes, et qui tente d'honorer autant que possible les accords conclus avec les parties prenantes de l'entreprise, y compris les prêteurs (Boatright, 1996 et 2008). Une telle posture éthique est un signe de fiabilité de l'engagement de l'emprunteur à se comporter d'une manière digne de confiance au fil du temps. Il peut être coûteux pour un manager de se conformer à des normes éthiques élevées plutôt qu'à des normes éthiques inférieures, ce qui l'incite à persévérer dans son engagement éthique afin de ne pas perdre le bénéfice de son investissement. Par conséquent, l'engagement des emprunteurs à ne pas se comporter de manière opportuniste - ce qui est l'expression de leur posture éthique - conduit à une réduction des risques perçus par le prêteur. Comme précédemment mentionné, le deuxième facteur fondant la confiance est l'intégrité ; cela signifie que les emprunteurs respectent un ensemble de principes moraux et éthiques jugés acceptables par les banques (Mayers et al., 1995). Dans une relation de prêt, l'intégrité implique qu'un représentant de la banque perçoit les dirigeants de l'entreprise comme s'engageant à respecter les obligations contractuelles de prêt.

Ce chapitre associe modélisation théorique et test empirique. Le modèle théorique proposé considère un manager caractérisé par une fonction d'utilité à la Jensen et Meckling (1976). Le manager de la firme a un degré d'engagement éthique plus ou moins fort qui se traduit de deux manières ; un engagement éthique fort du manager l'invite à accorder plus de poids à la maximisation de la valeur de l'entreprise dans sa fonction d'utilité, et à dévier à des fins personnelles une moindre part de la valeur de firme. Le manager de la firme arbitre donc entre maximisation de la valeur la firme et consommation privée en fonction de son engagement éthique. Le manager (assimilé à sa firme) peut ensuite opter pour trois types de pools bancaires : i) une banque principale honnête, qui contribue à la maximisation de la valeur de la firme ; ii) une banque principale corrompue, qui participe au détournement de la valeur de la firme à son profit ; iii) un pool bancaire diversifié. Ce modèle sera ensuite empiriquement testé.

### **iii) Une base de données originale**

Ainsi que précédemment souligné, à l'exception du dernier essai qui inclut une modélisation théorique en termes d'équilibre partiel, la stratégie de recherche est empirique. Elle exploite une base de données originale composée d'entreprises et de banques vietnamiennes. Ainsi que nous l'avons souligné, le Vietnam, en raison de son degré de corruption fournit un bon cadre expérimental pour répondre aux trois questions posées. Nous collectons donc et recoupons plusieurs sources de données pour aboutir à une base de données

composée de 389 entreprises de taille moyenne, en opération en décembre 2013, cotées sur les marchés de Hanoï ou de Ho Chi Minh Ville. Cette base est très originale ainsi que nous le détaillons ci-dessous.

### **a) Les entreprises - Les informations financières relatives aux entreprises**

Nous ciblons les entreprises vietnamiennes non financières cotées sur deux marchés boursiers (Hanoï et Ho-Chi Minh Ville). Nous nous concentrons sur les entreprises en activité en décembre 2013 avec moins de 500 employés ou un capital propre de moins de 500 milliards de Dong vietnamiens<sup>4</sup>. Ces caractéristiques correspondent à la définition des PME en termes d'emplois et de chiffre d'affaires total (Gibson et van der Vart, 2008). Nous extrayons l'information financière pertinente des sites Web du Comité de sécurité vietnamien et des rapports vérifiés<sup>5</sup> de diverses entreprises et banques, recueillie manuellement. Cet ensemble initial d'informations couvre les ratios financiers conventionnels, la structure de la dette, la description de la gouvernance des entreprises et les principales caractéristiques de chaque entreprise. Les entreprises couvrent cinquante et une provinces du Vietnam<sup>6</sup>, dont sept régions économiques et sociales, et peuvent être classées en dix secteurs industriels.

Pour mesurer la disponibilité du crédit, une variable essentielle pour nos questions de recherche, nous avons utilisé les états financiers des entreprises et le critère proposé par Petersen et Rajan (1994), construit à partir du crédit fournisseur. Celui-ci étant réputé plus onéreux que le crédit bancaire, le fait qu'une entreprise y recourt traduit sa difficulté d'accéder au crédit bancaire. A contrario, plus le pourcentage de crédit commercial payé tôt par l'entreprise est élevé, meilleure est la disponibilité du crédit de l'entreprise.

Les données sur les relations bancaires proviennent d'une enquête indépendante que nous avons administrée, et qui permet de recueillir des informations complètes sur la banque principale et le nombre de banques dans le pool bancaire de chaque entreprise. Toutes les entreprises interagissent avec soixante-deux banques différentes et leurs filiales, par le biais de prêts, d'épargne, de dépôts et d'autres services financiers. Le nombre de banques au sein du

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<sup>4</sup> Le taux de change est 19,01 millions de dollars américains (taux de change entre le dollar américain et le Vietnam Dong : 21 036 [moyenne du marché interbancaire des devises, en fin de décembre 2013, obtenue auprès de la SBV, 2013]).

<sup>5</sup> Nous avons étudié près de 2 000 rapports d'une longueur moyenne de 45 pages de chaque rapport. Ces rapports ont été vérifiés par des cabinets d'audit autorisés,

<sup>6</sup> Notre échantillon représente 78 % des provinces et des villes centrales du Vietnam en 2013.

pool bancaire varie entre un (banque unique) et onze (structure très diversifiée). Les entreprises de l'échantillon nouent des relations avec vingt-six banques principales différentes. La durée de la relation entre l'entreprise et sa banque principale est mesurée par le nombre d'années ; ce chiffre varie entre deux et quarante-trois.

## **b) Les informations sur le niveau de corruption ou d'engagement éthique des entreprises**

Nous disposons ici de deux types d'informations.

Concernant les connexions politiques des entreprises ou de leurs managers, nous avons recueilli manuellement ces informations à partir des rapports vérifiés des entreprises en 2013. Nous avons identifié trois types de connexions politiques majeures : i) l'entreprise est une ancienne société d'État avant sa privatisation<sup>7</sup> ; ii) le manager de l'entreprise est membre du Parti ; et iii) le manager de l'entreprise est un ancien manager d'une entreprise d'État. Nous avons identifié les entreprises ayant trois connexions politiques comme étant des entreprises connectées<sup>8</sup>. Environ 74 % des entreprises sont réputées connectées.

Nous avons également recueilli manuellement l'identité du cabinet comptable choisi par chaque firme à partir de ses rapports vérifiés en 2013. Le choix par une firme d'un des « Big Four » - les quatre grands cabinets de la profession comptable<sup>9</sup> - témoigne d'un engagement éthique du manager élevé<sup>10</sup>. La littérature en comptabilité financière fonde ce choix (Loeb, 1971 ; Eynon et al., 1997). Nous postulons en effet que la congruence des valeurs éthiques des firmes et de leurs cabinets comptables crée une atmosphère de confiance mutuelle qui justifie cet appariement. Environ 11 % des entreprises de notre échantillon sont caractérisées par une éthique managériale élevée.

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<sup>7</sup> En 2013, le gouvernement détenait des actions de contrôle dans 2 048 sociétés privées inscrites au nominatif dans l'ensemble du pays (selon un sondage des entreprises du GSO 2013[GSO, 2013])

<sup>8</sup> Notre mesure des entreprises connectées est similaire à celle de Malesky et Taussig (2009), en ce sens que nous avons sélectionné deux connexions politiques du manager de l'entreprise. Cependant, notre définition est différente en ce sens que nous définissons les entreprises connectées comme étant celles qui possèdent au moins trois connexions politiques.

<sup>9</sup> Les tops 4 des cabinets de la profession comptable sont KMPG, Deloitte, EY et PwC

<sup>10</sup> Les données existantes montrent que les personnes qui partagent des valeurs morales similaires jouissent de niveaux de confiance mutuelle plus élevés, ce qui réduit la nécessité de formaliser les interactions sociales et augmente les flux de communication, l'engagement, la coopération et la volonté de soutenir le partenaire (Brown et Mitchell, 2010 ; Fulmer et Gelfand, 2012).

### **c) Les informations sur les banques et leur niveau d'intégrité**

Les informations financières sur les banques proviennent de la base de données Bankscope du Bureau van Dijk. Au-delà de cette information financière classique, nous disposons d'informations permettant de qualifier le degré d'intégrité ou de corruption d'une banque.

Pour classer les banques comme (politiquement) connectées, nous avons collecté des informations sur l'attribution de la médaille d'honneur du Travail (en vietnamien, « Huân chương lao động ») par le Premier ministre entre 2010 et 2012. Nous avons obtenu cette information en extrayant les données des rapports annuels certifiés des banques. Nous avons vérifié l'information sur l'attribution de ces prix auprès des médias et des journaux officiels centraux afin d'identifier la nature exacte du prix et de vérifier le nom des banques récipiendaires. Nous avons défini une banque connectée comme une banque à laquelle la médaille d'honneur du Travail a été attribuée pour ses réalisations. Notre connaissance du pays nous amène en effet à supposer que la réception de cette médaille est biaisée par les liens entre le pouvoir politique et les banques récompensées. La moitié des banques avec lesquelles les entreprises de notre échantillon sont liées sont classées comme banques connectées.

Nous disposons d'une autre mesure du degré de corruption d'une banque. Nous utilisons à cette fin les informations recueillies dans le cadre d'affaires de corruption portées devant les tribunaux entre 2010 et 2012. Nous avons obtenu cette information en consultant les données des tribunaux économiques provinciaux. Puis, nous avons affiné cette information en consultant les journaux locaux et centraux, afin d'identifier précisément les cas de fraude bancaire, la valeur de la fraude, le type de corruption, le nom des employés de banque impliqués et les peines infligées. Une banque corrompue est définie comme une banque dont le manager a été condamné par le tribunal à la peine de mort, après que la fraude ait été prouvée. Environ 16 % des entreprises de notre échantillon entretiennent une relation bancaire principale avec ces banques corrompues.

Pour classer une banque comme honnête, nous recueillons des informations sur les récompenses internationales que les banques reçoivent au cours de la période que nous étudions. Contrairement aux récompenses nationales, nous croyons que les récompenses internationales ne sont pas biaisées par un lien potentiel entre le gouvernement et les banques. Nous utilisons

le nombre de récompenses internationales reçues par une banque au cours de la période 2010-2012 pour mesurer son intégrité. 20 % des entreprises de notre échantillon coopèrent avec une banque honnête.

#### **d) Information sur la corruption au niveau local**

Nous avons complété notre information par une recherche sur le degré de corruption au niveau local. Pour cela, nous avons extrait de PCI 2013 l'indice de partialité politique des provinces en faveur des entreprises d'État, des entreprises à investissement étranger et des entreprises connectées. Nous avons défini une province comme étant corrompue si son indice de partialité politique était supérieur à 6 (sur une échelle de 0 à 10). Le quart des firmes de notre échantillon opère dans des provinces corrompues.

#### **iv) Brève présentation des résultats**

##### **a) Les relations bancaires, les connexions politiques et la disponibilité du crédit**

Notre enquête confirme que les entreprises ayant des connexions politiques ont un meilleur accès au crédit (Khawaja et Mian, 2005 ; Claessens et al., 2008 ; Malesky et Taussig, 2009). Notre constatation la plus importante est peut-être qu'il existe une relation de complémentarité entre le financement bancaire relationnel et les relations politiques. Nous prouvons que les entreprises connectées développent des relations solides avec leurs banques et utilisent en même temps leurs connexions politiques pour influencer les banques afin de maximiser l'accès au crédit. Nous constatons également que la corruption affecte la capacité des entreprises à accéder au financement, et que les entreprises connectées qui opèrent dans des provinces corrompues ont un meilleur accès au crédit que les autres entreprises. En d'autres termes, un tissu local corrompu renforce le lien de complémentarité entre connexions politiques et financement bancaire relationnel dans une perspective de maximisation de la disponibilité du crédit.

Pour des décideurs politiques soucieux de l'intérêt collectif, nos résultats ont des implications importantes. En particulier, dans des pays émergents où le degré de corruption est élevé, il est contre-productif de favoriser un système bancaire relationnel ; en effet, cela augmente l'impact des relations politiques sur l'accès au crédit pour les entreprises. Les

décideurs politiques devraient préférer un système bancaire transactionnel avec des liens plus distants entre banques et firmes. Notre étude illustre ainsi la face noire du financement bancaire relationnel dans des environnements corrompus.

### **b) L'impact des relations politiques, de la corruption locale sur la structure du pool bancaire.**

En réponse à notre seconde question de recherche, nous concluons que dans une province corrompue où la politique locale favorise les entreprises connectées, celles-ci ont tendance à choisir des banques principales qui soient également connectées, à interagir avec un plus petit nombre de banques et à opter pour des pools bancaires plus homogènes en termes de types de banques (privées, publiques ou étrangères). Outre l'originalité de nos données, notre recherche contribue à la littérature sur les relations bancaires en ce qui concerne les effets des relations politiques et de la corruption locale sur les structures des pools bancaires des entreprises. Elle souligne que les décisions financières des entreprises dans les marchés émergents sont déterminées en partie par les connexions politiques, de sorte qu'une réforme efficace du secteur financier doit également tenir compte de l'économie politique de la finance. Notre recherche est aussi la première analyse qui étudie les effets d'interactions entre les connexions politiques des entreprises, celles des banques et la corruption locale sur la structure du pool bancaire.

### **c) Les impacts de l'éthique managériale sur la structure du pool bancaire**

Dans notre troisième essai, nous démontrons que la structure du pool bancaire des entreprises dépend autant du niveau d'éthique des entreprises et de leurs managers, que du degré de corruption des banques. En particulier, les entreprises ayant une éthique managériale élevée sont incitées à limiter ou éviter le comportement opportuniste d'une banque principale corrompue en diversifiant leur pool bancaire. En revanche, les managers d'entreprises dont l'éthique managériale est faible sont plus enclins à maximiser les avantages privés, même si cela diminue la valeur de l'entreprise. Par conséquent, ces entreprises/managers sont plus enclins à coopérer avec une banque corrompue, pour se partager les flux de trésorerie de l'entreprise qui auront été détournés à des fins personnelles. Cette analyse empirique vient confirmer les conclusions d'un modèle théorique : i) les entreprises et leurs banques principales s'apparient selon un même degré d'engagement éthique ou de corruption ; ii) la taille du pool

bancaire est un paramètre d'ajustement utilisé par l'entreprise pour moduler les effets négatifs résultant d'un appariement impossible en raison de la non disponibilité de la banque principale souhaitée au niveau local. Ce choix, en conditionnant les montants détournés par le manager de la firme et sa banque principale, impacte directement la valeur de la firme.

De façon générale, notre thèse a deux implications majeures. Premièrement, sur le plan politique, les gouvernements des pays émergents devraient donc considérer la restructuration des systèmes bancaires en fonction du degré de corruption des entreprises, des banques et du tissu local. Deuxièmement, et dans une perspective éthique qu'illustrent les travaux de Sen (1991), notre thèse corrobore le principe selon lequel l'économie ne devrait pas être déconnectée de l'éthique.

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## **General Introduction**

### **i) The framework of the thesis**

#### **a) Economy and corruption**

In capitalist economic systems, firms occupy an essential place in the economic fabric. They intervene at all levels and in all spheres of modern society, creating and restoring wealth. Access to credit plays a decisive role in the survival and development of firms. Several factors may explain firms' sensitivity to access to credit. These include firm-specific characteristics (e.g. size, performance, strategy, diversification of activities) or sectors (e.g. degree of competition). However, a firm can also activate its network of social relations to obtain financial resources used for its development (loans, capital). Finally, the managers of firms that have proven connections with the political world can also apply for preferential access to credit.

Banks are essential for financing the economy at all stages of development and in all regions of the world. Bank financing appears to be the primary source of financing for the operations and investments of firms in developed countries, this being even more true in emerging economies. Unfortunately, banking systems do not always work efficiently. In particular, banking systems are susceptible to corruption, undermining their primary function of allocating scarce capital efficiently. This problem is particularly severe in developing and transition countries where these countries lack adequate laws, prudential rules and other appropriate institutions to contain corruption sufficiently. Most international organisations consider corruption to be one of the main factors influencing the development and performance of firms, particularly small and medium-sized enterprises (SMEs).

In developing countries, corruption in the banking system can take various forms: financing political parties or providing poor quality 'loans'. Corruption in the financial sector can thus penalise good firms and unduly perpetuate non-performing firms. Corruption can sometimes rely on administrative corruption and influence political decisions in their favour, including up to the highest level of government. The question of the link between firms and politics is thus more topical than ever, as evidenced by certain scandals revealed by the media.

#### **b) SMEs and access to credit**

Small and medium-sized enterprises (SMEs) play a fundamental role in most countries, particularly in developing countries. Officially identified SMEs are the primary source of employment (60% of jobs) and contribute about 40% of national income in emerging economies (World Bank, 2017). These companies have difficulty financing their investment projects. They obtain bank financing less easily than large firms and yet depend more heavily on it because of their limited access to capital markets. Besides, they rely on internal funds, or cash from friends and family, to initially launch and run their businesses. In emerging countries, a significant proportion of SMEs does not have access to formal credit (World Bank, 2017). This problematic access to bank credit is a significant constraint on the growth of SMEs. It is vital to improve access to credit for SMEs and to enable this potentially dynamic sector to grow and provide jobs.

The SMEs face difficulties when raising external finance because of the high fixed transactions costs and asymmetric information problem. Stiglitz and Weiss (1981) developed an elaborate framework to show that it is possible for firms, particularly SMEs with a reputation for opaqueness, to be rationed in credit markets. This credit rationing reduces the availability of credit for firms and penalises their development. To limit the damaging consequences of information asymmetry, theories based on information passing through banking relationships (Stein, 2002) suggest that a firm with close ties to a bank can pass on more information for better access to credit. Indeed, in the context of relational lending, banks rely on "qualitative" information gathered through repeated contacts with their clients-firms to solve problems of opacity. In addition to interaction over time, the banking relationship is expressed in the exchange of numerous financial products and results in increased availability of funds to businesses (Petersen and Rajan, 1994).

Numerous recent studies seeking to identify the determinants of credit availability indicate that firms typically have one main bank, which monitors them and helps them to relax financial constraints (Aoki et al., 1994; Shikimi, 2013). However, the firm may extend the new banking relationships with other banks when the main bank cannot provide all the needs of a firm. Firms may thus choose to diversify their banking relationships to mitigate the "hold-up" problems characteristic of a single primary banking relationship (Sharpe, 1990; Von Thadden, 1992). This choice may be more significant when banking markets are less competitive. An alternative explanation of why a firm might engage in a larger number of bank relationships includes the fragility of the banking system. The firm might want to ensure the stability of

financing by maintaining a less concentrated borrowing. This point is highlighted by Detragiache et al. (2000) who suggest that the size of the banking pool can be motivated by the financial needs of firms to protect themselves against the premature withdrawal of services from the bank in financial difficulty and that this argument is stronger when the risk of anti-selection is high. Furthermore, other authors point out that the number of banking relationships can also be determined by differences in the intensity and effectiveness of control exercised by each (Carletti, 2004, Carletti et al., 2007), as well as by coordination problems (Bolton and Scharfstein, 1996).

Taking into account the influence of political connections and corruption on access to credit changes the traditional strategy of building firms' pool of banks. In other words, bank financing is often diverted from its purpose in a context of corruption or exploited for political purposes. The current literature on the effects of corruption on bank lending presents two conflicting views. First, banks may lend more when the legal framework allows them to find all or part of their debts in case of default (Ongena and Smith, 2000). However, corruption may diminish the bank's lending willingness by increasing the cost of the loan to the borrowers (La Porta et al., 1998; Beck et al., 2006, Weill, 2011). Corruption also impacts significantly on the firm's behaviour of access to bank credit. Despite the quality of the investment project, if the manager perceives that it will be difficult to get the loan and that corruption characterises the environment, he or she may be encouraged, without any ethical consideration, to pay bribes (Fungacova et al., 2015; Levin and Satarov, 2000).

At the local level, and always in a context of corruption, territorial officials also influence the demand and supply of bank credit. On the one hand, by biasing public procurement procedures, they interfere with the quality and quantity of projects to be financed. On the other hand, they can directly interfere with credit granting decisions and thus with bank credit supply (TI, 2013). In particular, corruption in local government can lead to increased funding for politically connected firms (public funds, social or political investment projects). However, also, local authorities and territorial officials can work with banks and in favour of politically connected firms i) to reduce banks' collateral requirements, ii) or encourage them to offer these firms especially advantageous loan terms and conditions.

Empirically, most researchers who have investigated the bank credit relationship in a corrupt context agree that politically connected firms have higher debt ratios than others (Cull

and Xu 2005; Johnson and Mitton 2003; Khwaja and Mian 2005; Faccio 2006). This result raises the question of what, in politically connected firms, makes banks more willing to grant them credit (Faccio, 2006). A political link can be interpreted as a special relationship between the bank and the firm. Firms benefit from this link in at least two ways. First, political connections can increase the value of the firms because the bank recognises that the firm has close links with political powers (Fisman, 2001). This connection helps to increase the firm's solvency. Second, through their political connections, banks can obtain more "qualitative" information about the firm. This political connection helps to reduce the cost of funds for politically connected firms. Let us conclude this paragraph by acknowledging that, while for the time being we have insisted on the effects of a context of corruption in corporate banking financing, reality requires us to observe that, in the wake of the 2008 financial crisis, a considerable body of research has developed suggesting a positive relationship between financial performance and the ethical commitment of the company (Duarte et al., 2012, Kim et al., 2014).

The reality of corruption in emerging countries, the influence of the political connections on financial decisions, including credit decisions and access to credit for SMEs, as well as the importance of corporate ethical commitment, constitute the general framework of this thesis and the research questions that we address.

### **c) Vietnam**

To this end, we have chosen Vietnam as our study site. First, according to the corruption perception index published in 2016 by Transparency International (TI), Vietnam ranks 113<sup>th</sup> of 176 countries. Second, a historical legacy of the past ownership structure of listed and private firms and banks is that the government retains shares in these institutions. Third, although Vietnam is a rapidly growing transition economy, the ruling Communist Party (Party) continues to use the advancement of cadres as a tool to maintain government control of the state apparatus in all economic sectors. Appointments of several boards of directors, whether banks or corporations are controlled by the government, which for the reasons mentioned above, influences lending decisions. Fourth, firms' managers often are former state-owned enterprise (SOE) managers. These managers maintain personal links with decision-makers in banks and enjoy preferential access to credit, whether at the highest level or in their interaction with local officials. Finally, Vietnam is in the transition from a centrally planned economy to a market

economy. Therefore, this country provides an excellent experimental framework for analysing the specificities of banking relationships and the determinants of the banking pool structure in emerging countries characterised by a high level of corruption.

## **ii) Research questions: statement and motivation**

The majority of theoretical or empirical studies dealing with firms' financing concern large firms, of which ownership is widely distributed and whose financing is diversified and varied. Most of the data on credit availability and the structure of the banking pool can be found in the business literature of developed countries. Moreover, while studies on SMEs have been developing significantly for several decades, the work on bank financing for SMEs in emerging countries remains a shadow for the scientific community, mainly because of the unavailability of data. The primary purpose of this research deepens our understanding of bank financing from SMEs (credit availability, banking relationship, and the structure of the pool of banks) in emerging markets in the presence of corruption and when actors are politically connected. More specifically, we ask three questions, each of which is answered empirically and theoretically in three successive trials.

*Question 1: Are bank-firm relationships and political connections substitutes or complements to maximise firms' access to credit?*

In the first essay, we seek to understand the reciprocal effects of bank-firm client relationships and the political connections of firm managers concerning access to credit for firms. These effects can be posed regarding substitution or complementarity. Indeed, dense customer relationships are known to be an effective means of maximizing credit availability, particularly for SMEs that are opaquer (see, for example, Petersen and Rajan, 1994; Berger and Udell, 2002; Boot, 2000; Cole, 1998; de Bodt et al., 2005; Ongena and Smith, 2000). However, at the same time, an unscrupulous manager can activate his political connections for the same result. In the first case, it is exposed to a risk of the "hold-up", in the sense of Sharpe (1990), namely a slightly higher interest rate. In the second, the "hold-up" is political, in the sense that the manager will be accountable. Are these two levers substitutable or complementary? This is the question we address in this chapter.

In this chapter, we traditionally define the bank-firm relationship in reference to the work of Ongena and Smith (2000) for whom it is a link between a bank and its client that goes beyond the execution of simple and anonymous<sup>11</sup> financial transactions. This conception is developed by Berger and Udell (2002) and Degryse et al (2009) who specify that the provision of financial services by a financial intermediary contains two elements: investing in obtaining information on clients and using this information to assess the profitability of investment projects through repeated and multiple interactions with the same client and on several financial products.

A second important concept in this chapter is the notion of the politically connected firm. Most literature defines a political connection as a personal connection between a politician and a specific firm, via patronage, shareholding, or executives (Khwaja and Mian, 2005; Faccio, 2006). Political connections also may occur through social networks or long-standing relationships with political parties (Ferguson and Voth, 2008; Goldman et al., 2009). Bertrand et al. (2008) include in the subset of politically connected firms those for which directors share the same education background with the politician. An extended definition of political connections refers to friendship, social networks or long-standing relationships with political parties (Cohen and al., 2008; Nguyen, 2012). Other types of political connections include donations to election campaigns (Claessens and al., 2008), lobbying (Hillman and al., 2004) and the link with the firm or industry that the politician used to work in (Qin, 2011). Malesky and Taussig (2009) define political connections in Vietnam using a three-point scale related to the former position of a firm's owner: former government official or military officer, former manager of an SOE, and former SOE. Brunell (2010) uses this measure of political connection in research relating to the effects of political connections on credit in Vietnam, as do Bertrand et al. (2008) and Fan et al. (2007). In this thesis, we assimilate the company and its manager when we speak of political connection, considering that a political connection when it exists within a firm, is established at its highest level and on a personal level.

The question of the effect of political linkages on access to credit has been studied at different levels. At the country level, Beck et al. (2005) observe that credit availability for medium and small firms is lower in countries that have more government-owned banks. This finding is confirmed by La Porta et al., (2002), Barth et al., (2004), and Berger et al. (2004).

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<sup>11</sup> In English version: « the connection between a bank and customer that goes beyond the execution of simple, anonymous, financial transactions » (Ongena et Smith, 2000)

Sapienza (2004) confirms that the preferential bank loan is one of the most influential tools that politicians use to signal their influence. At the local level, connected firms may benefit from lower interest rates (Infante and Piazza, 2014). At the bank level, Dinç (2005) shows that banks' lending behaviours are affected by political influence. He agrees with the conclusions of Beck et al. (2004). Banks can also put pressure on politicians to act in their best interests (Haber et al., 2003).

At the firm level, connected firms usually obtain better credit terms than others (Slinko et al., 2004; Faccio, 2006; Faccio and Parsley, 2006; Goldman et al., 2009; Chaney et al., 2011; Khurana et al., 2012). Khwaja and Mian (2005) suggest that in Pakistan, firms that have political connections with local governments receive better loans from government banks. Political connections reduce the number of capital expenditure restrictions and mandating associated with bank loans, leading to reductions in firms' debt costs (Houston et al., 2011). Political ties with government agencies reduce the time and obstacles involved in accessing bank loans in Vietnam (Hansen et al., 2009; Le et al., 2006; Nguyen et al., 2012). However, connected firms bear the costs of corruption, and political intervention debilitates managerial practices, thereby harming firms' financial performance (Fan et al., 2007). Recently, scholars have argued that political connections may not be a substitute for official market institutions (Dixit, 2004; Faccio, 2006; Leuz and Oberholzer-Gee, 2006).

This first test is thus structured. The first section briefly assesses the effects of the bank-firm relationship on firms' availability of credit in the case of Vietnamese SMEs. The second section assesses the impact of the firm's political connections on the availability of credit in a context of local corruption. In the third section, we examine the interaction effects between political connections and bank-firm relationships.

*Question 2: How do firms structure their pool of banks when the managers of the firms possess varying degrees of political connection and confront with local government corruption?*

In this second essay, we will try to understand the mechanisms that guide the choice the structure of the pool of banks when firms' managers possess the different degrees of political connections and confront with local government corruption.

If the notion of banking pool is traditionally defined by choice of the main bank around which several secondary banks revolve, in this chapter a new concept appears, that of corruption. We distinguish the notion of corruption from that of political connection. While corruption is established and measured at the firm level, corruption is the context in which the firm operates<sup>12</sup>. In this regard, we join the World Bank in defining corruption “*the abuse of public power for private benefit.*”<sup>13</sup> Political corruption not only leads to the misallocation of resources but also affects the manner in which decisions are made. The state, local governments, functionaries, bureaucrats, and politicians hold positions of authority to allocate rights over (scarce) public resources; the involvement of state officials in corruption is “*a form of secret social exchange through which those in power take personal advantage, of one type of another*” (Sardan, 1999).

The current literature on the effects of corruption on bank lending presents multiple and potentially conflicting views. Due to the uncertainty of court decisions for banks, corruption may diminish banks' lending willingness (La Porta et al., 1997; Beck et al., 2006, Weill, 2011) because of the uncertainty of court decisions for banks. Corruption also has a significant impact on firms' behaviour when it comes to applying for bank credit. Despite the quality of an investment project, if managers perceive that it will be difficult to obtain a loan through the usual contractual mechanisms and that corruption characterises the economic environment, they may have greater incentives to pay bribes (Levin and Satarov, 2000; Fungacova et al., 2015).

There are several measures of corruption: Weill uses the survey conducted by Transparency International (TI) and the Information for Democracy Foundation (INDEM) to define corrupt levels across Russia in 2002 (Weill, 2011). Beck and his associates (2004) define banking corruption based on responses to questions from a survey administered at the bank and the firm level. Anaere (2014) uses two indices: TI's Corruption Perceptions Index (CPI) (Corruption–CPI) and the World Bank Corruption-WB Index. In our thesis, we will measure corruption at the provincial level. In our thesis, we will measure corruption at the provincial level.

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<sup>12</sup> With one exception mainly present in the last essay: when the adjective "corrupt" is attached to the common noun "bank".

<sup>13</sup> “Helping Countries Combat Corruption: The Role of the World Bank” - In the words of the Bank's General Counsel, Ibrahim Shihata. <http://www1.worldbank.org/publicsector/anticorrupt/corruptn/cor02.htm>

This second test is thus structured. The first section models the probability that the firm has a main bank that is politically connected (e.g. a government-owned bank). We identify the reasons why politically connected firms choose a politically connected bank as their main bank. In the second section, we analyse the effects of choosing a main connected bank on the number of banks in the firm's pool of banks when the firm operates in a corrupt province. Finally, based on our previous findings, we will examine the effects of political connections and corruption on the diversification of types of bank ownership (as defined by Berger et al., 2007).

*Question 3: How do firms structure their pool of banks when the managers of the firms exhibit varying degrees of ethical commitment and interact with more or less corrupt banks?*

In this last essay, we develop an analysis of the determinants of the structure of the pool of banks under given conditions of ethical commitment of the manager of the firms and corruption of the banks.

Bank financing is a trust-intensive transaction between a borrower and its bank because the loan is granted in return for future repayments linked to the borrower's project performance and the borrower's opportunistic behaviour (Guiso et al., 2008). Some articles analyse the effect of trust-based measures on financial decisions, including informal lending (Karlan et al., 2009). The judgement of banks on the reliability of borrowers plays a central role in the lending decision.

According to Mayer et al. (1995), there are three significant factors of trust in bank's lending: the firms' ability to pay back the loan, which can be objectively assessed, and two subjective factors: the benevolence and the integrity of the borrower (Bews and Rossouw, 2002). Benevolence and integrity are as different as empathy is from engagement in the field of philosophy. Benevolence and integrity consider that taking into account the well-being of others contributes to our well-being; this is not the case with integrity and commitment, which are a matter of goodwill.

Benevolence is understood as the extent to which borrowers will not act opportunistically and will not take advantage of the lender's fragility to exploit short-term profit opportunity (Mayers et al., 1995). The higher borrower's opportunistic increases the risks of default. A borrower that engages in business ethics is one whose behaviour internalises its concern for the interest of all stakeholders and whose managers temper their opportunistic and try to honour as far as possible agreements reached with firm's stakeholders including lenders

(Boatright, 1996, 2008). Such ethical posture is reliability signal the borrower's commitment to behave in a trustworthy way over time. It might be costly for the borrowers that are bent to comply with high ethical standards than lower ethical standards, which encourages him to persevere in his ethical commitment so as not to lose the benefit of his investment. Consequently, the commitment of borrowers not to behave opportunistically - which is the expression of their ethical posture - leads to a reduction in the risks perceived by the lender. As previously mentioned, the second ethically-driven factor of trust is integrity which indicates that the borrowers follow to a set of moral and ethical principles that are deemed acceptable by the banks (Mayers et al., 1995). In a lending relationship, integrity implies that a bank representative perceives the firm's management as being committed to meeting contractual loan obligations.

This chapter combines theoretical modelling and empirical testing. The proposed theoretical model considers a manager characterised by a utility function of Jensen and Meckling (1976). The firm's manager has a more or less degree of ethical commitment which is translated in two ways. A strong ethical commitment of the manager invites him to give more weight to maximise firm's value in its utility function. This robust ethical commitment also leads him to deviate a lesser part of the firm's value for his personal purposes. The firm's manager thus arbitrates between maximising the firm's value and private consumption according to its ethical commitment. The manager (assimilated to his firm) can then opt for three types of banking pools: i) an honest main bank, which contributes to maximising the firm's value; ii) a corrupt main bank, which participates in misappropriating the firm's value for his benefit; iii) a diversified banking pool. This model will then be empirically tested.

### **iii) An original database**

As previously noted, except the last essay which includes partial equilibrium theoretical modelling, the research strategy is empirical. It operates an original database of Vietnamese firms and banks. As we have pointed out, Vietnam, because of its degree of corruption, provides an excellent experimental framework to answer the three questions posed. We, therefore, collect and cross-reference several data sources to arrive at a database composed of 389 medium-sized firms, in operation in December 2013, listed on the Hanoi or Ho Chi Minh City markets. This database is very original as we detail it below.

### **a) Financial information relating to firms**

We target nonfinancial Vietnamese listed firms in two stock exchange markets (Hanoi and Ho Chi Minh City). We focus on firms in operation in December 2013 with fewer than 500 employees or owner's equity of less than 500 billion Vietnamese Dong<sup>14</sup>. These characteristics match the definition of SMEs in terms of employment and total turnover (Gibson and van der Vart, 2008). We extract relevant financial information from Vietnamese Security Committee websites and various firms' and banks' audited reports<sup>15</sup>, collected manually. This initial set of information includes current financial ratios, long-term borrowing patterns, descriptions of the firm's corporate governance, and the main features of each firm. The firms span 51 provinces of Vietnam<sup>16</sup>, including seven social and economic regions, and can be classified into ten industrial sectors.

To measure the availability of credit, a key variable for our research questions, we used firms' corporate financial statements and the criterion proposed by Petersen and Rajan (1994), constructed from supplier credit. Since trade credit is considered more expensive than bank credit, the fact that a firm uses it reflects its difficulty in accessing bank credit. On the other hand, the higher the percentage of commercial credit paid early by the company, the better the firm's credit availability.

The data on banking relations come from an independent survey that we administered, which allows us to collect complete information on the main bank and the number of banks in the banking pool of each company. All firms interact with 62 different banks and their affiliates, through lending, savings, deposits, and other financial services. The number of banks in the firm bank pool varies between 1 (single bank) and 11 (highly diversified structure). Firms in the sample enter the main bank relationships with 26 different main banks. The length of the relationship between the firm and its main bank is measured by the number of years, ranges from 2 to 43.

### **b) Information on the level of corruption or ethical commitment of firms**

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<sup>14</sup> Equivalent to US\$19.01 million (exchange rate US dollar/Viet Nam Dong: 21,036 [Inter-Bank Foreign Currency Market average, end of December 2013, obtained from SBV, 2013]).

<sup>15</sup> We studied about nearly 2,000 reports with the average length of 45 pages of each report.

<sup>16</sup> Our sample accounts for 78% of the provinces and central cities of Vietnam as of 2013.

Here we have two types of information.

Regarding the political connections of firms or their managers. We manually collected information about political connections of firms and firms' CEO from firms' audited reports in 2013. We identified three major political links: (1) The firm was a former SOE before privatisation<sup>17</sup>; (2) the firm's CEO was a member of the Party; and (3) the firm's CEO was a former SOE manager. These political connections are most important at the province level, where local government officials regularly interact at government and social functions (Le et al., 2006; Malesky and Taussig, 2009). We identified firms with three political connections as connected firms<sup>18</sup>. Approximately 74% of firms are considered connected.

We also manually collected the identity of the accounting firm selected by each firm from its audited reports in 2013. The choice by a firm of one of the "Big Four"<sup>19</sup> - the four major firms in the accounting profession - testifies to a high manager's ethical commitment<sup>20</sup>. The financial accounting literature supports this choice (Loeb, 1971; Eynon et al., 1997). We postulate that the congruence of the ethical values of firms and their accounting firms creates an atmosphere of mutual trust that justifies this matching. High managerial ethics characterises about 11% of the firm in our sample.

### **c) Information about banks and their level of integrity**

Financial information on banks comes from the Bankscope database of Bureau van Dijk. Beyond this classic financial information, we have information enabling us to qualify the degree of integrity or corruption of a bank.

To classify the banks as (politically) connected we collected information about the Labor Order (in Vietnamese: *Huân chương lao động*) awarded to banks by the Prime Minister between 2010 and 2012. We obtained this information by retrieving data from banks' annual

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<sup>17</sup> The government had controlling shares in 2,048 registered, private companies across the country by 2013. (GSO Enterprise Survey 2013 [GSO, 2013])

<sup>18</sup> Our measure of connected enterprises is similar to that of Malesky and Taussig (2009), in that we selected two political connections of the enterprise manager. However, our definition is different in that we define connected businesses as those with at least three political connections.

<sup>19</sup> The top 4 accounting firms are KMPG, Deloitte, EY and PwC.

<sup>20</sup> Existing evidence shows that people who share similar moral values enjoy higher levels of mutual trust, which reduces the need to formalize social interactions and increases communication flows, commitment, cooperation, and willingness to support the partner (Brown and Mitchell, 2010; Fulmer and Gelfand, 2012).

audited reports. We verified the information on the awarding of these prizes with the media and central official newspapers in order to identify the exact nature of the prize and to verify the names of the recipient banks. We have defined a connected bank as a bank to which the Medal of Labor Order has been awarded for its achievements. Our knowledge of the country leads us to suppose that the receipt of this medal is biased by the links between the political power and the rewarded banks. Half of the banks with which firms in our sample are related, are classified as connected banks.

