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THÈSE DE DOCTORAT

DE L'UNIVERSITÉ PSL

Préparée à l'Université Paris Dauphine

**Corruption et développement: une analyse
microéconomique**

Soutenue par

Sarah MORCILLO

Le Vendredi 15 Novembre 2019

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*« La seule limite à notre
épanouissement de demain sera
nos doutes d'aujourd'hui. »*

Franklin Delano Roosevelt

À mes parents.

L'Université Paris-Dauphine n'entend donner aucune approbation ni improbation aux opinions émises dans les thèses; ces opinions doivent être considérées comme propres à leurs auteurs.

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Table des matières

Table des matières	ix
Liste des figures	xiii
Liste des tableaux	xv
Introduction générale	1
0.1 La corruption : un enjeu majeur des politiques de développement	1
0.2 Présentation des données d'enquête et mesure de la petite corruption	6
0.2.1 L'enquête 1-2-3	7
0.2.2 L'enquête auprès des petites et moyennes entreprises manufactu- rières au Vietnam	8
0.2.3 L'enquête nationale des ménages au Pérou (Enquesta Nacional de Hogares (ENAHO)	9
0.3 Objectifs et grandes lignes de la thèse	10
1 Corruption and informality, evidence from WAEMU capital cities	19
1.1 Introduction	20
1.2 Informality and corruption	22
1.2.1 Ambiguous definitions and measurement approaches	22
1.2.2 Does corruption promote or hamper formalization?	23
1.2.3 Firms' incentives to formalize : a theoretical framework	26
1.3 Data	28
1.3.1 The 1-2-3 Survey	28
1.3.2 Definition of variables	30
1.3.3 The informal production units in WAEMU : a descriptive overview . .	31
1.4 Corruption and firm's registration : the analytical framework	37
1.5 Results	40
1.5.1 Corruption incidence	40
1.5.2 Corruption vs. other means to settle a dispute	41

1.5.3 Bribe amounts	44
1.6 Conclusion	46
2 Firm-level corruption	
Unravelling sand from grease	53
2.1 Introduction	54
2.2 Literature review : firm-level corruption and performance	56
2.2.1 A "sand" or "grease the wheels" effect?	56
2.2.2 A need to differentiate between types of corruption	58
2.3 Data and descriptive statistics : patterns of bribe payment among Vietna- mese SMEs	60
2.4 Identifying the effects of voluntary and extortive bribe payment on firms . . .	64
2.5 The immediate 'returns to corruption' : Does it pay to bribe to obtain go- vernment contracts and avoid taxes?	66
2.6 Target indicators : firm-level corruption and firm performance	68
2.7 Conclusion	81
3 Corruption and institutional trust : evidence from the peruvian national house- hold survey	87
3.1 Introduction	89
3.2 Literature review : what are the expected effects of corruption on trust? . . .	92
3.2.1 Institutional trust	92
3.2.2 Corruption : a necessary evil?	93
3.3 Corruption in Peru : the historical background	95
3.3.1 Controlling the country's main institutions	97
The Armed Forces	97
The Judiciary System	97
3.4 Data : Corruption and politic legitimacy in Peru	99
3.4.1 The ENAHO survey	99
3.4.2 Trust, corruption and democracy	100
3.4.3 Measurement methods	105
Measuring trust in institutions : multidimensional trust index	105
Testing the validity of the scores' construction : The Cronbach's alpha method	108
Measuring corruption : two dimensions examined	111
3.5 Empirical strategy and findings	113
3.5.1 Model specification	113
3.5.2 Results	115

TABLE DES MATIÈRES

Results for trust scores	115
Additional results for trust outcomes	119
3.6 Conclusion	121
Conclusion générale	133
Annexes	I
.1 Tableaux annexes	I
.1.1 Chapter 1	I
.1.2 Chapter 2	III
.1.3 Chapter 3	IV

Liste des figures

1	Extrait de la résolution 70/1 adoptée par l'Assemblée générale de l'ONU le 25 septembre 2015	2
1.1	Advantages of registration according to IPU's leaders	36
3.1	Perception of the functioning of democracy (percentage of sample's respondents)	101
3.2	Percentage of the respondents seeing corruption as the major problem of the country	103
3.3	Perception and experience of corruption in Peru (2007-2014, percentage of sample's respondents)	104
3.4	Category points of the MCA trust variables in two dimensions	107

Liste des tableaux

1.1	Basic characteristics of an IPU (means)	32
1.2	Current registration status (%)	34
1.3	Willingness to register *	34
1.4	Reasons for non registration	35
1.5	Probit estimation-Willingness to register	41
1.6	Corruption and other settlements-Marginal Effects	42
1.7	Bribe amounts and willingness to register	43
1.8	Effects of bribe amounts on willingness to register	45
2.1	Descriptive statistics (unbalanced panel)	62
2.2	Descriptive statistics (balanced panel)	63
2.3	Questions recording the experience of corruption	63
2.4	Sale percentage to state customers	66
2.5	Ln total taxes paid	68
2.6	General corruption and firm performance : bribe dummy and firms' size	70
2.7	General corruption and firm performance : bribe amounts and firms' size	72
2.8	General corruption and firm performance : bribe dummy and efficiency	73
2.9	General corruption and firm performance : bribe amounts and efficiency	73
2.10	Sand corruption and firm performance	75
2.11	Grease corruption and firm performance : firms' size	77
2.12	Grease corruption and firm performance : efficiency	78
2.13	Sale percentage to state customers and Ln total taxes paid : sample restricted	79
2.14	Sand corruption : sample restricted	80
2.15	Grease corruption : sample restricted	81
3.1	Level of institutional mistrust	100
3.2	Individuals who think democracy does not work or works very poorly according to their perception and experience of corruption(%)	102
3.3	Description of variables	105
3.4	Trust scores : descriptive statistics	108