We have another measure of the degree of corruption in a bank. To this end, we use information gathered in corruption cases filed with the courts between 2010 and 2012. We obtained this information by retrieving data from provincial economic courts. Then, we verified this information by consulting local and central newspapers, in order to identify precisely the cases of bank fraud, the value of the fraud, the type of corruption, the names of the bank employees involved, and the sentences imposed. A corrupt bank is defined as a bank whose manager has been sentenced to a death penalty by the court following evidence of his or her fraud and the court's decision. About 16% of the firms in our sample have a main bank relationship with these corrupt banks.

To classify a bank as honest, we collect information about the international rewards that banks receive over the period we study. Contrary to government rewards, we believe that these international awards are unlikely to be biased by a potential link between the government and the banks. We use the number of international awards received by a bank during 2010–2012 as our measure of its integrity. 20% of the firms in our sample cooperate with an honest bank.

#### **d) Information on corruption at the local level**

We supplemented our information with research on the degree of corruption at the local level. To do this, we extracted from PCI 2013 the provincial political bias index in favour of state-owned enterprises, foreign-invested enterprises and connected enterprises. We defined a province as corrupt if its political bias index was greater than 6 (on a scale of 0 to 10). One quarter of the firms in our sample operate in corrupt provinces.

#### **iv) Brief presentation of results**

##### **a) Banking relationships, political connections and credit availability**

Our survey confirms that firms with political connections have better access to credit (Khwaja and Mian, 2005; Claessens et al., 2008; Malesky and Taussig, 2009). Perhaps our most important finding is that there is a complementary relationship between bank - firm relationships and political connections. We prove that connected firms develop stable relationships with their banks and at the same time use their political connections to influence banks to maximise access to credit. We also find that corruption affects the firms to access finance, and that connected firms operating in corrupt provinces have better access to credit than other firms. In other words, a corrupt local community strengthens the complementary link between political connections and relational bank financing with a view to maximising credit availability.

For policy makers concerned with the collective interest, our results have significant implications. In particular, in emerging countries with high levels of corruption, it is counterproductive to foster a relational banking system; indeed, it increases the impact of political relations on access to credit for firms. Policy makers should prefer a transactional banking system with more distant links between banks and firms. Our study thus illustrates the dark side of relational bank financing in corrupt environments.

##### **b) The impact of political connections, local corruption on the structure of firm's pool of banks**

In response to our second research question, we conclude that in a corrupt province where local policy favours connected firms. These firms tend to choose main banks that are also politically connected, interact with fewer banks and opt for a more homogeneous pool of banks concerning types of banks (private, government or foreign). In addition to the originality of our data, our research contributes to the literature on banking relationships with respect to the effects of political relations and local corruption on firm's structure of banking pool. Our research points out that corporate financial decisions in emerging markets are determined partly by political connections, so effective financial sector reform must also take into account the political economy of finance. Our thesis is also the first to study the effects of interactions

between firm's political connections, bank's political connections and local corruption on firms' structures of the pool of banks.

**c) The impact of managerial ethics on the structure of the firm's pool of banks.**

In our third essay, we show that the structure of the firm's pool of banks depends as much on the level of ethics of firms and their managers as on the degree of corruption of banks. In particular, firms with high managerial ethics are encouraged to limit or avoid the opportunistic behaviour of a corrupt main bank by diversifying their pool of banks. On the other hand, managers of firms with weak managerial ethics are more inclined to maximise private benefits, even if this reduces the value of the firm. As a result, these firms/managers are more inclined to co-operate with a corrupt bank, to share the firm's cash flows that have been diverted for personal use. This empirical analysis confirms the conclusions of a theoretical model. First, firms and their main banks are matched according to the same degree of ethical commitment or corruption. Second, the size of the pool of banks is an adjustment parameter used by the firm to modulate the negative effects resulting from an impossible matching due to the unavailability of the main bank desired at the local level. This choice, by conditioning the amounts misappropriated by the firm's manager and its main bank, directly impacts the firm's value.

Generally speaking, our thesis has two significant implications. First, at the political level, emerging country governments should, therefore, consider restructuring banking systems according to the degree of corruption of firms, banks and the local community. Second, and from an ethical perspective, as illustrated by the work of Sen (1991), our thesis corroborates the principle that economics should not be disconnected from ethics.

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# **Chapter 1: Are Bank–Firm Relationships and Political Connection Substitutes or Complements? How Firms Maximize Credit Availability: The Case of Vietnam.**

## **Abstract**

Are bank-firm relationships and political connections substitutes or complements in maximizing credit availability to firms? This paper studies the influences of bank–firm relationships and political connections on firms’ access to credit. It uses a manually collected data set of Vietnamese medium-sized enterprises to show that bank–firm relationships (length of relationship with main bank and number of banks) and political connections have complementary effects on maximizing firms’ availability of credit. This research has policy implications for emerging economies characterized by local government corruption; it suggests that policymakers should prefer transactional banking systems to relationship banking systems, and it exposes the dark side of bank–firm relationships.

*JEL Classification:* D72, D73, D82, G32, G34, P31 and P34

*Keywords:* credit availability, corruption, bank–firm relationships, political connections, small- and medium-sized enterprises

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## 1.1. Introduction

Access to bank financing is an important determinant of firms' abilities to develop, operate, and expand. Literature has investigated a variety of macroeconomic and microeconomic factors that influence firms' availability of credit. There are two schools of thought with regard to bank financing for small and medium-size enterprises (SMEs) and the determinants of credit availability. One group argues that close bank–firm relationships increase firms' access to credit (Petersen and Rajan, 1994; Cole, 1998; de Bodt et al., 2005), whereas the other maintains that firms with close ties to political power are more likely to have preferential access to credit (Fisman, 2001; Johnson and Mitton, 2003; Khwaja and Mian, 2005; Faccio, 2006; Claessens et al., 2008). Infante and Piazza (2014) find that politically connected firms benefit from lower interest rates when they are linked at local levels and in areas with higher incidences of corruption.

Despite these findings, however, we lack an overall understanding of the influences of bank relationships and political connections on credit availability. The coexistence of these influences on credit availability - which has gone unnoticed by scholars - raises an important research question: Are bank–firm relationships and political connections substitutes or complements in maximizing credit availability? The answer is relevant for policymakers; if they are complements, policymakers should favour the implementation of transactional banking systems.

Our paper is designed to provide an answer to this question. In our study, we assume that bank–firm relationships and political connections are substitutes for access to credit if they are economically associated with the availability of credit. We also assume that bank–firm relationships and political connections are complements if they increase firms' access to credit when they are combined. We conduct four tests: First, we test the effects of bank–firm relationships on credit availability. Second, we test whether politically connected firms are more likely to access finance than other firms and whether the impact of political connections is more significant in provinces in which local government corruption prevails. Third, we extend our previous study by analysing the aggregated impacts of bank–firm relationships and political connections on the availability of credit. Fourth, we investigate the influences of political connections and firms' credit availability on bank–firm relationships, to answer our

question of whether bank-firm relationships and political connections are complements or substitutes for access to credit.

The hypotheses we test relate to existing theory and knowledge about the nature of information asymmetries and agency costs that reduce firms' availability of credit (Stiglitz and Weiss, 1981). Information-based theories of bank relationships (Stein, 2002; Berger et Udell, 2002) suggest that firms with close ties to financial institutions have lower financing costs and greater access to funds. In relationship lending, banks rely on "soft" information to solve opacity problems; they gather such information through contact over time with firms and their communities. They also build relationships with firms by interacting with other financial products. Bank-firm relationships lower firms' borrowing costs and increase the availability of funds (Petersen and Rajan, 1994).

Research on credit availability suggests that typically, firms have main banks, which monitor firms and help them relax financial constraints (Aoki et al., 1994; Shikimi, 2013). Firms may establish new relationships with other banks when their main banks cannot meet all their needs. One reason that firms diversify their banks is to mitigate the "hold-up" problem associated with having single, main-bank relationships (Thadden, 1992); this choice may be more significant when banking markets are less competitive. Another reason that firms seek other bank relationships relates to the fragility of the banking system: Firms wish to ensure stability of financing by maintaining less concentrated borrowing. We argue that the length of relationships between firms and their main banks, as well as their numbers of bank relationships (concentration), determine both lenders' costs and the availability of funds. We hypothesize that longer relationships and fewer banks increase firms' credit availability.

Empirical research suggests that politically connected (publicly traded) firms have higher leverage ratios than other firms (Johnson and Mitton, 2003; Cull and Xu, 2005; Khwaja and Mian, 2005; Faccio, 2006). This evidence raises the question of why banks are more willing to provide credit to politically connected (connected) firms (Faccio, 2006). We argue that political connection occurs when there is a "special" bank-firm relationship and that firms benefit from their political connections in at least two ways. First, political connections increase firms' values because banks recognize that the firms have close ties with political powers (Fisman, 2001); firms' creditworthiness is increased when banks know the firms have ties with politicians. Second, through political networks, banks obtain more soft information about firms,

thereby reducing their funding costs. Moreover, connected firms benefit not only from personal links with politicians but also from local government policies that are biased toward credit access. We hypothesize that firms' political connections are associated with their credit availability and that the influence of political connections on credit availability is more significant in provinces with high levels of government corruption.

Vietnam provides an ideal context for studying our hypotheses. First, according to the corruption perception index published in 2016 by Transparency International (TI), Vietnam ranks 113<sup>th</sup> of 176 countries. Second, an historical legacy of the past ownership structure of listed and private firms and banks is that the government retains shares in these institutions. Third, although Vietnam is a rapidly growing transition economy, the ruling Communist Party (Party) continues to use the advancement of cadres to maintain government control of all economic sectors; the government controls the appointments of several boards of banks or their parent companies and has some influence over lending decisions. Fourth, firms' managers often are former state-owned enterprise (SOE) managers. These managers maintain personal links with decision makers and provide them with preferential access to credit through interactions with local officials. Finally, Vietnam is transitioning from a centrally planned economy to a market economy, thereby providing an excellent experimental framework for investigating the determinants of credit availability in emerging markets that are characterized by local government corruption.

We collect and cross check several data sources to derive a novel database, comprised of 389 listed Vietnamese medium-sized firms, in operation as of December 2013. The characteristics of listed firms match the definition of SMEs with regard to employment and total turnover (Gibson and van der Vart, 2008). Notably, our database adds accurate data on bank–firm relationships, political connections, and firm characteristics, which we collected manually from a 2013 survey and from various audited financial reports. We cross-check this information by comparing an independent survey of firms that gathered information on each firm's bank pool with information available from the Bankscope database provided by Bureau van Dijk.

The scope and depth of our data sets provide several advantages. First, we have direct measures of firms' credit availability. We use firms' data on trade credit to construct a variable that measures a firm's percentage of trade credit paid early. We argue that amounts that firms borrow from replacement resources are inverse measures of credit availability from banks.

Therefore, the amounts firms borrow from more expensive sources (trade credit) measure the degrees to which firms are constrained by the banks (Petersen and Rajan, 1994). The earlier that firms can make their trade credit payments to their suppliers, the more significant the firms' availability of credit. We measure a firm's credit availability according to the difference between the industry's median of outstanding days payable and the firm's outstanding days payable over the industry's median of outstanding days payable.

Second, we draw information on bank–firm relationships from a manually administered survey. Our definition of the bank–firm relationship includes the length of the relationship between a firm and its main bank and the concentration of banks with which the firm establishes relationships (including borrowing and other financial services).

Third, we use a 3-point additive index to capture the degree of a firm's political connections, including whether the firm was a former SOE, whether the firm's CEO was a member of the Party or a local or central government official, and whether the firm's CEO was a former SOE manager (Malesky and Taussig, 2009). This information enables us to construct a variable that approximates a firm's degree of political connection. We assume that a firm is connected if it has three mentioned political links.

Fourth, we measure the level of local government corruption using the ratings of provinces' political bias policy toward firms, drawn from the 2013 Provincial Competitiveness Index (PCI).<sup>21</sup> This index reflects businesses' concerns about the presence of a level playing field (PCI, 2013); it defines a province as corrupt when its political bias policy index is higher than 6. Our definition of local government corruption is drawn from questions on corruption included in the IHS Global Insight Country Risk Ratings,<sup>22</sup> according to which “corruption is a particular concern in relation to obtaining permits and favourable policy and planning decisions. Analysts will closely assess businesses' experience of these processes” (TI, 2013).<sup>23</sup>

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<sup>21</sup> The PCI survey is an annual survey that has been conducted by the Vietnam Chamber of Commerce and Industry and the United States Agency for International Development since 2006.

<sup>22</sup> IHS, founded in 1959, is a global information company that provides a wide range of online services covering country risk and individual sector analysis. The Global Insight Country Risk Rating is drawn mostly from the evaluation of risk (in which corruption is one of the country risks) and the insight of the country experts in analysing other areas of risk. According to their questions, corruption affects firms' operational activities, including the economic and political drivers of the problem.

<sup>23</sup> A total of 13 data sources construct the Perception Index in 2013 of TI Corruption Index 2013. Access: 23/01/2018. <https://www.transparency.org/files/content/pressrelease/2013-CPISourceDescription-EN.pdf>.

We estimate four models. They are reduced forms that embody the preferences of firms, the abilities of main banks and bank pools to meet these preferences, and the province characteristics that may have an impact on firms' access to credit. Our first empirical test evaluates the effects of bank–firm relationships on credit availability. We find that the effects of the lengths of relationships between firms and their main banks and the concentration of banks are economically associated with firms' percentages of early trade credit payments.

Our second empirical model investigates the effects of political connections on credit availability. We find that connected firms are more likely than non-connected firms to pay trade credit early. In emerging countries characterized by varying political connections and local-government bias policies, credit availability depends on these respective political connections; such availability determines the value of political connections for firms' financial decisions.

Our third empirical model investigates the aggregated effects of interaction terms between political connections with bank–firm relationships (length of relationship with main bank, concentration of banks). The influence of political connections on credit availability is significant in provinces with high levels of policy bias. Overall, our results provide robust evidence that in aggregation, the impacts of bank–firm relationships and political connections on credit availability are significantly greater when they are combined.

Our fourth model tests the effects of political connections on bank–firm relationships (length of the relationship with the main bank, number of banks). We find that connected firms are more likely to establish durable relationships with their main banks and interact with smaller numbers of banks. Together, the findings from our third and fourth models provide evidence that bank–firm relationships and political connections are complements for firms in maximizing access to credit.

Finally, our robustness tests show consistent results with our four model estimations. These results allow us to conclude that not only are bank–firm relationship essential but also that they are complements to political connections in maximizing credit availability.

The remainder of our study proceeds as follows: In Section 1.2, we present a review of literature. In Section 1.3, we present the study's context, data, and variables, and in Section 1.4, we outline our empirical strategy and test our models. We analyze results in Section 1.5, conduct robustness tests in Section 1.6, and present our conclusion in Section 1.7.

## **1.2. Literature review**

### **1.2.1. Credit availability and the role of banking relationships**

Since Stein's ground-breaking article in 2002, our understanding of bank–firm relationships has evolved. We now recognize that banks acquire two types of information to mitigate informational asymmetries, that is, “hard” information that can be easily reduced to a numerical entry and transmitted credibly, and soft information that is difficult to summarize in a numeric score and hard to communicate (Berger and Udell., 2002; Petersen and Rajan, 2002; Petersen 2004). Stein (2002) and Berger and Udell (2002) argue that small, opaque firms can be characterized by the qualitative information they produce. They may benefit from choosing decentralized main banks to develop close relationships with their banks; such relationships help integrate soft information into the decision-making process (Berger et al., 2005). Through close, continual interactions, firms may provide their banks with sufficient information about firms' financial information, thereby lowering costs and increasing credit availability (Petersen and Rajan, 1994). We will examine two dimensions of relationships between firms and their banks.

First, an essential dimension of bank–firm relationships is their duration. The longer firms have been servicing their loans, the more likely the firms are to be viable and to have stability of ownership (Diamond, 1991). Some research provides concrete evidence that length of bank–firm relationships is associated with firms' availability of credit (Petersen and Rajan, 1994; Cole, 1998; de Bodt et al., 2005). Lengthy relationships reduce the expected costs of lending and increase banks' willingness to provide loans; banks can obtain sufficient information about firms' abilities to pay back debt by observing their past interactions with other claim holders (previous creditors). The lengths of firms' financial relationships with their main banks should determine the banks' costs of lending and the availability of credit. Moreover, firms can build relationships with banks through interactions with other products (such as maintaining checking or savings accounts with the banks). These additional services can affect firms' borrowing in two ways. First, banks can absorb more soft information about firms; they can learn about firms' sales by checking firms' accounts receivable and accounts payable. Second, banks can reduce costs of producing information about firms from different financial products and gain more from these services, resulting in greater willingness to grant loans to firms, all else being equal.

The second measure of the closeness of firms and their banks is the numbers of banks with which firms have relationships. According to theoretical literature, higher numbers of banks can have both advantages and disadvantages for firms' access to credit. The benefit of concentrated borrowing is that firms can save both monitoring costs ((Diamond, 1984) and transaction costs. Concentrated borrowing provides banks with informational rents that increase the hold-up problem for firms, resulting in higher interest rates, greater collateral requirements, or even denial of credit (Rajan, 1992). Firms that have only single bank relationships risk being unable to obtain all the credit they need at market rates because of information asymmetry between firms and banks. Moreover, banks themselves may face liquidity problems (i.e., be fragile; see Detragiache et al., 2000). However, having higher numbers of banks lead to higher negotiation expenses in cases of firms' strategic defaults (Bolton and Scharfstein, 1996). Higher numbers of banks also may have adverse effects on firms' access to credit; such numbers depend on firms' supply. Some banks may be less likely to offer credit to fragile firms (Elsas and Krahen, 1998; Degryse and Ongena, 2001; Degryse et al., 2009), and others may prefer to co-finance in small pools of banks because of lending costs. Higher numbers of banks are associated with wasting resources of transferring information (Diamond, 1984) and with increasing the cost of funds and reducing the availability of credit to firms.

Our hypotheses about the effects of relationships on credit availability reflect the positive impacts of the length of relationships between firms and their main banks and of higher numbers of banks (i.e., less concentrated borrowing). We justify our hypotheses with three arguments: First, SMEs are the prototypes of firms in emerging economies; listed firms in Vietnam are mainly SMEs. Second, SMEs produce more soft information and less hard information than large enterprises. Third, financial reports provided by companies in emerging countries are not credible; as a consequence, credit officers must rely on soft information. Thus, we propose:

*Hypothesis 1.1. 1: Longer relationships between firms and their main banks increase credit availability.*

*Hypothesis 1.1. 2: Higher numbers of banks (i.e., less-concentrated borrowing) increase credit availability.*

## **1.2.2. Credit availability and the role of political connections and local government corruption**

### *1.2.2.1. Political connections and credit availability.*

Research related to the role of political connections in credit availability refers to four levels of operation. First, at the country level, Beck et al. (2005) observe that credit availability for SMEs is lower in countries that have significant market shares of government banks. Second, at the local level, connected firms benefit from lower interest rates (Infante and Piazza, 2014). Third, at the bank level, banks' lending behaviours are affected by political influence (Beck et al., 2004; Dinç, 2005). Banks in emerging markets with dominant government banks are associated with reduced access to credit (La Porta et al., 2002; Barth et al., 2004); banks in these areas may subsidize or finance directly for political purposes (Cole et al., 2004; Sapienza, 2004).

Finally, at the firm level, connected firms usually obtain better credit terms than other firms (Faccio, 2006; Imai, 2009; Chaney et al., 2011; Khurana et al., 2012). Khwaja and Mian (2005) suggest that firms that have political connections with local governments receive better loans from Pakistani government banks. Such relationships lead to reductions in firms' debt costs (Houston et al., 2011). Political ties with government agencies can reduce the time required and the obstacles to accessing bank lending in Vietnam (Le et al., 2006, Nguyen 2012). However, connected firms also accrue costs as the result of corruption, and political intervention debilitates managerial practices, thereby harming firms' financial performance (Fan et al., 2007).

Most literature concurs that political connections are personal connections between politicians and specific companies, via patronage, shareholding, or executives (Khwaja and Mian, 2005; Faccio, 2006; Ferguson and Voth, 2008). Malesky and Taussig (2009) define political connections in Vietnam using a 3-point scale related to the former positions of firms' owners: former government officials or military officers, former managers of SOEs, and former SOEs. Brunell (2010) uses the same definition of political connections research related to the effects of political connections on credit in Vietnam.

### *1.2.2.2. Corruption and credit availability.*

The World Bank's working definition of corruption is that is "the abuse of public power for private benefit"<sup>24</sup>. Political corruption leads not only to the misallocation of resources, but also affects the manner in which decisions are made. States, local governments, functionaries, bureaucrats, and politicians hold positions of authority to allocate rights over (scarce) public resources. The involvement of state officials in corruption is "a form of secret social exchange through which those in power take personal advantage, of one type of another" (Sardan, 1999).

Current literature on the effects of corruption on bank lending presents two conflicting views. The first is that banks lend more when legal frameworks allow them to find all or part of their debts in case of default (Ongena and Smith, 2000), and corruption diminishes banks' willingness to lend by increasing the costs of loans to borrowers (La Porta et al., 1997; Beck et al., 2006, Weill, 2011). The second view is that corruption has a significant impact on firms' behavior related to access to bank credit; despite the quality of investment projects, if managers perceive that it will be difficult to obtain loans and that their environments are corrupt, their incentives to bribe may be greater (Levin and Satarov, 2000; Fungacova et al., 2015).

There are two principal measures for evaluating corruption: the integral index for the perception of corruption (perception) and the integral index for the amount of corruption (amount). The measure for perception is used in cross-country comparisons and empirical studies (Lambdsdorff, 2005; Weill, 2011). Anaere (2014) uses two indices: The Corruption Perceptions Index (CPI) of TI (Corruption-CPI) and the index of corruption (Corruption-WB) developed by the World Bank. The TI index is built by using questions on corruption drawn from the IHS Global Insight Country Risk Ratings; these ratings indicate that corruption is associated with policy and planning decisions.

#### *1.2.2.3. Effects of political connections in corrupt provinces on credit availability.*

Our hypotheses with regard to the effects of political connections on credit availability are constructed according to preferential access to credit and at the firm, bank, and province levels. We broaden the concept of political connections as firms' social capital. We hypothesize that political connections increase firms' access to financing for two reasons. First, political connections enhance firm's values because banks recognize that firms have close ties with

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<sup>24</sup> Helping Countries Combat Corruption: The Role of the World Bank" - In the words of the Bank's General Counsel, Ibrahim Shihata. <http://www1.worldbank.org/publicsector/anticorrupt/corruptn/cor02.htm>

political powers and therefore reduce their costs of funding. Second, through political networks, banks can obtain more soft information about firms. Firms' creditworthiness may increase if banks know the firms have links with politicians or that their investment projects will attract political support.

According to local-government corruption theory, local public officials usually have greater decision-making discretion than national decision makers. Local public officials often have the opportunity not only to take charge but also to abuse their positions, resulting in policy biases toward firms that are connected to local politicians (TI, 2013). Corruption can be identified at the local level by the embezzling or "skimming" of public funds. Public officials' relative proximity to stakeholders allows for greater interaction and dialogue between local officials and businesses, which can subvert fair procurement procedures. We suggest that in highly politically biased provinces, the performance impact of political connections on credit availability is heightened in two ways: First, local government policy bias increases funding for connected firms (through access to public funds, or funding of social or political investment projects). Second, as the result of the corruption process, banks reduce their lending requirements for connected firms (requiring less collateral or offering special loan terms and conditions).

Accordingly, we hypothesize:

*Hypothesis 1.2. 1: Politically connected firms are likely to have greater credit availability than other firms.*

*Hypothesis 1.2. 2: Politically connected firms are likely to have greater credit availability than other firms especially when they operate in corrupt provinces.*

### **1.2.3. Are bank–firm relationships substitutes or complements for political connections in maximizing credit availability to firms?**

We turn now to the last and most important focus of this paper, that is, the substitution hypothesis related to political connections and bank–firm relationships. We have already referred to several arguments that support such a substitution effect. The political implications are quite important. If bank–firm relationships are substitutes for political connections in the financing of SMEs, policies that aim to eliminate corruption will be accompanied by financial

features that enhance the development of relationship banking. Such policies include objectives such as promoting the emergence of cooperative banks and preventing bank mergers and acquisitions that result in large banks favouring transaction business models.

Recently, scholars have argued that political connections are substitutes for official market institutions (Dixit, 2004; Faccio, 2006; Leuz and Oberholzer-Gee, 2006). However, to the best of our knowledge, no research has directly investigated the aggregated effects of bank–firm relationships and political connection on the availability of credit. We assume that our previous hypotheses about the separate roles of bank–firm relationships and political connections on credit availability are correct. Therefore, we examine whether these factors improve firms’ access to credit when they are combined. If both bank relationships and political connections accomplish the same function, we can conclude they are substitutes. Thus, SMEs in emerging countries that wish to maximize access to credit from the banking system can choose between two opposing strategies: building robust and close relationships with their banks or playing the game of corruption by using their political connections. According to these arguments, we hypothesize:

*Hypothesis 1.3: Bank–firm relationships (either length of main bank–firm relationships or higher numbers of banks) can substitute for political connections in fostering credit availability.*

#### **1.2.4. Measures of firms’ access to credit**

There are two methods used to investigate firms’ abilities to access financing: surveys of firms and econometric analyses of firms’ financial statements. The survey method often includes questions with regard to whether firms can access credit or have credit extended (Cole, 1998; Lehmann and Neuberger, 2001). Other survey questions relate to denial or approval of loans (Kano et al., 2011), and credit rationing (de Bodt et al., 2005). For developing countries, customized firm-level surveys are commonly used to investigate firms’ obtaining of financing (Beck et al., 2006). However, this survey method may have problems of endogeneity caused by ambiguous definitions and lack of conceptual frameworks (Claessens and Tzioumis, 2006). The method of using firms’ financial data includes percentage of trade credit paid early (Petersen and Rajan, 1994), loan amounts (Dietsch, 2003; Ioannidou and Ongena, 2010), and the debt-to-asset or debt-to-capital ratios (Repetto et al., 2002).

In this paper, we use trade credit data to measure firms' credit availability, as adapted from Petersen and Rajan (1994). We have two reasons for using trade credit as a proxy for credit availability: First, if banks limit credit to firms, the firms may switch to borrow from other expensive sources, providing that the investment returns finance the costs of funds from these sources. The amounts the firms borrow from replacement resources are therefore inverse measures of credit availability from bank, and the amounts firms borrow from more expensive sources of financing should measure the degree to which the firms are constrained by banks. In this respect, trade credit is one of the expensive sources of bank loans that firms can borrow (Wilson and Summers, 2002; Danielson and Scott, 2004, Abdulsaleh and Worthington, 2013). Second, firms can benefit from advance-payment discounts. Compared to banks, suppliers may be able to obtain information about firms' creditworthiness faster, and at lower costs, in the course of doing ordinary business. In this way, firms can signal their creditworthiness to banks, with the consequence that creditors are willing to lend more (Cook, 1999).

The measurement of a firm's percentage of trade credit paid early is the proxy to measure the firm's credit availability, which is calculated by the following formula:

$$\text{Firm percentage of trade credit early payment}_i = \frac{\text{Median DPO Industry}_k - \text{Firm DPO}_i}{\text{Median DPO Industry}_k},$$

where  $\text{DPO (Days payable outstanding)}_i = \frac{\text{Firm accounts payable}_i}{\frac{\text{Firm cost of goods sold}_i}{\text{Number of days (365)}}}$ , and  $\text{Median DPO Industry}_k$  is the median of DPO of each industry.

### 1.3. Context of the study, data and variables

#### 1.3.1. The Vietnamese banking system and bank financing for SMEs

Bank sector liberalization and deregulation in Vietnam started in the early 1990s as a part of the *Doi Moi* policy.<sup>25</sup> This financial sector reform provided for the establishment of private banks, the entry of foreign banks, and the privatization of some government banks. However, interest-rate decisions remain the responsibility of the State Bank of Vietnam (SBV). Between 1993 and 2013, four government banks privatized successfully; the State Bank of

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<sup>25</sup> *Doi Moi* translates as "renovation" in English; it is the name given to the economic reforms initiated in Vietnam in 1986 with the goal of creating a "socialist-oriented market economy."

Vietnam still holds shares in them. These banks continue to finance strategic governmental and social projects (Berger et al., 2009) and maintain relationships with large and state enterprises that began prior to privatization. The credit market is highly concentrated; government banks covered 51.2% of the official market at the end of 2013 (SBV, 2013).

Private banks began obtaining banking licenses during the early 1990s; 47 private banks began operations between 1993 and 2013. Their markets and networks span the entire country, although their focus is on small businesses in the private sector. There also are some incumbent private banks, founded with capital contributed by government banks, state entities, and central and local governments.

Most foreign banks began operating in the 1990s with licenses to open branches. They can take deposits and provide credit according to local banking laws and SBV regulations. However, these foreign operations and branches primarily serve companies from the banks' own countries of origin, and because of constraints on their branch expansion, their lending activities take place mostly in major cities. For joint venture banks, restrictions limit the shares of foreign partners to 49%. Foreign-owned banks provide credit mainly to foreign, medium, and larger firms rather than to small firms.

Corruption is the most frequently cited business problem in Vietnam (Bertelsmann Foundation, 2010, 2014; Thanh Nien News, 2014). Most executive bankers are business partners, friends, or executives of top-ranked politicians. Four massive corruption cases in the 1990s illustrate politicians' involvement in credit allocations by banks (Gainsborough, 2003).

There are still informal political connections between the financial sector and SOEs or even privatized firms (former SOEs) that are state-financed directly. One conventional explanation for the increase of the corruption is central- and local-government policy bias towards SOEs and politically connected firms, which leads to both reduced business performance and declining perceptions of economic governance. Recent failures of state conglomerates, which received a great deal of currency from their struggles, provide compelling evidence for the impact of political policy bias. At the province level, credit access is the highest policy bias (with an average of 27% of respondents from 2005 to 2013 [PCI, 2013]). The level of policy bias varies dramatically across the country; in some provinces, firms must battle against considerable difficulties (PCI, 2013). The most significant political bias that firms face

is toward former SOEs that have been privatized; states sometimes retain shares in these firms and have significant connections to policymakers (PCI, 2013).

Vietnamese SMEs play active, fundamental roles in economic growth. As of 2012, approximately 97% of firms were SMEs, accounting for 46.8% of the country's employment (GSO, 2013). Their access to external finance, particularly bank financing, is generally difficult (Tenev et al., 2003, Le and Wang, 2005). Therefore, lending to SMEs tends to depend on interorganizational and interpersonal banking relationships (Le, 2013), owner characteristics (Nguyen, 2012), and financial environments (Nguyen and Otake, 2014). Moreover, government-connected firms have preferential access to finance (Malesky and Taussig, 2009; Nguyen and van Dijk, 2012).

### **1.3.2. Data source**

#### *1.3.2.1. Firms' financial information.*

We targeted non-financial Vietnamese listed firms in two stock exchange markets (Hanoi [HSX] and Ho-Chi Minh City [HOSE]). We focused on firms in operation in December 2013 that had fewer than 500 employees or owner equity of less than 500 billion Vietnamese Dong<sup>26</sup>. These characteristics match the definition of SMEs in terms of employment and total turnover (Gibson and van der Vart, 2008). We extracted relevant financial information from Vietnamese Security Committee websites and various firms' and banks' audited reports,<sup>27</sup> which we collected manually. This initial set of information included conventional financial ratios, long-term borrowing patterns, descriptions of the firm's corporate governance, and the main features of each firm. The firms spanned 51 provinces of Vietnam,<sup>28</sup> including 7 social and economic regions, in 10 industrial sectors.

#### *1.3.2.2. Credit availability.*

We used firms' financial statements with regard to accounts payable and cost of goods sold to calculate their percentage of trade credit paid early. The higher a firm's percentage of

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<sup>26</sup> Equivalent to \$19.01 million USD (exchange rate US dollar/Viet Nam Dong: 21,036 [Inter-Bank Foreign Currency Market average, end of December 2013, obtained from SBV, 2013]).

<sup>27</sup> We studied almost 2,000 reports, with an average report length of 45 pages.

<sup>28</sup> Our sample accounted for 78% of the provinces and central cities of Vietnam as of 2013.

trade credit paid early, the better the firm's credit availability. Our direct measure of trade credit allowed us to analyze credit availability at the firm level and avoid the endogeneity problem.

#### *1.3.2.3. Bank relationships.*

We drew bank–firm relationship data from our independent survey,<sup>29</sup> which gathered full information on main banks and numbers of banks in each firm's bank pool. All firms interacted with 62 different banks and their affiliates, through lending, savings, deposits, and other financial services. The number of banks in firms' bank pools varied between 1 (single bank) and 11 (highly diversified structure). Firms in the sample entered into relationships with 26 main banks. We measured the length of relationship between a firm and its main bank by number of years; the lengths ranged from 2 to 43.

#### *1.3.2.4. Firm's political connections.*

We manually collected information about political connections of firms and firms' CEOs from firms' audited reports in 2013. We identified three major types of political links: the firm was a former SOE before privatization;<sup>30</sup> the firm's CEO was a member of the Party; and the firm's CEO was a former SOE manager.<sup>31</sup> These political connections are most important at the province level, where local government officials regularly interact at government and social functions (Le et al., 2006; Malesky and Taussig, 2009), and the province has bias index of credit access toward connected firms. We assumed that firms having three political links were more politically connected than other firms and identified such firms as a connected<sup>32</sup>.

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<sup>29</sup> We sent a survey questionnaire about firms' bank pool structures by email to all listed firms (about 700). We received the emailed responses of 425 firms. We approached other firms with incomplete information using different methods (telephone, physical visits, checking with credit officers) to obtain missing information. In cases in which responses to our questionnaire did not permit clear identification of main banks, we assumed that the main banks were those for which firms published their bank accounts on their official websites or in their audited financial reports. We ensured that there were no cessation periods in the relationships between firms and their main banks from the first time the firms began to use bank services.

<sup>30</sup> The government had controlling shares in 2,048 registered, private companies across the country by 2013. (GSO Enterprise Survey 2013 (GSO, 2013))

<sup>31</sup> In some SOEs in which the government holds a majority stake, ministries and provincial governments have the right to appoint the executive staff of the firms. Although SOE senior officials do not typically retain their positions at the state, they do retain their connections to the government and may return to government service once they complete their terms with SOEs.

<sup>32</sup> Our measurement of PCON firms is similar to that of Malesky and Taussig (2009) in that we select two political connections of the firm's CEO. However, our definition is different in that we define PCON firms as firms that possess at least three political connections.

#### *1.3.2.5. Corruption at the province level.*

To classify corrupt provinces, we used PCI 2013 to extract the indexes of the provinces' political biases<sup>33</sup> toward SOEs, foreign-invested enterprises, and politically connected firms. We defined a province as a corrupt province if its political bias policy index was higher than 6; we drew our definition of corruption from the content of questions on corruption in the IHS Global Insight Country Risk Ratings (TI, 2013), which are used regularly in TI reports.

#### *1.3.2.6. Bank characteristics.*

We obtained financial information about main banks and bank pool structures from the Bankscope database of Bureau van Dijk.

#### *1.3.2.7. Province characteristics.*

We used the GSO (2013) to collect the density of members of the 11<sup>th</sup> Standing Committee of the Political Bureau of the Party Central Committee in 1,000 people of the province between 2011 and 2016. We also used the GSO (2013) to collect population density, as a proxy for rural versus urban areas (Berger et al., 2009).

Our final data set included 389 firm observations.

### **1.3.3. Variables and descriptive statistics**

Table 1.1 contains the definitions and summary statistics for all the variables. For analysis purposes, we took the log values of some variables.

#### *1.3.3.1. Dependent variables.*

We used the percentage of trade credit paid early as a measure of credit availability (*CREDAVAIL*) (for details, please refer to Section 1.2.4). Petersen and Rajan (1994) argue that trade credit is more expensive than bank loans; firms use trade credit if, and only if, it is credit-rationed. They state that the extent to which a firm takes cash discounts for early payment is measure of firm's credit availability (Petersen and Rajan, 1994)

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<sup>33</sup> The provincial policy bias index includes land access, credit access, and administrative access for 63 provinces.

### 1.3.3.2. Independent variables.

We introduced two groups of independent variables: bank–firm relationship and political connections.

- *Bank–firm relationship*: First, the variable *LENGTH* presents the length of the relationship between a firm and its main bank. It equals the natural log of 1 plus the length of the main bank relationship by 2013. The length ranges from 2 to 43 years, with an average of 14.51 years. Second, the variable *CONCENTRATION* records the concentration of the number of banks. *CONCENTRATION* is the reciprocal of 1 plus the number of banks. The average firm has 2.35 banks.
- *Political connections*: First, *CONNECT FIRM* is a dummy that indicates a connected firm, assessed according to whether firms and firms' CEOs have at least three political connections with the government and the Party. About 74% firms have high political connections. Second, we add *CORRUPT PROVINCE* to represent the corrupt identity of the firm's province. We defined a province as corrupt if its political bias policy index was higher than 6 in 2013, 0 otherwise. About 21% of firms operate in corrupt provinces. Third, we generated the dummy variable *PAIR FIRM – PROVINCE*, which equals 1 if *CONNECT FIRM* = 1 and *CORRUPT PROVINCE* = 1, 0 otherwise.

### 1.3.3.3. Control variables.

We introduced three sets of controls:

- *Firm characteristics*: We measured firm size as the natural log of firm's assets (*FSIZE*), with an average of \$2.38 million USD. The firm-level return on assets ratio (*FROA*) takes an average value of 0.049. We also included the firm's research and development (R&D) expenses ratio (*FR&D*), defined as its total expenditures on R&D relative to total assets. Similar to Yosha (1995), Bhattacharya and Chiesa (1995), and Berger et al. (2007), we predicted that innovation shapes firms' debt structures; *Z – SCORE* measures a firm's likelihood of bankruptcy, which is calculated by the formulation of the Altman z-score<sup>34</sup>. The average firm's *Z – SCORE* is 2.223. *QUICKRATIO* is an

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<sup>34</sup> Altman z-score =  $1.2A + 1.4B + 3.3C + 0.6D + 1.0E$ , where A = working capital/total assets, B = retained earnings/total assets, C = earnings before interest and tax/total assets, D = market value of equity/total liabilities, and E = sales/total assets).

indicator of a firm's short-term liquidity (Quick ratio = [current assets–inventories]/current liabilities]). The average of firm's quick ratios is 1.454. *DEBTRATIO* is the institutional debt-to-asset ratio (institutional debt excludes debt from firms' owners or their families). The mean of debt-to-asset ratio is 0.486. We introduced the variable *BANK DEBT RATIO* as the banking debt-to-asset ratio, with a mean of 0.043. The variable *SAVINGS* is the bank savings-to-asset ratio with a mean of 0.040. The variable *SALEGROWTH* is the growth rate of the income from sales (before tax) between 2012 and 2013 for firms. We used this variable to measure firms' business opportunities in 2013, as an evaluation of firms' access to credit (Petersen and Rajan, 1994). The dummy *MARKET* equals 1 for firms listed on the Ho Chi Minh City Stock Exchange (HOSE), 0 otherwise. About 34% of firms are listed in the frequently traded market of HOSE<sup>35</sup>. We believe that each market creates different choices of debt structures and therefore affects credit availability.

- *Bank pool characteristics*: Bank size, measured by the natural log of the main bank's assets (*BFSIZE*), ranges from \$6.55 USD to \$10.41 million USD, with an average size of \$20,620 million USD. We used a dummy to indicate banks listed on the stock exchanges (*BLISTED*), which accounts for 46% of the sample, and used the *HERFINDAHL INDEX* to indicate the concentration of banks in areas in which firms were headquartered in 2013 (*Herfindahl Index* =  $\sum_i^N S_i^2$ , where *i* is the number of the banks in the region, and *S* is relative size of each bank). We used this as a measure of the effect of bank concentration on credit availability (Petersen and Rajan, 1994). The average of the Herfindahl index is 0.114.
- *Province characteristics*: We introduced the variable *PARTY DENSITY*, equal to a province's number of executive members of the 11<sup>th</sup> Standing Committee of the Political Bureau of the Party Central Committee per 1,000 people from 2012 to 2013. We used this variable because literature suggests that higher numbers of party members are correlated with corruption at the local government level (Bergh et al., 2017). The average of *PARTY DENSITY* is 1.644. We used *POP DENSITY* to measure the population density by proxy for rural versus urban areas. The average population density per square

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<sup>35</sup> At the HOSE, investors can trade stocks, investment fund certificates, and bonds that are listed on the HOSE. At the HNX, in addition to the above-mentioned financial products listed on the HNX, investors can trade shares, convertible bonds of companies that have not been publicly traded (UPCoM), government bonds, government-guaranteed bonds, local government bonds, and treasury bills. The conditions on listing of securities, trading, and transactions differ between these markets.

kilometre is 1,886. This variable allowed us to compare the credit availability of major cities and rural areas.

We also included controls for firms' geography (51 provinces, 7 regions) and 10 industry sectors in all regressions, but they are not included in Table 1.1<sup>36</sup>.

## 1.4. Empirical methodology

### 1.4.1. Univariate test

It was challenging to test our hypotheses, because they involve a causal relationship between the degree of political connections and credit availability. Thus, merely observing a match at a given data between the degree of firm's political connections and the percentage of trade credit paid early did not allow us to make conclusions. To solve this endogeneity problem, we focused on our second hypothesis and performed univariate analyses. We tested different averages for percentage of trade credit paid early (credit availability), according to two methods of cutting the sample: whether a firm had at least two banks, and whether a firm was connected.

### 1.4.2. Model development

#### 1.4.2.1. Credit availability and the role of relationships.

Our first model tested the effects of bank–firm relationships on firms' credit availability:

*Equation 1. 1 The effects of bank–firm relationships on firms' credit availability*

$$\begin{aligned}
 CREDAVAIL_i = & \alpha_0 + \alpha_1 LENGTH_i + \alpha_2 CONCENTRATION_i + \alpha_F * \\
 & Firm_i + \alpha_{BP} * Bank Pool_i + \alpha_P * Province_i + \\
 & FE(Industry, Province, Region) + \varepsilon_i
 \end{aligned}
 \tag{1.1}$$

In these equations,  $CREDAVAIL_i$  is a generic dependent variable that measures credit availability to the firm $_i$ ;  $LENGTH_i$  and  $CONCENTRATION_i$  are generic dependent variables that measure bank–firm relationships;  $Firm_i$  is a generic vector of control variables at the firm

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<sup>36</sup> Approximately 10% of firms are in the Red River Delta, 16% are in the northern central and central areas, 28% are in Hanoi, 26% are in Ho Chi Minh City, and 20% are in the northern midlands and mountainous, eastern southern, or Mekong River Delta. In terms of sectors, 27% of firms are in real estate, construction, materials, and services for construction sectors; 10% are in the consumer goods and services or personal effects sectors; 34% are in industrial goods and services; 5% are in food and beverage sectors; and 24% are in consumer goods involving natural resources, oils and gas, public services, technology, and travel and entertainment.

level ( $FSIZE_i$ ,  $FROA_i$ ,  $FR&D_i$ ,  $Z-SCORE_i$ ,  $QUICKRATIO_i$ ,  $DEBTRATIO_i$ ,  $BANK DEBT RATIO_i$ ,  $SAVINGS_i$ ,  $SALE GROWTH_i$ ,  $MARKET_i$ );  $Bank Pool_i$  is a generic vector of control variables at the pool bank level ( $B SIZE_i$ ,  $BLISTED_i$ ;  $HERFINDAHL INDEX_i$ ); and  $Province_i$  is a generic vector of control variables at the province level ( $PARTY DENSITY_i$ ,  $POP DENSITY_i$ ).

Table 1.1 defines all variables. We also included fixed effects at the industry, province<sup>37</sup>, and region levels in our regressions. We estimated three separate equations with different controls for firms' and bank pools' characteristics.

We considered two methods of estimation to deal with the problem that the data points of the dependent variable  $CREDAVAIL_i$  are of varying quality. First, we used the Tobit regression with the variable  $CREDAVAIL_i$ , censored at 0.0 and 1.0, to limit the influence of outliers (Petersen and Rajan, 1994), and we adjusted the standard errors for clustering by the seven regions. One disadvantage of the Tobit model is that it cannot explain the interaction effects of two variables (Ai and Norton, 2003; Ai et al., 2004). Second, we used weighted least squares (WLS)<sup>38</sup> regressions, which provide an efficient method for dealing with small data sets when the data points are of varying quality. We used the optimal WLS solution with the weighting proportional to a firm's listed duration and its log nature, together with an adjustment proportional to the log of squared residuals. A firm's listed duration is the time that the firm is publicly traded on the stock market. This variable measure for the opacity of the firm and its data points are not of varying quality (the stock market of Vietnam was established in 2000). We also investigated potential outliers because they could have had an impact on the parameter estimation of WLS analysis (Ryan, 1997; Carroll and Ruppert, 1998).

If our hypotheses on the role of relationships on credit availability are correct, the coefficient of the variable  $LENGTH_i$  will be positive and significant, and the coefficient of the interaction variable  $CONCENTRATION_i$  will be negative and significant.

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<sup>37</sup> We excluded provinces with fewer than five observations.

<sup>38</sup> We use Stata to check how well data meet the assumptions of ordinary least squares (OLS) regression including the assumptions of linearity, normality, homogeneity of variance (homoscedasticity), independence, and errors in variables. One of the main assumptions of OLS regression is the homogeneity of variance of the residuals. If the model fits well, there should be no pattern to the residuals plotted against the fitted values. If the variance of the residuals is non-constant, the residual variance is said to be "heteroscedastic." Our research transforms the data and uses weights in the parameter estimation to improve parameter estimators. By using the WLS fitting criteria, we estimate the parameter by the minimizing equation,  $Q = \sum_{i=1}^n w_i [y_i - f(\vec{x}; \hat{\beta})]^2$ .

#### 1.4.2.2. Credit availability and the role of political connections in corrupted environments.

Our second model tests the effects of political connections on firms' credit availability:

*Equation 1. 2 The effects of political connections on firms' credit availability*

$$\begin{aligned} \text{CREDAVAIL}_i = & \alpha_0 + \alpha_1 \text{CONNECT FIRM}_i + \alpha_2 \text{CORRUPT PROVINCE}_i + \\ & \alpha_4 \text{CONNECT FIRM}_i \times \text{CORRUPT PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \text{Bank Pool}_i + \\ & \alpha_P * \text{Province}_i + \text{FE}(\text{Industry, Province, Region}) + \varepsilon_i. \end{aligned} \quad (1.2a)$$

$$\begin{aligned} \text{CREDAVAIL}_i = & \alpha_0 + \alpha_1 \text{LENGTH}_i + \alpha_2 \text{CONCENTRATION}_i + \\ & \alpha_3 \text{CONNECT FIRM}_i + \alpha_4 \text{CORRUPT PROVINCE}_i + \alpha_5 \text{CONNECT FIRM}_i \times \\ & \text{CORRUPT PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \text{Bank Pool}_i + \alpha_P * \text{Province}_i + \\ & \text{FE}(\text{Industry, Province, Region}) + \varepsilon_i. \end{aligned} \quad (1.2b)$$

In these equations, *CONNECT FIRM<sub>i</sub>* is a generic independent variable that measures the degree of political connections for firm *i*, and *CORRUPT PROVINCE<sub>i</sub>* is a generic independent variable that measures the level of corruption in province *i*.

Table 1.1 defines all variables. We also included fixed effects at the industry, province, and region levels in our regressions. We estimated three separate equations with different controls for firms', bank pools', and provinces' characteristics, with WLS and Tobit regression as Model 1.1. If our hypotheses on the role of political connections on credit availability are correct, the coefficients of the variables *CONNECT FIRM<sub>i</sub>*, *CONNECT FIRM<sub>i</sub> × CORRUPT PROVINCE<sub>i</sub>*, will be positive and significant, and the coefficient of the interaction variable *CONCENTRATION<sub>i</sub>* will be negative and significant.

#### 1.4.2.3. Are bank–firm relationships and political connections substitutes or complements for firms in maximizing access to credit?

To test our hypotheses on bank–firm relationships and political connections as complements, we performed two tests. First, we tested the effects of the interactions of these independent variables on credit availability (Model 1.3). Second, we tested the effects of political connections and credit availability on bank–firm relationships (Model 1.4).

Our third model tested the effects of the interaction of bank–firm relationships with connected firms (Models [1.3a] and [1.3b]), and with connected firms that operate in corrupt provinces (Models [1.3c] and [1.3d]), on firms' credit availability.

Equation 1. 3 The effects of the interaction of bank–firm relationships with connected firms, and with connected firms that operate in corrupt provinces on firms’ credit availability

$$\begin{aligned} \text{CREDAVAIL}_i = & \alpha_0 + \alpha_1 \text{LENGTH}_i + \alpha_2 \text{CONCENTRATION}_i + \\ & \alpha_3 \text{CONNECT FIRM}_i + \alpha_4 \text{CORRUPT PROVINCE}_i + \alpha_5 \text{LENGTH}_i \times \\ & \text{CONNECT FIRM}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \text{Bank Pool}_i + \alpha_P * \text{Province}_i + \\ & \text{FE(Industry, Province, Region)} + \varepsilon_i. \end{aligned} \quad (1.3a)$$

$$\begin{aligned} \text{CREDAVAIL}_i = & \alpha_0 + \alpha_1 \text{LENGTH}_i + \alpha_2 \text{CONCENTRATION}_i + \\ & \alpha_3 \text{CONNECT FIRM}_i + \alpha_4 \text{CORRUPT PROVINCE}_i + \alpha_5 \text{CONCENTRATION}_i \times \\ & \text{CONNECT FIRM}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \text{Bank Pool}_i + \alpha_P * \text{Province}_i + \\ & \text{FE(Industry, Province, Region)} + \varepsilon_i. \end{aligned} \quad (1.3b)$$

$$\begin{aligned} \text{CREDAVAIL}_i = & \alpha_0 + \alpha_1 \text{LENGTH}_i + \alpha_2 \text{CONCENTRATION}_i + \alpha_3 \text{PAIR FIRM} - \\ & \text{PROVINCE}_i + \alpha_4 \text{LENGTH}_i \times \text{PAIR FIRM} - \text{PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \\ & \text{Bank Pool}_i + \alpha_P * \text{Province}_i + \text{FE(Industry, Province, Region)} + \varepsilon_i. \end{aligned} \quad (1.3c)$$

$$\begin{aligned} \text{CREDAVAIL}_i = & \alpha_0 + \alpha_1 \text{LENGTH}_i + \alpha_2 \text{CONCENTRATION}_i + \alpha_3 \text{PAIR FIRM} - \\ & \text{PROVINCE}_i + \alpha_4 \text{CONCENTRATION}_i \times \text{PAIR FIRM} - \text{PROVINCE}_i + \alpha_F * \\ & \text{Firm}_i + \alpha_{BP} * \text{Bank Pool}_i + \alpha_P * \text{Province}_i + \text{FE(Industry, Province, Region)} + \varepsilon_i \end{aligned} \quad (1.3d)$$

In these equations, *PAIR FIRM – PROVINCE<sub>i</sub>* is a generic independent variable that measures the degree of political connections for firm<sub>i</sub> operating in a corrupt province.

We estimated four separate equations with different controls for firms’, bank pools’, and provinces’ characteristics. For each model, we made two estimates: the WLS and the Tobit regressions. If our hypotheses about the complements of relationships and political connections are correct, the coefficients of interactions *LENGTH<sub>i</sub> × CONNECT FIRM<sub>i</sub>* ; *LENGTH<sub>i</sub> × PAIR FIRM – PROVINCE<sub>i</sub>* will be positive and significant, and the coefficients of the interactions *CONCENTRATION<sub>i</sub> × CONNECT FIRM<sub>i</sub>* and *CONCENTRATION<sub>i</sub> × PAIR FIRM – PROVINCE<sub>i</sub>* will be negative and significant.

The fourth model tested the direct influence of political connections and credit availability on bank–firm relationships. CEOs of firms that seek to maximize credit availability can decide whether to develop bank–firm relationships or use their political connections to ease their access to bank credit. Firms can implement either of these opposing strategies in local environments that are more or less corrupted. In our Model 1.4:

*Equation 1. 4 The direct influence of political connections and credit availability on bank–firm relationships*

$$\begin{aligned} \text{LENGTH}_i = & \alpha_0 + \alpha_1 \text{CREDAVAIL}_i + \\ & \alpha_2 \text{CONNECT FIRM}_i + \alpha_3 \text{CORRUPT PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \text{Bank Pool}_i + \\ & \alpha_P * \text{Province}_i + \text{FE(Industry, Province, Region)} + \varepsilon_i. \end{aligned} \quad (1.4a)$$

$$\begin{aligned} \text{NUMBER}_i = & \alpha_0 + \alpha_1 \text{CREDAVAIL}_i + \\ & \alpha_2 \text{CONNECT FIRM}_i + \alpha_3 \text{CORRUPT PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \text{Bank Pool}_i + \\ & \alpha_P * \text{Province}_i + \text{FE(Industry, Province, Region)} + \varepsilon_i. \end{aligned} \quad (1.4b)$$

In these equations,  $\text{LENGTH}_i$ ,  $\text{NUMBER}_i$  is a generic dependent variable that measures the length of the relationship with main bank and the number of bank of firm $_i$ ;  $\text{CREDAVAIL}_i$  is a generic independent variable that measures credit availability of firm $_i$ ; and other variables and controls are defined in Model 1.1.

We estimated two equations. For Equation (1.4a), the ordinary least squares (OLS) model is more appropriate for these data when the dependent variable is  $\text{LENGTH}_i$ . In Equation (1.4b), the dependent variable  $\text{CONCENTRATION}_i$  varies from 0 to 0.5; therefore, we used the Tobit regression with two-sided censoring (at 0.0 and 0.5); and we adjusted the standard errors for clustering by the seven regions.

If our hypotheses about the substitutes of these determinants are correct, the coefficients of the variables  $\text{CREDAVAIL}_i$ ;  $\text{CONNECT FIRM}_i$  will be negative and significant.

## 1.5. Results

### 1.5.1. Univariate analysis results

We compared the average credit availability of connected firms and non-connected firms, according to whether firms have at least two banks. Tables 1.2 and 1.3 show firms' credit availability, which appears to depend on their degrees of political connections. Table 1.2 reveals that average credit availability is significantly higher for connected firms (-0.278 vs. -0.699 when firms have relationships with at least two banks and -0.308 vs. -0.637 for other firms). Table 1.3 shows comparable results for connected firms operating in corrupt provinces. These firms are more likely than other firms to have a higher percentage of trade credit paid early

(0.044 vs. -0.507 when firms have relationships with at least two banks, and -0.106 vs. -0.446 for other firms). These results are consistent with our remaining hypotheses.

## 1.5.2. Main results

### 1.5.2.1. *Effects of bank–firm relationships on credit availability.*

Table 1.4 presents the regressions that explain the percentage of trade credit paid early, and the role of relationships. We report the coefficients of the WLS regression in Columns 1, 2 and 3 and the Tobit regressions in Columns 4, 5, and 6. The  $LENGTH_i$  of relationships with main banks is both economically and statistically significant regardless of whether we use linear or non-linear regression. A one-standard-deviation increase in the log of 1 plus the length of the relationship with the main bank increases the percentage of trade credit paid early by 0.697 to 0.591 (Columns 1, 2 and 3).

Interestingly, we find that the coefficients  $CONCENTRATION_i$  decline in magnitude and are statistically significant (except in Column 3). An increase of the reciprocation of the sum of 1 plus the number of banks reduces the firm's percentage of trade credit paid early by almost 1.330 and 0.961 (Columns 1 and 2). Our findings certify that higher numbers of banks (less concentrated borrowing) are correlated with higher availability of credit. Given that our results contradict the mainstream view, our interpretation is as follows: Given that corruption is a driver of credit availability, firms can avoid the costs of corruption by increasing the sizes of their bank pools. Such a strategy helps avoid the hold-up problem, even if this decision is traditionally dedicated to qualifying the monopoly of information of the main bank (Sharpe, 1990). Firms must make trade-offs between the costs of corruption and the costs of bank relationships. Such balances may affect the establishment of new bank relationships (Sharpe, 1990; Rajan, 1992; Radhakrishnan et al., 2011).

With regard to firms' characteristics, we find that firms that are profitable or less likely to go bankrupt pay as early as other firms and that innovative firms do not make more early payments than other firms. Our findings may be the result of adverse effects of innovation on lending conditions (Mocnik, 2001); some banks prefer not to lend to firms with high levels of R&D. Firms are more likely to pay trade credit early when their banks are more informed. The coefficients of the bank debt ratio are significant and positive in all regressions. Firms with greater bank debt are more likely to pay early. We also find that firms listed on the HOSE are

more likely than other firms to pay early. We argue that being listed on a prestigious market enhances firms' visibility and lowers informational frictions (Cetorelli and Peristiani, 2010), leading to firms' increased access to credit.

Further, we find that firms that have relationships with listed main banks are more likely than other firms to pay trade credit early. Credit availability for firms in more geographically concentrated banking markets is significantly higher. Firms in the most concentrated areas increases paid early 2.446 and 1.801 times more than firms in the most competitive areas (Petersen and Rajan, 1994). Finally, the availability of credit for firms with more geographical density of number of executive members of the Party is significantly lower. Higher numbers of elected executive members of the Party are associated positively with higher levels of corruption in provinces (Bergh et al., 2017), thus reducing firms' access to finance. We also find that banks tend to offer more credit to firms in cities than in rural areas (Petersen and Rajan, 1994).

Findings from the Tobit estimation are consistent with our WLS estimations (Columns 4, 5 and 6). The results confirm our hypothesis (*Hypothesis 1.1.1* and *Hypothesis 1.1.2*) that the length of relationship between a firm and its main bank, and a higher number of banks (i.e., a lower concentration of bank pool), enhance credit availability.

#### *1.5.2.2. Effects of political connections on credit availability.*

Table 1.5 shows the regressions that explain the effects of political connections on firms' percentage of trade credit paid early. The coefficients of  $CONNECT FIRM_i$  are both economically and statistically significant (1.383 and 1.608 respectively) regardless of whether we examine its effects separately (Column 1), or together with bank–firm relationship variables (Column 2). However, the coefficients of the interaction  $CONNECT FIRM_i \times CORRUPT PROVINCE_i$  are positive but not significant. Firms are more likely to pay early when their managers have ties with politicians. The coefficients of  $CONNECT FIRM_i$  in the Tobit estimation are in the same magnitude but insignificant. Our findings justify our hypothesis (*Hypothesis 1.2.1*) that connected firms are more likely to have higher credit availability.

The closeness of bank–firm relationships is correlated with firms’ ability to pay early (Column 2). Length of relationship with main bank and number of banks are both drivers of firms’ access to credit.

Table 1.5 also shows that highly innovative firms and firms with greater access to debt from institutions are less likely than other firms to pay trade credit early. Not surprisingly, firms are more likely to access financing when banks have more information about the stability of firms’ financial situations (i.e., higher z-scores) and firms’ abilities to access bank debt. Our findings prove that firms with greater business opportunities (*SALE GROWTH<sub>i</sub>*) are more likely to pay early (Petersen and Rajan (1994)).

We also find that firms that have relationships with publicly traded main banks are more likely to access financing than other firms, and that firms in concentrated banking markets are more likely to pay trade credit early than firms in competitive banking markets. Finally, we confirm our previous findings with regard to the negative effects of the number of Party members and the positive effects of population density on firms’ availability of credit.

#### *1.5.2.3. Interaction effects of bank–firm relationships and political connections on firms’ credit availability.*

Table 1.6 shows the coefficients from a WLS model and a Tobit model for the interaction effects of the bank–firm relationship (*LENGTH<sub>i</sub>* and *CONCENTRATION<sub>i</sub>*) with political connections (*CONNECT FIRM<sub>i</sub>*; *PAIR FIRM – PROVINCE<sub>i</sub>*). We find that the coefficients of the variable *LENGTH<sub>i</sub> × CONNECT FIRM<sub>i</sub>* and *LENGTH<sub>i</sub> × PAIR FIRM – PROVINCE<sub>i</sub>* are statistically significant and negative (0.5312 and 0.1349 respectively) (Columns 1, 7). However, the signals of the coefficients of *LENGTH<sub>i</sub>*, *CONNECT FIRM<sub>i</sub>*, and *PAIR FIRM – PROVINCE<sub>i</sub>* are both economically and statistically significant. The net margins for these variables and their interactions are both significant and positive at 2.1207 and 0.0454 respectively (Columns 1, 7). Connected firms that establish longer relationships with main banks are more likely than other firms to pay trade credit early. Results in Columns 2 and 4 show that the effects of interactions *CONCENTRATION<sub>i</sub> × CONNECT FIRM<sub>i</sub>* and *CONCENTRATION<sub>i</sub> × PAIR FIRM – PROVINCE<sub>i</sub>* are negative but statistically significant only in Column 2. Connected firms with higher numbers of banks correlate with greater

availability of credit. These findings show that the coexistence of bank–firm relationships and political connections improves firms’ credit availability.

More interestingly, Column 5 shows that the coefficient of  $PAIR\ FIRM - PROVINCE_i$  is statistically significant and positive. Connected firms that operate in corrupt provinces are more likely than other firms to pay trade credit early. Our findings verify our hypothesis (*Hypothesis 1.2.2*) that connected firms that operate in corrupt provinces have better access to credit than other firms.

Again, highly profitable firms are in better positions to access credit than non-profitable firms. Our finding that the coefficients of their debt-over-asset ratios are significant but positive can be explained by the positive association between firm’s debts and values (i.e., increasing debts suggest good news about firms’ futures [Ross, 2004]). Our other findings with regard to firms, bank pools, and province characteristics are consistent with our previous findings.

Table 1.7 reports findings related to the correlation of the effects of bank–firm relationships and political connections on credit availability (Model 1.4). Table 1.7, Column 1 presents an OLS model with  $LENGTH_i$  as the dependent variable; it shows that connected firms and firms with higher percentages of trade credit paid early are more likely to have long relationships with their main banks. Table 1.7, Column 2 presents a Tobit model with  $CONCENTRATION_i$  as the dependent variable; it shows that connected firms are associated with concentrated bank pools (i.e., they maintain bank relationships with smaller numbers of banks). The sign of the variable  $CREDAVAIL_i$  is negative but insignificant (Column 2). These results rule out the possibility that bank–firm relationships and political connections have the same values with regard to availability of credit. Together with previous findings, we reject our hypothesis (*Hypothesis 1.3*) that bank–firm relationships (i.e., length of relationship with main banks, number of banks [less concentrated borrowing]) and firms’ political connections are substitutes for firms seeking to maximize credit availability.

Our other findings show that firms in relationships with large main banks are more likely to have durable main-bank relationships. Moreover, larger firms, firms trading in liquidity stock markets (e.g., HOSE), and firms that operate in highly concentrated bank markets are associated with greater availability of credit.

## 1.6. Robustness Tests

### 1.6.1. Endogeneity and omitted variables bias/alternative methodology

Our concern with regard to our empirical analysis was that endogeneity and omitted variables bias may have confounded the causal relationships among credit availability and other firm characteristics (e.g., firm size, stock market), firm investment opportunities (e.g., sales growth, R&D expenses), and political connections. To solve the endogeneity problem, we performed several steps. First, we used a firm's percentage of trade credit paid early as the proxy for credit availability. Second, we performed univariate and multivariate analyses of the percentage of early payments. Third, we made estimations using an extensive list of variables to reduce the omitted-variable problem. Fourth, we use the fixed effects of firm's industry, province, and region in all regressions.

### 1.6.2. Alternative main variables

#### 1.6.2.1. Alternative measure of credit availability.

Firms use trade credit not only to finance their investments but also to offer trade credit to customers to make additional sales (without cutting prices for existing customers). Firms may obtain better credit from financial institutions; they may have few investment opportunities, or their customers may not be able to pay early because of financial distress. In this paper, we focus on firms' abilities to access credit from cheaper resources, which allows them to offer trade credit to customers. The extent to which firms allow their suppliers to pay late is an alternative measure of credit availability that should be driven by the same factors that cause firms to pay early. The longer the customer payment periods offered by firms, the better the firms' abilities to access credit. This is an alternative measure of firm's credit rationing. Similarly, according to our discussion in Section 1.2.4, we develop a new measure of firms' ability to absorb delinquent customer payments by the variable of firm's percentage of trade credit received late.

$$\text{Firm percentage of trade credit late receivable}_i = \frac{\text{Median DRO Industry}_k - \text{Firm DRO}_i}{\text{Median DRO Industry}_k},$$

where  $\text{DRO (Days receivable outstanding)}_i = \frac{\text{Firm accounts receivable}_i}{\frac{\text{Firm sales before tax and expenses}_i}{\text{Number of days (365)}}}$ , and

$\text{Median DRO Industry}_k$  is the median of the DROs of each industry.

Thus, the regression with the percentage of trade credit received late as the dependent variable is a test of the robustness of our results. We expected the coefficients related to bank–firm relationships, political connections, and their interactions to have the same sign as previous results. Table 1.8 reports the results of the replication of Models 1.1 to 1.4; they are robust with the findings of the main tests. Firms that establish long relationships with their main banks, that maintain greater numbers of banks, and that possess ties with local politicians are more likely than other firms to have access to credit. Other findings related to firm, bank, and province characteristics are consistent with previous findings. Together with our findings on the effects of political connections, we confirm that bank–firm relationships and political connections are complements in enhancing credit availability

#### *1.6.2.2. Main banks with high numbers of government-held shares as alternative measure of political connections.*

Empirical literature finds that government banks in emerging countries subsidize or finance directly for political purposes (Cole, 2004) or lend to connected firms. We extend our research on the influences of political connections from both the demand (firm) and supply (bank) sides. We argue that banks with higher numbers of government-held shares are more influenced by politicians. Accordingly, we constructed a new dummy variable,  $PAIR\ BANK_i - FIRM_i$  that equals 1 when firms are connected with government-controlled main banks (i.e., the proportion of shares held by government is higher than 30%). About half the firms in our sample are defined by this definition. We performed the same test of political connections that we used in Equations 2 and 3. Findings are similar to our main results (findings available upon request). We also find that in firms in corrupt provinces are more likely to have better access to credit.

### **1.7. Conclusion**

We began our empirical analysis by confirming that bank–firm relationships are essential determinants of credit availability. The more prolonged firms’ relationships with their main banks, the greater the firms’ access to financing (Petersen and Rajan, 1994; Berger and Udell, 1995; Elsas and Krahn, 1998). Our findings show a positive association between number of banks and availability of credit to firms (Cosci and Meliciani, 2002; Dietsch, 2003; Repetto et al., 2003; Shikimi, 2013). They also show that bank–firm relationships are active drivers of credit availability in corrupt environments.

Our investigation confirms that government-rooted firms and firms with politically connected CEOs have better access to credit (Khwaja and Mian, 2005; Claessens et al., 2008; Malesky and Taussig, 2009). Perhaps our most important finding is that there is a complementary relationship between bank–firm relationships and political connections. We test whether political connections and bank–firm relationships are substitutes or the complements for credit availability. We find evidence that connected firms develop strong bank–firm relationships and use their political power to influence banks to maximize credit availability. We also find that corruption affects firms’ abilities to access financing and that connected firms that operate in corrupt provinces have greater access to credit than other firms.

Our study sheds further light on the crucial public policy issue of the economic effects of political connections. In corrupt environments, policymakers who wish to erase corruption should prefer transaction banking systems over relationship banking systems, such that banks can have the independence to decide whether they should grant loans to firms. Further study of the structures of firm’s bank pools will provide even more powerful analysis of the financial advantages of political connections in emerging markets characterized by local corruption.

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Table 1. 1 Definition of variables and descriptive statistics

This table presents the definition of variables and their descriptive statistics (means, standard deviations, minimums, and maximums) used in the analysis

Variables	Definition	Obs	Mean	Std. Dev.	Min	Max
<i>Dependent variables</i>						
CREDAVAIL	We use the percentage of trade credit paid early as a measure of credit availability: $CREAVAIL_i = (Median\ DPO\ Industry - DPO_i) / Median\ DPO\ Industry$ With $DPO_i = 365 * (Accounts\ Payable / Cost\ of\ Goods\ Sold)_i$ . Source: Firm' annual audited reports & author's calculation	389	-0.394	1.271	-5.913	0.850
<i>Independent variables</i>						
<i>Banking Relationships</i>						
LENGTH	The natural log of 1 plus the length of the main bank-firm relationship by 2013. The mean of LENGTH is the mean of the length of relationship, not the log of 1 plus the length of relationship. Source: Author's survey.	389	14.512	0.541	1.098	3.384
CONCENTRATION	The firm's borrowing concentration equals the reciprocal of 1 plus the number of banks that firms establish the bank-firm relationships ( $1/(1+Number\ of\ banks)$ ). (Mean represents number of banks, not the reciprocal concentration.) Source: Author's survey.	389	2.347	0.120	0.083	0.5
<i>Political Connections &amp; Corruption</i>						
CONNECTED FIRM	Dummy variable equals 1 for firms in which incumbent CEOs were former SOE managers and firms were SOEs before privatization, 0 otherwise. Source: Firms' audited financial reports.	389	0.740	0.439	0	1
CORRUPT PROVINCE	Dummy variable equals 1 for provinces with Policy Bias Index higher than 6. Source: PCI (2013)	389	0.211	0.408	0	1
PAIR FIRM-PROVINCE	Dummy variable equals 1 for CONNECTED FIRM=1 & CORRUPT PROVINCE = 1, 0 otherwise. Source: Firms' audited financial reports and PCI (2013).	389	0.179	0.384	0	1
<i>Control variables</i>						
<i>Firm characteristics</i>						
FSIZE	Log of firm's total assets in \$million USD. (Mean represents firm size, not log of size). Source: Firms' audited financial reports.	389	2.384	1.044	-0.589	5.072
FROA	Profit before interest and tax over the total assets of a firm. Source: Firms' audited financial reports.	389	0.049	0.061	0	0.392
FR&D	R&D expenses over the total assets of the firm. Source: Firms' audited financial reports.	389	0.077	0.139	0	0.790
Z-SCORE	Firms' Altman score measures firm's likelihood of bankruptcy. We know whether the z-score is less than 1.81, between 1.81 and 2.99, or greater than 2.99. Our variable is therefore coded as 1, 2, or 3. Source: Firms' audited financial reports and author's calculation.	389	2.223	0.811	1	3
<i>(to be continued)</i>						

Table 1.1 (continued) Definition of variables and descriptive statistics

(continued) Variables	Definition	Obs	Mean	Std. Dev.	Min	Max
<i>Firm characteristics</i>						
QUICK RATIO	Firms' quick ratio is an indicator of a firm's short-term liquidity ( <i>Quick ratio = (current assets – inventories)/current liabilities</i> ). Source: Firms' audited financial reports and author's calculations.	389	1.454	1.737	0.069	9.842
DEBT RATIO	Debt over the total assets of the firms. Source: Firms' audited financial reports.	389	0.486	0.226	0.002	0.958
BANK DEBT RATIO	Bank lending over the total assets of the firms. Source: Firms' audited financial reports.	389	0.043	0.098	0.000	0.589
SAVING	Savings at banks over the total assets of the firms. Source: Firms' audited financial reports.	389	0.040	0.053	0.000	0.463
SALEGROWTH	The growth rate of the income from sales (before tax) between 2012 and 2013 for firms. Source: Firms' audited financial reports.	389	0.006	0.112	-0.838	0.818
MARKET	Dummy variable equals 1 for firms listed on the HSX, 0 otherwise. Source: Firms' audited financial reports.	389	0.342	0.475	0	1
<i>Bank pool characteristics</i>						
BSIZE	Log of main bank's total assets in million USD. (Mean shows for bank size, not log of size). Source: BVD BankScope	389	20,620	0.885	6.548	10.406
BLISTED	Dummy variable equals 1 for listed banks, 0 otherwise. Source: BVD BankScope.	389	0.465	0.499	0	1
HERFINDAHL INDEX	Herfindahl index of the concentrations of banks in the area in which the firm is headquartered in 2013. Herfindahl is calculated by $Herfindahl\ Index = \sum_i^N S_i^2$ , where $i$ is the number of the banks in the region, $S$ is relative size of each bank. Source SBV, (2013), BVD BankScope and author's calculation.	389	0.114	0.120	0.049	0.350
<i>Local characteristics</i>						
PARTY DENSITY	Density of the member of the 11 <sup>th</sup> Standing Committee of the Political Bureau of the Party Central Committee in 1,000 people of the province from 2011 to 2016. Source: website of the Communist Party of Vietnam <a href="http://www.dangcongsan.vn">www.dangcongsan.vn</a>	389	1.644	1.902	1	10.07
POPULATION DENSITY	Log of density of the population per square kilometre of the province. Source: GSO (2013) (Mean represents POP density, not log of POP density)	389	1,866	1.118	3.892	8.224
<i>Robustness tests</i>						
CREDAVAIL1	We use the percentage of trade credit received late as a measure of credit availability: $CREAVAIL1_i = (Median\ DRO\ Industry\ 1 - Firm\ DRO_i) / Median\ DRO\ Industry\ 1$ , where $DRO_i = 365 * (Accounts\ Receivable/Sales)_i$ . Source: Firm' annual audited reports	389	-0.636	2.022	-13.749	1
PAIR BANK-FIRM	Dummy variable equals 1 for firms with $CONNECTED\ FIRM = 1$ and when firm's main bank is one of two banks with shareholding of government higher than 30% by the end of 2013, 0 otherwise. Source: Firms' and banks' audited financial reports.	389	0.517	0.500	0	1

*Table 1. 2 Credit Availability: Connected firms and the number of banking relationships*

This table displays different averages (M) and Standard Deviation (SD) for percentages of trade credit paid early, according to two methods to cut the sample: whether the firm has at least two banks and whether the firm is connected. The t-test is a difference-in-means test, based on a student test; \*, \*\*, and \*\*\* indicate the t-test is significant at 10%, 5%, and 1%, respectively.

Percentage of trade credit paid early	CONNECTED FIRM						95% CI for Mean Difference	t	df
	Yes			No					
	M	SD	n	M	SD	n			
Firms in relationships with at least two banks	0.278	0.129	77	-0.699	0.234	43	-0.908; 0.066	-1.711**	120
Others	0.308	0.849	211	-0.637	0.174	58	-0.694; 0.037	-1.768**	269

There is a statistically significant mean difference in percentage of trade credit paid early between the group of connected firms and the bank pools with multiple banks and others. Results show that connected firms tend to have a higher percentage of trade credit paid early than other firms.

*Table 1. 3 Credit availability: Connected firms operating in corrupt provinces and numbers of banking relationships*

This table displays different averages (M) and Standard Deviation (SD) for the percentages of trade credit paid early, according to two methods to cut the sample: whether the firm has at least two banks and whether the connected firm operates in a corrupt province. The t-test is a difference-in-means test, based on a student test; \*, \*\*, and \*\*\* indicate the t-test is significant at 10%, 5%, and 1%, respectively.

Percentage of trade credit paid early	Pair of CONNECTED FIRM -CORRUPT PROVINCE						95% CI for Mean Difference	t	df
	Yes			No					
	M	SD	n	M	SD	n			
Firms in relationships with at least two banks	0.044	0.168	17	-0.507	0.134	103	-1.221; 0.120	-0.163*	120
Others	-0.106	0.108	53	-0.446	0.091	216	-0.325; -0.626	-0.177**	269

There is a statistically significant mean difference in percentage of trade credit paid early between the group of connected firms operating in corrupt provinces and the bank pools with multiple banks and other firms. Results show that connected firms tend to have higher percentages of trade credit paid early than other firms when they operate in corrupt provinces.

Table 1. 4 Credit availability and the role of relationships (Equation 1.1)

In this table, the dependent variable *CREDAVAIL* is the percentage of trade credit paid before the due date (paid early). The coefficients estimates are from a WLS regression with the adjustment proportional to the log of squared residuals (Columns 1, 2 and 3) and a Tobit regression with two-sided censoring (in the Tobit regression, the dependent *CREDAVAIL* is censored at 0.0 and 1.0) (Columns 4, 5 and 6). Each regression also includes the fixed effects of industry, province, and region but we do not report them here. Table 1.1 presents details of the definitions and statistics of previous variables, with \*, \*\*, \*\*\* significance at the 10%, 5% and 1% levels. The *p*-values are reported in parentheses (for Tobit regression, robust *p*-values, adjusted for clustering by region).