3.5	Correlation matrix for the graduated response trust items	110
3.6	Correlation matrix for the dichotomous response trust items	110
3.7	Cronbach's alpha calculated values	110
3.8	OLS estimation : scores of institutional trust and first perception variable - Individual and time fixed effects included	116
3.9	OLS estimation : scores of institutional trust and second perception va- riable - Individual and time fixed effects included	117
3.10	OLS estimation : scores of institutional trust and third perception variable - Individual and time fixed effects included	118
3.11	Experiencing corruption - OLS estimation with individual and time fixed effects	119
3.12	Ordered probit estimates : Experienced corruption and levels of trust - Time effects included	120
13	Have you already attempted to register your activity? (%)	I
14	Corruption and other settlements of issues with officials	II
15	Corruption and institutional trust : Hausman test results for each specifica- tion	III
16	Overview of firm-level (published) empirical studies on corruption and firm performance	V

Introduction générale

0.1 La corruption : un enjeu majeur des politiques de développement

Alors que l'ère des Objectifs du Millénaire pour le Développement (OMD) a touché à sa fin en 2015, 2016 a marqué le lancement officiel de l'Agenda 2030 pour un développement durable. Ce programme, adopté par les dirigeants du monde entier le 25 septembre 2015 aux Nations Unies appelle les pays à entreprendre des efforts pour atteindre dix-sept objectifs de développement durable (ODD) et 169 mesures cibles à l'horizon 2030. Ces objectifs s'inscrivent dans le prolongement des OMD et sont destinés à orienter l'élaboration des politiques et le développement pour les onze prochaines années. Ils visent également à réaliser ce que ceux-ci n'ont pas permis de faire en conciliant plusieurs dimensions du développement durable notamment économique et sociale. Le seizième objectif de développement durable de ce nouveau programme a pour but de répondre à "la nécessité d'édifier des sociétés pacifiques, justes et inclusives, qui offrent à tous un accès à la justice dans des conditions d'égalité et qui soient fondées sur le respect des droits de l'homme (y compris le droit au développement), un véritable état de droit et une bonne gouvernance à tous les niveaux, et sur des institutions transparentes, efficaces et responsables. Il prend en compte les facteurs tels que les inégalités, la corruption, la mauvaise gouvernance [...], l'insécurité et l'injustice." [ONU, 2015]. Plusieurs mesures clés de ce seizième objectif visent plus particulièrement à promouvoir une meilleure gouvernance institutionnelle et réduire la corruption. En effet, les cibles 16.4, 16.5, 16.6 et 16.10 sont particulièrement pertinentes pour la bonne gouvernance et la lutte contre la corruption aux niveaux mondial, national et régional (Figure 1).

La lutte contre la corruption est en effet au coeur des préoccupations politiques et économiques et s'avère être une condition nécessaire à une société juste et équitable et

FIGURE 1 – Extrait de la résolution 70/1 adoptée par l'Assemblée générale de l'ONU le 25 septembre 2015

<p>Objectif 16. Promouvoir l'avènement de sociétés pacifiques et inclusives aux fins du développement durable, assurer l'accès de tous à la justice et mettre en place, à tous les niveaux, des institutions efficaces, responsables et ouvertes à tous</p> <p>16.1 Réduire nettement, partout dans le monde, toutes les formes de violence et les taux de mortalité qui y sont associés</p> <p>16.2 Mettre un terme à la maltraitance, à l'exploitation et à la traite, et à toutes les formes de violence et de torture dont sont victimes les enfants</p> <p>16.3 Promouvoir l'état de droit dans l'ordre interne et international et garantir à tous un égal accès à la justice</p> <p>16.4 D'ici à 2030, réduire nettement les flux financiers illicites et le trafic d'armes, renforcer les activités de récupération et de restitution des biens volés et lutter contre toutes les formes de criminalité organisée</p> <p>16.5 Réduire nettement la corruption et la pratique des pots-de-vin sous toutes leurs formes</p> <p>16.6 Mettre en place des institutions efficaces, responsables et transparentes à tous</p> <p>16.7 Faire en sorte que le dynamisme, l'ouverture, la participation et la représentation à tous les niveaux caractérisent la prise de décisions</p> <p>16.8 Élargir et renforcer la participation des pays en développement aux institutions chargées de la gouvernance au niveau mondial</p> <p>16.9 D'ici à 2030, garantir à tous une identité juridique, notamment grâce à l'enregistrement des naissances</p> <p>16.10 Garantir l'accès public à l'information et protéger les libertés fondamentales, conformément à la législation nationale et aux accords internationaux</p> <p>16.a Appuyer, notamment dans le cadre de la coopération internationale, les institutions nationales chargées de renforcer, à tous les niveaux, les moyens de prévenir la violence et de lutter contre le terrorisme et la criminalité, en particulier dans les pays en développement</p> <p>16.b Promouvoir et appliquer des lois et politiques non discriminatoires pour le développement durable</p>

Source : Résolution 70/1. *Transformer notre monde : le Programme de développement durable à l'horizon 2030*, Organisation des Nations Unies, New York

à un développement durable. Obstacle majeur à la réalisation d'un grand nombre de ces objectifs, la corruption entrave la croissance économique (Mauro [1995], Tanzi and Davoodi [1998], Guetat [2006]), aggrave la pauvreté, creuse les inégalités de revenus (Gupta

et al. [2002], Dincer and Gunalp [2008]), d'accès aux services publics et de redistribution des ressources. En outre, la corruption se produit à tous les stades de la chaîne de prestation de services minant ainsi la quantité et la qualité de ces services. Elle limite l'accès aux services de santé et d'éducation en réduisant notamment les dépenses budgétaires allouées à ces services [Shleifer and Vishny, 1993] et en limitant en amont les recettes fiscales (Shleifer and Vishny [1993], Hindriks et al. [1999], Haque and Sahay [1996], Tanzi and Davoodi [1998], Johnson et al. [1998]) ce qui nuit à leur qualité [Bearse et al., 2000] avec un impact disproportionné sur les plus pauvres.