VARIABLES	(1) WLS Model 1.1a <i>CREDAVAIL</i>	(2) WLS Model 1.1b <i>CREDAVAIL</i>	(3) WLS Model 1.1c <i>CREDAVAIL</i>	(4) Tobit Model 1.1a1 <i>CREDAVAIL</i>	(5) Tobit Model 1.1b1 <i>CREDAVAIL</i>	(6) Tobit Model 1.1c1 <i>CREDAVAIL</i>
<i>Independent variables</i>						
<i>The bank-firm relationship</i>						
LENGTH	0.6972*** (0.00)	0.6439*** (0.00)	0.5910*** (0.00)	0.1146** (0.02)	0.1252** (0.03)	0.1239** (0.04)
CONCENTRATION	-1.3300** (0.01)	-0.9609* (0.08)	-0.6991 (0.23)	-0.3173** (0.03)	-0.3494*** (0.01)	-0.3284** (0.03)
<i>Control variables</i>						
<i>Firm characteristics</i>						
FSIZE	-0.0314 (0.70)	-0.0717 (0.38)	-0.1028 (0.22)	-0.0376 (0.18)	-0.0468 (0.10)	-0.0486 (0.10)
FROA	1.7733 (0.22)	3.2525** (0.03)	3.5350** (0.02)	0.6262 (0.29)	0.7768 (0.18)	0.7816 (0.20)
FR&D	-2.1546*** (0.00)	-2.2844*** (0.00)	-2.4542*** (0.00)	-0.4667 (0.12)	-0.4864* (0.07)	-0.4689* (0.09)
Z-SCORE	0.7224*** (0.00)	0.6427*** (0.00)	0.7519*** (0.00)	0.1776*** (0.00)	0.1690*** (0.00)	0.1673*** (0.00)
QUICK RATIO	0.0591* (0.07)	0.0478 (0.14)	0.0346 (0.30)	0.0043 (0.42)	0.0015 (0.79)	0.0014 (0.82)
DEBT RATIO	-0.4591 (0.24)	-0.3844 (0.32)	-0.3034 (0.45)	-0.6822*** (0.00)	-0.6392*** (0.00)	-0.6338*** (0.00)
BANK DEBT RATIO	3.9336*** (0.00)	3.3876*** (0.00)	4.4143*** (0.00)	0.3519 (0.39)	0.2536 (0.50)	0.2556 (0.49)
SAVINGS RATIO	3.0666 (0.10)	1.8896 (0.29)	1.4073 (0.46)	0.1033 (0.70)	0.1038 (0.58)	0.1384 (0.52)
SALE GROWTH	-0.0799 (0.91)	0.3437 (0.62)	0.6307 (0.37)	-0.2391 (0.39)	-0.1758 (0.42)	-0.1468 (0.47)
<i>(to be continued)</i>						

Table 1.4 (continued) Credit availability and the role of relationships (Equation 1.1)

<i>(continued)</i>	(1) WLS Model 1.1a <i>CREDAVAIL</i>	(2) WLS Model 1.1b <i>CREDAVAIL</i>	(3) WLS Model 1.1c <i>CREDAVAIL</i>	(4) Tobit Model 1.1a1 <i>CREDAVAIL</i>	(5) Tobit Model 1.1b1 <i>CREDAVAIL</i>	(6) Tobit Model 1.1c1 <i>CREDAVAIL</i>
<i>Firm characteristics</i>						
MARKET	0.4784** (0.01)	0.2894 (0.13)	0.4955** (0.01)	0.0403 (0.57)	0.0232 (0.74)	0.0273 (0.71)
<i>Bank pool characteristics</i>						
BFSIZE		0.0049 (0.95)	0.0014 (0.98)		-0.0154 (0.56)	-0.0161 (0.56)
BLISTED		0.1418 (0.28)	0.1301 (0.32)		0.1397*** (0.00)	0.1396*** (0.00)
HERFINDAHL INDEX		2.4461*** (0.01)	1.8014* (0.08)		0.5231*** (0.00)	0.3732*** (0.00)
<i>Province characteristics</i>						
PARTY DENSITY			-0.1605*** (0.00)			-0.0231 (0.11)
POP DENSITY			0.3307** (0.03)			0.0732*** (0.00)
(Industry/Province/Region) FE Intercept	YES -4.1853*** (0.00)	YES -4.2802*** (0.00)	YES -5.8763*** (0.00)	YES -0.1864 (0.49)	YES -0.1754 (0.58)	YES -0.5021 (0.15)
Number of Observations	389	389	389	389	389	389
Adjusted R-squared	0.486	0.465	0.513			
Pseudo R-squared				0.180	0.179	0.199

Table 1. 5 Credit availability and the role of bank relationships, political connections, and corruption (Equation 1.2)

The dependent variable *CREDAVAIL* is the percentage of trade credit paid before the due date (paid early). The coefficients estimates are from a WLS regression with the adjustment proportional to the log of squared residuals (Columns 1, 2) and a Tobit regression with two-sided censoring (in the Tobit regression, the dependent *CREDAVAIL* is censored at 0.0 and 1.0) (Columns 3, 4). Each regression also includes the fixed effects of industry, province, and region but we do not report them here. Table 1.1 presents details of the definitions and statistics of previous variables, with \*, \*\*, \*\*\* significance at the 10%, 5% and 1% levels. The *p*-values are reported in parentheses (for Tobit regression, robust *p*-values, adjusted for clustering by region).

VARIABLES	(1) WLS Model 1.2a <i>CREDAVAIL</i>	(2) WLS Model 1.2b <i>CREDAVAIL</i>	(3) Tobit Model 1.2a1 <i>CREDAVAIL</i>	(4) Tobit Model 1.2b1 <i>CREDAVAIL</i>
<i>Independent variables</i>				
<i>The bank-firm relationship</i>				
LENGTH		0.3931*** (0.00)		0.1016 (0.21)
CONCENTRATION		-2.1017*** (0.00)		-0.3451** (0.03)
<i>Political connection + Corruption</i>				
CONNECTED FIRM	1.3832*** (0.00)	1.6088*** (0.00)	0.1520 (0.11)	0.1271 (0.28)
CORRUPT PROVINCE	0.0365 (0.93)	-0.6303 (0.15)	-0.0742 (0.57)	-0.0729 (0.54)
<i>Interaction variables</i>				
CONNECTED FIRM × CORRUPT PROVINCE	0.0453 (0.92)	0.5706 (0.19)	0.0135 (0.88)	0.0054 (0.93)
<i>Control variables</i>				
<i>Firm characteristics</i>				
FSIZE	-0.0745 (0.34)	-0.0322 (0.66)	-0.0367 (0.22)	-0.0424 (0.18)
FROA	2.0146 (0.17)	1.4050 (0.33)	0.4799 (0.45)	0.6246 (0.36)
FR&D	-3.4206*** (0.00)	-2.7463*** (0.00)	-0.5622* (0.09)	-0.5410 (0.10)
Z-SCORE	0.6325*** (0.00)	0.5464*** (0.00)	0.1655*** (0.00)	0.1603*** (0.00)
QUICK RATIO	0.0477 (0.13)	0.0850*** (0.01)	0.0027 (0.66)	0.0023 (0.72)
DEBT RATIO	-0.3066 (0.40)	-1.2310*** (0.00)	-0.6452*** (0.00)	-0.6884*** (0.00)
<i>Firm characteristics</i>				
BANK DEBT RATIO	4.4623*** (0.00)	6.0104*** (0.00)	0.2424 (0.54)	0.2427 (0.54)
SAVINGS	-0.3342 (0.85)	1.4795 (0.42)	0.0899 (0.57)	0.0533 (0.77)
SALE GROWTH	1.4984** (0.02)	0.6649 (0.29)	-0.0665 (0.76)	-0.1233 (0.56)
MARKET	0.3317* (0.08)	0.3953** (0.04)	0.0319 (0.63)	0.0226 (0.74)
<i>Bank Pool characteristics</i>				
BFSIZE	0.0163 (0.83)	-0.0257 (0.73)	-0.0186 (0.47)	-0.0223 (0.41)
<i>(to be continued)</i>				

Table 1. 5 (continued) Credit availability and the role of relationships, political connections, and corruption (Equation 1.2)

<i>(continued)</i>	(1) WLS Model 1.2a <i>CREDAVAIL</i>	(2) WLS Model 1.2b <i>CREDAVAIL</i>	(3) Tobit Model 1.2a1 <i>CREDAVAIL</i>	(4) Tobit Model 1.2b1 <i>CREDAVAIL</i>
<i>Bank Pool characteristics</i>				
BLISTED	0.0523 (0.68)	0.0654 (0.58)	0.1117*** (0.00)	0.1302*** (0.00)
HERFINDAHL INDEX	2.0309** (0.05)	1.3688 (0.20)	0.3894** (0.01)	0.3885** (0.01)
<i>Province characteristics</i>				
PARTY DENSITY	-0.3240*** (0.00)	-0.3399*** (0.00)	-0.0376*** (0.01)	-0.0292* (0.07)
POP DENSITY	0.5732*** (0.00)	0.7833*** (0.00)	0.0664*** (0.01)	0.0698*** (0.00)
(Industry/Province/Region) FE	YES	YES	YES	YES
Intercept	-6.5159*** (0.00)	-7.2060*** (0.00)	-0.2595 (0.40)	-0.3607 (0.33)
Number of observations	389	389	389	389
Adjusted R-squared	0.571	0.684		
Pseudo R-squared			0.197	0.207

Table 1.6 Credit availability and the interaction effects of bank–firm relationships and political connections in corrupt provinces (Equation 1.3)

In this table, the dependent variable *CREDAVAIL* is the percentage of trade credit paid before the due date (paid early). The coefficients estimates are from a WLS regression with the adjustment proportional to the log of squared residuals (Columns 1, 2, 5, and 6) and a Tobit regression with two-sided censoring (in the Tobit regression, the dependent *CREDAVAIL* is censored at 0.0 and 1.0) (Columns 3, 4, 7 and 8 Each regression also includes the fixed effects of industry, province, and region but we do not report them here. Table 1.1 presents details of the definitions and statistics of previous variables, with \*, \*\*, \*\*\* significance at the 10%, 5% and 1% levels. The *p*-values are reported in parentheses (for Tobit regression, robust *p*-values, adjusted for clustering by region).

VARIABLES	(1) WLS Model 1.3a <i>CREDAVAIL</i>	(2) WLS Model 1.3b <i>CREDAVAIL</i>	(3) Tobit Model 1.3a1 <i>CREDAVAIL</i>	(4) Tobit Model 1.3b1 <i>CREDAVAIL</i>	(5) WLS Model 1.3c <i>CREDAVAIL</i>	(6) WLS Model 1.3d <i>CREDAVAIL</i>	(7) Tobit Model 1.3c1 <i>CREDAVAIL</i>	(8) Tobit Model 1.3d1 <i>CREDAVAIL</i>
<i>Independent variables</i>								
<i>The bank-firm relationships</i>								
LENGTH	0.7154*** (0.00)	0.4126*** (0.00)	0.1393 (0.60)	0.1019 (0.21)	0.6087*** (0.00)	0.5778*** (0.00)	0.1423** (0.04)	0.1252** (0.04)
CONCENTRATION	-1.4230** (0.01)	-0.2736 (0.70)	-0.3406** (0.04)	-0.2235 (0.40)	-0.7120 (0.23)	-0.6830 (0.26)	-0.3175** (0.03)	-0.3793* (0.08)
<i>Political connections + Corruption</i>								
CONNECTED FIRM	2.6519*** (0.00)	3.1287*** (0.00)	0.2543 (0.64)	0.1817* (0.06)				
CORRUPT PROVINCE	-0.1058 (0.71)	-0.3302 (0.26)	-0.0683 (0.34)	-0.0677 (0.34)				
PAIR FIRM-PROVINCE					2.6961* (0.10)	0.4676 (0.45)	0.3629** (0.03)	-0.0911 (0.68)
<i>Interaction variables</i>								
LENGTH × CONNECTED FIRM	-0.5312** (0.01)		-0.0512 (0.84)					
CONCENTRATION × CONNECTED FIRM		-4.2051*** (0.00)		-0.1651 (0.43)				
LENGTH × PAIR FIRM PROVINCE					-0.8240 (0.16)		-0.1349* (0.08)	
CONCENTRATION × PAIR FIRM-PROVINCE						-0.2774 (0.86)		0.2406 (0.69)
<i>Control variables</i>								
<i>Firm characteristics</i>								
FSIZE	0.0241 (0.76)	-0.0970 (0.17)	-0.0412 (0.20)	-0.0439 (0.15)	-0.0941 (0.26)	-0.0932 (0.26)	-0.0477 (0.12)	-0.0481 (0.10)
FROA	1.8603 (0.19)	2.5681* (0.07)	0.6148 (0.35)	0.6442 (0.36)	3.3541** (0.03)	3.6318** (0.02)	0.7744 (0.21)	0.7795 (0.21)
FR&D	-3.4109*** (0.00)	-3.1545*** (0.00)	-0.5406 (0.10)	-0.5365 (0.10)	-2.5331*** (0.00)	-2.4677*** (0.00)	-0.4848* (0.09)	-0.4658 (0.10)

(to be continued)

Table 1. 6 (continued) Credit availability and the interaction effects of the bank–firm relationships and political connections in corrupt provinces (Equation 1.3)

(continued)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	WLS Model 1.3a	WLS Model 1.3b	Tobit Model 1.3a1	Tobit Model 1.3b1	WLS Model 1.3c	WLS Model 1.3d	Tobit Model 1.3c1	Tobit Model 1.3d1
<i>Firm characteristics</i>								
Z-SCORE	0.4361*** (0.00)	0.5354*** (0.00)	0.1592*** (0.00)	0.1594*** (0.00)	0.7974*** (0.00)	0.7264*** (0.00)	0.1655*** (0.00)	0.1668*** (0.00)
QUICK RATIO	0.0875*** (0.00)	0.0894*** (0.00)	0.0024 (0.71)	0.0026 (0.69)	0.0365 (0.29)	0.0348 (0.29)	0.0016 (0.78)	0.0013 (0.83)
DEBT RATIO	4.4603*** (0.00)	8.0562*** (0.00)	0.2355 (0.50)	0.2437 (0.54)	4.7327*** (0.00)	4.1392*** (0.00)	0.2594 (0.49)	0.2432 (0.52)
BANK DEBT RATIO	2.2389 (0.21)	1.8940 (0.30)	0.0719 (0.72)	0.0580 (0.76)	1.2244 (0.54)	1.0464 (0.58)	0.1372 (0.52)	0.1299 (0.56)
SAVINGS	0.9021 (0.16)	0.4761 (0.41)	-0.1227 (0.57)	-0.1238 (0.56)	0.6770 (0.34)	0.6347 (0.37)	-0.1657 (0.43)	-0.1449 (0.47)
SALEGROWTH	0.3305* (0.08)	0.3740* (0.05)	0.0222 (0.75)	0.0244 (0.71)	0.5247** (0.01)	0.4212** (0.03)	0.0258 (0.72)	0.0274 (0.70)
MARKET	4.4603*** (0.00)	8.0562*** (0.00)	0.2355 (0.50)	0.2437 (0.54)	4.7327*** (0.00)	4.1392*** (0.00)	0.2594 (0.49)	0.2432 (0.52)
<i>Bank pool characteristics</i>								
BSIZE	-0.0265 (0.72)	0.0208 (0.77)	-0.0228 (0.43)	-0.0215 (0.42)	0.0363 (0.62)	0.0219 (0.77)	-0.0181 (0.50)	-0.0169 (0.54)
BLISTED	0.1593 (0.20)	0.0263 (0.81)	0.1320*** (0.00)	0.1301*** (0.00)	0.1270 (0.34)	0.1599 (0.23)	0.1319*** (0.00)	0.1408*** (0.00)
HERFINDAHL INDEX	1.9969** (0.05)	1.4098 (0.16)	0.3929** (0.02)	0.3872** (0.02)	1.2390 (0.28)	1.2366 (0.26)	0.4230** (0.01)	0.3788** (0.01)
<i>Province characteristics</i>								
PARTYPOP1000	-0.3136*** (0.00)	-0.3637*** (0.00)	-0.0290* (0.08)	-0.0294* (0.07)	-0.1692*** (0.00)	-0.1470*** (0.00)	-0.0244* (0.09)	-0.0233 (0.11)
LOGDENSITY	0.6530*** (0.00)	0.9462*** (0.00)	0.0703*** (0.00)	0.0704*** (0.00)	0.3601** (0.02)	0.3305** (0.03)	0.0734*** (0.00)	0.0748*** (0.00)
(Industry/Province/Region) FE	YES							
Intercept	-7.1942*** (0.00)	-9.2374*** (0.00)	-0.4497 (0.50)	-0.4105 (0.33)	-6.4877*** (0.00)	-5.9922*** (0.00)	-0.5209 (0.14)	-0.4873 (0.17)
Number of observations	389	389	389	389	389	389	389	389
Adjusted R-squared	0.643	0.778			0.531	0.497		
Pseudo R-squared			0.207	0.207			0.201	0.200

Table 1. 7 Bank-firm relationships and political connections (Equation 1.4)

In this table, Column 1 reports the coefficients that estimate an OLS model with the independent variable *LENGTH*, which equals the natural log of 1 plus the length of the relationship between a firm and its main bank. Column 2 reports the coefficients that estimate a Tobit regression with the independent variable *CONCENTRATION* censored at 0.0 and 0.5. Each regression also includes the fixed effects of industry, province, and region but we do not report them here. Table 1.1 presents details of the definitions and statistics of previous variables, with \*, \*\*, \*\*\* significance at the 10%, 5% and 1% levels. The *p*-values are reported in parentheses (for Tobit regression, robust *p*-values, adjusted for clustering by region).

VARIABLES	(1) OLS Model 1.4a <i>LENGTH</i>	(2) Tobit Model 1.4b <i>CONCENTRATION</i>
<i>Independent variables</i>		
CREDAVAIL	0.0515* (0.07)	-0.0078 (0.34)
CONNECTED FIRM	0.3118*** (0.00)	0.0277** (0.05)
<i>Control variables</i>		
CORRUPT PROVINCE	0.0807 (0.40)	-0.0029 (0.90)
<i>Firm characteristics</i>		
FSIZE	-0.0244 (0.49)	-0.0239** (0.02)
FROA	-0.7184 (0.16)	0.4253*** (0.00)
FR&D	0.0416 (0.79)	0.0826 (0.22)
Z-SCORE	0.0281 (0.59)	-0.0025 (0.85)
QUICK RATIO	0.0020 (0.84)	0.0007 (0.77)
DEBT RATIO	0.3260* (0.07)	-0.0619 (0.14)
BANK DEBT RATIO	-0.0845 (0.68)	0.0108 (0.87)
SAVINGS	0.3903 (0.41)	0.0882 (0.61)
SALE GROWTH	0.0816 (0.70)	-0.0641 (0.36)
MARKET	-0.0319 (0.65)	-0.0508*** (0.00)
SAVINGS	0.3903 (0.41)	0.0264*** (0.00)
<i>Bank pool characteristics</i>		
BSIZE	0.0947** (0.02)	0.0256 (0.20)
BLISTED	-0.1527* (0.08)	0.0014 (0.98)
HERFINDAHL INDEX	0.0176 (0.93)	0.0159*** (0.00)
<i>Province characteristics</i>		
PARTY DENSITY	-0.0359 (0.38)	0.0106 (0.23)
POP DENSITY	-0.0323 (0.35)	-0.0029 (0.90)
(Industry/Province/Region) FE	YES	YES
Intercept	1.7044** (0.02)	0.1520*** (0.00)
Number of observations	389	389
Adjusted R-squared	0.151	

Table 1. 8 Robustness tests: Credit availability and the role of relationships, political connections, corruptions and its interactions (Equation 1.1, 1.2, 1.3, 1.4)

Columns 1, 2, 3, 4, 5 and 6 reports the coefficients that estimate from a WLS regression with the adjustment proportional to the log of squared residuals with the dependent variable *CREDAVAIL1*, which equals the percentage of trade credit that firm's suppliers paid after the due date (paid late). Column 7 reports the coefficients that estimate an OLS model with the independent variable *LENGTH*, which equals the natural log of 1 plus the length of the relationship between a firm and its main bank. Column 8 reports the coefficients that estimate a Tobit regression with the independent variable *CONCENTRATION* censored at 0.0 and 0.5. Each regression also includes the fixed effects of industry and province, but we do not report them here. Table 1.1 presents details of the definitions and statistics of previous variables, with \*, \*\*, \*\*\* significance at the 10%, 5% and 1% levels. The *p*-values are reported in parentheses (for Tobit regression, robust *p*-values, adjusted for clustering by region).

VARIABLES	(1) WLS Model 1.1a <i>CREDAVAIL1</i>	(2) WLS Model 1.1b <i>CREDAVAIL1</i>	(3) WLS Model 1.2a <i>CREDAVAIL1</i>	(4) WLS Model 1.2b <i>CREDAVAIL1</i>	(5) WLS Model 1.3a <i>CREDAVAIL1</i>	(6) WLS Model 1.3b <i>CREDAVAIL1</i>	(7) OLS Model 1.4a <i>LENGTH</i>	(8) Tobit Model 1.4b <i>CONCENTRATION</i>
<i>Independent variables</i>								
<i>The bank-firm relationship</i>								
LENGTH	0.6439*** (0.00)	0.5910*** (0.00)		0.2877** (0.04)	0.1817 (0.35)	0.2483* (0.07)		
CONCENTRATION	-0.9609* (0.08)	-0.6991 (0.23)		-0.3712 (0.62)	-0.5975 (0.41)	-2.8188*** (0.01)		
<i>Political connection + Corruption</i>								
CONNECT FIRM			0.5121** (0.01)	0.4586** (0.04)	0.0343 (0.96)	-0.7857* (0.08)	0.3131*** (0.00)	-0.1456*** (0.01)
CORRUPT PROVINCE			1.5125*** (0.01)	1.3663** (0.02)	0.9042** (0.01)	0.8283** (0.02)	0.0746 (0.43)	0.1723 (0.10)
<i>Credit availability</i>								
CREDAVAIL1							0.0276* (0.06)	-0.0047 (0.72)
<i>Interaction terms</i>								
CONNECT FIRM × CORRUPT PROVINCE			-0.7899 (0.17)	-0.7824 (0.19)				
CONNECT FIRM × LENGTH						0.1422 (0.59)		
CONNECT FIRM × CONCENTRATION					4.0043*** (0.00)			
<i>Control variables</i>								
<i>Firm characteristics</i>								
FSIZE	-0.0717 (0.38)	-0.1028 (0.22)	0.3263*** (0.00)	0.3383*** (0.00)	0.3392*** (0.00)	0.4103*** (0.00)	-0.0304 (0.41)	0.1147*** (0.01)
FROA	3.2525** (0.03)	3.5350** (0.02)	7.0231*** (0.00)	6.6621*** (0.00)	7.7245*** (0.00)	5.5356*** (0.00)	-0.7116 (0.18)	-1.5985*** (0.01)

(to be continued)

Table 1.8 (continued) Robustness test: Credit availability and the role of relationships, political connections, corruptions and its interactions (Equation 1.1, 1.2, 1.3, 1.4)

(continued)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	WLS	WLS	WLS	WLS	WLS	WLS	OLS	Tobit
VARIABLES	Model 1.1a	Model 1.1b	Model 1.2a	Model 1.2b	Model 1.3a	Model 1.3b	Model 1.4a	Model 1.4b
	<i>CREDAVAIL1</i>	<i>CREDAVAIL1</i>	<i>CREDAVAIL1</i>	<i>CREDAVAIL1</i>	<i>CREDAVAIL1</i>	<i>CREDAVAIL1</i>	<i>LENGTH</i>	<i>CONCENTRATION</i>
FR&D	-2.2844*** (0.00)	-2.4542*** (0.00)	-5.8606*** (0.00)	-5.0512*** (0.00)	-6.2164*** (0.00)	-5.1713*** (0.00)	0.0049 (0.97)	-0.3373 (0.12)
Z-SCORE	0.6427*** (0.00)	0.7519*** (0.00)	1.2120*** (0.00)	1.1121*** (0.00)	1.2975*** (0.00)	1.1497*** (0.00)	0.0254 (0.63)	0.0600 (0.41)
QUICK RATIO	0.0478 (0.14)	0.0346 (0.30)	-0.0943** (0.02)	-0.0727* (0.07)	-0.1148*** (0.00)	-0.0798** (0.04)	0.0053 (0.61)	-0.0013 (0.81)
DEBT RATIO	-0.3844 (0.32)	-0.3034 (0.45)	0.1850 (0.69)	-0.1344 (0.80)	-0.1378 (0.78)	-0.5383 (0.30)	0.2996* (0.10)	0.3704*** (0.01)
BANK DEBT RATIO	3.3876*** (0.00)	4.4143*** (0.00)	6.4876*** (0.00)	5.5506*** (0.00)	7.8431*** (0.00)	5.7575*** (0.00)	-0.1326 (0.52)	-0.0690 (0.75)
SAVINGS	1.8896 (0.29)	1.4073 (0.46)	-3.2220 (0.16)	-1.6670 (0.48)	-5.1460** (0.03)	-2.1246 (0.37)	0.4179 (0.38)	-0.1178 (0.71)
SALE GROWTH	0.3437 (0.62)	0.6307 (0.37)	1.7359** (0.04)	1.2814 (0.15)	1.4266* (0.08)	1.4222* (0.10)	0.0616 (0.76)	0.3996** (0.03)
MARKET	0.2894 (0.13)	0.4955** (0.01)	-0.7628*** (0.00)	-0.7972*** (0.00)	-0.6790*** (0.01)	-0.7561*** (0.00)	-0.0118 (0.88)	0.1572*** (0.00)
<i>Bank Pool characteristics</i>								
BFSIZE	0.0049 (0.95)	0.0014 (0.98)	0.1762* (0.07)	0.1294 (0.20)	0.1697* (0.07)	0.1134 (0.24)	0.0885** (0.04)	-0.0980*** (0.00)
BLISTED	0.1418 (0.28)	0.1301 (0.32)	-0.2677* (0.10)	-0.2008 (0.25)	-0.3175** (0.04)	-0.2284 (0.17)	-0.1440* (0.08)	-0.1007 (0.10)
HERFINDAHL INDEX	2.4461*** (0.01)	1.8014* (0.08)	1.9147 (0.13)	1.2618 (0.33)	1.9564 (0.13)	1.4099 (0.26)	0.0396 (0.85)	0.2756 (0.33)
<i>Province characteristics</i>								
PARTY DENSITY		-0.1605*** (0.00)	-0.1916*** (0.00)	-0.1300** (0.04)	-0.1933*** (0.00)	-0.1726*** (0.00)	-0.0368 (0.36)	-0.0501*** (0.00)
POP DENSITY		0.3307** (0.03)	0.2084 (0.26)	0.2294 (0.24)	0.2065 (0.24)	0.2198 (0.24)	-0.0314 (0.37)	0.0079 (0.70)
(Industry/Province Region) FE	YES	YES	YES	YES	YES	YES	YES	YES
Intercept	-4.2802*** (0.00)	-5.8763*** (0.00)	-6.6671*** (0.00)	-6.7559*** (0.00)	-6.6438*** (0.00)	-5.6076*** (0.00)	1.7709** (0.02)	1.4074*** (0.01)
Number of observations	389	389	389	389	389	389	389	389
Adjusted R-squared	0.465	0.513	0.555	0.465	0.664	0.528	0.148	

## Chapter 2: Political connections, local corruption, and firm's bank pool structures: Empirical evidence from Vietnam

### Abstract

This paper investigates the effects of political connections and local corruption on the structures of firms' bank pools. Using a manually collected data set of 389 listed Vietnamese firms in 2013, we confirm first that local corruption is associated positively with number of banks and diversification of bank ownership types. Moreover, we add new results: i) politically connected firms tend to establish their main bank relationships with connected banks; ii) connected firms reduce their number of banks and their diversity of bank ownership types in their bank pool when they achieve main bank relationships with connected banks; iii) such firms maintain these bank pool structures especially when corruption is prevalent in their home provinces.

*Key Words: Firm bank pool structure, political connections, corruption, banks*

*JEL Classification: G 30, G 32*

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## 2.1. Introduction

In recent years, authors have investigated a number of important policies and research issues related to the effects of political connections on firms' access to financing, especially in emerging markets (Fisman, 2001; Johnson and Mitton, 2003). Much research focuses on preferential access to credit established by firms' political connections with banks (Khwaja and Mian, 2005; Faccio, 2006). Firms' access to financing differs dramatically according to the strength of their political links and the levels of corruption in their geographical areas (Infante and Piazza, 2014), suggesting that firms' financial decisions in emerging markets are determined partly by their political connections and partly by local corruption. Therefore, to be effective, financial-sector reform must account for the politics of finance. Accordingly, in this paper, we ask: do firms' political connections and corrupt local markets affect their bank pool structures? Our question is relevant for several reasons. First, in practical terms, many emerging countries are characterized by both substantial corruption and substantial economic growth. Such growth often appears to be driven by investment activities financed by bank lending, because these financial markets remain mostly undeveloped (Merton, 1992; Allen and Gale, 1995; Thakor, 1996), and firms must optimize their bank credit. Second, to the best of our knowledge, there are no empirical studies that analyze bank pool structures according to firms' numbers of political connections and degrees of local government corruption. Third, emerging-country governments need to consider two financial objectives: improving their banking systems and creating better credit conditions for firms to finance value-creating investment projects.

Typically, authors have studied the structures of firms' bank pools according to firm's efforts to maximize credit funds (Petersen and Rajan, 1994; Cole, 1998) or minimize credit costs (Degryse and Cayseele, 2000; Elsas and Krahnen, 1998). We take a different perspective. We examine bank pools according to three elements: choice of main bank, number of banks, and diversity of types of bank ownership. We move beyond study of the objectives of maximizing credit availability and lowering funding costs, to address the impact of firms' political connections in corrupt environments on bank pool structures. By doing so, we help clarify the nature of bank financing in emerging countries (Beck et al., 2017). Our research follows the arguments of Khwaja and Mian (2005) and Faccio (2006) that political connections influence firms' financing conditions. It also helps explain how corruption affects firms' access

to bank financing (Weill, 2011; Fungacova et al., 2015) at the local level (Infante and Piazza, 2014).

Using data from Vietnam, we conduct three types of tests: first, we determine the types of firms that establish main bank relationships (MBRs) with politically connected (connected) banks. Second, we investigate the effects of MBRs with connected banks on number of banks when firms are connected and especially when they operate in corrupt provinces. Third, we extend previous literature by analyzing the likelihood that connected firms will diversify to banks with other types of ownership when their main banks are connected and operate in corrupt provinces.

Literature suggests that the number of banks used by firms is driven by firms' need to protect themselves from the premature withdrawal of services from financially fragile relationships (Detragiache et al., 2000; Berger et al., 2007). The vulnerability of bank pool structures may vary according to the politically connected nature of main banks; relationships with connected banks may be particularly sturdy because such institutions have the political support required to be protected from financial failure. In some cases, connected banks may be the only institutions that will provide credit for projects that have negative net present values. Shleifer and Vishny (1994) reveal that in countries with high levels of government intervention, bank lending is often seen as a mechanism for supplying political patronage in exchange for bribes to political office-holders. Accordingly, connected firms that have MBRs with connected banks will be less likely to deal with other banks or diversify to banks that have other types of ownership.

Another potential effect of banking relationships on the size of bank pools and types of banks relates to differences in monitoring (Berger et al., 2007) and to the costs and benefits of monitoring (Carletti, 2004). Connected banks often have very high ratios of non-performing loans, because such institutions consent to poor loan-repayment performance. This consent, or relatively low level of monitoring, represents the net monitoring benefit to firms from single relationships with connected banks. Importantly, smaller bank pools may reduce financial transaction costs (Carletti, 2004) and avoid coordination complications following defaults (Bolton and Schafstein, 1996; Bris and Welch, 2005). Therefore, connected firms that have MBRs with connected banks are less likely to deal with other banks or diversify to banks that have other types of ownership.

Corruption can affect credit decisions at various levels. At the bank level, it may discourage banks from lending more, especially to riskier projects, and result in increased loan costs for borrowers (La Porta et al., 1997; Beck et al., 2006). At the firm level, it may affect firms' access to credit. If a firm's managers believe that legal enforcements against corruption are weak, or the risks of getting caught and prosecuted are low, their likelihood of engaging in corrupt practices will be high. At the local government level, corruption may enhance the abilities of connected firms to access credit because local politicians are biased toward connected firms. Therefore, having MBRs with connected banks becomes a form of insurance for firms to ensure access to bank financing in challenging times; such relationships are crucial for maximizing access to loans, even if the firms do not engage in corrupt behavior. Accordingly, we hypothesize that connected firms that establish MBRs with connected banks are unlikely to deal with other banks or diversify to banks with other types of ownership.

We focus on Vietnam for several reasons. First, the historical legacy of past ownership structures of listed and private firms and banks is that the government retains shares in such firms and banks. Second, although Vietnam is a rapidly growing transition economy, the ruling Communist Party continues to use advancement of cadres to maintain control of the governing apparatus in all economic sectors, including bank financing; in many cases, appointments to boards of banks or their parent companies are controlled by the government, which maintains some influence over lending decisions. Third, firms' managers are often former managers of state-owned enterprises (SOEs), to which they maintain personal links; this gives them preferential access to credit in interactions with local officials. Therefore, Vietnam provides an excellent experimental framework for investigating the effects of political connections and local government corruption on bank pools.

In this study, we collect and cross-check several data sources to derive a novel database comprised of 389 listed Vietnamese medium-sized firms, in operation as of December 2013. The scope and depth of our data set provides several advantages. First, we use a 3-point additive index to capture the degree of firms' political connections, according to whether a firm was a former SOE, whether the firm's CEO was a member of the Communist Party or was a local or central government official, and whether the firm's CEO was a former SOE manager (Malesky and Taussig, 2009). This information enables us to construct a variable that approximates the degree of political connections at the firm level.

Second, we draw information on the composition of each firm's bank pool from a hand-collected survey. We use degree of bank connection as a central model parameter, such that we construct a variable that captures the degrees of banks' political connections as perceived by company managers. Many Vietnamese entrepreneurs are members of groups that have accumulated substantial political capital through awards and various titles and honors bestowed by the government; such honors lead to political incorporation and socialization. To classify banks that we consider to be connected banks, we identify those that received the most significant political recognition during the period of 2010 to 2012, that is, the highest award known as "The Labour Order" from the Prime Minister. This award represents powerful political connections on the part of banks' managers (Chen, 2011: 73, 183, 186; House of Commons, 2012). Such classification allows us to examine the choice of connected main bank and its effects on the size and type of banks in the bank pool.

Third, we measure the level of local government corruption using the 2013 Provincial Competitiveness Index (PCI, 2013)<sup>39</sup> an index of provincial political bias policy toward firms. This index is constructed according to the philosophy that it reflects business concerns about the presence of a level playing field (PCI, 2013)<sup>2</sup>. It defines a province as corrupt when its political-bias policy index is higher than 6; we draw our definition of local government corruption from the corruption questions included in the Global Insight Country Risk Ratings by IHS<sup>40</sup>, which indicate that "corruption is a particular concern in relation to obtaining permits and favourable policy and planning decisions. Analysts closely assess businesses' experience of these processes" (TI, 2013).<sup>41</sup>

We estimate three models. Our first empirical model analyzes the likelihood of firms having MBRs with connected banks. We find that connected firms tend to establish MBRs with

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<sup>39</sup> The PCI survey is an annual survey that has been performed by the Vietnam Chamber of Commerce and Industry and United States Agency for International Development since 2006. The New Index on Policy Bias is one of the new index "were added to reflect the changing importance of difference aspects of governance" (PCI, 2013: 15).

<sup>40</sup> IHS was founded in 1959; it is a global information company that provides a wide range of online services covering country risk and individual sector analysis. The Global Insight Country Risk Rating is drawn mostly from the evaluation of risk (in which corruption is one of the country risks) and the insights of country experts in analyzing other areas of risk. According to its questions, corruption affects firms' operational activities, including the economic and political drivers of the problem.

<sup>41</sup> A total of 13 data sources construct the 2013 Perception Index of the TI Corruption Index 2013. Access: 23/01/2018. [https://www.transparency.org/files/content/pressrelease/2013\\_CPISourceDescription\\_EN.pdf](https://www.transparency.org/files/content/pressrelease/2013_CPISourceDescription_EN.pdf).

connected banks. We also show that connected firms that operate in corrupt provinces have a 23.35% greater likelihood of establishing MBRs with connected banks.

Our second model investigates the effects of establishing MBRs with connected banks on numbers of banks used by firms when firms are connected firms operating in corrupt provinces. We confirm first that local corruption is associated positively with the size of the firm bank pool. We go one step further and add that connected firms tend to reduce the number of banks they deal with and enter less often into multiple bank relationships when their MBRs with connected banks are achievable and especially when they are located in corrupt provinces.

Our third model extends our previous results to examine the effects of political connections and corruption on diversification of bank ownership types. Our findings are consistent with our hypothesis that connected firms that operate in corrupt provinces are less likely to diversify to banks with different types of ownership when they have MBRs with connected banks. Finally, in emerging countries characterized by varying degrees of political connection, bank pool compositions depend on political connections and are influenced by local corruption; these factors determine the value of political connections to firms' financial decisions.

We structure the remainder of our study as follows. Section 2.2 presents a review of literature. Section 2.3 presents data and variables and outlines our empirical strategy. Section 2.4 describes the tested models. Section 2.5 analyzes results. Section 2.6 describes robustness tests, and Section 7 concludes.

## **2.2. Literature review and hypotheses development**

### **2.2.1. Banking relationship, main bank, number of banks, and diversity of bank ownership type**

Literature on banking relationships focuses on relationship lending to opaque firms. Banks acquire two types of information to mitigate informational asymmetries: “hard” information, which can be easily reduced to numerical entries and transmitted credibly, and “soft” information, which is difficult to summarize in numeric scores (judgments, opinions, notes) and hard to communicate (Stein, 2002; Berger et Udell, 2002; Petersen and Rajan, 2002; Petersen 2004). The advantage of large banks lies in their advanced lending technologies; small

banks prefer to lend according to soft information. Large banks are likely to have shorter, less exclusive, less personal, and longer-distance associations with small firms (Berger et al., 2005). Relationship lending is the most powerful technology available to reduce the information problem in firms' financing. However, it poses the "hold-up" problem, because exclusive relationships lead to information monopolies. The hold-up problem mitigates the positive effect of the reduction of informational asymmetries (Boot, 2000).

Four primary functions define the concept of the main bank (*hausbank* in Germany): (1) It is the firm's critical financial source; (2) its financial transactions with the firm endure for a lengthy period; (3) it is the final resource of rescue when the firm is in financial distress; and (4) it is the most significant shareholder of its customer (firm) (Diamond, 1984; Aoki et al., 1994).

Existing literature on number of banks and number of bank ownership types adopts either the firm's (borrower's) or the bank's (lender's) point of view. Firms may have at least five reasons for entering larger bank pools. First, their main banks may not meet their needs; this may happen when firms become larger and more complex. Second, firms may wish to eliminate the hold-up problem of a single relationship bank or an existing main bank (Rajan, 1992; Boot, 2000); this incentive is more significant when main banks harden terms of lending. Third, banks may wish to avoid the potential of premature credit withdrawal as the result of distressed relationships; firms that maintain considerable numbers of banks are more likely to be financially fragile (Detragiache et al., 2000). Fourth, they may be affected by bank fragility; if banks frequently run into liquidity problems (i.e., if the banking system is fragile), firms can insure against premature liquidation by creating pools of many banks. Finally, firms may wish to avoid the high cost of negotiating with many banks in cases of firms' strategic defaults (Bolton and Scharfstein, 1996) by setting up pools consisting of two banks to restore sufficient competition and limit banks' monopoly powers (Thadden, 1992).