L'expérience des OMD semble suggérer que les résultats positifs à court terme ne seront pas durables à plus long terme si les pratiques de corruption ne diminuent pas¹. C'est pourquoi l'Agenda 2030 reconnaît expressément la corruption comme un obstacle majeur aux progrès en ce qui concerne les OMD et que des objectifs et indicateurs de gouvernance responsable ont été fixés au niveau mondial dans le cadre de l'ODD 16 sur la gouvernance durable. C'est dans l'esprit d'une meilleure compréhension du phénomène de corruption et de ses conséquences que s'articulent les trois chapitres de cette thèse, chacun se focalisant sur des aspects encore peu étudiés et des pays faisant partie des trois régions les plus impactées par la corruption sous toutes ses formes : l'Asie-Pacifique, l'Amérique Latine et l'Afrique Subsaharienne. Par ailleurs, la faisabilité de ce travail a été conditionnée par la disponibilité des données analysées. Ces données m'ont permis d'orienter les enjeux de développement sur lesquels j'ai choisi de me concentrer à savoir la formalisation des petites unités de production informelles en Afrique de l'Ouest, la performance des petites et moyennes entreprises au Vietnam et la confiance institutionnelle des ménages au Pérou. Pour chacun de ses enjeux, l'objectif de ce travail a été de déterminer s'il existe un lien de causalité avec la corruption afin d'en définir les conséquences.

Définir la corruption : un pré-requis nécessaire

Le terme "corruption" couvre un large éventail de comportements, à différentes échelles, impliquant des méthodes de mesures spécifiques. Il n'existe pas de définition unique, complète et universellement acceptée de la corruption. Les tentatives d'élaboration d'une telle définition se heurtent inéluctablement à des problèmes juridiques, pénaux et, dans

1. Les OMD ont permis de nombreux progrès notamment en terme de réduction de l'extrême pauvreté et de la faim. Ces progrès sont menacés entre autre par le gaspillage et la corruption qui privent l'aide publique au développement de son efficacité.

de nombreux pays, politiques. Lorsque les négociations de la Convention des Nations Unies contre la corruption ont commencé début 2002, l'une des options envisagées n'était pas du tout de définir la corruption, mais d'énumérer des types ou des actes de corruption spécifiques. En outre, les propositions visant à obliger les pays à ériger la corruption en infraction pénale couvraient principalement des infractions ou des groupes d'infractions spécifiques qui dépendaient du type de comportement en cause. De nombreuses formes spécifiques de corruption sont clairement définies et comprises et font l'objet de diverses définitions juridiques ou académiques. Quelles que soient les personnes impliquées et les comportements associés, la corruption implique l'octroi d'un avantage dans le but d'influencer indûment une action ou une décision. Dans ce travail de thèse, c'est essentiellement l'expérience de la "petite corruption" qui est étudiée et analysée grâce à des données d'enquête auprès de ménages et d'entreprises². La "petite" corruption peut impliquer l'échange de très petites sommes d'argent, l'octroi de faveurs par ceux qui recherchent un traitement préférentiel ou l'emploi d'amis et de parents à des postes mineurs. La différence la plus évidente entre la "grande" corruption et la petite corruption est que la "grande" corruption induit la distorsion ou la corruption des fonctions centrales du gouvernement impliquant des montants élevés. La "petite" corruption en revanche se développe et existe à un niveau individuel, dans un contexte de gouvernance établi, impliquant des sommes moindres et des "petits fonctionnaires". La "grande" corruption sévit en effet aux plus hauts sommets de l'Etat, ce qui entraîne une large érosion de la confiance dans la bonne gouvernance, la primauté du droit et la stabilité économique [Rose-Ackerman, 2000]. Cette dimension de la corruption est analysée dans le deuxième chapitre de cette thèse à travers les variables de perception des ménages péruviens.

La "petite" corruption peut se manifester sous plusieurs formes. Le paiement de pots de vin est probablement la forme de corruption la plus courante. Le "bénéfice" attendu de cette forme de corruption découle de diverses formes d'incitation - obtention d'argent ou d'objets de valeur, actions au sein d'une entreprise, accès à des informations confidentielles, faveurs diverses, avantage liés à l'emploi ou simplement une promesse de récompenses. L'avantage peut être transmis directement ou indirectement à la personne corrompue ou à un tiers, tel qu'un ami, un parent, un associé, un organisme de bienfaisance, une entreprise privée, un parti politique ou lors d'une campagne électo-

2. Le terme générique "entreprises" fait ici référence à des petites et moyennes entreprises au Vietnam et à des unités de production informelles en Afrique de l'Ouest.

rale. Le résultat espéré suite au versement d'un pot-de-vin peut être actif ou passif. Un exemple de comportement actif recherché par l'acte de corruption serait l'exercice d'une influence administrative ou politique tandis qu'un comportement passif consisterait à ignorer intentionnellement une infraction ou une obligation. Les différents paiements informels relevés dans les enquêtes utilisées tout au long de cette thèse concernent les deux types de bénéfices espérés. Ces derniers englobent la sollicitation et l'offre de cadeaux ou de paiements illégaux, généralement des pourboires ou des dessous-de-table, en échange de services de fonctionnaires publics. Ces transactions informelles ont pu également permettre d'échapper à l'impôt ou à d'autres coûts réglementaires ou d'obtenir des contrats avec l'État pour les entités ayant offerts des pots-de-vin aux fonctionnaires en charge de l'octroi de contrats gouvernementaux.

Il est très difficile de donner une définition précise et unique de la corruption dont il existe de nombreuses autres manifestations. Nous retiendrons néanmoins une caractéristique importante qui fait consensus dans la littérature : les différents actes de corruption s'appuient tous sur une violation des normes de la fonction publique par un agent public (A) agissant dans son intérêt personnel afin d'obtenir des gains privés illégitimes [Rose-Ackerman and Palifka, 1999] nuisant ainsi aux intérêts du public (B) au profit d'un tiers (C) qui récompense A pour l'accès à des biens ou services que C n'obtiendrait pas autrement.

0.2 Présentation des données d'enquête et mesure de la petite corruption

La lutte contre la corruption pose la question essentielle de la mesure de ce phénomène dont il est nécessaire de "quantifier" au mieux l'incidence afin d'identifier la menace qu'il représente et d'évaluer les efforts pour l'éradiquer. Aussi, mesurer le plus finement et correctement possible la corruption est une des clés de la progression vers plus d'intégrité, de transparence et de responsabilité dans la gouvernance. Le caractère illégal et secret des transactions de corruption soulève un véritable défi lorsqu'il s'agit de la mesurer. Cela donne aux personnes impliquées dans des pratiques corrompues, une raison supplémentaire de déformer ou falsifier les informations qu'ils fournissent. Pourtant, au cours des deux dernières décennies, les études empiriques autour de ce phénomène n'ont cessé de se multiplier. L'approche standard longtemps utilisée afin de mesurer la corruption a été d'utiliser des indices nationaux de perception de la corruption reposant sur des enquêtes auprès de citoyens ou d'entrepreneurs du pays en question ou se basant sur des évaluations d'experts. Depuis le travail précurseur de Mauro [1995] qui a étudié la relation potentielle entre la corruption et la croissance économique à travers une analyse économétrique en coupe transversale sur un échantillon de plusieurs pays, de plus en plus d'études corrélant la corruption perçue au niveau national à des facteurs économiques, politiques ou encore socio-culturels ont vu le jour.

Bien que ces études aient contribué à notre compréhension de la relation entre la corruption et les agrégats importants des pays, leur plus grande limite réside dans le biais inhérent à la mesure de la corruption à travers les indices de perception. Par ailleurs, l'utilisation de données agrégées ne dit pas grand chose à propos de la corruption au niveau individuel dans la mesure où les facteurs macroéconomiques ne peuvent expliquer de manière satisfaisante les variations de la corruption à l'intérieur d'un pays [Reinikka and Svensson, 2006].

Au cours de la dernière décennie, l'utilisation de données d'enquête pour l'étude de la corruption a permis aux chercheurs d'aborder à la fois les problèmes de mesure et d'endogénéité qui limitent les résultats obtenus par les études précédentes. De nouvelles techniques ont permis de mieux comprendre comment la corruption se produit et comment les individus potentiellement corrompus réagissent à différents ensembles d'incitations monétaires et non monétaires.

Les données d'enquête : un important instrument d'évaluation

Dans ce travail de thèse, la corruption est mesurée et étudiée à partir de données d'enquêtes. Les enquêtes permettent de recueillir de l'information à partir de réponses à des questionnaires écrits ou des entrevues verbales. Les enquêtes utilisées dans cette thèse satisfont un certain nombre de critères garantissant leur qualité ainsi que celle des données recueillies. Elles combinent à la fois des données objectives (expérience de la corruption) et subjectives (perceptions ou opinions du répondant) et permettent d'obtenir un large éventail de données sur les types, la nature ou l'étendue de la corruption, ainsi que la perception qu'en a le public. Par ailleurs, chaque enquête permet de disposer d'échantillons représentatifs de la population.

Par ailleurs, la formulation des instruments d'enquête a été élaborée avec soin de sorte que les questions soient rédigées de manière à être comprises par tous les participants à l'enquête, quels que soient leur parcours ou leur niveau de scolarisation. Tous les répondants de l'enquête peuvent comprendre la question de la même façon y compris dans les cas où de nombreux répondants sont analphabètes ou jugés peu susceptibles de répondre à un questionnaire écrit grâce à des entrevues personnelles avec des enquêteurs formés pour poser tous les mêmes questions en utilisant la même terminologie. Ce travail de recherche utilise trois grandes enquêtes que nous allons décrire de manière plus précise dans les paragraphes qui suivent.

0.2.1 L'enquête 1-2-3

Cette enquête, utilisée dans le premier chapitre de cette thèse, est une série d'enquêtes originale portant sur les ménages urbains d'Afrique de l'Ouest. Cette vaste enquête a été menée dans sept grandes villes de l'Union économique et monétaire ouest africaine (Abidjan, Bamako, Cotonou, Dakar, Lomé, Niamey et Ouagadougou) en 2001, 2002 et 2003. Comme son nom l'indique, l'enquête 1-2-3 est une enquête en trois phases. La première phase est une enquête emploi large. Elle permet de documenter et d'analyser le fonctionnement du marché du travail et sert de filtre pour la deuxième phase, où un échantillon représentatif d'unités de production informelles (UPI) est étudié. Dans la deuxième phase de l'enquête, un échantillon de chefs d'UPI identifiés lors de la première phase a été interrogé. La phase 2 vise à mesurer les principales caractéristiques économiques et productives des UPI (production, valeur ajoutée, investissement, finan-

cement), les principales difficultés rencontrées dans le développement de leur activité et les demandes de soutien public des entrepreneurs informels. Enfin, dans la troisième phase, un sous-échantillon de ménages, sélectionné à partir de la phase 1, fait l'objet d'une enquête spécifique sur les revenus et les dépenses, conçue pour estimer le poids des secteurs formel et informel dans la consommation des ménages, par produit et par type de ménage. La phase 3 permet également d'estimer le niveau de vie et la pauvreté monétaire des ménages sur la base des revenus ou des dépenses de consommation. Ce premier chapitre porte sur la phase 2 de l'enquête.

0.2.2 L'enquête auprès des petites et moyennes entreprises manufacturières au Vietnam

Le deuxième chapitre s'appuie sur des données de panel et en coupe transversale auprès de petites et moyennes entreprises (PME) manufacturières vietnamiennes. L'enquête est le fruit d'une collaboration entre l'Institut central de gestion économique (CIEM) du Ministère de la planification et de l'investissement du Vietnam, l'Institut des sciences du travail et des affaires sociales (ILSSA) le Ministère du travail, des personnes en situation d'handicap et des affaires sociales du Vietnam, le Groupe de recherche sur l'économie du développement (DERG) de l'Université de Copenhague, et l'Institut mondial de recherche sur l'économie du développement de l'Université des Nations Unies (UNU-WIDER). L'enquête comporte deux composantes. Une première sous-enquête fournit des données en coupe transversale pour un échantillon de 2 647 entreprises dans 10 des 63 provinces du Vietnam en 2015. Le deuxième pan du projet fournit des données de panel non cylindrées sur les années 2011, 2013 et 2015 pour un total de 7 696 entreprises. La procédure d'échantillonnage est basée sur le Recensement des établissements et sur l'Enquête industrielle vietnamienne, n'incluant que des entreprises formelles. Une quantité importante d'entreprises informelles a été incorporée à l'échantillon à partir d'une identification sur le terrain. Ainsi, toutes les entreprises informelles interrogées exerçaient leur activité parallèlement aux entreprises formelles interrogées et ne permettaient pas d'assurer une représentativité de l'ensemble du secteur informel vietnamien.