From the bank's point of view, there are at least four motives for entering larger bank pools. First, banks may prefer to co-finance in pools because of lending costs; higher numbers of banks are associated positively with wasting resources (Diamond, 1984). Second, they may enter larger pools of banks to better manage risk (Carletti et al., 2007); banks benefit from co-financing in terms of being able to lower lending rates and mitigate firms' strategic default risks (Bernardo et al., 2015). Third, banks may incorporate with many other banks to reduce banking

competition, especially when large and out-of-market banks predominate (Presbitero and Zazzaro, 2011). Finally, they may be influenced to co-finance as the result of banking regulations; such restrictions differ according to bank type and may result in limitation of accepted credit (Thakor, 1996).

### **2.2.2. Hypotheses development**

Our hypotheses with regard to the effects of political connections on firms' likelihood of having MBRs with connected banks are founded on these primary functions and the impacts of political connections on firms' access to credit. We hypothesize that MBRs with connected banks are essential for connected firms, because connected banks have stronger national ties and higher numbers of business opportunities (including political projects). Connected banks often receive financial support from their governments and connected banks are unlikely to exit the market. We also postulate that this effect is more significant when firms operate in corrupt provinces, such that:

*Hypothesis 2.1. 1: Connected firms are more likely to establish MBRs with connected banks.*

*Hypothesis 2.1. 2: Connected firms are more likely to establish MBRs with connected banks, especially when the firms operate in corrupt provinces.*

Our hypotheses about the effects of political connections on numbers of banks and bank ownership types relate primarily to extensions of firms' fifth motive and banks' first, and second motive. We hypothesize that MBRs with connected banks are particularly sturdy because, given their government support, connected banks are not subject to distress. We also broaden the interpretation of monitoring costs and benefits of having MBRs with connected banks. Connected firms tend to benefit from single banking relationships with connected banks. Moreover, connected banks may prefer to work with smaller pools of banks because of lending costs, information sharing, and bank regulations. Coordination between connected banks and other banks may be complicated in cases of firms' defaults, especially if the other banks are not connected. By extending these motives, we hypothesize that connected firms reduce their numbers of banks and their numbers of bank ownership types when they achieve MBRs with connected banks.

Finally, our hypotheses with regard to the effects of corruption at the province level on the number of banks and bank ownership types, when connected firms have MBRs with connected banks, are developed from previous hypotheses and from findings on the impacts of corruption on firms' access to credit. In corrupt provinces, the effects of political connections on connected firms' financial decisions are enhanced because corruption biases local politicians toward connected firms' access to credit. Corruption drives firms' credit availability (Weill, 2011; Fungacova et al., 2015) and affects their borrowing behavior; connected firms in corrupt provinces tend to reduce their numbers of banks and numbers of bank ownership types when MBRs with connected banks are achievable.

Accordingly, we hypothesize:

*Hypothesis 2.2. 1: Connected firms are more likely to reduce their numbers of banks when MBRs with connected banks are achievable.*

*Hypothesis 2.2. 2: Connected firms are more likely to reduce their numbers of banks when MBRs with connected bank are achievable and especially when they operate in corrupt provinces.*

We further hypothesize:

*Hypothesis 2.3. 1: Connected firms are more likely to have less diversity of bank ownership types when MBRs with connected banks are achievable.*

*Hypothesis 2.3. 2: Connected firms are more likely to have less diversity of bank ownership types when MBRs with connected banks are achievable and especially when they operate in corrupt provinces.*

## **2.3. Context of the study, data and variables**

### **2.3.1. The Vietnamese banking system and bank financing for SMEs**

Banking sector liberalization and deregulation in Vietnam started in the early 1990s as part of the *Doi Moi* policy.<sup>42</sup> This financial-sector reform provided for the establishment of

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<sup>42</sup> *Doi Moi* translates as "renovation" in English and is the name given to the economic reforms initiated in Vietnam in 1986 with the goal of creating a "socialist-oriented market economy."

private banks, the entry of foreign banks, and the privatization of some government banks. However, interest-rate decisions remained the responsibility of the State Bank of Vietnam (SBV). Between 1993 and 2013, four government banks privatized successfully; the SBV still holds shares in these banks. The banks continue to finance strategic government and social projects (Berger et al., 2009) and maintain relationships with large enterprises and SOEs that began prior to privatization. The credit market is highly concentrated; at the end of 2013, government banks covered 51.2% of the official market (SBV, 2013).

Private banks began receiving banking licenses during the early 1990s; 47 private banks began operations between 1993 and 2013. Their markets and networks span the entire country, although their focus is on small businesses in the private sector. There are also some incumbent private banks founded with capital contributed by government banks, state entities, and central and local governments.

Most foreign banks began operating in the 1990s with licenses to open branches. They are permitted to take deposits and provide credit according to local banking laws and SBV regulations.<sup>43</sup> However, these foreign operations and branches primarily serve companies from the banks' own countries of origin, and their lending activities take place mostly in the major cities because of constraints on branch expansion. With regard to joint venture banks, restrictions limit the shares of foreign partners to 49%. Foreign-owned banks provide credit mainly to foreign, medium, and larger companies rather than to small enterprises.

Corruption is the most frequently cited business problem in Vietnam (Bertelsmann Foundation, 2010, 2014; Thanh Nien News, 2014). Most executive bankers are business partners, friends, or executors of top-ranked politicians. Four massive corruption cases that took place in the 1990s illustrate politicians' involvement in credit allocations by banks (Gainsborough, 2003).

One conventional explanation for the increase of corruption is the policy bias toward SOEs on the part of politically connected firms from the central and local government, which has led to both reduced business performance and declining perceptions of economic governance. Recent failures of state conglomerates, which received a great deal of currency

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<sup>43</sup> Between 1993 and 2013, 5 wholly owned foreign banks, 4 joint ventures, 51 representative offices of foreign banks, and 51 branches of foreign banks were established.

from their struggles, are compelling evidence of the impact of political policy bias. At the province level, credit access is one of the greatest policy biases (with an average of 27% of respondents from 2005 to 2013 [PCI, 2013]). Across the country, the level of policy bias varies dramatically. In some provinces, firms must battle against considerable difficulties (PCI, 2013). The most significant political bias that firms face is toward former SOEs, which have been privatized; states sometimes retain shares in these firms, which have significant connections to policymakers (PCI, 2013).

Vietnamese small- and medium-sized enterprises (SMEs) play an active and fundamental role in economic growth. As of 2012, approximately 97% of firms were SMEs; they accounted for 46.8% of the country's employment (GSO, 2013). Generally, they have difficulty in accessing external finance, especially bank financing (Tenev et al., 2003, Le and Wang, 2005). Loans to SMEs tend to depend on interorganizational and interpersonal banking relationships (Le, 2013), owner characteristics (Nguyen, 2012, and the financial environment (Nguyen and Otake, 2014). Moreover, government-connected firms have preferential access to finance (Malesky and Taussig, 2009; Nguyen and van Dijk, 2012).

### **2.3.2. Data source**

As concerns firm's financial information, firm's political connections, corruption at the province level, bank characteristics, and province characteristics, we use the same data as in the previous chapter. We add the following two sources to complete our data base.

#### *2.3.2.1. Structure of firms' bank pools.*

We drew our bank pool data largely from our independent survey<sup>44</sup>, which gathered full information on the main bank and the number of banks in each firm's bank pool. The firms interacted with 62 different banks and their affiliates, through lending, deposits, or other banking and financial services. The number of banks in firms' bank pools varied between 1

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<sup>44</sup> We sent a survey questionnaire about firms' bank pool structures by email to all the listed firms (about 700 firms). We received the emailed responses of 425 firms. We approached other companies using various methods (telephone, physical visits, checking with credit officers) to obtain the missing information in cases in which responses to our questionnaire prevented us from clearly identifying main banks. For these firms, we assumed their main banks were those for which the firms published their bank accounts on their official websites or in their audited financial reports. We ensured that there was no cessation period in the relationships between a firm and its main bank from the first time the firm began to use the bank services.

(single bank) and 11 (highly diversified structure). Firms in the sample entered into relationships with 26 main banks.

#### 2.3.2.2. *Political connections at the bank level.*

To classify banks as connected banks, we collected information about the Labor Order (in Vietnamese: *Huân chương lao động*)<sup>45</sup> awarded to banks by the Prime Minister between 2010 and 2012. We obtained this information by retrieving data from banks' annual audited reports. We verified the award information with media reports and central official newspapers to identify the types of awards and the names of banks involved. Accordingly, we defined a connected bank as a bank to which the bank and/or its executives received the Labor Order for accomplishments in banking activities, on the assumption that receipt of the honor is biased by links between politicians and rewarded banks.<sup>46</sup>

Our final data set included 389 firm observations.

### 2.3.3. Variables and descriptive statistics

Table 2.1 contains the definitions and summary statistics for all variables. For analysis purposes, we took the log values of some variables.

#### 2.3.3.1. *Dependent variables.*

We introduced three groups of dependent variables:

- *Main bank:* The variable *CONNECT BANK* represents the politically connected identity of a firm's main bank. This dummy equal 1 if the firm's main bank is one of the banks for which the bank's executives or bank received the Labor Order from the Prime Minister during 2010 to 2012, and 0 otherwise. About half the firms in our sample maintained MBRs with these connected banks. To avoid concerns about endogeneity, we observed the politically connected nature of the banks from 2010 to 2012, then

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<sup>45</sup> Vietnamese awards and decorations are specified by the National Assembly of Vietnam. Commendation forms include Order and State honorable titles. The Labor Order is an award conferred or posthumously conferred on individuals and conferred on collectives that have recorded outstanding achievements in Labor, creativity, or public construction.

<sup>46</sup> According to Chen (2011), there are problems with the *award system*, which is run mainly by the *Party*; often, *political connections* play a role in the selection of awardees.

considered firms' bank pools in 2013 (see Section 2.4.1 for further discussion). Accordingly, our results can be interpreted as causal relationships between the independent variable and dependent variable.

- *Number of banks*: We introduced two variables: the variable *NUMBER* records the actual number of banks, and the dummy variable *DNUMBER* equals 1 if a firm has more than two banks. About 31% of firms had a diversified bank pool structure and the average firm had 2.35 banks.
- *Number of bank ownership types*: We introduced two variables: *OWNERSHIP* records the actual number of bank ownership types plus one, and the dummy variable *DOWNERSHIP* equals 1 if the firm has more than two different bank ownership types (Government-owned banks (GOB), Private-owned banks (POB), or Foreign-owned banks (FOB)). About 48% of firms had diversified across bank ownership types, and the average number of bank ownership types was 1.5, which confirmed that the diversification of bank ownership types is essential.

#### 2.3.3.2. *Independent variables.*

First, *CONNECT FIRM* is a dummy that indicates a connected firm, assessed according to whether firms and firms' CEOs have at least three political connections with the government and Party. About 74% firms had strong political connections. Second, *CORRUPT PROVINCE* represents the corrupt identity of the firm's province; we defined a province as corrupt if the political bias policy index was higher than 6 in 2013, and 0 otherwise. About 21% of firms operated in corrupt provinces. Finally, we generated the independent variable *CONNECT FIRMBANK* to capture the match/mismatch between the level of political connections of a specific firm and its main bank. This dummy variable equals 1 if a connected firm has an MBR with a connected bank and 0 otherwise. Approximately 51% of firms were connected firms that had MBRs with connected banks.

#### 2.3.3.3. *Control variables.*

We introduced three sets of control variables:

- *Firm characteristics*: We introduced several variables to measure a firm's quality and its ability to access credit, including firm size, measured as the natural log of the firm assets (*FSIZE*), with an average of \$2.42 million USD. The firm-level return on assets

ratio (*FROA*) takes an average value of 0.049. We also included the firm's research and development expenses ratio (*FR&D*), defined as its total expenditures on research and development relative to total assets. In line with Bhattacharya and Chiesa (1995) and Berger et al. (2007), we predicted that innovation shapes firms' debt structures. The variable *Z – SCORE* measures a firm's likelihood of bankruptcy, calculated according to the formulation of the Altman-Score.<sup>47</sup> Given that we knew whether the z-score was less than 1.81, between 1.81 and 2.99, or greater than 2.99, we coded our variables as 1, 2, or 3. The average firm's *Z – SCORE* was 2.223. The variable *QUICKRATIO* is an indicator of a firm's short-term liquidity (Quick ratio = [current assets–inventories]/current liabilities); the average of firm's quick ratio was 1.454. *DEBTRATIO* is the institutional debt to asset ratio (institutional debt excludes debt from firm's owners or their families). The mean of debt to asset ratio was 0.486. We introduced the variable *BANK DEBT RATIO* as the banking debt-to-asset ratio, with a mean of 0.043. The variable *SAVINGS* is the bank savings-to-asset ratio, with a mean of 0.043. The variable *SALEGROWTH* is the growth rate of the income from sales (before tax) between 2012 and 2013 for firms. We used this variable to measure of a firm's business opportunity in 2013 as a determinant of its access to credit (Petersen and Rajan, 1994). The average of firms' sale growth was 6%. The dummy *MARKET* equals 1 for firms that were listed on the Ho Chi Minh City Stock Exchange (HOSE), and 0 otherwise. About 34% of firms were listed in HOSE.<sup>48</sup> Each market provides different choices of debt structures and therefore, different structures of bank pools.

- *Bank pool characteristics:* Main bank size, measured by the natural log of the main bank's assets (*BSIZE*), ranged from \$6.55 million USD to \$10.41 million USD, with an average size of \$20,620 million USD. We used a dummy to indicate banks listed on the stock exchanges (*BLISTED*), which account for 46% of the sample. We measured the duration of the MBR by number of years plus 1 (*LENGTH*). The duration of relationships with main banks ranged from 2 to 43, with an average of 14.51 years. The

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<sup>47</sup> *Altman Z-Score* =  $1.2A + 1.4B + 3.3C + 0.6D + 1.0E$ ; where A = working capital/total assets; B = retained earnings/total assets; C = earnings before interest and tax/total assets; D = market value of equity/total liabilities; and E = sales/total assets).

<sup>48</sup> At the HOSE, investors can trade stocks, investment fund certificates, and bonds that listed on the HOSE. At the Hanoi Stock Exchange (HNX), investors also can trade shares, convertible bonds of companies not publicly traded (UPCoM), government bonds, government-guaranteed bonds, local government bonds, and treasury bills. The conditions of listing of securities, trading, and transactions differ between these markets.

*HERFINDAHL INDEX*<sup>49</sup> is the concentrations of banks in the province where the firm was headquartered in 2013. We used this as a measure of the effect of bank concentration on the structure of bank pool, as the bank industry concentration has effects on firm's credit availability (Petersen and Rajan, 1994). The average of the Herfindahl index was 0.114. We also created the dummies *ATLEAST1SOB* if the firm had at least one government bank and *ATLEAST1POB* if the firm had at least one private bank, to measure the effects of bank ownership on a firm's bank pool structure (Berger et al., 2007). About 59% of firms had a bank pool with at least one government bank, and 36% had a bank pool with at least one private bank.<sup>50</sup>

- *Province characteristics:* We introduced the variable *PARTY DENSITY*, equal to provinces' number of executive members of the 11<sup>th</sup> Standing Committee of the Political Bureau of the Party Central Committee per 1,000 people, from 2012 to 2013. We used this variable because literature suggests that higher numbers of party members correlate with corruption at the local government level (Bergh et al., 2017). The average of *PARTY DENSITY* was 1.644. We used *POP DENSITY* to measure the population density by proxy for rural versus urban areas. The average population density per square kilometer was 1,886. Use of this variable allowed us to investigate differences in bank financing between cities and rural areas.

We also included controls for firms' geography (51 provinces, 7 regions) and 10 industry sectors in all regressions, but they are not displayed in Table 2.1<sup>51</sup>.

## 2.4. Empirical methodology

### 2.4.1. Empirical design

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<sup>49</sup> *Herfindahl Index* =  $\sum_i^N S_i^2$ , where  $i$  is the number of the banks in the region, and  $S$  is the relative size of each bank.

<sup>50</sup> We excluded relationships with at least one foreign bank because the number of observations was small (25).

<sup>51</sup> Approximately 10% of firms are in the Red River delta, 16% are in the northern central and central areas, 28% are in Hanoi, 26% are in Ho Chi Minh City, and 20% are in the northern midlands and mountainous, eastern southern, or Mekong River delta. In terms of sectors, 27% of firms are in real estate, construction, materials, and services for construction sectors; 10% are in the consumer goods and services or personal effects sectors; 34% are in industrial goods and services; 5% are in food and beverage sectors; and 24% are in consumer goods involving natural resources, oils and gas, public services, technology and travel, and entertainment.

It was challenging to test our hypotheses (Section 2.2) because they involve a causal relationship between the degree of political connections of firms and their MBRs with connected banks; merely observing a match at a given data between the degree of political connections between firms and banks did not allow us to make conclusions. Even if we had observed a strong statistical link between these characteristics, we could not have deduced any causality. To solve this endogeneity problem, we focused on our hypotheses, using the following stepwise methodology:

- We identified emblematic cases of bank political connections during 2010 to 2012. From these cases, we classified two types of banks: those perceived by all firms in Vietnam as connected banks, and others.
- For 2013, using univariate and multivariate analyses, we compared:
  - MBRs with banks which were perceived to be connected banks during the period of 2010 to 2012 of both connected firms and other firms when the connected firms operated in provinces perceived as corrupt in 2013.
  - The effect of MBRs with connected banks during 2010 to 2012 on the number of banks of both connected firms and other firms when the connected firms operated in provinces perceived as corrupt in 2013.
  - The effect of MBRs with connected banks during 2010–2012 on the number of bank ownership types of connected firms and other when the connected firms operated in provinces perceived as corrupt in 2013.

If our hypotheses presented in Section 2.2 are correct, managers who perceive their main banks to be connected banks can react and adapt the structures of their bank pools according to their levels of political connections.

With our empirical design, we sought to determine cases that were more emblematic of connection, including those that attracted extensive media attention and thus had national impacts. Given that the Labor Order is one of the highest government awards to firms in Vietnam, we decided to use this award to identify emblematic cases of connecting. This type of honor tends to attract national coverage and profoundly affects people's minds. Thus, we classified a bank as perceived to be a connected bank if it received the Labor Order award during 2010-2012. Such rewards are likely to be biased by a link between the state and the banks and therefore should provide a measure of the connection of the rewarded bank. Rewards

may have less impact on people's minds than other connections, but because they exert a national impact, they can be considered reliable measures of the strength of banks' s political connections.

## 2.4.2. Model development

### 2.4.2.1. Likelihood of MBRs with connected banks.

Our first model investigated a connected firm's likelihood of having an MBR with a connected bank when the firm operates in a corrupt province. We estimated equation 2.1:

*Equation 2. 1 The connected firm's likelihood of having an MBR with a connected bank when the firm operates in a corrupt province*

$$\text{CONNECT BANK}_i = \alpha_0 + \alpha_1 \text{CONNECT FIRM}_i + \alpha_2 \text{CORRUPT PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \text{Bank Pool}_i + \alpha_P * \text{Province}_i + \text{FE}(\text{Industry, Province, Region}) + \varepsilon_i. \quad (2.1a)$$

$$\text{CONNECT BANK}_i = \alpha_0 + \alpha_1 \text{CONNECT FIRM}_i + \alpha_2 \text{CORRUPT PROVINCE}_i + \alpha_3 \text{CONNECT FIRM}_i \times \text{CORRUPT PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \text{Bank Pool}_i + \alpha_P * \text{Province}_i + \text{FE}(\text{Industry, Province, Region}) + \varepsilon_i \quad (2.1b)$$

In these equations,

- *CONNECT BANK<sub>i</sub>* is our generic dependent variable that measures the degree of political connections for main bank of firm *i*.
- *CONNECT FIRM<sub>i</sub>* is our generic independent variable that measures the degree of political connections for firm *i*.
- *CORRUPT PROVINCE<sub>i</sub>* is our generic independent variable that measures the corrupt for province *i*.
- *Firm<sub>i</sub>* is a generic vector of control variables at the firm level (*F<sub>SIZE<sub>i</sub></sub>*, *F<sub>ROA<sub>i</sub></sub>*, *F<sub>R&D<sub>i</sub></sub>*, *Z – SCORE<sub>i</sub>*, *QUICKRATIO<sub>i</sub>*, *DEBTRATIO<sub>i</sub>*, *BANK DEBT RATIO<sub>i</sub>*, *SAVINGS<sub>i</sub>*, *SALE GROWTH<sub>i</sub>*, *MARKET<sub>i</sub>*).
- *Bank Pool<sub>i</sub>* is a generic vector of control variables at the pool bank level (*ATLEAST1SOB<sub>i</sub>*, *ATLEAST1POB<sub>i</sub>*<sup>52</sup>, *HERFINDAHL INDEX<sub>i</sub>*)

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<sup>52</sup> In other words, the dummies for at least one government bank and at least one private bank are not mutually exclusive categories. Therefore, we cannot include all in one regression. We excluded the dummy for at least one foreign bank because the number of observations was fewer than 25.

- $Province_i$  is a generic vector of control variables at the province level ( $PARTY DENSITY_i, POP DENSITY_i$ ).

Table 2.1 defines all variables. We also included fixed effects at the industry, province<sup>53</sup>, and region levels in our regressions. We adjusted the standard errors for clustering by the seven regions. We estimated Equations (2.1a) and (2.1b) by using a probit model and an ordinary least squares (OLS) model. We recognized that it was not possible to interpret the interaction variable directly with a probit regression. To circumvent this issue, we used the “*inteff*” command in Stata (Ai et al., 2004) to determine the marginal effect of this interaction term in Equation (2.1b).

If our hypotheses with regard to the main bank are correct, the coefficients of the variables  $CONNECT FIRM_i$  and  $CONNECT FIRM_i \times CORRUPT PROVINCE_i$  will be positive and significant.

#### 2.4.2.2. Effects of MBRs with connected banks and corruption on numbers of banks.

Our second model investigated the effects of MBRs with connected banks on numbers of banks of connected firms and when the firms operated in corrupt provinces. We estimated equation 2.2:

*Equation 2. 2 The effects of MBRs with connected banks on numbers of banks of connected firms and when the firms operated in corrupt provinces*

$$\begin{aligned} \text{Number of bank}_i &= \alpha_0 + \\ &\alpha_1 \text{CONNECT FIRMBANK}_i + \alpha_2 \text{CORRUPT PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \\ &\text{Bank Pool}_i + \alpha_P * \text{Province}_i + \text{FE(Industry, Province, Region)} + \varepsilon_i. \end{aligned} \quad (2.2a)$$

$$\begin{aligned} \text{Number of bank}_i &= \alpha_0 + \alpha_1 \text{CONNECT FIRMBANK}_i + \alpha_2 \text{CORRUPT PROVINCE}_i + \\ &\alpha_3 \text{CONNECT FIRMBANK}_i \times \text{CORRUPT PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \\ &\text{Bank Pool}_i + \alpha_P * \text{Province}_i + \text{FE(Industry, Province, Region)} + \varepsilon_i. \end{aligned} \quad (2.2b)$$

In these equations,  $Number\ of\ banks_i$  is our generic dependent variable that measures the number of banks in the bank pool of the firm  $i$ . We use two proxies:  $NUMBER_i$  and  $DNUMBER_i$ ;  $CONNECT\ FIRMBANK_i$  is our generic independent variable that measures connected firms establishing MBRs with connected banks and  $Bank\ Pool_i$  is a generic vector

<sup>53</sup> We excluded provinces with fewer than 5 observations.

of control variables at the bank pool level. Controls for the main bank are: ( $B_{SIZE}_i$ ,  $B_{LISTED}_i$ ,  $L_{LENGTH}_i$ ) and controls for the pool of banks ( $H_{ERFINDAHL\ INDEX}_i$ ;  $A_{TLEAST1SOB}_i$ ;  $A_{TLEAST1POB}_i$ ).

All other independent variables, the controls for firm, province, and fixed effects, and the method are similar to Equations (2.1a and 2.1b). We estimated Equation (2.2) using a Poisson model when the independent variable was  $NUMBER_i$  and a probit model when the independent variable was  $DNUMBER_i$ . Also, we used the `inteff` command in Stata (Ai et al., 2004) to determine the marginal effect of interaction terms in Equation 2.2b.

If our hypotheses on the firms' number of banks are correct, the coefficients of the variables  $CONNECT\ FIRMBANK_i$ ;  $CONNECT\ FIRMBANK_i \times CORRUP_T\ PROVINCE_i$  will be negative and significant.

#### 2.4.2.3. Effects of MBRs with connected banks on numbers of bank ownership types.

Our third model examined the effects of MBRs with connected banks on numbers of bank ownership types when firms are connected firms and when the firms operated in corrupt provinces. We estimated equation 2.3:

*Equation 2. 3 The effects of MBRs with connected banks on numbers of bank ownership types of connected firms and when the firms operated in corrupt provinces*

$$\begin{aligned} \text{Number of bank ownership types}_i &= \alpha_0 + \\ &\alpha_1 \text{CONNECT FIRMBANK}_i + \alpha_2 \text{CORRUPT PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \\ &\text{Bank Pool}_i + \alpha_P * \text{Province}_i + \text{FE(Industry, Province, Region)} + \varepsilon_i. \end{aligned} \quad (2.3a)$$

$$\begin{aligned} \text{Number of bank ownership types}_i &= \alpha_0 + \\ &\alpha_1 \text{CONNECT FIRMBANK}_i + \alpha_2 \text{CORRUPT PROVINCE}_i + \\ &\alpha_3 \text{CONNECT FIRMBANK}_i \times \text{CORRUPT PROVINCE}_i + \alpha_F * \text{Firm}_i + \alpha_{BP} * \\ &\text{Bank Pool}_i + \alpha_P * \text{Province}_i + \text{FE(Industry, Province, Region)} + \varepsilon_i. \end{aligned} \quad (2.3b)$$

In these equations,  $Number\ of\ bank\ ownership\ types_i$  is our generic dependent variable that measures the number of bank ownership types (diversification of bank ownership types) for firm  $i$ . We used two proxies:  $OWNERSHIP_i$  and  $DOWNERSHIP_i$ .

All other independent variables, the controls for firm, bank pool, province, fixed effects, and the method are similar to Equations (2.2). We estimated Equation (2.3) using a Poisson

model when the independent variable was  $OWNERSHIP_i$  and a probit model when the independent variable was  $DOWNERSHIP_i$ . If our hypotheses on the firms' number of bank ownership types are correct, the coefficients of the variables  $CONNECT\ FIRMBANK_i$  and  $CONNECT\ FIRMBANK_i \times CORRUPT\ PROVINCE_i$  will be negative and significant.

## 2.5. Results

### 2.5.1. Univariate analysis results

We began with a univariate analysis of the influence of political connections on the choice of MBRs with connected banks. Table 2.2 shows proportions of main connected banks; the choice appears to depend on a firm's degree of political connection. Table 2.2 reveals that the proportion of connected banks is significantly higher for connected firms than other firms (0.52 vs. 0.44), which is consistent with our first hypothesis.

Second, we compare the average number of banks between connected firms and others, depending on whether they perceive their main bank as a connected bank. Table 2.3 shows the number of banks; the number appears to depend on both the firm's and its main bank's degree of political connections. Specifically, Table 2.3 reveals that the average number of banks is significantly lower when connected firms perceive their main banks to be connected banks (2.10 versus 2.86), which is consistent with our second hypothesis. The difference in average means of number of banks is not significant for non-connected banks.

Third, we compare the average number of bank ownership types of connected firms and others, depending on whether they perceive their bank as being a connected bank. Table 2.4 shows that the average number of bank ownership types is significantly lower when connected firms perceive their main banks to be connected banks (1.42 versus 1.65), which is consistent with our second hypothesis. The difference in average means of the number of bank ownership types is not significant for non-connected banks.

### 2.5.2. Main results

Tables 2.5, 2.6, and 2.7 show our regressions results from Models 2.1, 2.2, and 2.3 respectively. We report marginal effects instead of coefficients in Poisson and probit estimations for the exogenous variables to facilitate evaluations of whether their magnitudes

are of economic importance. In most cases, our key exogenous variables of interest are dummy variables such as firm type (connected firm or other firm) or province type (corrupt or non-corrupt). For each of these variables, the reported marginal effect is the difference in predicted value for the dependent value for a dummy value of 1 versus 0, with all other exogenous variables at their means (Berger et al., 2007). For continuous exogenous variables, the reported marginal effects are the derivatives of the predicted dependent variables for minor changes in the exogenous variables. For each model, we also perform OLS estimations in which we report the coefficients. For the probit model of the interaction terms of two independent variables, we report the results of the inteff test after each estimation. The results are similar when we run the models with and without controls for the bank ownership variables ( $ATLEAST1SOB_i$ ;  $ATLEAST1POB_i$ ). We also report the estimations with the controls for bank ownership variables.

#### 2.5.2.1. Results of the likelihood of MBRs with connected bank.

Table 2.5 shows the marginal effects of a probit model (Models 2.1a and 2.1b) for the determinant of MBRs with connected banks (Equations 2.1a, 2.1b). Results in Table 2.5, Model 2.1a are consistent with our hypothesis (*Hypothesis 2.1.1*) that connected firms are more likely to establish MBRs with connected banks than with other banks. Connected firms have an 8.21% higher likelihood than other firms of maintaining their MBR with a connected bank (Column 1).

Results in Models 2.1b and 2.1b1 show that consistent with our previous finding, the signs of the interaction variable  $CONNECT FIRM_i \times CORRUPT PROVINCE_i$  are statistically and economically significant. Connected firms tend to maintain MBRs with connected banks especially when they operate in provinces with high policy bias toward connected firms. Notably, connected firms that do business in corrupt provinces have 23.21% (Probit model) and 22.25% (OLS model) higher likelihoods than other firms of having MBRs with connected banks. Results from the inteff test (Panel B) are consistent with our findings from the probit and OLS models. Finally, the sum of the coefficients of  $CORRUPT PROVINCE_i$  and  $CONNECT FIRM_i \times CORRUPT PROVINCE_i$  is negative and significant (Panel C, Columns 2, 4). These findings confirm our hypotheses *Hypothesis 2.1.1* and *Hypothesis 2.1.2* that connected firms tend to have MBRs with connected banks and this effect is more significant when the firms operate in corrupt provinces.

For firm characteristics, we found that firms with high z-scores have lower likelihoods of having MBRs with connected banks. These firms with less possibility of bankruptcy may be better able than others to obtain credit from other banks. Therefore, their MBRs with connected banks may not be important. Moreover, firms listed in the high-frequency trading stock market (i.e., HOSE) are more likely than other firms to establish MBRs with connected banks, probably as they have more business opportunities.

For bank pool characteristics, we find that firms in banking relationships with at least one private bank have lower likelihoods of having MBRs with connected banks, which is consistent with Cole's (2004) evidence that loans from connected banks are often more politically motivated than performance-driven (Berger et al., 2007)

#### *2.5.2.2. Results for effects of MBRs with connected banks of connected firms on the size of the firm bank pool.*

Table 2.6 shows the results of our tests of the effects of MBRs with connected banks when firms are connected firms and operate in corrupt provinces. The table shows the results of marginal effects from a Poisson model (Models 2.2a, 2.2b) for the actual number of banks and a probit model (Models 2.2c, 2.2d) for the dummy of the number of banks. The table reports the coefficients of an OLS model (Models 2.2a1, 2.2b1, 2.2c1, 2.2d1). The findings for the two methods are generally consistent.

First, the coefficients of  $CONNECT\ FIRMBANK_i$  are strongly statistically significant and are substantial magnitudes in most of our estimations. Column 1 shows that when we control for the number of firm-level variables and other bank and province characteristics, connected firms that have MBRs with connected banks are significantly more likely to maintain smaller numbers of banks. The data predict about 0.18 fewer banks when connected firms have MBRs with connected banks. The findings show that the likelihood of having a multiple pool of banks is 6.05% lower when connected firms have MBRs with connected banks. The OLS differences in Columns 5 and 6 are qualitatively similar.

Second, we focus on the effects of the interaction term of  $CONNECT\ FIRMBANK_i \times CORRUPT\ PROVINCE_i$ . Accordingly we report the results of the inteff test (Panel B) and the sum of coefficients (Panel C) for these effects. We find that when we control for the firm, bank pool, and province characteristics, the likelihood that connected firms that have MBRs with

connected banks have multiple bank pool structures when the firms operate in corrupt provinces is 9.88% lower than that of other firms. Results from the *inteff* test, the sum of the coefficients, and the OLS model (Model 2.2d1) are consistent with a probit model; the sign of  $CONNECT\ FIRMBANK_i \times CORRUPT\ PROVINCE_i$  is negative but not significant in Column 2. These findings are consistent with our hypotheses that after conditioning the other variables, MBRs with connected banks are more durable; connected firms are more likely to maintain the small numbers of banks, even when the firms operate in provinces with high local policy bias on credit access.

The coefficients of  $CORRUPT\ PROVINCE_i$  are significant and positive in almost all regressions (except Columns 3 and 7). In provinces with high policy bias toward connected firms, firms are more likely to interact with many banks. Given that corruption may diminish banks' lending willingness (Weill, 2011), firms increase their numbers of banks to ensure financing.

With regard to firm characteristics, our finding that large firms are likely to maintain higher numbers of banks and interact with multiple pools of banks is consistent with previous literature (Berger et al., 2007). However, highly profitable and highly innovative firms tend to reduce their numbers of banking relationships and work with smaller numbers of banks. These results may be explained by firms' great ability to access other credit sources or their ability to establish new banking relationships when their existing banks are discontinued (Berger et al., 2007). Given the adverse effects of innovation on lending conditions (Mocnik, 2001), some banks prefer not to lend to firms with high research and development expenses. On the contrary, firms with high z-scores, high quick ratios, and high debt ratios to total assets enter relationships with many banks. These firms are more informed and in better positions to obtain credit from many banks. Firms with many business opportunities and firms listed on the HOSE seem more likely than other firms to expand the sizes of their bank pools and interact with many banks.

Table 2.6 also shows that firms that have MBRs with larger, publicly traded banks are less likely to interact with multiple banks. Moreover, firms that maintain more extended relationships with their main banks are less likely to enter into multiple pools of banks. We also find that firms with at least one relationship with a government bank tend to have concentrated pools of banks (Berger et al., 2007). Firms in concentrated banking markets tend to interact

with many banks. These findings are consistent with previous literature that finds that firms may be able to borrow more in competitive banking markets (Petersen and Rajan, 1994).

Finally, we find that firms tend to reduce their numbers of banks in provinces that have higher numbers of Party executive members; this shows the correlation between firms' financial decisions and political connections. Higher numbers of elected Party executive members are positively associated with higher levels of provincial corruption (Bergh et al., 2017), thus reducing firms' access to finance. Firms may have to develop relationships with their main banks to reduce the costs of transaction with many banks and increase credit availability. Moreover, firms in areas of high population density are more likely to maintain multiple pools of banks, because banks tend to offer more credit to firms in cities than in rural areas (Petersen and Rajan, 1994).

#### *2.5.2.3. Results for effects of MBRs with connected banks of connected firms on the diversification in the firm bank pool.*

Table 2.7 presents the empirical results for the effects of MBRs with connected banks on numbers of bank ownership types when firms are connected firms and when the firms operate in corrupt provinces. We report marginal effects for simple Poisson distributions for numbers of bank ownership types (Models 2.3a, 2.3b) and probit estimations for the likelihood of diversification (Models 2.3c, 2.3d). The table reports the coefficients of an OLS model (Models 2.3a1, 2.3b1, 2.3c1, 2.3d1) that have the same specifications as the Poisson and probit models. We ran the models with and without controls for bank ownership variables; the results of the two regressions are similar. We report the results with the controls for bank ownership variables. Similar to the previous model, we also focused on the interaction effects of  $CONNECT\ FIRMBANK_i \times CORRUPT\ PROVINCE_i$ . Therefore, we report the results of the inteff test (Panel B) and the sum of coefficients (Panel C) for these effects.

Consistent with our findings on the actual numbers of banks and on multiple banking, we find that connected firms are less likely to have higher numbers of bank ownership types or to diversify across ownerships types when they have MBRs with connected banks and when they operate in corrupt provinces. The data predict that connected firms that have MBRs with connected banks have about 0.1 fewer bank ownership types than other firms (Columns 1, 2). The likelihood of diversification across bank ownership types is 4.49% lower when connected firms have MBRs with connected banks (Column 3). The OLS differences in Columns 5, 6, and

7 are qualitatively similar. Table 2.7, Model 2.3d, shows that the marginal effects of the interaction of  $CONNECT\ FIRMBANK_i \times CORRUPT\ PROVINCE_i$  are economically and statistically significant. The likelihood of diversification is between 10.99% lower for connected firms that have MBRs with connected banks and operate in corrupt provinces than for other firms. The results from the inteff test, sum of coefficients, and the OLS model (Model 2.3d1) are consistent with a probit model. These findings are consistent with our hypotheses *Hypothesis 2.3.1* and *Hypothesis 2.3.2*.

The coefficients and marginal effects of the variable  $CORRUPT\ PROVINCE_i$  are positive and highly significant, as are results for the actual number of bank ownership types in the Poisson model and diversity of banks in the probit model. The data predict about 0.2 more bank ownership types for firms in provinces with high local bias by local politicians (Columns 1, 2). The likelihood of diversification across bank ownership types is 17.17% higher for firms in corrupt provinces. These findings are consistent with previous findings: Firms are more likely to expand the size of their bank pools to prevent early withdrawn of banks as the result of vulnerable banking systems or banks' unwillingness to lend in corrupted provinces.

With regard to firms' characteristics, our findings are generally similar to those for number of banks; we find that large firms and firms with sales growth are more likely to diversify across bank ownership types. Such firms tend to have complicated operations or new business opportunities that require different types of services from different kinds of banks. The debt structures of firms are also positively related to their diversity of bank ownership types. Highly profitable firms are not in positions of diversify of bank ownership types; top-innovation firms tend to reduce their numbers of bank ownership types and diversify less.

With regard to bank pool characteristics, bank size and public bank status have significant and negative effects. Closeness of the MBR has a negative but insignificant effect. Firms that have banking relationships with government banks and private banks often interact with many bank ownership types (Berger et al., 2007), a finding that is slightly inconsistent with our previous findings. However, firms that operate in competitive banking markets tend to diversify across bank ownership types.

Finally, firms operating in corrupt provinces are consistently less likely to expand their banking relationships to many types of banks.