0.2.3 L'enquête nationale des ménages au Pérou (Enquesta Nacional de Hogares (ENAHO))

Les données utilisées dans le troisième chapitre proviennent de l'Enquesta Nacional de Hogares (ENAHO) au Pérou. Cette enquête nationale à grande échelle auprès des ménages, coordonnée par l'Institut national péruvien de la statistique et de l'information (INEI) depuis 1995, est une enquête statistique continue générant des indicateurs trimestriels permettant de connaître l'évolution de la pauvreté, du bien-être et des conditions de vie des ménages et de mesurer la portée des programmes sociaux. L'enquête est menée au niveau national, dans les zones urbaines et rurales des vingt-quatre départements du pays et de la province constitutionnelle de Callao. Son but est d'avoir une image précise des conditions de vie de la population, de l'ampleur de la pauvreté dans le pays et de servir de source d'information aux institutions publiques et privées, ainsi qu'aux chercheurs. Dans ce troisième chapitre, nous nous concentrons en particulier sur un module de l'enquête intitulé "Gouvernance, transparence et démocratie". Ce module fournit des informations sur la confiance dans les institutions, la qualité perçue de la démocratie, l'expérience et la perception de la corruption ainsi que l'opinion des citoyens sur les principaux problèmes qui se posent dans le pays.

0.3 Objectifs et grandes lignes de la thèse

De manière générale, chaque chapitre de la thèse s'attache à déterminer et analyser les conséquences de la corruption dans des pays où son incidence est particulièrement importante. Malgré plusieurs études ayant mis en lumière les nombreux effets pervers de la corruption, la littérature connaît des divergences quant aux conséquences de ce phénomène. Le but de cette thèse est donc de déterminer, pour différents enjeux de développement, le rôle joué par la corruption. Plus particulièrement, il s'agit de mettre en évidence les interactions entre la corruption et certains des autres objectifs de développement durable (ODD). Trois enjeux essentiels de développement nous ont particulièrement intéressés tout au long de ce travail de recherche. Premièrement, la question de la formalisation des unités de production informelles en Afrique Subsaharienne où ce secteur représente une proportion significative des activités productives de la région, hors agriculture. Ensuite, c'est la question de la performance des petites et moyennes entreprises dont la promotion est au centre des politiques économiques qui nous a particulièrement intéressés dans le deuxième chapitre. Cet intérêt a pu être approfondi en une analyse qui a été possible grâce à une série d'enquête récente très riche en informations fournie par l'institut mondial de recherche sur l'économie du développement de l'Université des Nations Unies.

Enfin, la confiance dans les institutions publiques des membres des ménages péruviens est au coeur de l'analyse du troisième chapitre. Le contexte péruvien, fruit d'une histoire jonchée de scandales de corruption et d'abus de confiance, ainsi que la richesse fournies par l'enquête nationale des ménages ont particulièrement motivé l'écriture de ce chapitre sur la question essentielle de la qualité de la gouvernance institutionnelle et sa perception par les citoyens.

Premier chapitre : "Corruption and informality : evidence from the WAEMU³ capital cities"

En Afrique subsaharienne, l'informalité et la corruption sont des phénomènes endémiques. Néanmoins, les liens possibles entre ces deux caractéristiques des pays en développement demeurent relativement inexplorés dans la littérature existante. Tout comme la corruption, la question de la formalisation des petites structures informelles est au

3. West African Monetary Union

coeur des ODD. L'une des cibles de l'ODD n°8 est en effet de "promouvoir des politiques axées sur le développement qui [...] stimulent la croissance des microentreprises et des petites et moyennes entreprises et facilitent leur intégration dans le secteur formel".

Dans ce chapitre, nous utilisons un ensemble de données original et représentatif du secteur informel en milieu urbain Ouest Africain afin de mettre en évidence les interactions potentielles entre la corruption et la volonté de devenir formel au sein des chefs d'unités de production informelles (UPI). Pour ce faire, nous utilisons trois dimensions différentes de la corruption. Dans un premier temps, nous analysons l'impact du versement de pots-de-vin sur la volonté de s'enregistrer, que nous comparons ensuite avec d'autres moyens de règlement de problèmes avec des fonctionnaires publics comme le paiement d'amendes. Le seul comportement de corruption n'a pas d'impact significatif sur la volonté de s'enregistrer. Néanmoins, lorsque nous mettons les choses en perspective et que l'on considère les différents types de règlement de problèmes, nous constatons que le paiement de pots-de-vin et d'amendes ont tous deux un impact positif significatif sur la volonté de se formaliser avec un effet plus dissuasif des amendes qui augmentent d'au moins 48% la probabilité d'être prêt à s'enregistrer. Nous utilisons ensuite le logarithme des montants de pots-de-vin versés par l'individu enquêté comme troisième mesure de la corruption et constatons que plus les montants versés en pots-de-vin sont importants, plus la probabilité d'être prêt à formaliser est élevée. Cet effet persiste après avoir pris en compte l'endogénéité de la variable corruption et avoir instrumenté les montants de pots-de-vin par la moyenne des pots-de-vin versés par les unités de productions du même pays, disposant du même type de local d'activité. Nous constatons un effet positif significatif des pratiques de corruption sur la volonté de de formaliser.