## 2.6. Robustness tests

### 2.6.1. Endogeneity and omitted variables bias

Our concern with regard to our empirical analysis was that endogeneity and omitted-variables bias may have confounded the causal relationship between political connections and bank pool structures (Section 2.4.1). To solve the endogeneity problem, we performed several steps. First, we identified a connected bank as a bank perceived by all firms in Vietnam as connected during the period of 2010 to 2012. Second, we used univariate and multivariate analyses of the structure of bank pools in 2013 (see discussion in Sections 2.4.1 and 2.5.1). Our estimation of a specification with an extensive list of variables reduced the omitted-variable problem.

### 2.6.2. Sample selection bias

Our method of data collection in the sample could have caused a problem of sample selection bias, given that our database screened out connected firms. Thus, although we controlled for size, there could have been a competing hypothesis that our findings reflected dominance in our sample of connected firms that are more likely to establish MBRs with connected banks, maintain smaller numbers of banks, and diversify less often across bank ownership types. To determine whether this problem existed, we constructed the corresponding inverse Mills ratio (Heckman, 1979; Kim et al., 2014), related to firms' and banks' political connections, in the following manner: We used the original sample to conduct a probit estimation of the dummy variable *CONNECTED FIRM<sub>i</sub>*. We took as explanatory the variables *F<sub>SIZE<sub>i</sub></sub>*, *F<sub>ROA<sub>i</sub></sub>*, *F<sub>R&D<sub>i</sub></sub>*, *Z – SCORE<sub>i</sub>*, *QUICKRATIO<sub>i</sub>*, *DEBTRATIO<sub>i</sub>*, *BANK DEBT RATIO<sub>i</sub>*, *SAVINGS<sub>i</sub>*, *SALE GROWTH<sub>i</sub>*, and *MARKET<sub>i</sub>*, as well as control dummies for industry, province, and region. We obtained the variable *FIRM MILLS RATIO* from this estimation. Given that the correction for connected banks follows the same logic, we took as explanatory the variables *B<sub>SIZE<sub>i</sub></sub>*, *B<sub>LISHED<sub>i</sub></sub>*, and *B<sub>LENGTH<sub>i</sub></sub>*, as well as control dummies for province and region. We obtained the variable *BANK MILLS RATIO* from this estimation. We included the corresponding *FIRM MILLS RATIO* in all parametric specifications from Equations 2.1, 2.2, and 2.3 to accommodate the potential sample selection problem. We included the corresponding *BANK MILLS RATIO* in all parametric specifications from Equations 2.2 and 2.3. The coefficients of the Mills ratios (available upon request) were insignificant, indicating that sample selection bias was not an issue in our study.

### **2.6.3. Alternative measurements of the dependent variable**

There is some evidence that government banks are more likely to support connected firms, and government banks are more connected because of the supporting from the government (Khwaja and Mian, 2005; Infante and Piazza, 2014). We therefore extended our research by examining the effects of government control on banks with structures of firms' bank pools. To undertake such analysis, we computed a dummy variable, *CONNECT BANK*, which equals 1 if the bank was a bank perceived as connected in 2013 (as defined in Table 2.1) and the government retained ownership of the bank of higher than 30%. About 42% of firms had MBRs with these banks. As a result, we constructed the new dummy variable *CONNECT FIRMBANK1* to express the matching of levels of political connections of firms and their main banks; *CONNECT FIRMBANK1* equals 1 if both *CONNECT BANK1* and *CONNECT FIRM* equal 1. About one-third of firms are defined by this definition. We continued with the replacement of our two dummies in Models 2.1, 2.2, and 2.3. Result using these alternative proxies were consistent with those shown in the paper (available upon request).

## **2.7. Conclusion**

In this study, we formulated and tested hypotheses about the links between political connections and the structures of firm's bank pools in markets characterized by corruption. Our analysis uses data from Vietnam, one of the fastest growing developing countries. The country has both a mix of bank types and a significant policy bias toward granting credit to politically connected firms, which provides an opportunity to examine the firms' financial decisions. Our data set is particularly informative on these issues because it includes observations of bank pool structures and measures of political connections of both firms and banks, as well as measures of corruption at the province level. The data set, for 2013, allowed about 10 years for the renovation of Vietnam's banking sector to take effect.

Our hypotheses extend current theories about the firm bank pool structure. We build on the theory that connected firms establish MBRs with connected banks to benefit from their political connections and protect themselves from premature withdrawal of services as the result of financial fragility, given that MBRs with connected banks are sturdier (i.e., they provide better access to credit and are less subject to distress).

We find that in conditions of high levels of corruption, in which local policy favors connected firms at the provincial level, connected firms tend to establish MBRs with connected banks, interact with smaller numbers of banks, and diversify less across bank ownership types. We also find that firms tend to increase their numbers of banks and diversify across bank ownership types in provinces in which local politicians have strong influence. Our empirical research contributes to literature on bank relationships with regard to the effects of political connections and local corruption on firms' bank pool structures. It also contributes to new measures of political connections at the firm and bank level, and corruption at the province level.

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Table 2. 1 Definition of variables & descriptive statistics

This table presents the definition of variables and its descriptive statistics (mean, standard deviations, minimum and maximum) that are used in the analysis

Variables	Definition	Obs	Mean	Std. Dev.	Min	Max
<i>Dependent variables</i>						
CONNECT BANK	Dummy variable equals 1 for banks that received “The Labor Order” from 2010 to 2012, 0 otherwise. Source: Bank’s annual audited reports.	389	0.504	0.501	0	1
NUMBER	Number of banks of the firm. Source: Author’s survey.	389	2.347	1.625	1	11
DNUMBER	Dummy variable equals 1 for firms with at least two banks, 0 otherwise. Source: Author’s survey.	389	0.308	0.462	0	1
OWNERSHIP	One plus number of bank ownership types of the firm. (Mean refers to number of bank ownership types, not diversity of bank types). Source: Author’s survey.	389	1.542	0.610	2	4
DOWNERSHIP	Dummy variable equal to 1 for firms that diversify to banks of various ownership types (i.e., have relationships with at least two different ownership types, 0 otherwise). Source: Author’s survey.	389	0.481	0.500	0	1
<i>Independent variables</i>						
CONNECT FIRM	Dummy variable 1 for firms in which incumbent CEOs were former SOE managers and firms that were SOEs before privatization, 0 otherwise. Source: Firms’ audited financial reports.	389	0.740	0.439	0	1
CONNECT FIRMBANK	Dummy variable equals 1 for firms with CONNECT FIRM = 1 and CONNECT BANK =1, 0 otherwise. Source: Firms’ and bank audited financial reports.	389	0.517	0.500	0	1
CORRUPT PROVINCE	Dummy variable equals 1 for provinces with Policy Bias Indexes higher than 6. Source: PCI 2013.	389	0.211	0.408	0	1
<i>Control variables</i>						
<i>Firm characteristics</i>						
FSIZE	Log of firm’s total assets in millions of U.S. dollars. Source: Firms’ audited financial reports (Mean refers to size, not log of firm size)	389	2.420	1.044	-0.589	5.072
FROA	Profit before interest and tax over the total assets of a firm. Source: Firms’ audited financial reports.	389	0.049	0.061	0	0.392
FR&D	R&D expenses over the total assets of the firm. Source: Firms’ audited financial reports.	389	0.077	0.139	0	0.790
Z-SCORE	Firm’s Altman-Score measures its likelihood of bankruptcy. Given that we know whether the Z-Score is less than 1.81, between 1.81 and 2.99, or greater than 2.99, our variable is coded as 1, 2, or 3. Source: Firms’ audited financial reports and author’s calculation.	389	2.223	0.811	1	3
QUICK RATIO	Indicator of a firm’s short-term liquidity ( $Quick\ ratio = [current\ assets - inventories] / current\ liabilities$ ). Source: Firms’ audited financial reports and author’s calculations.	389	1.454	1.737	0.069	9.842
DEBT RATIO	Debt over total assets of the firm. Source: Firms’ audited financial reports.	389	0.486	0.226	0.002	0.958

(to be continued)

Table 2.1 (continued) Definition of variables & Descriptive Statistics

(continued) Variables	Definition	Obs	Mean	Std. Dev.	Min	Max
<i>Firm characteristics</i>						
BANK DEBT RATIO	Bank lending over total assets of the firm. Source: Firms' audited financial reports.	389	0.043	0.098	0.000	0.589
SAVINGS	Savings at banks over the total assets of the firm. Source: Firms' audited financial reports.	389	0.040	0.053	0.000	0.463
SALE GROWTH	Growth rate of income from sales between 2012 and 2013 (before tax) for firms. Source: Firms' audited financial reports.	389	0.006	0.112	-0.838	0.818
MARKET	Dummy variable equals 1 for firms listed on the HOSE, 0 otherwise. Source: Firms' audited financial reports.	389	0.342	0.475	0	1
<i>Bank pool characteristics</i>						
BFSIZE	Log of main bank's total assets in millions of U.S. Dollars. Source: BVD BankScope (Mean refers to bank size, not log of size)	389	20,620	0.885	6.548	10.406
BLISTED	Dummy variable equals 1 for listed banks, 0 otherwise. Source: BVD BankScope.	389	0.465	0.499	0	1
LENGTH	Natural log of 1 plus the length of the main bank-firm relationship by 2013. Mean of LENGTH is the mean of the length of relationship, not the log of 1 plus the length of relationship. Source: Author's survey.	389	14.512	0.541	1.098	3.384
HERFINDAHL INDEX	Herfindahl index of the concentrations of banks in the area where the firm is headquartered in 2013. Calculated by $Herfindahl\ Index = \sum_i^N S_i^2$ , where $i$ is the number of the banks in the region, $S$ is relative size of each bank. Source SBV (2013), BVD Bank Scope, and author's calculation.	389	0.114	0.120	0.049	0.350
ATLEAST1SOB	Dummy variable equals 1 for firms with at least 1 SOB, 0 otherwise. Source: Author's survey.	389	0.591	0.492	0	1
ATLEAST1POB	Dummy variable equals 1 for firms with at least 1 POB, 0 otherwise. Source: Author's survey.	389	0.355	0.479	0	1
<i>Local characteristics</i>						
PARTY DENSITY	Density of members of the 11 <sup>th</sup> Standing Committee of the Political Bureau of the Party Central Committee in 1,000 people of the province from 2011 to 2016. Source: Website of Communist Party of Vietnam ( <a href="http://www.dangcongsan.vn">www.dangcongsan.vn</a> ).	389	1.644	1.902	0	10.07
POP DENSITY	Log of density of the population per square kilometer of the province. Source: GSO (2013) (Mean refers to POP density, not log of POP density)	389	1,866	1.118	3.892	8.224
<i>Robustness tests</i>						
CONNECT BANK1	Dummy variable equals 1 if CONNECT BANK = 1 and government-retained share of the firm's main bank is higher than 30% by the end of 2012, 0 otherwise. Source: Banks' annual audited reports.	389	0.419	0.494	0	1
CONNECT FIRMBANK1	Dummy variable equals 1 if CONNECT FIRM = 1 and CONNECT BANK1 = 1, 0 otherwise. Source: Firms' and banks' audited financial reports.	389	0.341	0.475	0	1

*Table 2. 2 Proportion of connected banks: connected firms and other firms*

This table displays different averages (M) and Standard Deviation (SD) of proportions of connected banks within the two groups of connected firms and non-connected firms, according to two methods to cut the sample: When the banks are perceived as connected banks, and when the firms are connected or not connected. The pair-test performs tests on the equality of proportions; \*, \*\*, and \*\*\* indicate the pair-test is significant at 10%, 5%, and 1%, respectively.

	Firms						95% CI for Mean Difference	z	df
	Connected firms			Other firms					
	M	SD	n	M	SD	n			
Connected banks	0.52	0.03	288	0.44	0.05	101	-0.21, 0.02	-1.59*	389

There is a statistically significant mean difference in proportions of connected banks between groups of connected firms and other firms. Results show that the connected firms are more likely than other firms to establish MBRs with connected banks.

*Table 2. 3 Number of banks: Between connected firms that have MBRs with connected banks and firms that do not*

This table displays different averages (M) and Standard Deviation (SD) for the number of banks, according to two methods to cut the sample: When the main banks are perceived as connected or not connected and when the firms are connected or not connected. The t-test is a difference-in-means test, based on a student test; \*, \*\*, and \*\*\* indicate the t-test is significant at 10%, 5%, and 1%, respectively.

Number of banks	Firms						95% CI for Mean Difference	t	df
	Connected firms			Other firms					
	M	SD	n	M	SD	n			
Connected bank	2.10	0.13	152	2.86	0.30	44	0.19, 1.33	2.62***	196
Others	2.33	0.12	136	2.63	0.25	57	-1.76, 0.78	1.25	193

There is a statistically significant mean difference in the number of banks between groups of the connected firms that have MBRs with connected banks and firms that do not. Results show that connected firms that bank with connected main banks tend to have lower numbers of banks than other firms.

*Table 2. 4 Number of bank ownership types: Connected firms that have MBRs with connected banks and firms that do not*

This table displays different averages (M) and Standard Deviation (SD) for the number of bank ownership types, according to two methods to cut the sample: When the main banks are perceived as connected or not connected and when the firms are connected or not connected. The t-test is a difference-in-means test, based on a student test; \*, \*\*, and \*\*\* indicate the t-test is significant at 10%, 5%, and 1%, respectively

Number of bank ownership types	Firms						95% CI for Mean Difference	t	df
	Connected firms			Other firms					
	M	SD	n	M	SD	n			
Connected bank	1.42	0.04	152	1.65	0.10	44	0.05, 0.44	2.51***	196
Others	1.58	0.05	136	1.70	0.09	57	-0.08, 0.32	1.21	193

There is a statistically significant mean difference in the number of bank ownership types between groups of connected firms that have MBRs with connected banks and firms that do not. Results show that connected firms that bank with connected main banks tend to have lower numbers of banks than firms that do not

Table 2. 5 Firms' likelihood of having main banking relationships with connected banks (Equation 2.1)

The dependent variable is the *CONNECT BANK* is a dummy that equals 1 (0) when banks were awarded The Labor Order during the period of 2010 to 2012. Panel A: Marginal effects estimates are from a probit regression (Columns 1, 2). Coefficients estimates are from an OLS (Columns 3, 4). Each regression also includes the fixed effects of industry, province, and region, not reported here. Panel B reports results from the inteff test of *CONNECT FIRM* × *CORRUPT PROVINCE*. Panel C reports the net marginal effects of *CORRUPT PROVINCE* and *CONNECT FIRM* × *CORRUPT PROVINCE*. Table 2.1 presents the definition and describes statistics of previous variables; \*, \*\*, \*\*\* significance at the 10%, 5% and 1% level. Robust *p*-values, adjusted for clustering by region, are reported in parentheses.

VARIABLES	(1) Probit Model 2.1a <i>CONNECT BANK</i>	(2) Probit Model 2.1b <i>CONNECT BANK</i>	(3) OLS Model 2.1a1 <i>CONNECT BANK</i>	(4) OLS Model 2.1b1 <i>CONNECT BANK</i>
<i>Panel A</i>				
<i>Independent variables</i>				
<i>Political connections + Corruption</i>				
CONNECT FIRM	0.0821* (0.05)	0.0530 (0.22)	0.0890 (0.11)	0.0593 (0.26)
CORRUPT PROVINCE	-0.0890 (0.42)	-0.2902** (0.03)	-0.0940 (0.45)	-0.2848* (0.05)
<i>Interaction</i>				
CONNECT FIRM × CORRUPT PROVINCE		0.2321*** (0.00)		0.2255** (0.01)
<i>Control variables</i>				
<i>Firm characteristics</i>				
FSIZE	-0.0328 (0.48)	-0.0338 (0.46)	-0.0310 (0.55)	-0.0315 (0.53)
FROA	0.5001 (0.20)	0.4494 (0.27)	0.4666 (0.27)	0.4145 (0.34)
FRND	0.2485 (0.20)	0.2375 (0.20)	0.2398 (0.27)	0.2282 (0.27)
Z-SCORE	-0.0352* (0.10)	-0.0310 (0.17)	-0.0350 (0.16)	-0.0308 (0.24)
QUICK RATIO	0.0137 (0.14)	0.0137 (0.14)	0.0154 (0.18)	0.0153 (0.17)
DEBT RATIO	0.0539 (0.77)	0.0539 (0.76)	0.0474 (0.82)	0.0450 (0.82)
BANK DEBT RATIO	-0.1658 (0.28)	-0.1586 (0.29)	-0.1627 (0.34)	-0.1516 (0.36)
SAVINGS	0.0749 (0.88)	0.1069 (0.83)	0.0862 (0.87)	0.1213 (0.82)
SALE GROWTH	-0.1295 (0.74)	-0.1218 (0.75)	-0.1429 (0.73)	-0.1366 (0.74)
MARKET	0.0960* (0.10)	0.0950* (0.10)	0.0978 (0.15)	0.0987 (0.15)
<i>Bank pool characteristics</i>				
ATLEAST1SOB	0.0266 (0.69)	0.0284 (0.67)	0.0301 (0.70)	0.0325 (0.67)
ATLEAST1POB	-0.1502*** (0.00)	-0.1487*** (0.00)	-0.1520*** (0.00)	-0.1521*** (0.00)
HERFINDAHL INDEX	1.0094 (0.27)	0.9299 (0.30)	0.6607 (0.42)	0.5948 (0.45)
<i>Province characteristics</i>				
PARTY DENSITY	0.0010 (0.96)	0.0000 (1.00)	0.0003 (0.99)	-0.0009 (0.97)
<i>(to be continued)</i>				

Table 2. 5 (continued) Firms' likelihood of having main banking relationships with connected banks (Equation 2.1)

(continued)	(1) Probit Model 2.1a <i>CONNECT BANK</i>	(2) Probit Model 2.1b <i>CONNECT BANK</i>	(3) OLS Model 2.1a1 <i>CONNECT BANK</i>	(4) OLS Model 2.1b1 <i>CONNECT BANK</i>
<i>Province characteristics</i>				
POP DENSITY	0.0817 (0.14)	0.0832 (0.14)	0.0810 (0.20)	0.0825 (0.20)
(Industry/Province/ Region) FE	YES	YES	YES	YES
Intercept	-2.8746** (0.02)	-2.7826** (0.02)	-0.3667 (0.33)	-0.3377 (0.37)
Number of Observations	389	389	389	389
Pseudo R-squared	0.103	0.106		
Adjusted R-squared			0.044	0.046
<i>Panel B: Inteff</i> <i>CONNECT FIRM</i> × <i>CORRUPT PROVINCE</i>				
<i>_probit_se</i>		2.667***		
<i>_probit_p-value</i>		(0.003)		
<i>Panel C: net marginal effects of</i> <i>CONNECT FIRM</i> and <i>CONNECT FIRM</i> × <i>CORRUPT PROVINCE</i>				
		-0.0579** (0.03)		-0.0583** (0.04)

Table 2. 6 Effects of having MBRs with connected banks of connected firms on numbers of banks (Equation 2.2)

The first dependent variable, *NUMBER*, is the number of banks participating in the bank pool (Columns 1, 2, 5, 6). The second dependent variable, *DNUMBER*, is a dummy that equals 1 (0) when a firm's number of bank is above 2 for the corresponding year. Panel A: Marginal effects estimates are from a Poisson regression (Columns 1, 2) and probit regression (Columns 3, 4). Coefficients estimates are from an OLS (Columns 5, 6, 7, 8). Each regression also includes the fixed effects of industry, province, and region, not reported here. Panel B reports results from the inteff test of *CONNECT FIRMBANK* × *CORRUPT PROVINCE*). Panel C reports net marginal effects of *CORRUPT PROVINCE* and *CONNECT FIRMBANK* × *CORRUPT PROVINCE*). Table 2.1 presents the definition and describes statistics of previous variables; \*, \*\*, \*\*\* significance at the 10%, 5% and 1% level. Robust *p*-values, adjusted for clustering by region, are reported in parentheses.

VARIABLES	(1) Poisson Model 2.2a <i>NUMBER</i>	(2) Poisson Model 2.2b <i>NUMBER</i>	(3) Probit Model 2.2c <i>DNUMBER</i>	(4) Probit Model 2.2d <i>DNUMBER</i>	(5) OLS Model 2.2a1 <i>NUMBER</i>	(6) OLS Model 2.2b1 <i>NUMBER</i>	(7) OLS Model 2.2c1 <i>DNUMBER</i>	(8) OLS Model 2.2d1 <i>DNUMBER</i>
<i>Panel A</i>								
<i>Independent variables</i>								
<i>Political connections &amp; corruptions</i>								
CONNECT FIRMBANK	-0.1819*** (0.00)	-0.1819** (0.01)	-0.0605** (0.01)	-0.0397 (0.19)	-0.1451 (0.22)	-0.1605 (0.20)	-0.0504* (0.06)	-0.0280 (0.39)
CORRUPT PROVINCE	0.4453*** (0.00)	0.4454*** (0.00)	0.0734 (0.10)	0.1220** (0.02)	0.4670** (0.02)	0.4222** (0.02)	0.1039 (0.10)	0.1688** (0.02)
<i>Interaction</i>								
CONNECT FIRMBANK × CORRUPT PROVINCE		-0.0001 (1.00)		-0.0988*** (0.01)		0.0749 (0.61)		-0.1088** (0.03)
<i>Control variables</i>								
<i>Firm characteristics</i>								
FSIZE	0.2658*** (0.00)	0.2658*** (0.00)	0.0554** (0.02)	0.0566** (0.01)	0.2355** (0.02)	0.2336** (0.02)	0.0479 (0.12)	0.0506 (0.10)
FROA	-4.8197*** (0.00)	-4.8197*** (0.00)	-1.3804*** (0.00)	-1.3774*** (0.00)	-4.4507** (0.01)	-4.4610** (0.01)	-1.2848** (0.02)	-1.2698** (0.02)
FRND	-0.7553* (0.09)	-0.7553* (0.09)	-0.0349 (0.77)	-0.0473 (0.67)	-0.4911 (0.36)	-0.4780 (0.38)	-0.0046 (0.97)	-0.0237 (0.85)
Z-SCORE	0.2141* (0.07)	0.2141* (0.07)	0.0215 (0.63)	0.0204 (0.65)	0.2272 (0.21)	0.2280 (0.21)	0.0163 (0.78)	0.0152 (0.80)
QUICK RATIO	0.0063 (0.62)	0.0063 (0.62)	0.0086** (0.04)	0.0087** (0.04)	0.0124 (0.38)	0.0123 (0.39)	0.0116* (0.10)	0.0118* (0.09)
DEBT RATIO	0.7648*** (0.00)	0.7648*** (0.00)	0.1710*** (0.01)	0.1674** (0.01)	0.9221** (0.02)	0.9239** (0.02)	0.1908* (0.06)	0.1882* (0.06)
BANK DEBT RATIO	-0.0270 (0.97)	-0.0270 (0.97)	-0.0043 (0.97)	-0.0121 (0.92)	0.0189 (0.98)	0.0291 (0.97)	0.0280 (0.82)	0.0132 (0.92)
SAVINGS	-0.3044 (0.63)	-0.3044 (0.63)	0.0615 (0.88)	0.0278 (0.94)	-0.6267 (0.36)	-0.6041 (0.37)	0.0158 (0.97)	-0.0170 (0.97)
<i>(to be continued)</i>								

Table 2. 6 (continued) The effects of the MBR with a connected bank of connected firms on the number of banks (Equation 2.2)

(continued)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Poisson Model 2.2a NUMBER	Poisson Model 2.2b NUMBER	Probit Model 2.2c DNUMBER	Probit Model 2.2d DNUMBER	OLS Model 2.2a1 NUMBER	OLS Model 2.2b1 NUMBER	OLS Model 2.2c1 DNUMBER	OLS Model 2.2d1 DNUMBER
<i>Firm characteristics</i>								
SALE GROWTH	1.2258*** (0.00)	1.2258*** (0.00)	0.1658 (0.19)	0.1758 (0.18)	1.5346** (0.03)	1.5249** (0.03)	0.1781 (0.39)	0.1921 (0.41)
MARKET	0.2378** (0.03)	0.2378** (0.03)	0.0567* (0.07)	0.0522* (0.10)	0.2678 (0.10)	0.2718* (0.09)	0.0783 (0.16)	0.0725 (0.18)
<i>Bank pool characteristics</i>								
BSIZE	-0.1151* (0.07)	-0.1151* (0.07)	-0.0247 (0.28)	-0.0264 (0.24)	-0.1555* (0.09)	-0.1550* (0.09)	-0.0326 (0.34)	-0.0334 (0.32)
BLISTED	-0.2874*** (0.00)	-0.2874*** (0.00)	-0.0648*** (0.00)	-0.0636*** (0.00)	-0.2705* (0.09)	-0.2707* (0.09)	-0.0539 (0.13)	-0.0536 (0.14)
LENGTH	-0.2174* (0.09)	-0.2174* (0.09)	-0.0479* (0.08)	-0.0490* (0.05)	-0.2320 (0.14)	-0.2305 (0.14)	-0.0578 (0.19)	-0.0600 (0.15)
ATLEAST1SOB	-1.1247*** (0.00)	-1.1247*** (0.00)	-0.2811*** (0.00)	-0.2815*** (0.00)	-1.1495*** (0.00)	-1.1488*** (0.00)	-0.3150*** (0.00)	-0.3160*** (0.00)
ATLEAST1POB	-0.1383 (0.42)	-0.1383 (0.42)	-0.0383 (0.37)	-0.0379 (0.36)	-0.2189 (0.30)	-0.2191 (0.30)	-0.0592 (0.28)	-0.0589 (0.28)
HERFINDAHL INDEX	5.6546*** (0.00)	5.6546*** (0.00)	7.1195*** (0.00)	7.2645*** (0.00)	4.0296** (0.05)	4.0196** (0.05)	0.9223* (0.07)	0.9368* (0.06)
<i>Province characteristics</i>								
PARTY DENSITY	-0.1374*** (0.00)	-0.1374*** (0.00)	-0.0441*** (0.00)	-0.0435*** (0.00)	-0.1203** (0.03)	-0.1207** (0.03)	-0.0367** (0.03)	-0.0363** (0.03)
POP DENSITY	-0.1160 (0.18)	-0.1160 (0.17)	0.0368** (0.02)	0.0333* (0.07)	-0.0787 (0.47)	-0.0765 (0.47)	0.0469*** (0.01)	0.0437*** (0.01)
(Industry/Province/Region) FE	YES	YES	YES	YES	YES	YES	YES	YES
Intercept	0.4972 (0.35)	0.4972 (0.35)	-17.6052*** (0.00)	-17.6980*** (0.00)	2.8827* (0.09)	2.8591* (0.09)	0.0751 (0.84)	0.1094 (0.76)
Number of Observations	389	389	389	389	389	389	389	389
Pseudo R-squared			0.269	0.271				
Adjusted R-Squared					0.256	0.254	0.201	0.201
<i>Panel B: ineff - CONNECT FIRMBANK × CORRUPT PROVINCE</i>								
_probit_se				-2.247** (0.012)				
_probit p-value								
<i>Panel C: test CORRUPT PROVINCE and CONNECT FIRMBANK × CORRUPT PROVINCE</i>								
				0.0232*** (0.010)				0.0600** (0.02)

Table 2. 7 Effects of having MBRs with connected banks of connected firms on diversity of bank ownership types (Equation 2.3)

The first dependent variable, *OWNERSHIPS*, is the number of bank ownership types in the bank pool (Columns 1, 2, 5, 6). The second dependent variable, *DOWNERSHIPS*, is a dummy that is equal to 1 (0) when firms' number of bank ownership types is above two for correspondent year. Panel A: Marginal effects estimates are from a Poisson regression (Columns 1, 2) and probit regression (Columns 3, 4). Coefficients estimates are from an OLS (Columns 5, 6, 7, 8). Each regression also includes the fixed effects of industry, province, and region, not reported here. Panel B reports results from the inteff test of *CONNECT FIRMBANK* × *CORRUPT PROVINCE*. Panel C reports the net marginal effects of *CORRUPT PROVINCE* and *CONNECT FIRMBANK* × *CORRUPT PROVINCE*. Table 2.1 presents the definition and describes statistics of previous variables; \*, \*\*, \*\*\* significance at the 10%, 5% and 1% level. Robust *p*-values, adjusted for clustering by region, are reported in parentheses.

VARIABLES	(1) Poisson Model 2.3a <i>OWNERSHIP</i>	(2) Poisson Model 2.3b <i>OWNERSHIP</i>	(3) Probit Model 2.3c <i>DOWNERSHIP</i>	(4) Probit Model 2.3d <i>DOWNERSHIP</i>	(5) OLS Model 2.3a1 <i>OWNERSHIP</i>	(6) OLS Model 2.3b1 <i>OWNERSHIP</i>	(7) OLS Model 2.3c1 <i>DOWNERSHIP</i>	(8) OLS Model 2.3d1 <i>DOWNERSHIP</i>
<i>Panel A</i>								
<i>Independent variables</i>								
<i>Political connections &amp; corruptions</i>								
CONNECT FIRMBANK	-0.0988*** (0.00)	-0.0925** (0.02)	-0.0449** (0.04)	-0.0210 (0.38)	-0.0986** (0.01)	-0.0916* (0.07)	-0.0452* (0.09)	-0.0268 (0.35)
CORRUPT PROVINCE	0.2035*** (0.01)	0.2208** (0.02)	0.1717*** (0.00)	0.2344*** (0.00)	0.1898* (0.05)	0.2101* (0.08)	0.1704* (0.05)	0.2235** (0.03)
<i>Interaction</i>								
CONNECT FIRMBANK × CORRUPT PROVINCE		-0.0301 (0.64)		-0.1099** (0.01)		-0.0341 (0.66)		-0.0890 (0.10)
<i>Control variables</i>								
<i>Firm characteristics</i>								
FSIZE	0.0789*** (0.00)	0.0797*** (0.00)	0.0515** (0.01)	0.0538** (0.01)	0.0751** (0.02)	0.0760** (0.02)	0.0539* (0.06)	0.0561* (0.06)
FROA	-1.5016** (0.02)	-1.4960** (0.02)	-1.2153*** (0.00)	-1.2091*** (0.00)	-1.4640* (0.07)	-1.4593* (0.07)	-1.2603** (0.04)	-1.2480** (0.04)
FRND	-0.2365** (0.02)	-0.2417** (0.01)	-0.1304*** (0.01)	-0.1498*** (0.00)	-0.2241* (0.08)	-0.2301* (0.05)	-0.1030 (0.27)	-0.1186 (0.17)
Z-SCORE	0.0980 (0.14)	0.0977 (0.15)	0.0528 (0.24)	0.0524 (0.24)	0.0966 (0.23)	0.0963 (0.24)	0.0598 (0.34)	0.0589 (0.36)
QUICK RATIO	0.0013 (0.80)	0.0014 (0.80)	0.0028 (0.27)	0.0031 (0.24)	0.0010 (0.86)	0.0010 (0.86)	0.0044 (0.27)	0.0046 (0.26)
DEBT RATIO	0.2834*** (0.00)	0.2828*** (0.00)	0.1859*** (0.00)	0.1832*** (0.00)	0.2719*** (0.00)	0.2711*** (0.00)	0.2159** (0.01)	0.2138*** (0.01)
BANK DEBT RATIO	0.2768 (0.16)	0.2726 (0.17)	0.1261 (0.52)	0.1221 (0.53)	0.3015 (0.23)	0.2968 (0.23)	0.1406 (0.54)	0.1285 (0.58)
SAVINGS	-0.4386** (0.04)	-0.4480* (0.05)	-0.2161 (0.22)	-0.2366 (0.22)	-0.4042* (0.05)	-0.4145* (0.07)	-0.2577* (0.10)	-0.2845* (0.08)
<i>(to be continued)</i>								

Table 2. 7 (continued) The effects of the MBR with a connected bank of connected firms on the diversification of bank ownership types (Equation 2.3)

(continued)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Poisson Model 2.3a <i>OWNERSHIP</i>	Poisson Model 2.3b <i>OWNERSHIP</i>	Probit Model 2.3c <i>DOWNERSHIP</i>	Probit Model 2.3d <i>DOWNERSHIP</i>	OLS Model 2.3a1 <i>OWNERSHIP</i>	OLS Model 2.3b1 <i>OWNERSHIP</i>	OLS Model 2.3c1 <i>DOWNERSHIP</i>	OLS Model 2.3d1 <i>DOWNERSHIP</i>
<i>Panel A</i>								
<i>Firm characteristics</i>								
SALE GROWTH	0.2984**	0.3019**	0.2699*	0.2843*	0.3300**	0.3344**	0.2472	0.2586
(to be continued)	(0.01)	(0.01)	(0.07)	(0.06)	(0.04)	(0.04)	0.20	(0.20)
MARKET	0.0587	0.0573	0.0697***	0.0634***	0.0673	0.0654	0.0690	0.0642
	(0.15)	(0.14)	(0.01)	(0.01)	(0.16)	(0.15)	(0.12)	(0.13)
<i>Bank pool characteristics</i>								
BSIZE	-0.0489*	-0.0491**	-0.0198	-0.0204	-0.0540	-0.0542	-0.0231	-0.0238
	(0.05)	(0.04)	(0.32)	(0.31)	(0.15)	(0.15)	(0.30)	(0.29)
BLISTED	-0.1484***	-0.1482***	-0.0661***	-0.0672***	-0.1405**	-0.1404**	-0.0638**	-0.0635**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.03)	(0.05)	(0.05)
LENGTH	-0.0618	-0.0624	-0.0440	-0.0482	-0.0567	-0.0574	-0.0482	-0.0500
	(0.21)	(0.21)	(0.25)	(0.19)	(0.32)	(0.31)	(0.23)	(0.21)
ATLEAST1SOB	0.1057**	0.1054**	0.1247***	0.1240***	0.1114**	0.1111**	0.1257**	0.1250**
	(0.01)	(0.01)	(0.00)	(0.00)	(0.04)	(0.05)	(0.01)	(0.01)
ATLEAST1POB	0.5483***	0.5483***	0.4689***	0.4698***	0.5576***	0.5577***	0.5696***	0.5699***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
HERFINDAHL INDEX	0.6187	0.6263	7.8758***	7.9797***	0.2936	0.2982	1.0102*	1.0221*
	(0.33)	(0.33)	(0.00)	(0.00)	(0.71)	(0.71)	(0.07)	(0.07)
<i>Province characteristics</i>								
PARTY DENSITY	-0.0325**	-0.0324**	-0.0287***	-0.0284***	-0.0313*	-0.0312*	-0.0284*	-0.0280*
	(0.02)	(0.02)	(0.00)	(0.00)	(0.06)	(0.07)	(0.05)	(0.06)
POP DENSITY	-0.0064	-0.0071	-0.0317	-0.0395	-0.0070	-0.0080	-0.0104	-0.0130
	(0.85)	(0.83)	(0.51)	(0.43)	(0.84)	(0.81)	(0.79)	(0.75)
(Industry/Province/Region) FE	YES	YES	YES	YES	YES	YES	YES	YES
Intercept	0.7312***	0.7339***	-17.7429***	-17.7714***	2.2870***	2.2977***	-0.2970	-0.2690
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.35)	(0.40)
Number of Observations	389	389	389	389	389	389	389	389
Pseudo R-squared			0.394	0.396				
Adjusted R-Squared					0.320	0.318	0.378	0.377
<i>Panel B: inieff – CONNECT FIRMBANK × CORRUPT PROVINCE</i>								
_probit_se				-1.707**				
_probit p-value				(0.044)				
<i>Panel C: test CORRUPTPROVINCE and CONNECT FIRMBANK × CORRUPTPROVINCE</i>								
				0.1245*				
				(0.010)				

## **Chapter 3: Bank Integrity, Managerial Ethics and Firms' Bank-Pool Structure: A Theoretical Approach and Empirical Evidence from Vietnam**

### **Abstract**

This study analyzes the structure of firms' bank pools in emerging economies characterized by corruption. In the proposed theoretical model, firm managers maximize an expected utility function that depends on both firm value and personal consumption. According to their managerial ethics, managers choose among three bank pool structures to combine some number of banks and the choice of a main bank that is more or less corrupt. The test of this model relies on a rich data set from Vietnamese firms. The results confirm that firms and banks match, in terms of their levels of integrity. Moreover, firms tend to increase the number of banks in the bank pool when they cannot achieve a relationship with a desirable main bank.

*JEL classification:* G30, G32

*Keywords:* Firm bank pool structure, Managerial ethics, Corruption, Banks

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### 3.1. Introduction

In their 2006 compilation, Stijn Claessens and Luc Laeven assembled 20 notable contributions to the international corporate finance field, divided into two volumes. The second contains a section devoted specifically to the political economy of finance, and two selected articles in this section reflect on the value of political connections in developing countries. Raymond Fisman's article, first published in the *American Economic Review*, reveals that Indonesian firms that built political connections during President Suharto's term suffered significant drops in value, compared with other companies, when the rumors began circulating about the poor health of the powerful president (Fisman, 2001). Thus, the firms appear to have derived value from their political connections. A second article, first published by the *Journal of Financial Economics* (Johnson and Mitton, 2003), also provides evidence that the regulation of capital control during the Asian crisis of the late 1990s allowed Malaysian firms with existing political connections to Prime Minister Mahathir to benefit. As these two crucial references suggest, firms' financial decisions in emerging markets are determined partly by their political connections, so effective financial sector reform must account for the political economy of finance too.

We seek to do so in reference to a central research question: How do firms structure their pool of banks when the managers of the firms exhibit varying degrees of ethical commitment and interact with more or less corrupt banks? This research question is pertinent for several reasons. First, at a practical level, many emerging countries are characterized by substantial corruption, along with their notable economic growth. Such growth often appears driven largely by investment activities financed by bank lending, because these financial markets remain mostly undeveloped (Merton, 1992; Allen, 1993; Allen and Gale, 1995; Thakor, 1996). Firms must optimize their uses of banking credit, and accurate theoretical frameworks can help them adapt their bank pool for this purpose. Second, on theoretical and empirical levels, we know of no prior studies that offer an analysis of the determinants of the bank pool according to the ethical commitments exhibited by firms or bank corruption levels. Third, at the political level, governments of emerging countries need to consider the structure of their financial systems from a twofold perspective, targeting both improvements to the banking system and better credit conditions that will enable firms to finance value-creating investment projects in the most feasible way.

The question of the structure of a firm's bank pool, as described by financial theory, usually consists of three sub-issues: the choice of the main bank, the choice of a number of banks within the pool, and the density of the relationship between the firm and its banks. First, most studies of the main bank choice focus on the nature of the information produced, with a goal of optimizing firms' access to credit. Stein (2002) and Berger and Udell (2002) argue that small, opaque firms can even be characterized by the qualitative information they produce. They might benefit from the choice of a decentralized main bank, so that they can develop close relationships with the bank, which in turn can integrate the soft information into its decision-making process. These conclusions have been confirmed in multiple empirical studies (e.g., Berger et al., 2005).