Contrairement aux résultats les plus souvent rencontrés selon lesquels les niveaux élevés de corruption tendent à accroître l'informalité en évitant les paiements extorqués lors du processus d'enregistrement (De Soto [1989], Johnson et al. [1997], Djankov et al. [2003], Friedman et al. [2000]), nous constatons que dans les capitales d'Afrique de l'Ouest, la corruption ne contribue pas à maintenir les UPI dans l'informalité mais, au contraire, les incite à vouloir formaliser leur activité. Cela nous amène à suggérer, dans le cadre de politiques de formalisation des UPI, de cibler également d'autres aspects liés à l'informalité. Aussi, au delà des politiques de lutte contre la corruption, d'autres mesures sont à envisager telles qu'un assouplissement ou un accompagnement du processus de formalisation [Campos et al., 2015] souvent long, complexe et coûteux un allègement des taxes et impôts appliqués aux entreprises formelles ou des exonérations fiscales afin

d'inciter les chefs d'unités de production à se formaliser [Maloney, 2004]. Ces mesures peuvent également passer par une sensibilisation accrue sur les différents coûts subis dans le secteur informel ou des campagnes de communication car les chefs d'UPI ne semblent pas, au regard des réponses à l'enquête, connaître les réglementations en vigueur.

Deuxième chapitre : "Firm-level corruption, unravelling sand from grease"

De la même manière que la lutte contre la corruption, la croissance des micro, petites et moyennes entreprises est au coeur des ODD. L'ODD 8 vise, entre autres cibles, à "parvenir à un niveau élevé de productivité économique" et "promouvoir des politiques [...] qui favorisent des activités productives, la création d'emplois décents, l'entrepreneuriat [...] et stimulent la croissance des microentreprises et des petites et moyennes entreprises." Combattre la corruption est-il donc un moyen d'y parvenir?

Ce chapitre examine la nature complexe des effets de la corruption sur les entreprises au Vietnam. L'objectif de ce troisième chapitre est d'apporter un éclairage sur ce que l'on pourrait considérer comme des avantages de la corruption du point de vue des entreprises. La corruption peut être perçue, lorsqu'il s'agit d'une décision individuelle, comme un compromis entre les risques et les gains; notre analyse révèle certains des gains qui peuvent survenir.

L'une des principales contributions de ce chapitre provient de différenciation des pots-de-vin selon leur finalité, ce qui permet de distinguer le type de pot-de-vin " extorqué " (contraint) du paiement " volontaire " (proactif). Les résultats montrent que la corruption au niveau de l'entreprise est globalement associée à une taille d'entreprise nettement plus importante (mesurée par le nombre de travailleurs et le total des actifs), mais pas à des résultats à court terme plus élevés (mesurés en terme de valeur ajoutée). Une analyse plus poussée des types de pots-de-vin montre que les pots-de-vin destinés à obtenir de nouveaux marchés ont un lien immédiat et fort avec le pourcentage des ventes à l'État. Ces pots-de-vin proactifs se révèlent alors être le principal moteur des résultats observés au niveau de la firme, tandis que les types extorsionnaires ont peu ou pas d'influence négative. Nous avons par ailleurs accordé un large espace de réflexion à l'endogénéité de la relation entre corruption et performance que nous avons tenté de corriger en instrumentalisant la corruption.

Les résultats obtenus mettent dans l'ensemble en évidence des effets positifs de la

corruption mais ne sont pas pour autant surprenants. La raison pour laquelle la corruption reste répandue dans de nombreux pays en développement doit résider dans une sorte d'effet positif au niveau des entreprises. Même si le phénomène peut constituer un obstacle pour l'ensemble de l'économie, il semble très probable qu'une distinction suffisante entre les différents types de corruption peut donner des résultats positifs et significatifs pour les firmes. Néanmoins, nous ne prétendons pas, à ce stade, que les pots-de-vin ont un impact positif causal sur la performance des entreprises, et en fin de compte sur leur taille. Par ailleurs, bien qu'il soit de plus en plus utilisé dans la littérature, l'instrument que nous utilisons⁴ ne fournit pas une identification parfaite, mais plutôt une indication de l'effet des pots-de-vin par rapport aux concurrents directs n'ayant pas ou ne pouvant pas avoir recours à des paiements informels pro-actifs. En effet, l'instrumentalisation par le paiement moyen des pots-de-vin dans la même province et la même industrie donne finalement des résultats qui indiquent un écart par rapport à la moyenne. Les résultats positifs mis en évidence dans ce chapitre indiquent donc qu'un versement de pots-de-vin supérieur à celui de concurrents directs a un rendement positif sur l'activité de la firme, notamment à travers sa taille et son pourcentage de ventes à l'État. En ce sens, ces effets pourraient être en partie liés à d'autres caractéristiques non observées des propriétaires de l'entreprise, telles que leur capacité de gestion car le fait de soudoyer pour obtenir des contrats est en réalité une forme d'agressivité concurrentielle et de distorsion de la concurrence [Burguet and Che, 2004].

Troisième chapitre : "Corruption and institutional trust : evidence from the peruvian national household survey"

La question de la confiance institutionnelle suscite de plus en plus d'intérêt au sein de la recherche en économie. Néanmoins peu d'études s'intéressent aux facteurs pouvant promouvoir ou au contraire dégrader la confiance. La confiance institutionnelle reflète dans quelle mesure un individu fait confiance à une institution pour remplir son rôle de façon satisfaisante plutôt que les gains ou les pertes découlant de l'engagement dans un contrat (implicite) avec cette institution. Cela rejoint la définition de Mishler and Rose [2001] qui définissent la confiance institutionnelle comme l'utilité attendue des institutions qui fonctionnent de manière satisfaisante.

4. L'incidence moyenne des pots de vin pour les firmes du même secteur d'activité et de la même province

"Réduire nettement la corruption et la pratique des pots-de-vin sous toutes leurs formes" et "mettre en place des institutions efficaces, responsables et transparentes à tous" sont des cibles qu'il est nécessaire d'atteindre pour la réalisation de l'ODD 16 (1). Cet objectif met ainsi en lumière la question du lien entre corruption et intégrité des institutions et par extension celle de la relation entre corruption et confiance institutionnelle [Hudson, 2006].

Ce chapitre s'intéresse donc aux effets de la corruption sur la confiance institutionnelle au Pérou. La littérature existante fait état d'affirmations contradictoires sur l'impact de la corruption sur la confiance institutionnelle et la légitimité des gouvernements. Les quelques études empiriques qui ont été menées sur cette question font état des effets perniciose de la corruption sur la légitimité des institutions politiques (Della Porta (2000), Anderson et Tverdova (2003)). Certaines approches plus récentes soutiennent au contraire que la corruption améliore la situation économique dans des pays dont les institutions sont de mauvaise qualité (Dreher and Gassebner [2013], Méon and Weill [2010], Mendoza et al. [2015], Bologna and Ross [2015]). Cet effet positif pourrait alors contrebalancer la dégradation de la confiance institutionnelle des citoyens.

Les données de l'ENAHO nous permettent d'explorer cette question en estimant l'impact direct de la corruption sur la confiance. L'avantage de ces données d'enquête est de pouvoir étudier les effets de plusieurs aspects de la corruption en différenciant la corruption perçue de la corruption vécue (ou expérience de la corruption). Le Pérou est en effet caractérisé par des niveaux de perception de la corruption extrêmement élevés remettant en cause la qualité de la gouvernance dans les pays de la région et la légitimité des gouvernements. Les citoyens font néanmoins l'expérience, dans leur quotidien, de la petite corruption, essentiellement lorsqu'ils cherchent à accéder aux services de l'État. La confiance est dans un premier temps mesurée à travers deux indicateurs créés à partir des données de l'enquête. Le premier indicateur est un score de confiance agrégé calculé à partir des réponses des individus sur leur confiance ou non dans différents types d'institutions. Le second score est créé à partir d'une analyse en correspondance multiple à partir des mêmes questions de confiance.

La perception de la corruption est quant à elle mesurée sur la base de trois variables, chacune capturant un aspect de la corruption perçue : l'importance de la corruption dans les problèmes du pays, la corruption des politiciens et l'évolution du niveau de corruption sur les douze derniers mois. Ces trois variables permettent de distinguer plusieurs dimensions de la corruption perçue et ainsi de différencier la perception de corruption

centrée sur la sphère politique de celle d'une corruption plus générale. Cela permet ainsi de déterminer si l'héritage historique des affaires de corruption politique est le principal facteur d'altération de la confiance.

Les résultats obtenus par les estimations économétriques sur les scores de confiance montrent que la corruption perçue quelle que soit sa nature a un effet globalement négatif sur la confiance. En revanche, le fait d'avoir versé des pots-de-vin au cours de l'année précédant l'enquête n'a pas d'impact significatif sur le niveau de confiance institutionnelle. Afin de tester la robustesse de ces résultats, nous estimons institutions par institutions les effets de la corruption sur la confiance mesurée par une variable catégorielle traduisant le degré de confiance individuelle dans chaque institutions. Les résultats de l'estimation par probit ordonné confirment que la corruption perçue dégrade significativement le degré de confiance pour toutes les institutions. En ce qui concerne l'expérience de la corruption, cette spécification révèle un effet négatif et significatif (au seuil de 1%) sur le niveau de confiance.

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Chapitre 1

Corruption and informality, evidence from WAEMU capital cities

Sommaire

1.1 Introduction	20
1.2 Informality and corruption	22
1.2.1 Ambiguous definitions and measurement approaches	22
1.2.2 Does corruption promote or hamper formalization?	23
1.2.3 Firms' incentives to formalize : a theoretical framework	26
1.3 Data	28
1.3.1 The 1-2-3 Survey	28
1.3.2 Definition of variables	30
1.3.3 The informal production units in WAEMU : a descriptive overview .	31
1.4 Corruption and firm's registration : the analytical framework	37
1.5 Results	40
1.5.1 Corruption incidence	40
1.5.2 Corruption vs. other means to settle a dispute	41
1.5.3 Bribe amounts	44
1.6 Conclusion	46

1.1 Introduction

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides seventeen sustainable development goals (SDGs) which need to be achieved to reach peace and prosperity for all, now and into the future. The eighth SDG aims at promoting "sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all". To achieve this goal, some key targets need to be fulfilled, in particular encouraging "the formalization and growth of micro-, small- and medium-sized enterprises".

The informal or unregistered sector represents a significant proportion of the economy and employs a majority of nonagricultural workers in many developing countries, especially in Sub-Saharan Africa (SSA). In spite of its intrinsic measurement difficulties, there is a large consensus about this key stylized feature. Informal employment ranges from 72% of non-agricultural employment in sub-Saharan Africa . According to the International Labour Office (ILO), the share of informal employment varies from nearly 33% in South Africa to 52% in Zimbabwe and over 82% for non-agricultural jobs in Mali . Especially in two of the seven countries¹ under review in this paper, informal sector employment accounts for 70% of non-agricultural jobs in Côte d'Ivoire and 72% in Mali (ILO [2012]).

Large informal sectors are detrimental to economic development as they escape government taxation and regulation. Informality undermines government's ability to meet social goals through spending and regulation (Clarke [2011]). Not only governments have fewer resources for financing development, but it leads to welfare losses (De Paula and Scheinkman [2007]) There is also growing evidence that informal firms are less efficient. Several reasons seem to account for this finding. It might be because of their necessarily small scale, their lack of access to credit, legal protection or government contracts. As it is more difficult for them to get outside resources for investment, they can find it difficult to grow and realize economics of scale. Hence, in many developing countries, creating incentives for formalization represents an important step to increase aggregate productivity (De Paula and Scheinkman [2007]). Following the widespread conviction that poverty can only be reduced if people have a decent and productive job, in 2006 a new target was added under the first Millennium Development Goal (MDG 1) : "Achieve full and productive employment and decent work for all, including women and young people". We also

1. Bénin, Burkina Faso, Côte d'Ivoire, Mali, Niger, Senegal and Togo

know that the success of the MDG led, in 2015, the United Nations countries to adopt a new sustainable development program, built on seventeen sustainable development goals (SDG). The objective is to facilitate their integration into the formal sector, including through access to financial services by 2030. The transition from the informal to the formal economy is thus essential to achieve inclusive development and to realize decent work for all. It is crucial to improve working and living conditions, promote sustainable small and medium enterprises and to achieve fair competition and fiscal consolidation at national level (ILO [2015]).