Second, the choice of the number of banks has been studied according to two main views, related to either the advantages of diversifying the bank pool or the difficulties of coordinating creditors according to the firms' financial distress conditions. From the former perspective, hold-up theory (Sharpe, 1990; Rajan, 1992) suggests that a high-quality firm may seek to multiply the number of its banking partners, to escape a bank's monopoly power over its confidential information. In their empirical study, Ongena and Smith (2000) confirm that increasing the number of banking relationships reduces this hold-up problem. Detragiache et al. (2000) cite the diversification of the bank pool as another advantage. If the firm's main bank is illiquid, which may result from exogenous causes (e.g., general liquidity crisis, such as in 2008), it is rational for a company to diversify its bank pool. The probability that all banks are illiquid at the same time decreases with a greater number of banks, though this benefit comes only at the expense of an increase in transaction costs. From the latter perspective, a firm might make the choice of the number of banks on the basis of its attempt to resolve a possible financial difficulty. Bolton and Scharfstein (1996) insist that more banks in a bank pool multiplies coordination costs, so companies that prefer a debt restructuring option should concentrate their debt on a limited number of banks. However, the number of banks also depends on their supply. Some banks may be less likely to offer credit to more fragile firms (Elsas and Krahen, 1998; Degryse and Ongena, 2001; Farinha and Santos, 2002; Degryse et al., 2009).

Third, with respect to the density of banking relationships, Boot (2000) offers two opposing models. A relational financing model is characterized by repeated interactions between banks and their customers, and the bank captures privileged information about the

company. Conversely, transactional financing implies a more distant relationship and less intensive exchanges of information (Berger and Udell, 2002).

Typically, the general question of the optimal structure of a firm's bank pool has been addressed through efforts to maximize credit availability (Petersen and Rajan, 1994; Cole, 1998) or minimize collateral requirements (Berger and Udell, 1995; Degryse and Cayseele, 2000; Elsas and Krahn, 1998). We take a different perspective to derive a framework of the structure of the firm's bank pool. Even as we expand on prior studies regarding the three elements that constitute the structure of the bank pool (choice of main bank, the number of banks in the bank pool, and type of relationship), we also seek to move beyond a limited objective of maximizing credit availability or lowering the interest rate. Instead, we address the ethical commitment of the firm's manager and the degree of corruption–honesty of the bank as primary determinants of the bank pool structure for the firm. In this respect, our model may help clarify bank financing in emerging countries (Beck et al., 2014). It follows on arguments by Bews and Rossouw (2002) and Boatright (2008) that ethical commitments influence firms' financing conditions; Kim et al. (2014) confirm this point for the effect of ethical commitment on interest rates.

In our theoretical model, an individual firm manager can be characterized by her or his degree of ethical commitment (high or low), which translates into two managerial outcomes: (1) high personal ethics leads the manager to assign more weight to maximizing the value of the company in its utility function but (2) low personal ethics encourages the manager to entertain less value, for personal purposes. The manager thus arbitrates between maximizing the firm's value and private consumption, according to her or his ethical commitment; both of these options constitute utility functions in Jensen and Meckling's (1976) view. In addition, the firm's main bank controls its financial activities (Diamond, 1984). The firm can opt for three types of banking relationships with (1) an honest main bank, which helps maximize the firm's value; (2) a corrupt main bank, which contributes to misappropriating the firm's value and shares the diverted value with the firm manager; or (3) a diverse bank pool, such that the firm forgoes the choice of a main bank.

We model this choice as involving three elementary structures. The first is a diversified pool without a main bank, mixing corrupt banks and honest banks, as well as distant and transactional relationship financing. The second structure is a concentrated pool, reduced to a

corrupt main bank, with relational financing (Boot, 2000). Finally, a concentrated pool may reduce to an honest main bank, also with relationship financing. Which bank pool structure should a firm choose? To answer this research question, we apply an equilibrium model in which firms' choice depends on their managers' ethical commitment. Our results are as follows: i) ethically committed managers choose relationship financing provided by a bank pool that is highly concentrated around an honest main bank; ii) managers with low managerial ethics instead choose relationship financing from a pool that is concentrated around a corrupt main bank; iii) finally, firms whose managers have a median level of ethical commitment will prefer transactional financing with a diversified pool of banks.

We test these theoretical model predictions with a sample of Vietnamese firms. Vietnam provides a good experimental framework for testing our model conclusions. To this end, we collect and cross-check several data sources and derive a novel database, comprised of 389 medium-sized firms, in operation as of December 2013, listed on the Hanoi or Ho Chi Minh City stock exchanges. We obtain their financial data and manually collect information about which audit firm these firms have chosen. This information enables us to construct a variable that approximates the ethical commitment of each firm. We assume that firms opting for one of the four most famous audit firms have strong ethical commitments; a corrupt firm working with one of these reputable audit firms risks a greater likelihood of revealing the degree of its corruption to investors and would be immediately penalized, through the market price of its stock. In addition, we draw information on the composition of each firm's bank pool from an administered and handpicked survey.

We cross-check the information by comparing an independent survey of firms that gathered information on each firm's bank pool with information available from the Bankscope database provided by Bureau van Dijk. The degree of bank corruption is a central model parameter, such that we need to construct a variable that captures the degree of corruption perceived by company managers. For this purpose, we identify the most significant cases of fraud over 2010–2012, namely, filed cases in which bank CEOs have been found guilty and sentenced to death. The impact of these widely reported condemnations was powerful. The banks thus identified accordingly are classified as corrupt banks.

In testing the implications of this theoretical model, we reveal the dependence of the bank pool structure on the degree of ethical commitment of the firm and its main bank. More precisely:

- Managers of firms with a high (low) ethical commitment, when they perceive their main bank as corrupt (honest), choose to diversify their bank pool;
- Managers of firms with a weak (strong) ethical commitment, when they perceive their main bank as corrupt (honest), choose to concentrate their bank pool;

These empirical results confirm some implications of the theoretical model. In emerging countries characterized by varying ethical commitments by managers of firms and by banks, the composition of the bank pool depends on these respective commitments, which thereby determine the value of the firm.

We organize the rest of the article as follows: Section 3.2 presents the theoretical model. We detail the empirical study and present the data and variables in Section 3.3, before outlining the empirical strategy and the tested models in Section 3.4. After we present the results in Section 3.5, we conclude with some policy implications.

## **3.2. Model**

We model the firm's bank pool structure decision and the role of corruption in this choice. After describing agents, actions, and preferences, we define three typical structures for the firm's bank pool, reflecting different combinations of the number of banks and whether the main bank is corrupt. We derive optimal choices, and finally, we present the model implications.

### **3.2.1. Agents, actions, and preferences**

We consider two types of agents: managers–firms and banks. All are rational and risk-neutral. The risk-free rate is normalized to zero.

#### *3.2.1.1. Managers–firms.*

Firms have the same initial value  $V_0$ . Each manager (we regard the firm and its manager as the same entity) undertakes an identical, safe, one-period investment project. Managers have no initial wealth; they can only use bank loans to finance their project. The firm value after reimbursing its debt is  $V_1$  ( $V_1 > V_0$ ). All banks know that the investment project is safe, so they charge the same interest rate, normalized to 0.

Managers differ in the degree of their managerial ethics. Those with a high degree of managerial ethics grant little importance to their personal benefits and are dedicated to the maximization of firm value. Managers with poor managerial ethics instead care more about personal consumption, which decreases firm value, at the expense of shareholders. The preference for private benefits or firm value maximization, as described in the pioneering work by Jensen and Meckling (1976), can be modeled by the manager's utility function  $U$ :

$$U = (\Delta V - C)^y(1 + F) \quad (U1)$$

where  $\Delta V$  is the firm value added by the investment ( $\Delta V = V_1 - V_0$ );  $C$  corresponds to the part of the gross return of the project that is diverted by the manager and the banks;  $F$  indicates the manager's private benefits ( $F < C$ ); and  $y$  captures the manager's preference for value maximization, which signals the level of managerial ethics of that manager.

#### 3.2.1.2. Banks.

We classify banks into two types: honest banks, which monitor firms and help them maximize the proceeds of their investment, and corrupt banks, which pursue other objectives, like consuming part of the cash flow generated by the financed project to the debtor. The manager type  $y$  and the choice to divert part of the gross return of the investment project are information observable by all banks in the firm's bank pool.

#### 3.2.1.3. Financing.

Banks are not exposed to firm default risk (all projects are riskless); thus, they have no reason for not lending to the firm.

#### 3.2.1.4. Elementary structures of the firm bank pool.

Managers can choose among three elementary structures for their bank pool:

- Structure *D*: The firm bank pool is highly diversified, without a main bank, and it contains a mix of corrupt and honest banks. Because the firm bank pool is diversified, any individual bank cannot influence the strategy of the firm CEO (i.e., maximizing firm value or diverting part of the cash-flow for personal purposes).
- Structure *ND/C*: The firm bank pool is not diversified, with a corrupt main bank.
- Structure *ND/H*: The firm bank pool is not diversified, with an honest main bank.

### 3.2.2. Implications of elementary bank pool structure choices

#### 3.2.2.1. Choice of the *D* structure.

With this structure, the firm has no specific main bank, and lending is rather transactional. Banks potentially are subject to a free-riding problem, so their monitoring is inefficient, and a manager can divert some part  $F_d$  of the gross return of the project, but banks do not participate in this diversion. Every dollar diverted from the investment gross return goes in the pocket of the manager and contributes to increase personal consumption. From Equation (1), the manager's utility with this bank pool structure is:

$$U = (V_1 - V_0 - F_d)^y(1 + F_d). \quad (U2)$$

#### 3.2.2.2. Choice of the *ND/C* structure.

Because the main bank is corrupt, it helps the firm divert notable amounts, which then get shared between the manager and the bank. We use  $B$  to denote the amount captured by the corrupt main bank and  $F_c$  to refer to that captured by the manager. Thus, the manager's utility with a *ND/C* bank pool structure is:

$$U = (V_1 - V_0 - B - F_c)^y(1 + F_c) \quad (U3)$$

Because the firm and its corrupt main bank agree to divert part of the investment proceeds, the part gained by the firm likely is greater than that obtained under the *D* structure:

$$F_c > F_d \quad (U4)$$

#### 3.2.2.3. Choice of the *ND/H* structure.

The relationship between the firm and its main bank is still strong in this case, because the bank pool is undiversified. But now the main bank is honest and denies any diversion, while also carefully monitoring the firm. The manager is not able to divert any part of the loan, and  $F = 0$ . The manager's utility is then:

$$U = (V_1 - V_0)^y \quad (U5)$$

### 3.2.3. Optimal choice of firm bank pool

What kind of bank pool structure will a manager  $y$  choose? Selecting structure  $D$  is a double-edged sword: On the one hand, the manager can capture  $F_d$  of the investment gross return; on the other hand, firm value is not maximized. Selecting a  $ND/C$  structure will probably be the best choice for a manager with a low level of managerial ethics, considering the high level of diversion and the maximal contribution to the manager's utility. Finally, the  $ND/H$  structure maximizes the value of the project but prohibits any private rent ( $F=0$ ). It probably will attract more ethical managers. With the following lemma, we describe how the trade-off among the three kinds of bank pool structures depends on  $y$ , that is, on the level of ethics exhibited by the manager.

**Lemma:** There are two thresholds  $y_1$  and  $y_2$  ( $y_1 > y_2$ ), such that

- i. Managers characterized by a high level ( $y > y_1$ ) of managerial ethics choose the  $ND/H$  structure;
- ii. Managers characterized by an intermediate level of managerial ethics ( $y$  belongs to  $]y_2, y_1[$ ) choose the  $D$  structure;
- iii. Managers characterized by a low level ( $y < y_2$ ) of managerial ethics choose the  $ND/C$  structure.

$$\text{Here, } y_1 = \frac{\ln(1+F_d)}{\ln\left(\frac{V_1-V_0}{V_1-V_0-F_d}\right)}, \text{ and } y_2 = \frac{\ln\left(\frac{1+F_c}{1+F_d}\right)}{\ln\left(\frac{V_1-V_0-F_d}{V_1-V_0-B-F_c}\right)}.$$

Proof: See the Appendix.

The interpretation of this proposition is relatively intuitive. Managers with a strong preference for value maximization (i.e., high level of managerial ethics,  $y > y_1$ ) are *ceteris paribus* more sensitive to firm value maximization than to private rents. Therefore, they set up a small bank pool, concentrated around an honest main bank. A highly concentrated bank pool also is the choice of managers with a low level of managerial ethics ( $y_2 > y$ ), but they prefer a corrupt main bank that can help them divert the investment proceeds, reflecting their greater sensitivity to maximizing their private rent. Finally, managers with a moderate level of managerial ethics ( $y \in ]y_2, y_1[$ ) prefer a diversified bank pool without any main bank. Their utility is balanced between firm value and private rents that they can divert. Therefore, to negotiate with a main bank would always be unfavorable: if it is a corrupt bank, firm value would be low, and if not, the firm manager would be unable to divert part of the gross return.

### 3.2.4. Implications

From the previous analysis, we derive some implications, which we summarize in a proposition.

#### **Proposition**

- *Implication 1:* The higher the manager's incentive to maximize firm value, the higher the probability to choose an honest bank as the main bank.
- *Implication 2:* The weaker the manager's incentive to maximize firm value, the higher the probability to choose a corrupt bank as the main bank.
- *Implication 3:* Firms with high managerial ethics locked in with a corrupt main bank must set up a diversified bank pool.
- *Implication 4:* Firms with low managerial ethics locked in with an honest main bank must set up a diversified bank pool.

Proof: Implications 1 and 2 derive directly from the proposition. Regarding implication 3, imagine a firm with high business ethics (high  $y$ ) operating in a very corrupt environment. Its probability of being mismatched with a corrupt main bank is great, but a highly diversified bank pool helps it avoid the negative consequences of such a mismatch. Next, imagine a firm with low business ethics standards (low  $y$ ) operating in a non-corrupt environment. This firm

exhibits a strong preference for private rents, which honest banks would prohibit. Therefore, to limit the effects of honest bank monitoring, managers choose a highly diversified bank pool (implication 4).

### **3.3. Context of the Study, Data, and Variables**

#### **3.3.1. Vietnamese banking system and bank financing for SMEs**

Banking sector liberalization and deregulation in Vietnam started in the early 1990s as a part of *Doi Moi* policy.<sup>54</sup> This financial sector reform provided for the establishment of private banks, the entry of foreign banks, and the privatization of some government banks. However, interest rates decisions still are the responsibility of the State Bank of Vietnam. Between 1993 and 2013, four government banks privatized successfully; the State Bank of Vietnam still holds shares in them. These banks continue to finance strategic governmental and social projects (Berger et al., 2009) and maintain relationships with large and state enterprises that began prior to privatization. The credit market is highly concentrated; government banks covered 51.2% of the official market at the end of 2013 (SBV, 2013).

Private banks began being granted banking licenses during the early 1990s, and 47 private banks began operations between 1993 and 2013. Their markets and networks span the whole country, though their focus is on small businesses in the private sector. Some incumbent private banks also exist, founded with capital contributed from the government banks, state entities, and central and local governments.

Most foreign banks began operating in the 1990s with a license to open branches; they may take deposits and provide credit according to local banking laws and SBV regulations.<sup>55</sup> However, these foreign operations and branches primarily serve companies from the banks' own countries of origin, and their lending activities take place mostly in the major cities, due to the constraints on their branch expansion. For joint venture banks, restrictions limit the share of the foreign partner to 49%. Foreign-owned banks provide credit mainly to foreign, medium, and larger firms rather than to small enterprises.

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<sup>54</sup> *Doi Moi* translates as "renovation" in English and is the name given to the economic reforms initiated in Vietnam in 1986 with the goal of creating a "socialist-oriented market economy."

<sup>55</sup> Between 1993 and 2013, 5 wholly owned foreign banks, 4 joint ventures, 51 representative offices of foreign banks, and 51 branches of foreign banks were established.

Corruption is the most frequently cited problem when doing business in Vietnam (Bertelsmann Foundation, 2010, 2014; The Global Corruption Barometer, 2013<sup>56</sup>; Thanh Nien News, 2014). Most executive bankers are business partners, friends, or executants of top-ranked politicians. The four massive corruption cases in 1990s illustrate politicians' involvement in credit allocations by banks (Gainsborough, 2003).

Vietnamese small and medium enterprises (SMEs) play an active and fundamental role in economic growth. As of 2012, approximately 97% of firms were SMEs, accounting for 46.8% of the country's employment (GSO, 2013). Their access to external finance is generally difficult, especially bank financing (Tenev et al., 2003, Le and Wang, 2005). Lending to SMEs thus tends to depend on interorganizational and interpersonal banking relationships (Le, 2013), owner characteristics, and the financial environment (Nguyen and Otake, 2014). Moreover, government-connected firms have preferential access to finance (Malesky and Taussig, 2009; Nguyen and van Dijk, 2012).

### **3.3.2. Data Sources**

As concerns firm's financial information, and bank characteristics, we use the same data as in the previous chapter. We add the following two sources to complete our database.

#### *3.3.2.1. Firms' managerial ethics.*

We manually collected the identities of the accounting firm chosen by each firm from its audited reports in 2013. A firm's selection of a Big Four auditor signals its high managerial ethics.<sup>57</sup> Accounting literature reveals that Big Four employees are more ethical than employees working for smaller accounting companies (Loeb, 1971; Eynon et al., 1997). Considering the proximity of firms their accounting service providers, we posit that congruence in their ethical values creates a mutually trustworthy atmosphere, which facilitates business operations and business ethics for the firms.

#### *3.3.2.2. Corruption/integrity at the bank level.*

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<sup>56</sup> [www.transparency.org/gcb2013](http://www.transparency.org/gcb2013)

<sup>57</sup> Existing evidence shows that people who share similar moral values enjoy higher levels of mutual trust, which reduces the need to formalize social interactions and increases communication flows, commitment, cooperation, and willingness to support the partner (Brown and Mitchell, 2010; Fulmer and Gelfand, 2012).

To classify a bank as corrupt, we use information gathered from corruption cases filed with the courts between 2010 and 2012. We obtained this information by retrieving data from provincial economic courts,<sup>58</sup> then verified the cases with media reports in local and central newspapers, to identify the bank fraud cases, fraud value, type of corruption, names of the bank employees involved, and sentences given to the defendants. A corrupt bank is defined as one whose CEO was sentenced to a death penalty, following evidence of his or her fraud and the court's decision.

To classify a bank as honest, we collect information about the international rewards that banks receive over the period we study. Contrary to national rewards, we believe that these international versions are unlikely to be biased by a potential link between the government and the banks. We use the number of international awards received by a bank during 2010–2012 as our measure of its integrity.

### **3.3.3. Variables and descriptive statistics**

Tables 3.1 and 3.2 contain the definitions and summary statistics for all the variables. For analysis purposes, we take the log values of some variables.

#### *3.3.3.1. Dependent variables.*

We measure the structure of the firm bank pool by introducing two dependent variables: *NUMBER* records the actual number of banks, and the dummy variable *DNUMBER* equals 1 if the firm has more than two banks. About 31% of firms have a diversified bank pool structure, and the average firm has 2.35 banks.

#### *3.3.3.2. Independent variables.*

Our first independent variable, *ETHICAL FIRM*, is a dummy that indicates a firm with high managerial ethics, assessed according to whether its auditor is one of the Big Four auditors. About 11% firms have high managerial ethics.

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<sup>58</sup> The loss value threshold is US\$10 million, and the cases were discovered and reported during 2010–2012. The data came from <http://eng.pci vietnam.org/pci-data-c16.html> (Access date: January 15, 2017).

The variable *CORRUPT BANK* represents the corrupt identity of the firm's main bank. This dummy variable equals 1 if the firm's main bank was one of the two banks for which the CEO was prosecuted and sentenced to death by the court in 2012, and 0 otherwise. About 16% of firms maintain a main bank relationship with these corrupt banks. We observe the corrupt nature of the bank in 2012, then consider the firm bank pool in 2013, such that we avoid endogeneity concerns (see Section 3.4.1 for further discussion). In turn, our results can be interpreted as causal relationships.

The variable *HONEST BANK* is another dummy that equals 1 if the bank received more than 17 international rewards during the period of observation (20% of firms co-operate with an honest bank).

Finally, we generate the independent variable *PAIR* to capture the match/mismatch between the level of integrity of a specific firm and its main bank. This dummy variable equals 1 if either an ethical firm cooperates with an honest bank or an unethical firm cooperates with a corrupt main bank. It equals 0 otherwise. Approximately 15% of firms enter into matching firm–bank relationships.

#### 3.3.3.3. *Control variables.*

The first set of control variables relates to firm characteristics. Firm size, measured as the natural log of the firm assets (*F SIZE*), ranges from US\$-0.589 to 5.072 million, with an average of US\$2.4 million. The firm-level return on assets ratio (*FROA*) takes an average value of 4.85. We also include the firm's research and development expense ratio (*FR&D*), defined as its total expenditures on research and development relative to total assets. Similar to Berger et al. (2007), Yosha (1995), and Bhattacharya and Chiesa (1995), we predict that innovation shapes firms' debt structure.

The second set of control variables relates to bank characteristics. Bank size, measured by the natural log of the main bank's assets (*B SIZE*), ranges from US\$6.55 to 10.41 million, with an average size of US\$9.7 million. We used a dummy to indicate banks listed on stock exchanges (*BLISTED*), which account for 46% of the sample. The duration of the main bank–firm relationship, measured by the number of years (*LENGTH*), ranges from 2 to 43, with an average of 14.51 years.

We also include controls for the firm's geography (51 provinces, 7 regions) and 10 industry sectors in all regressions, but they are not displayed in Table 3.1<sup>59</sup>.

### **3.4. Methodology and Model**

#### **3.4.1. Methodology**

Testing our proposition empirically (Section 3.2) is not an easy task, because it involves a causal relationship between the degree of firm–manager ethics and the choice of a corrupt or honest main bank. Thus, simply observing a match at a given date between the degree of firm ethics and the level of bank corruption does not allow us to make conclusions. Even if we observe a strong statistical link between these characteristics, we cannot deduce anything about causality. To solve this endogeneity problem, we focus on implications 3 and 4 of our proposition, using the following stepwise methodology:

- Identify emblematic cases of bank corruption or integrity during 2010–2012. From these cases, we classify three types of banks: those perceived by all firms in Vietnam as corrupt, those perceived as honest, and others.
- In 2013, using univariate and multivariate analyses, we compare:
  - the structure of the bank pool of firms in which the main bank is perceived as corrupt in 2010–2012 with the structure of others, and
  - the structure of the bank pool of firms in which the main bank is perceived as honest in 2010–2012 with the structure of others.

If our theoretical predictions (implications 3 and 4) are correct, when managers perceive their main bank as corrupt or honest, they can react and adapt the structure of their bank pool according to their own level of ethics. Hence, we derive four hypotheses to test:

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<sup>59</sup> Approximately 10% of firms are in the Red River Delta, 16% are in the Northern central and Central, 28% are in Hanoi, 26% are in Ho Chi Minh City, and 20% are in the northern midlands and mountainous, eastern southern, or Mekong River Delta. In terms of sectors, 27% of firms are in real estate, construction, materials, and services for construction sectors; 10% are in the consumer goods and services or personal effects sectors; 34% are in industrial goods and services; 5% are in food and beverage sectors; and 24% are in consumer goods involving natural resources, oils and gas, public services, technology and travel and entertainment.

*Hypothesis 3. 1: All things being equal, an ethical firm that perceives its main bank as corrupt during 2010–2012 has a diversified bank pool in 2013.*

*Hypothesis 3. 2: All things being equal, an unethical firm that perceives its main bank as corrupt during 2010–2012 has a concentrated bank pool in 2013.*

*Hypothesis 3. 3: All things being equal, an ethical firm that perceives its main bank as honest during 2010–2012 has a concentrated bank pool in 2013.*

*Hypothesis 3. 4: All things being equal, an unethical firm that perceives its main bank as honest during 2010–2012 has a diversified bank pool in 2013.*

With our empirical design, we seek to determine “more emblematic” cases of corruption and integrity, including those that attracted wide media attention and thus had national impacts. The death penalty is still in place in Vietnam, and we have decided to use this sentence to identify emblematic cases of corruption. This type of punishment tends to attract national coverage and profoundly affects people's minds. Thus, we classify a bank as perceived as corrupt if during 2010–2012 it perpetrated a fraud that prompted a death sentence for its CEO. To determine firm perceptions of bank integrity, we use the number of international awards received by banks during 2010–2012. Such rewards are unlikely to be biased by a potential link between the state and banks and therefore really should provide a measure of the integrity of the rewarded bank. Clearly, rewards may have less impact on people's minds than a death sentence, but because they still exert a national impact, they can be considered reliable measures of banks' perceived integrity. We classify a bank as perceived as honest if, during 2010–2012, it received more than 17 international awards.<sup>60</sup>

### **3.4.2. Model**

To test our hypotheses, we estimate two equations: Equation 3.1 and 3.2.

*Equation 3. 1 The bank pool structure of the ethical firm when the main bank is a corrupt bank*

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<sup>60</sup> The results do not depend on this specific threshold; the results are similar with a threshold of 14 international awards (available on request). The distribution of the number of awards by bank is in Table 3.

$$\text{Bank pool structure}_i = \alpha_0 + \alpha_1 \text{ETHICAL FIRM}_i + \alpha_2 \text{CORRUPT BANK}_i + \alpha_3 \text{ETHICAL FIRM}_i \times \text{CORRUPT BANK}_i + \alpha_F * \text{Firm}_i + \alpha_B * \text{Bank}_i + \text{FE}(\text{Industry, Province, Region}) + \varepsilon_i. \quad (3.1)$$

*Equation 3. 2 The bank pool structure of the non-ethical firm when the main bank is an honest bank*

$$\text{Bank pool structure}_i = \alpha_0 + \alpha_1 \text{ETHICAL FIRM}_i + \alpha_2 \text{HONEST BANK}_i + \alpha_3 \text{ETHICAL FIRM}_i \times \text{HONEST BANK}_i + \alpha_F * \text{Firm}_i + \alpha_B * \text{Bank}_i + \text{FE}(\text{Industry, Province, Region}) + \varepsilon_i. \quad (3.2)$$

In these equations,

- *Bank pool structure<sub>i</sub>* is our generic dependent variable that measures the structure of the bank pool for firm *i*. We use two proxies: *NUMBER<sub>i</sub>* (Model 3.1a; Model 3.2a) and *DNUMBER<sub>i</sub>* (Model 3.1b; Model 3.2b).
- *Firm<sub>i</sub>* is a generic vector of control variables at the firm level (*FSIZE<sub>i</sub>*, *FROA<sub>i</sub>*, *FR&D<sub>i</sub>*).
- *Bank<sub>i</sub>* is a generic vector of control variables at the bank level (*BFSIZE<sub>i</sub>*, *BLISTED<sub>i</sub>*, *LENGTH<sub>i</sub>*). All our variables are defined in Table 3.1.

We also include fixed effects at the industry, province<sup>61</sup>, and region levels in our regressions. The standard errors are adjusted for clustering by the seven regions. If our hypotheses 3.1, 3.2, 3.3, and 3.4 are true, we would find that:

- the coefficient of the interaction variable *ETHICAL FIRM<sub>i</sub> × CORRUPT BANK<sub>i</sub>* is positive and significant;
- the sum of the coefficients of *CORRUPT BANK<sub>i</sub>* and *ETHICAL FIRM<sub>i</sub> × CORRUPT BANK<sub>i</sub>* is positive and significant;
- the coefficient of the interaction variable *ETHICAL FIRM<sub>i</sub> × HONEST BANK<sub>i</sub>* is negative and significant.

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<sup>61</sup> We excluded provinces with fewer than 5 observations.

### 3.5. Results

#### 3.5.1. Main results

We start with a univariate analysis of the influence of bank type (corrupt or honest bank) on the structure of the bank pool. We compare the average number of banks of ethical and non-ethical firms, depending on whether they perceive their bank as corrupt or honest. Tables 3.4 and 3.5 show the structure of the bank pool; it appears to depend on the firm's degree of ethics and the level of bank corruption. Specifically, Table 3.4 reveals that the average number of banks is significantly higher when an ethical firm perceives its bank as corrupt than if the firm is non-ethical (3.44 versus 1.92), in line with our first two hypotheses. The results in Table 3.5 are more ambiguous. On the one hand, non-ethical firms work with more banks if they perceive their main bank as honest (2.48 versus 2.18), but on the other hand, ethical firms also deal with more banks if they perceive their bank as honest (3.6 versus 2.48). These results confirm *Hypothesis 3.4* but contradict *Hypothesis 3.3*.

We refine these results in a multivariate setting, such that we test Equations 3.1 and 3.2, using two proxies of the bank pool structure. The first proxy is the number of banks ( $NUMBER_i$ , Model 3.1a; Model 3.2a), and the second uses  $DNUMBER_i$ , the dummy variable that equals 1 if the size of the firm bank pool is greater or equal than 2 (Model 3.1b; Model 3.2b).

First, we analyse the results from Equation 3.1: The first column in Table 3.6 displays the results for Equation 3.1 when dependent variable is  $NUMBER_i$  (Model 3.1a). As expected, we observe that the number of banks decreases when a non-ethical firm perceives its main bank as corrupt (sign of  $CORRUPT BANK_i$  is negative and significant). In addition, the number of banks increases when an ethical firm perceives its main bank as corrupt. The sign of the interaction variable  $ETHICAL FIRM_i \times CORRUPT BANK_i$  is positive and significant, as is the sum of the coefficients of  $CORRUPT BANK_i$  and  $ETHICAL FIRM_i \times CORRUPT BANK_i$  (Table 3.6, panel C).

Regarding the control variables, our results are consistent with previous studies. That is, the larger the firm, the higher the number of banks; the greater firm R&D, the fewer the number of banks (Yosha, 1995); and the longer the duration of the relationship between the firm and its main bank, the fewer the number of banks.

We also confirm these results (Model 3.1b and 3.1b1, Table 3.6) when we replace the continuous dependent variable  $NUMBER_i$  with the  $DNUMBER_i$  binary variable. In the Probit model (Model 3.1b1), all variables display the same sign and are significant,<sup>62</sup> when we use an ordinary least squares (OLS) regression (Model 3.1b), the sign of the interaction variable is positive and highly significant and that for  $CORRUPT BANK_i$  is positive and significant at 10%. Finally, as in Model 3.1, the sum of the coefficients of  $CORRUPT BANK_i$  and  $ETHICAL FIRM_i \times CORRUPT BANK_i$  is positive and significant (Table 3.6, panel C). These findings validate *Hypothesis 3.1* and *Hypothesis 3.2*.

Next, we consider the results from Equation 3.2, which analyzes the structure of the bank pool of an ethical firm that perceives its main bank as honest. The results in Table 3.7 show that, for both models, the coefficient of the variable  $HONEST BANK_i$  is positive and highly significant, but the coefficient for the interaction of  $ETHICAL FIRM_i \times HONEST BANK_i$  is not significant (though it shows the expected negative sign). This evidence offers support for *Hypothesis 3.3*, in that non-ethical firms that perceive their main bank as honest adopt more diversified bank pools than others. For our last hypothesis, we cannot obtain conclusive evidence.

Therefore, the outcomes of the regressions in Equations 3.1 and 3.2 empirically support the theoretical implications of the model that we developed in Section 3.2. Specifically:

- Firms with high managerial ethics in a relationship with a corrupt main bank set up a diversified bank pool.
- Non-ethical firms in a relationship with a corrupt main bank set up a concentrated bank pool.
- Non-ethical firms in a relationship with an honest main bank set up a diversified bank pool.

### 3.5.2. Complementary results

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<sup>62</sup> We realize that it is not possible to interpret the interaction variable directly with a Probit regression. To circumvent this issue, we use the “Inteff command” in Stata (Ai et al., 2004) to determine the marginal effect of this variable. The results are similar to those from the OLS regression. The marginal effect of the variable  $CORRUPT BANK$  is -.0207, and that for the interaction term is 0.401.

Considering that ethical or non-ethical firms choose the same type of bank pool structure (diversified or concentrated) when the integrity of their main bank matches their own level of ethics, we can derive an extended hypothesis:

*Hypothesis 3. 5: All things being equal, a non-ethical firm that perceives its main bank as corrupt or an ethical firm that perceives its main bank as honest during 2010–2012 has a concentrated bank pool in 2013.*

To test this hypothesis<sup>63</sup> we estimate the following equation 3.3:

*Equation 3. 3 The bank pool structure of the firm when the integrity of their main bank matches their own level of ethics*

$$\text{Bank pool structure}_i = \alpha_0 + \alpha_1 \text{PAIR}_i + \alpha_F * \text{Firm}_i + \alpha_B * \text{Bank}_i + \text{FE(Industry, Province, Region)} + \varepsilon_i. \quad (3.3)$$

where  $\text{PAIR}_i$  is a dummy variable equal to 1 when  $\text{ETHICAL FIRM}_i = 1$  and  $\text{HONEST BANK}_i = 1$ , or  $\text{ETHICAL FIRM}_i = 0$  and  $\text{CORRUPT BANK}_i = 1$ ; and 0 otherwise. To find support for *Hypothesis 3.5*, the coefficient of the variable  $\text{PAIR}_i$  must be negative and significant.

Table 3.8 provides the results of the regression obtained from Equation 3.3. The coefficient of the variable  $\text{PAIR}_i$  presents the expected negative sign for Models 3.3a; 3.3b; 3.3b1; it also is significant for all models. These results validate *Hypothesis 3.5* and support the findings from the main analysis.

### 3.6. Conclusion

For this study, we begin theoretically by addressing the bank pool structure decision of firms and how this decision depends on the level of bank corruption and the ethical involvement of firms. We demonstrate that the structure of the bank pool of firms depends as much on the level of ethics of firms as on the corruption of banks. In particular, firms with high managerial ethics are more willing to avoid the opportunistic behavior of a corrupt main bank by diversifying their bank pool. In contrast, managers of firms with low managerial ethics are more prone to maximize private benefits, even if doing so decreases firm value. As a consequence, these firms are more likely to cooperate with a corrupt bank, because the managers and the

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<sup>63</sup> This last hypothesis is a conjunction of *Hypothesis 3.2* and *Hypothesis 3.3*.

corrupt bank share the firm cash flow that has been diverted for personal purposes. With our empirical analysis, we also use data at the firm level to confirm that Vietnamese firms behave according to our theoretical predictions and that their bank pool structure strongly depends on how they perceive the banks with which they interact.

This article has a political implication. In emerging countries characterized by corruption, firms may structure their bank pool according to their managerial ethics. In turn, this impacts the level of wealth diversion within the firm. Public authorities should then consider that fighting against corruption is a priority from both an economic and an ethical perspective.

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Table 3. 1 Definition of variables

This table presents the definition of variables that are used in the analysis

Variables	Definition
<i>Panel A: Main tests</i>	
<i>Dependent variables</i>	
DNUMBER	Dummy variable equal to 1 for firms with at least two banks; 0 otherwise. Source: Authors' survey in 2013.
NUMBER	Number of banks of the firm. Source: Authors' survey in 2013.
<i>Independent variables</i>	
CORRUPT BANK	Dummy variable equal to 1 for banks that committed fraud that resulted in a death sentence for the bank CEO; 0 otherwise. Source: Provincial economic courts, public media.
HONEST BANK	Dummy variable equal to 1 for banks with at least 17 international awards from 2010 to 2012, 0 otherwise. Source: Bank annual audited reports – Author's calculation.
ETHICAL FIRM	Dummy variable equal to 1 for firms that use one of the Big Four accounting firms; 0 otherwise. Source: Firms' audited financial reports.
<i>Control variables</i>	
<i>Firm characteristics</i>	
FSIZE	Log of firm's total assets in million US Dollars. Source: Firm's audited financial reports.
FROA	Profit before interest and tax over the total assets of a firm. Source: Firm's audited financial reports.
FR&D	R&D expenses over the total assets of the firm. Source: Firm's audited financial reports.
<i>Bank characteristics</i>	
BFSIZE	Log of main bank's total assets in million US Dollars. Source: BVD BankScope.
BLISTED	Dummy variable equal to 1 for listed banks (Ho Chi Minh City Stock Exchange (HSE) or Hanoi Stock Exchange (HNX)); 0 otherwise. Source: BVD BankScope.
LENGTH	Length (in years) of the main bank-firm relationship by 2013. Source: Author's survey in 2013.
<i>Panel B: Complementary test</i>	
PAIR	Dummy variable equal to 1 for firms with ETHICAL FIRM = 1 and HONEST BANK = 1, or ETHICAL FIRM = 0 and CORRUPT BANK = 1; 0 otherwise.

Table 3. 2 Descriptive statistics

This table presents the descriptive statistics (mean, standard deviation, minimum and maximum) of the variables in the analysis. The definitions of the variables are in Table 3.1.

Variables	Obs.	Mean	S.D.	Min	Max
<i>Panel A: Main test</i>					
<i>Dependent variables</i>					
NUMBER	389	2.347	1.625	1	11
DNUMBER	389	0.308	0.462	0	1
<i>Independent variables</i>					
CORRUPT BANK	389	0.157	0.364	0	1
HONEST BANK	389	0.2030	0.403	0	1
ETHICAL FIRM	389	0.111	0.314	0	1
<i>Control variables</i>					
<i>Firm characteristics</i>					
FSIZE	389	2.384	1.044	-0.589	5.072
FROA	389	4.852	6.146	0	39.290
FR&D	389	8.328	17.958	0	186.602
<i>Bank characteristics</i>					
BSIZE	389	9.679	0.885	6.548	10.406
BLISTED	389	0.465	0.499	0	1
LENGTH	389	14.512	7.430	2	43
<i>Panel B: Complementary test</i>					
PAIR	389	0.146	0.354	0	1

*Table 3. 3 Distribution of the number of bank international awards obtained during 2010–2012*

This table presents the distribution (number of awards, frequency, percentages, cumulation and number of banks) of the number of bank international awards that the firm's main bank obtained during 2010-2012. Source: Bank annual audited reports – Author's calculation.

Awards	Freq.	Percent	Cum.	Number of banks
0	14	3.6	3.6	5
2	16	4.11	7.71	3
3	2	0.51	8.23	2
4	17	4.37	12.6	3
5	93	23.91	36.5	1
6	4	1.03	37.53	2
7	78	20.05	57.58	2
9	51	13.11	70.69	1
10	10	2.57	73.26	2
13	10	2.57	75.84	2
14	15	3.86	79.69	1
17	63	16.2	95.89	1
18	3	0.77	96.66	1
25	13	3.34	100	1
Total	389	100		26

Table 3. 4 Number of banks: Corrupt bank and ethical firm

Table 3.4 displays different averages for the number of banks, according to two methods to cut the sample: when the bank is perceived as corrupt or not, and when the firm is ethical or not. The t-test is a difference-in-means test, based on a Student test. \*, \*\*, and \*\*\* indicate the t-test is significant at 10%, 5%, and 1%, respectively.

Number of banks in the pool	Ethical Firm	Non-Ethical Firm	<i>t</i>
	Mean	Mean	
Corrupt Bank	3.44	1.92	3.06**
Others	3.1	2.3	2.53*
<i>t</i>	0.46	1.69*	

Table 3. 5 Number of banks: Honest bank and ethical firm

Table 3.5 displays different averages for the number of banks, according to two methods to cut the sample: when the bank is perceived as honest or not, and when the firm is ethical or not. The t-test is a difference-in-means test, based on a Student test. \*, \*\*, and \*\*\* indicate the t-test is significant at 10%, 5%, and 1%, respectively.

Number of banks in the pool	Ethical Firm	Non-Ethical Firm	<i>t</i>
	Mean	Mean	
Honest Bank	3.6	2.48	1.3*
Others	3.1	2.18	3.37***
<i>t</i>	0.49	1.52*	

Table 3. 6 Role played by the corruption of the main bank on the structure of the firm bank pool, for ethical or non-ethical firms (Equation 3.1)

In model 3.1a, *NUMBER* is the dependent variable, corresponding to the number of banks in the firm bank pool. The variable *CORRUPT BANK* measures perceptions of the degree of corruption of the main bank, and *ETHICAL FIRM* measures if firms are ethical or not. In Models 3.1b and 3.1b1, the dependent variable is *DNUMBER*, and all other variables are unchanged. Models 3.1a and 3.1b use ordinary least square regressions with standard errors clustered at the region level (*p*-values in parentheses). Model 3.1b1 uses a Probit regression with standard errors clustered at the region level (*p*-values in parentheses). In all regressions, we include a fixed effect for industry and province. Variable definitions are in Table 3.1. \*, \*\*, and \*\*\* indicate the coefficient is significant at 10%, 5%, and 1%, respectively.

VARIABLES	(1) OLS Model 3.1a NUMBER	(2) OLS Model 3.1b DNUMBER	(3) Probit Model 3.1b1 DNUMBER
<i>Panel A</i>			
<i>Independent variables</i>			
<i>Corrupt Bank and Ethical Firm</i>			
CORRUPT BANK	-0.5767** (0.05)	-0.1710* (0.1)	-0.5514** (0.05)
ETHICAL FIRM	0.3615 (0.585)	0.1175 (0.468)	0.3883 (0.354)
<i>Interaction</i>			
CORRUPT BANK × ETHICAL FIRM	1.4477* (0.054)	0.4432*** (0.004)	1.3975*** (0.000)
<i>Control variables</i>			
<i>Firm characteristics</i>			
FSIZE	0.3242** (0.017)	0.0652* (0.058)	0.2304** (0.016)
FROA	-0.0412** (0.02)	-0.0140*** (0.007)	-0.0607*** (0.000)
FR&D	-0.0095* (0.09)	-0.0016 (0.207)	-0.0087* (0.057)
<i>Bank characteristics</i>			
BFSIZE	-0.2307** (0.040)	-0.0558** (0.027)	-0.1709*** (0.003)
BLISTED	-0.3691* (0.098)	-0.0746 (0.251)	-0.2652* (0.074)
LENGTH	-0.0277* (0.065)	-0.0075 (0.107)	-0.0246* (0.055)
(Industry/Province Region) FE	YES	YES	YES
Intercept	3.9259*** (0.001)	0.8173*** (0.002)	-2.7708*** (0.000)
Number of Observations	389	389	389
R-squared	0.211	0.191	
Adjusted R-Squared	0.142	0.121	
Pseudo R-Squared			0.182
<i>Panel B (Inteff) CORRUPTBANK × ETHICALFIRM</i>			
probit ie			0.405
probit se			0.098
probit_z			4.168***
<i>Panel C (test CORRUPT BANK and CORRUPTBANK × ETHICALFIRM )</i>			
	0.871* (0.093)	0.272* (0.069)	0.846*** (0.007)

Table 3. 7 Role played by the integrity of the main bank on the structure of the firm bank pool for ethical or non-ethical firms (Equation 3.2)

In model 3.2, *NUMBER* is the dependent variable, corresponding to the number of banks in the firm bank pool. The variable *HONEST BANK* measures perceptions of the degree of integrity of the main bank, and *ETHICAL FIRM* measures if firms are ethical or not. In Models 3.2b and 3.2b1, the dependent variable is *DNUMBER*, and all other variables are unchanged. Models 3.2a and 3.2b use ordinary least square regressions with standard errors clustered at the region level (*p*-values in parentheses). Model 3.2b1 uses a Probit regression with standard errors clustered at the region level (*p*-values in parentheses). In all regressions, we include fixed effects for industry and province. Variable definitions are in Table 3.1. \*, \*\*, and \*\*\* indicate the coefficient is significant at 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)
	OLS	OLS	Probit
VARIABLES	Model 3.2a	Model 3.2b	Model 3.2b1
	NUMBER	DNUMBER	DNUMBER
<i>Panel A</i>			
<i>Independent variables</i>			
<i>Honest Bank and Ethical Firm</i>			
HONEST BANK	0.5951*** (0.009)	0.1497*** (0.003)	0.5230*** (0.000)
ETHICAL FIRM	0.7602 (0.310)	0.2341 (0.199)	0.7656 (0.105)
<i>Interaction</i>			
HONEST BANK × ETHICAL FIRM	-0.2381 (0.625)	-0.0570 (0.803)	-0.3107 (0.613)
<i>Control variables</i>			
<i>Firm characteristics</i>			
FSIZE	0.2925* (0.061)	0.0567 (0.135)	0.2109* (0.059)
FROA	-0.0369** (0.027)	-0.0127** (0.013)	-0.0565*** (0.000)
FR&D	-0.0100* (0.067)	-0.0018 (0.136)	-0.0094** (0.022)
<i>Bank characteristics</i>			
BSIZE	-0.2687** (0.018)	-0.0666** (0.029)	-0.2118*** (0.002)
BLISTED	-0.4859* (0.055)	-0.1018* (0.080)	-0.3646*** (0.002)
LENGTH	-0.0294* (0.054)	-0.0078 (0.105)	-0.0249* (0.076)
(Industry/Province Region) FE	YES	YES	YES
Intercept	4.4113*** (0.001)	0.9485*** (0.004)	-2.2727*** (0.000)
Number of Observations	389	389	389
R-squared	0.210	0.185	
Adjusted R-Squared	0.142	0.114	
Pseudo R-Squared			0.179
<i>Panel B (Inteff)</i>			
probit ic			-0.087
probit se			0.199
probit_z			-0.446

Table 3. 8 Influence of matching ethical firm–honest bank and non-ethical firm–corrupt bank on the structure of the firm bank pool (Equation 3.3)

In model 3.3,  $PAIR = 1$  if either  $ETHICAL FIRM = 1$  and  $HONEST BANK = 1$ , or  $ETHICAL FIRM = 0$  and  $CORRUPT BANK = 1$ . In Models 3.3a,  $NUMBER$  is the dependent variable, corresponding to the number of banks in the firm bank pool. In Models 3.3b and 3.3b1, the dependent variable is  $DNUMBER$ , and all other variables are unchanged. Models 3.3a and 3.3b use ordinary least square regressions with standard errors clustered at the region level ( $p$ -values in parentheses). Model 3.3b1 uses a Probit regression with standard errors clustered at the region level ( $p$ -values in parentheses). In all regressions, we include fixed effects for industry and province. Variable definitions are in Table 3.1. \*, \*\*, and \*\*\* indicate the coefficient is significant at 10%, 5%, and 1%, respectively.

VARIABLES	(1) OLS Model 3.3a NUMBER	(2) OLS Model 3.3b DNUMBER	(3) Probit Model 3.3b1 DNUMBER
<i>Independent variables</i>			
PAIR	-0.557** (0.038)	-0.180* (0.094)	-0.602** (0.03)
<i>Control variables</i>			
<i>Firm characteristics</i>			
FSIZE	0.351*** (0.006)	0.085** (0.020)	0.307*** (0.001)
FROA	-0.038** (0.016)	-0.014*** (0.003)	-0.061*** (0.000)
FR&D	-0.011** (0.035)	-0.001 (0.343)	-0.007 (0.193)
<i>Bank characteristics</i>			
BSIZE	-0.158* (0.074)	-0.043* (0.082)	-0.119* (0.060)
BLISTED	-0.519** (0.023)	-0.097 (0.118)	-0.358** (0.011)
LENGTH	-0.028* (0.077)	-0.007 (0.134)	-0.023* (0.074)
(Industry/Province Region) FE	YES	YES	YES
Intercept	3.971*** (0.000)	0.599*** (0.006)	-3.716*** (0.000)
Number of Observations	389	389	389
R-squared	0.290	0.183	
Adjusted R-Squared	0.147	0.092	
Pseudo R-Squared			0.175

### **Appendix 1: Proof of proposition**

The first step in this proof is to define indifferent managers across the three structures of bank pool (D, ND/H and ND/C).

#### **Indifferent manager between structure D and ND/H**

The indifferent manager, defined as  $y_1$ , between structure D and ND/H satisfies the following condition:

$$(A.1) \quad (V_1 - V_0)^y = (V_1 - V_0 - F_d)^y(1 + F_d)$$

From Equation (A.1), we can write:

$$y \ln(V_1 - V_0) = y \ln(V_1 - V_0 - F_d) + \ln(1 + F_d)$$

$$y(\ln(V_1 - V_0) - \ln(V_1 - V_0 - F_d)) = \ln(1 + F_d)$$

$$y \ln\left(\frac{V_1 - V_0}{V_1 - V_0 - F_d}\right) = \ln(1 + F_d),$$

$$(A.2) \quad y_1 = \frac{\ln(1 + F_d)}{\ln\left(\frac{V_1 - V_0}{V_1 - V_0 - F_d}\right)}$$

We also note that

- If  $y > y_1$ , by definition of  $y$ , the manager chooses structure ND/H.
- If  $y < y_1$ , by definition of  $y$ , the manager chooses structure D.
- 

#### **Indifferent manager between structure D and ND/C**

The indifferent manager, defined as  $y_2$ , between structure D and ND/C satisfies the following condition:

$$(A.3) \quad (V_1 - V_0 - F_d)^y(1 + F_d) = (V_1 - V_0 - B - F_c)^y(1 + F_c)$$

From Equation (A.3), we can write:

$$y \ln(V_1 - V_0 - F_d) + \ln(1 + F_d) = y \ln(V_1 - V_0 - B - F_c) + \ln(1 + F_c)$$

$$y(\ln(V_1 - V_0 - F_d) - \ln(V_1 - V_0 - B - F_c)) = \ln(1 + F_c) - \ln(1 + F_d)$$

$$y \ln\left(\frac{V_1 - V_0 - F_d}{V_1 - V_0 - B - F_c}\right) = \ln\frac{1 + F_c}{1 + F_d}$$

$$(A.4) \quad y_2 = \frac{\ln\left(\frac{1+F_C}{1+F_d}\right)}{\ln\left(\frac{V_1-V_0-F_d}{V_1-V_0-B-F_C}\right)}$$

We also note that

- If  $y < y_2$ , by definition of  $y$ , manager chooses structure  $ND/C$ .
- If  $y > y_2$ , by definition of  $y$ , the manager chooses structure  $D$ .

### Indifferent manager between structure $ND/H$ and $ND/C$

The indifferent manager, defined as  $y_3$ , between structure  $ND/H$  and  $ND/C$  satisfies the following condition:

$$(A.5) \quad (V_1 - V_0)^y = (V_1 - V_0 - B - F_C)^y (1 + F_C)$$

From Equation (A.5), we can write:

$$y \ln(V_1 - V_0) = y \ln(V_1 - V_0 - B - F_C) + \ln(1 + F_C)$$

$$y(\ln(V_1 - V_0) - \ln(V_1 - V_0 - B - F_C)) = \ln(1 + F_C)$$

$$y \ln\left(\frac{V_1 - V_0}{V_1 - V_0 - B - F_C}\right) = \ln(1 + F_C)$$

$$(A.6) \quad y_3 = \frac{\ln(1+F_C)}{\ln\left(\frac{V_1-V_0}{V_1-V_0-B-F_C}\right)}$$

We also note that

- If  $y < y_3$ , by definition of  $y$ , the manager chooses structure  $ND/C$ .
- If  $y > y_3$ , by definition of  $y$ , the manager chooses structure  $D$ .

The second step of the proof is to show that  $y_1 > y_3 > y_2$ . Therefore,

**i.**  $y_1 > y_3$

If  $B < 0$ , then  $V_1 - V_0 - B - F_C < V_1 - V_0 - F_C$ , so,  $\ln\frac{V_1-V_0}{V_1-V_0-B-F_C} > \ln\frac{V_1-V_0}{V_1-V_0-F_C}$ . In turn,  $y_3 < \frac{\ln(1+F_C)}{\ln\frac{V_1-V_0}{V_1-V_0-F_C}}$ . Next we show that  $\frac{\ln(1+F_C)}{\ln\frac{V_1-V_0}{V_1-V_0-F_C}} < y_1$ . To do so, we pose  $f(x) = \frac{\ln(1+x)}{\ln\frac{V_1-V_0}{V_1-V_0-x}}$ ,

where  $f$  is a  $C-2$  function, defined on  $]0, V_1 - V_0[$ , and  $N$  is the numerator of the derivative of  $f$  with respect of  $x$ :

$$N = \frac{1}{1+x} [\ln(V_1 - V_0) - \ln(V_1 - V_0 - x)] - \frac{1}{V_1 - V_0 - x} [\ln(1+x)]$$

$$N = \frac{1}{(1+x)(V_1 - V_0 - x)} A(x),$$

where:

$$A(x) = (V_1 - V_0 - x) \ln(V_1 - V_0) - (V_1 - V_0 - x) \ln(V_1 - V_0 - x) - (1+x) \ln(1+x).$$

Hence,

$$A'(x) = -\ln(V_1 - V_0) + \ln(V_1 - V_0 - x) - \ln(1+x),$$

but,

$$\frac{V_1 - V_0 - x}{V_1 - V_0} < 1 + x.$$

Thus,  $A'(x) < 0$  when  $x \in ]0, V_1 - V_0[$ , and it follows that  $N$  is negative too, such that  $f$  decreases on  $]0, V_1 - V_0[$ . Now, because  $F_d < F_c$ , then  $f(F_d) > f(F_c)$  and hence  $\frac{\ln(1+F_c)}{\ln \frac{V_1 - V_0}{V_1 - V_0 - F_c}} < y_1$ . Accordingly, we have shown that  $y_1 > y_3$ .

**ii.**  $y_3 > y_2$

Assume  $g(x) = \frac{\ln\left(\frac{1+F_c}{1+x}\right)}{\ln \frac{V_1 - V_0 - x}{V_1 - V_0 - B - F_c}}$ , where  $g$  is a C-2 function, defined on  $]0, V_1 - V_0[$ , and

$N$  is the numerator of the derivative of  $g$  with respect of  $x$ :

$$N = -\frac{1}{1+x} \ln\left(\frac{V_1 - V_0 - x}{V_1 - V_0 - B - F_c}\right) + \frac{1}{V_1 - V_0 - x} \ln\left(\frac{1+F_c}{1+x}\right)$$

$$N = \frac{1}{(1+x)(V_1 - V_0 - x)} E(x)$$

$$E(x) = (V_1 - V_0 - x) \cdot \ln(V_1 - V_0 - B - F_c) - (V_1 - V_0 - x) \cdot \ln(V_1 - V_0 - F_c) + (1+x) \ln(1+F_c) - (1+x) \ln(1+x).$$

Therefore,

$$E'(x) = -\ln(V_1 - V_0 - B - F_c) - \ln(V_1 - V_0 - F_c) + \ln(1+F_c) - \ln(1+x)$$

and,

$$E''(x) = -\frac{1}{V_1 - V_0 - x} - \frac{1}{1+x},$$

such that as  $V_1 - V_0 > x$  then  $E''(x) < 0$ , and  $E'$  is decreasing on  $]0, V_1 - V_0 [$ .

Moreover,

$$E'(0) = -\ln(V_1 - V_0 - B - F_c) + \ln(V_1 - V_0 - F_c) + \ln(1 + F_c) > 0, \text{ and } E'(V_1 - V_0) = -\infty.$$

Then, there is a value  $x_0 \in ]0, V_1 - V_0 [$  such that  $E'(x_0) = 0$ , and this value verifies the following equation:

$$(A7) \ln(V_1 - V_0 - B - F_c) - \ln(V_1 - V_0 - F_c) = \ln(1 + F_c) - \ln(1 + x_0).$$

In addition, as  $\ln(V_1 - V_0 - B - F_c) - \ln(V_1 - V_0 - F_c) < 0$  ( $B > 0$ ), then  $x_0 > F_c$ . At this point, we know that the function  $E$  is increasing on  $[0, x_0]$  and decreasing on  $[x_0, V_1 - V_0]$ .

Therefore, we look to define the sign of  $E$  in  $x_0$ :

$$E(x_0) = (V_1 - V_0 - x_0) \cdot \ln(V_1 - V_0 - B - F_c) - (V_1 - V_0 - x_0) \cdot \ln(V_1 - V_0 - F_c) + (1 + x_0) \ln(1 + F_c) - (1 + x_0) \ln(1 + x_0).$$

$$E(x_0) = (V_1 - V_0 - x_0) \cdot [\ln(V_1 - V_0 - B - F_c) - \ln(V_1 - V_0 - F_c)] + (1 + x_0) [\ln(1 + F_c) - \ln(1 + x_0)].$$

Using (A7), we can write:

$$E(x_0) = (V_1 - V_0 - x_0) \cdot [\ln(1 + F_c) - \ln(1 + x_0)] + (1 + x_0) [\ln(1 + F_c) - \ln(1 + x_0)].$$

and thus,

$$E(x_0) = (V_1 - V_0 + 1) \cdot [\ln(1 + F_c) - \ln(1 + x_0)].$$

But we have previously shown that if  $x_0 > F_c$ , then  $E(x_0) < 0$ , so  $E$  is always negative on  $]0, V_1 - V_0 [$ , which demonstrates that  $g$  decreases on  $]0, V_1 - V_0 [$ . Finally,  $F_d > 0 \Leftrightarrow g(0) > g(F_d)$ , and we can conclude that  $y_3 > y_2$ .

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## Conclusion générale

En guise de conclusion générale, nous souhaiterions insister sur trois points : les résultats de la thèse et leur caractère novateur ; la cohérence d'ensemble de la thèse et des résultats ; leurs implications politiques.

Au plan des résultats, nous avons confirmé tout d'abord que les relations de clientèle sont un levier puissant pour maximiser l'accès au crédit. Les firmes peuvent aussi mobiliser leurs connexions politiques à cette fin ; cela est déjà en soi un résultat. Mais le résultat principal du premier essai tient dans la complémentarité entre ces deux canaux. En d'autres termes, les firmes usent de leurs relations de clientèle pour rendre leurs connexions politiques plus efficaces. Probablement est-ce dû à la nature identique des connexions politiques aux sommets respectifs des banques et des firmes. Ce résultat illustre la face noire du « relationship banking ».

D'autres résultats obtenus sont relatifs à la structure du pool bancaire. Nous confirmons que la corruption au niveau local tend à exercer un effet positif sur le nombre de banques au sein du pool bancaire. Mais nous ajoutons d'autres résultats. Quand une firme est politiquement connectée, elle a tendance à choisir une banque principale également connectée et à réduire la taille de son pool bancaire, de même que la diversité des types de banques au sein de ce pool.

Si on ajoute l'éthique du manager comme paramètre supplémentaire, les résultats précédents sont confirmés et affinés. En d'autres termes, les firmes les plus éthiques ont tendance à s'apparier avec des banques elles-aussi éthiques, tandis que les firmes corrompues choisissent des banques principales corrompues. Dans ce cas, quand les mariages entre firmes et banques principales ont pu se faire idéalement, la taille du pool bancaire diminue. À l'inverse, quand une firme est liée avec une banque principale qui n'a pas le même niveau d'intégrité, elle module ce défaut d'appariement et les coûts associés en augmentant le nombre de ses banques au sein du pool.

Ces résultats sont très cohérents entre eux. Ainsi le premier essai et ses résultats appellent naturellement les conclusions des deux essais suivants. En effet, si les relations de clientèle et les connexions politiques sont positivement associées à une meilleure disponibilité du crédit dans un sens de complémentarité, il n'est pas surprenant que les firmes politiquement liées choisissent des banques également politiquement liées pour stimuler l'efficacité de leurs

connexions politiques. Dans ce cas, la taille du pool bancaire est une source de coûts et doit être limitée, car elle ne contribue pas à l'accès au crédit qui passe davantage par le jeu politique.

Les essais deux et trois sont également très cohérents. Le choix de banque principale de l'entreprise est largement influencé par le degré de corruption relative de la firme et de la banque. Ce résultat est confirmé quand on prend en compte l'engagement éthique du manager.

Les implications politiques de cette thèse sont importantes et relatives à la structuration des systèmes bancaires dans les pays émergents à fort taux de corruption. Quatre éléments sont ici à souligner.

Tout d'abord, le financement bancaire relationnel a bien une face noire, dans la mesure où il amplifie l'efficacité des connexions politiques en matière d'accès au crédit et fausse un peu plus le jeu du marché. Les autorités publiques et de régulation, si elles sont conscientes de cela en même temps qu'elles veulent éradiquer la corruption pour intégrer le terrain de jeu de la finance internationale, doivent donc limiter l'efficacité de « l'investissement » en matière de corruption au niveau des agents économiques. Cela passe par deux choix : favoriser un modèle bancaire transactionnel ; et ouvrir l'accès au marché bancaire domestique à des banques étrangères en moyenne moins corrompues.

Deuxièmement, toute initiative visant à développer des systèmes indépendants de notation éthique au niveau des firmes et organisations doit être encouragé.

Troisièmement, le développement financier a pour condition de possibilité l'existence d'un cadre juridique et judiciaire strict sanctionnant de façon équitable et sans faille la corruption.

Enfin, et même si ce point n'a pu être testé empiriquement, le troisième et dernier essai souligne que le système bancaire et l'intégrité de ses acteurs conditionnent la valeur de l'entreprise et de ses actifs. Celles-ci sont croissantes avec le degré d'intégrité des acteurs (firmes et banques) et impactent in fine la richesse nationale.

Nous avons terminé l'introduction de cette thèse par une référence à l'économiste et philosophe Amartya Sen. Celui-ci est l'illustre représentant d'une lignée d'économistes qui a toujours refusé de séparer l'économie de l'éthique. Cette lignée est jalonnée de noms tout aussi

célèbres : Aristote, Adam Smith, Karl Marx, John Rawls et Amartya Sen. Ces économistes, quels que soient leurs choix politiques, ont assigné à l'économie une finalité très haute, à savoir « la vie bonne », quitte à choisir pour cela des modèles de société diamétralement opposés.

Cette tradition éthique est aujourd'hui très largement supplantée par une tradition mécaniste qui assigne à l'économie une finalité plus matérielle : produire davantage et de façon plus efficiente. D'autres noms illustres l'ont incarnée, de Jean-Baptiste Say à Augustin Cournot, de Léon Walras aux plus récents lauréats du prix Nobel d'économie.

À notre place et très humblement, nous reconnaissons à l'une et l'autre de ces traditions des mérites distincts et complémentaires : à la tradition éthique, nous empruntons l'idée que l'éthique est d'une dimension supérieure à l'économie qui n'est jamais que l'ensemble des techniques et des savoirs au service d'une production. À la tradition mécaniste, nous reconnaissons la nécessité de rationaliser les choix financiers au service de la maximisation de la valeur.

Très modestement, en prenant l'exemple particulier du choix d'un pool bancaire par une entreprise, nous avons illustré la nécessité de concilier ces deux traditions ; l'optimisation financière ne peut ignorer l'intégrité des acteurs.

Lille, le 3 juin 2018

## General Conclusion

By way of general conclusion, we would like to stress three points: the results of the thesis and their innovative character; the overall coherence of the thesis and the results; and their political implications.

Concerning results, we first confirmed that the client relationships (the bank-firm relationships) are a powerful lever to maximise firms' access to credit. Firms can also mobilise their political connections for this purpose; this is already in itself a result. However, the main result of the first test is the complementarity between these two channels. In other words, firms use their client relationships to make their political connections more effective. Probably this is due to the identical nature of the political connections at the respective summits of banks and firms. This result illustrates the dark side of the "banking relationship".

Other results obtained relate to the structure of firm's pool of banks. We confirm that corruption at the local level tends to have a positive effect on the number of banks in the pool of banks. However, we are adding more results. When a firm is politically connected, it tends to choose an equally connected main bank and reduce the size of its pool of banks, as well as the diversity of types of banks within that pool of banks.

If we add managerial ethics as an additional parameter, the previous results are confirmed and refined. In other words, the most ethical firms tend to pair with banks that are also ethical, while corrupt firms choose corrupt main banks. In this case, when marriages between firms and main banks have ideally taken place, the size of the pool of banks decreases. Conversely, when a firm is linked with the main bank that does not have the same level of integrity, it modulates this mismatch and the associated costs by increasing the number of its banks in the pool.

These results are very consistent with each other. Thus, the first essay tests and its results naturally call for the conclusions of the two following tests. Indeed, if the bank-firm relationships and political connections are positively associated with greater availability of credit in a complimentary sense, it is not surprising that politically connected firms choose banks that are also politically connected to boost the effectiveness of their political connections.

In this case, the size of the pool of banks is a source of costs and must be limited, because it does not contribute to access to credit, which is more a political game.

The second essay and third essay are also very consistent. The choice of the firm's main bank is largely influenced by the degree of relative corruption of the firm and the bank. This result is confirmed when the manager's ethical commitment is taken into account.

The political implications of this thesis are relevant and related to the structuring of banking systems in emerging countries with high corruption rates. Four elements should be highlighted here.

First of all, the relational bank financing does have a dark side, in that it amplifies the effectiveness of political connections concerning access to credit and distorts the market a little more. Public and regulatory authorities, if they are aware of this at the same time as they want to eradicate corruption to enter the international financial arena, must, therefore, limit the effectiveness of "investment" in corruption at the level of economic agents. This policy involves two choices: promoting a transactional banking model; and opening access to the domestic banking market for foreign banks in the way of less corruption.

Secondly, any initiative aimed at developing independent ethical rating systems at the level of firms and organisations must be encouraged.

Third, financial development is conditional on the existence of a strict legal and judicial framework that punishes corruption fairly and without fail.

Finally, and even if this point could not be empirically tested, the third and last test underlines that the banking system and the integrity of its actors condition the value of the firm and its assets. These are growing with the degree of integrity of the players (firms and banks) and ultimately impact national wealth.

We had ended the introduction of this thesis regarding the economist and philosopher Amartya Sen. He is the illustrious representative of a line of economists who have always refused to separate economics from ethics. This line is dotted with equally famous names: Aristotle, Adam Smith, Karl Marx, John Rawls and Amartya Sen. These economists, whatever

their political choices, have assigned to the economy a very high goal, namely ‘the good life’, even if it means choosing opposed models of society.

This ethical tradition is today primarily superseded by a mechanistic tradition that assigns to the economy a more real purpose: to produce more and more efficiently. Other illustrious names have embodied it, from Jean-Baptiste Say to Augustin Cournot, from Léon Walras to the most recent Nobel Prize winners in economics.

In our place and very humbly, we recognise in each of these traditions distinct and complementary merits: in the ethical tradition, we borrow the idea that ethics is of a dimension superior to the economy which is never only the set of techniques and knowledge at the service of production. In the mechanistic tradition, we recognise the need to rationalise financial choices to maximise value.

Very modestly, taking the particular example of a firm’s choice of a pool of banks, we have illustrated the need to reconcile these two traditions; financial optimisation cannot ignore the integrity of the players.

Lille, 3 June 2018.

## List of Hypotheses

### Chapter 1:

Hypothesis 1.1.1: Longer relationships between firms and their main banks increase credit availability..... 62

Hypothesis 1.1.2: Higher numbers of banks (i.e., less-concentrated borrowing) increase credit availability..... 62

Hypothesis 1.2.1: Politically connected firms are likely to have greater credit availability than other firms..... 65

Hypothesis 1.2.2: Politically connected firms are likely to have greater credit availability than other firms especially when they operate in corrupt provinces..... 65

Hypothesis 1.3 Bank–firm relationships (either length of main bank–firm relationships or higher numbers of banks) can substitute for political connections in fostering credit availability..... 66

### Chapter 2:

Hypothesis 2.1.1: Connected firms are more likely to establish MBRs with connected banks..... 112

Hypothesis 2.1.2: Connected firms are more likely to establish MBRs with connected banks, especially when the firms operate in corrupt provinces..... 112

Hypothesis 2.2.1: Connected firms are more likely to reduce their numbers of banks when MBRs with connected banks are achievable..... 113

Hypothesis 2.2.2: Connected firms are more likely to reduce their numbers of banks when MBRs with connected bank are achievable and especially when they operate in corrupt provinces..... 113

Hypothesis 2.3.1: Connected firms are more likely to have less diversity of bank ownership types when MBRs with connected banks are achievable..... 113

Hypothesis 2.3.2: Connected firms are more likely to have less diversity of bank ownership types when MBRs with connected banks are achievable and especially when they operate in corrupt provinces..... 113

### **Chapter 3:**

Hypothesis 3. 1: All things being equal, an ethical firm that perceives its main bank as corrupt during 2010–2012 has a diversified bank pool in 2013. .... 161

Hypothesis 3. 2: All things being equal, an unethical firm that perceives its main bank as corrupt during 2010–2012 has a concentrated bank pool in 2013..... 161

Hypothesis 3. 3: All things being equal, an ethical firm that perceives its main bank as honest during 2010–2012 has a concentrated bank pool in 2013..... 161

Hypothesis 3. 4: All things being equal, an unethical firm that perceives its main bank as honest during 2010–2012 has a diversified bank pool in 2013. .... 161

Hypothesis 3. 5: All things being equal, a non-ethical firm that perceives its main bank as corrupt or an ethical firm that perceives its main bank as honest during 2010–2012 has a concentrated bank pool in 2013. .... 165

## List of Equations

### Chapter 1:

Equation 1. 1 The effects of bank–firm relationships on firms’ credit availability ..... 74

Equation 1. 2 The effects of political connections on firms’ credit availability ..... 76

Equation 1. 3 The effects of the interaction of bank–firm relationships with connected firms, and with connected firms that operate in corrupt provinces on firms’ credit availability ..... 77

Equation 1. 4 The direct influence of political connections and credit availability on bank–firm relationships ..... 78

### Chapter 2:

Equation 2. 1 The connected firm’s likelihood of having an MBR with a connected bank when the firm operates in a corrupt province ..... 121

Equation 2. 2 The effects of MBRs with connected banks on numbers of banks of connected firms and when the firms operated in corrupt provinces..... 122

Equation 2. 3 The effects of MBRs with connected banks on numbers of bank ownership types of connected firms and when the firms operated in corrupt provinces ..... 123

### Chapter 3:

Equation 3. 1 The bank pool structure of the ethical firm when the main bank is a corrupt bank ..... 161

Equation 3. 2 The bank pool structure of the non-ethical firm when the main bank is an honest bank ..... 162

Equation 3. 3 The bank pool structure of the firm when the integrity of their main bank matches their own level of ethics ..... 165

## List of Abbreviations

CEO	Chief executive officer
CPI	Corruption perception index
DPO	Days payable outstanding
DRO	Days receivable outstanding
FOB	Foreign-owned bank
GOB	Government-owned bank
GSO	General statistic office
HOSE	Ho Chi Minh City stock exchange
HSX	Hanoi stock exchange
INDEM	Information for Democracy Foundation
MBR	Main bank relationship
OLS	Ordinary least squares
PCI	Provincial competitiveness index
PME	Petite et moyenne entreprise
POB	Private-owned bank
R&D	Research and development
SBV	State bank of Vietnam
SD	Standard deviation
SME	Small and medium-sized enterprise
SOE	State-owned enterprise
TI	Transparent International
UPCoM	The company that has not been publicly traded.
USAID	United State agency for international development
USD	US Dollar
VCCI	Vietnamese chamber of commerce and industry
WB	World Bank
WLS	Weighted least squares

## Table of Contents

<b>Remerciements .....</b>	<b>1</b>
<b>Table of Contents .....</b>	<b>5</b>
<b>List of Tables.....</b>	<b>7</b>
<b>List of Appendix .....</b>	<b>9</b>
<b>Résumé .....</b>	<b>10</b>
<b>Introduction générale.....</b>	<b>13</b>
i) Le cadre de la thèse .....	13
ii) Les questions de recherche : énoncé et motivation.....	17
iii) Une base de données originale.....	23
iv) Brève présentation des résultats .....	27
Référence .....	30
<b>General Introduction .....</b>	<b>35</b>
i) The framework of the thesis.....	35
ii) Research questions: statement and motivation .....	39
iii) An original database .....	44
iv) Brief presentation of results .....	48
Reference .....	50
<b>Chapter 1: Are Bank–Firm Relationships and Political Connection Substitutes or Complements? How Firms Maximize Credit Availability: The Case of Vietnam.....</b>	<b>55</b>
Abstract.....	55
1.1. Introduction .....	56
1.2. Literature review.....	61
1.3. Context of the study, data and variables.....	67
1.4. Empirical methodology .....	74
1.5. Results .....	78
1.6. Robustness Tests.....	83
1.7. Conclusion .....	84

Reference .....	86
<b>Chapter 2: Political connections, local corruption, and firm’s bank pool structures: Empirical evidence from Vietnam .....</b>	<b>105</b>
Abstract.....	105
2.1. Introduction .....	106
2.2. Literature review and hypotheses development .....	110
2.3. Context of the study, data and variables.....	113
2.4. Empirical methodology .....	119
2.5. Results .....	124
2.6. Robustness tests.....	130
2.7. Conclusion.....	131
Reference .....	133
<b>Chapter 3: Bank Integrity, Managerial Ethics and Firms’ Bank-Pool Structure: A Theoretical Approach and Empirical Evidence from Vietnam .....</b>	<b>146</b>
Abstract.....	146
3.1. Introduction .....	147
3.2. Model.....	151
3.3. Context of the Study, Data, and Variables .....	156
3.4. Methodology and Model .....	160
3.5. Results .....	163
3.6. Conclusion.....	165
Reference .....	167
<b>Conclusion générale .....</b>	<b>182</b>
<b>General Conclusion .....</b>	<b>185</b>
<b>List of Hypotheses .....</b>	<b>188</b>
<b>List of Equations.....</b>	<b>190</b>
<b>List of Abbreviations.....</b>	<b>191</b>
<b>Table of Contents .....</b>	<b>192</b>



## La relation de clientèle banque-entreprise et la structure du pool bancaire dans un environnement corrompu : trois essais

### Résumé

Cette thèse consiste en trois recherches sur le financement bancaire des entreprises. Le premier essai met l'accent sur l'influence des relations bancaires et des connexions politiques sur l'accès des entreprises au crédit. Il utilise un ensemble de données collectées manuellement sur les moyennes entreprises vietnamiennes pour montrer que les relations bancaires (durée de la relation avec la banque principale et le nombre de banques) et les connexions politiques ont des effets complémentaires sur la maximisation de la disponibilité du crédit pour les entreprises. Cette recherche a des implications politiques pour les économies émergentes caractérisées par la corruption gouvernementale locale ; elle suggère que les décideurs politiques devraient préférer les systèmes bancaires transactionnels aux systèmes bancaires relationnels, et elle expose le côté obscur des relations bancaires. Le deuxième essai examine les effets des connexions politiques et de la corruption locale sur les structures du pool bancaire des entreprises. En utilisant le même ensemble de données que dans notre premier essai, nous constatons que les entreprises politiquement connectées ont tendance à établir leurs relations bancaires principales avec les banques connectées. Nous constatons également que les entreprises connectées réduisent le nombre de banques et la diversité des types de propriétés des banques dans leurs pools bancaires lorsqu'elles établissent des relations avec les banques connectées ; ces entreprises maintiennent ces structures de pool bancaire lorsque la corruption est répandue dans leur province d'origine. Les résultats montrent que la corruption locale est associée positivement au nombre de banques et à la diversification des types de propriétés des banques. Le dernier essai explore la structure du pool bancaire des entreprises dans les économies émergentes caractérisées par la corruption. Dans le modèle théorique proposé, les gestionnaires d'entreprise maximisent une fonction d'utilité attendue qui dépend à la fois de la valeur de l'entreprise et de la consommation personnelle. En fonction du poids qu'ils attribuent à chaque composante, les gestionnaires choisissent parmi trois structures du pool bancaire pour combiner un certain nombre de banques et le choix d'une banque principale plus ou moins corrompue. Le test de ce modèle repose sur un riche ensemble de données provenant d'entreprises vietnamiennes que dans notre premier essai. Les résultats confirment que les entreprises et les banques sont de même niveau d'intégrité. En outre, les entreprises ont tendance à augmenter le nombre de banques dans le pool bancaire lorsqu'elles ne peuvent pas établir une relation avec une banque principale souhaitable.

**Mots clefs français :** La disponibilité du crédit, la relation de clientèle banque-entreprise, la structure du pool bancaire, la connexion politique, la corruption, l'éthique managériale.

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### ***Bank-firm relationship and the firm's bank pool structure in corrupt environment: three essays***

### Abstract

This thesis consists of three research on the firms' bank financing. The first essay focuses the influences of bank-firm relationships and political connections on firms' access to credit. It uses a manually collected data set of Vietnamese medium-sized enterprises to show that bank-firm relationships (length of relationship with main bank and number of banks) and political connections have complementary effects on maximizing firms' availability of credit. This research has policy implications for emerging economies characterized by local government corruption; it suggests that policymakers should prefer transactional banking systems to relationship banking systems, and it exposes the dark side of bank-firm relationships. The second essay investigates the effects of political connections and local corruption on the structures of firms' bank pools. Using the same data set with our first essay, it finds that politically connected firms tend to establish their main bank relationships with connected banks. It also finds that connected firms reduce their numbers of banks and their diversity of bank ownership types in their bank pools when they achieve main bank relationships with connected banks; such firms maintain these bank pool structures when corruption is prevalent in their home provinces. Results demonstrate that local corruption is associated positively with number of banks and diversification of bank ownership types. The last essay explores the structure of firms' bank pools in emerging economies characterized by corruption. In the proposed theoretical model, firm managers maximize an expected utility function that depends on both firm value and personal consumption. According to the weight they assign to each component, managers choose among three bank pool structures to combine some number of banks and the choice of a main bank that is more or less corrupt. The test of this model relies on the same rich data set with our first essay. The results confirm that firms and banks match, in terms of their levels of integrity. Moreover, firms tend to increase the number of banks in the bank pool when they cannot achieve a relationship with a desirable main bank.

**Keywords:** Credit availability, bank-firm relationship, firm bank pool structure, political connection, corruption, managerial ethics.

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