Corruption-defined as the abuse of public power for private benefit-(Tanzi [1998]) is an other major issue in Sub-Saharan Africa which entails social and economic costs to development that are similar to those of informality. The magnitude of corruption is also believed to be comparable to that of the informal sector. For instance,(Djankov et al. [2003]) suggest that "countries with heavier regulation of entry have higher corruption and larger unofficial economies". Some of the earlier studies on the informal sector have also pointed out the possible link between corruption and informality but this field remains relatively unexplored in the literature (Johnson et al. [1998], Friedman et al. [2000], Djankov et al. [2003]).

This paper is concerned with the potential willingness to register costs of corruption in order to understand if it hampers formalization. To the best of our knowledge, there are no empirical studies that examine corruption's relationship to willingness to formalize. They rather deal with the impact of corruption on firms' decision to be informal. Furthermore, the existing literature is still quite indeterminate concerning the possible causal relationship between corruption and the operating sector choice, revealing contradictory results. A part of this literature suggests that high marginal tax rates are not the only reason why firms choose to operate informally but that high level of regulation, bureaucratic discretion and corruption are also to blame.

Our problematic is quite different as we want to understand if corruption deters firms from formalizing their activity by decreasing the manager's probability of being willing to officially register.

This chapter aims to contribute to this literature by analyzing the impact of corruption on informal managers' willingness to register their activity which is one of the main features of the formalization process. To do so, we will capitalize on a unique dataset consisting in a sample of firms representative of the informal sector in seven West African

economic capital cities². We take into account direct observations of the informal sector in order to analyze the determinants of registration using econometric estimates on individual data. We set out to analyze the impact of bribe payments on a manager's probability of being willing to register. To do so, we use limited dependant variable models and especially probit estimations using different measures of corruption. We address the endogeneity of the bribe amount variable by instrumenting it with the country-premise average of bribe amounts. Our results are robust to instrumentation and the different tests performed support the strenght of our instrument.

The rest of chapter is organized as follows. We briefly review the literature in the second section. Then, we present the general features of the informal sector in the West African Economic and Monetary Union (WAEMU) by describing the data we rely on. The fourth section sets out the identification strategy and section five robustly estimates econometric probit models on individual data. Lastly, we provide some concluding thoughts and recommendations for future research.

1.2 Informality and corruption

1.2.1 Ambiguous definitions and measurement approaches

In less developed countries, informality is rather the norm than the exception (Jütting and de Laiglesia [2009]) and the hidden nature of its activity has posed a significant challenge to defining and measuring it faithfully. Informality is still a confusing concept. Most policymakers, researchers and observers mix underground, parallel and criminal activities with traditional, spontaneous and non-registered activities which play a major role among poor populations [Charmes, 2019]. The economic literature offers different criteria to define the informal sector.

A first approach, extending the work of Lewis [1954] and Harris and Todaro [1970] is based on a dual labour market model where the informal sector is considered to be a residual component of this market totally unrelated to the formal one and which "exists separately from the formal sector economy" (Callahan [2012]). Some other definitions focus on the type of firm and its legal status which includes small-scale production units with no legal separation from their owners i.e. firms not legally registered as businesses. This approach considers that the informal sector is made of micro-entrepreneurs who

2. Cotonou, Ouagadougou, Abidjan, Bamako, Niamey, Dakar, Lomé

prefer to operate informally to evade economic regulations (De Soto [1989]). In this liberal line of thought, the choice of informality is a voluntary choice due to an extremely costly registration process. Losby et al. [2002] define it as activities that are "not recorded or imperfectly reflected in official national accounting systems". This perspective contrasts with the approach based on a "social protection" view which focuses on employment, recognizing that in many cases larger, formally registered firms establish informal working contracts with their employees, thus avoiding payment of social security contributions, severance payments, and other penalties in case of dismissal. This viewpoint allows for an interdependence of the two sectors (Moser [1978]; Portes et al. [1989]). Informal activities can thus take place within formal firms. Annis and Franks [1989] suggested different criteria to define the informal sector : type of employment, technological/capital level, income level, legal status and firm size.

The International Labour Office launched the concept of "informal sector" which is now one of its most lasting legacies, three decades ago. ILO's pioneering work on informality began with the Kenyan multidisciplinary mission in 1972. They define informal activities by the way of doing things characterised by "ease of entry, reliance on indigenous resources, family ownership of enterprises, small scale of operation, labour-intensive and adapted technology, skilled acquired outside the formal school system and unregulated and competitive markets". The precise definition of the informal sector varies thus considerably but it broadly refers to economic activity that is neither taxed nor monitored by a government.

In our analysis informal production units³ (IPUs) are defined as a production unit with no registration number and no formal written book-account.

1.2.2 Does corruption promote or hamper formalization?

A firm's decision to operate informally implies a cost-benefit tradeoff. The decision to become formal is comparable to any other investment decision. Each firm compares its perceived costs of being formal including both initial registration and ongoing costs with its perceived benefits. Entrepreneurs who operate in the informal sector perceive the benefits of doing so to outweigh the costs of going formal. We can thereby foresee that a

3. IPU is our preferred terminology given the characteristics of these small "enterprises" (a tailor or a street vendor working alone a few hours a week can hardly be qualified as a firm). However, for comparability purposes with the literature, we will also call them "informal enterprises" or "informal firms" as usual substitutes.

firm chooses informality if the expected profit of operating informally is larger than the expected profit of operating formally. Some factors such as "the rise of the burden of taxes "declining tax morale" raised by Schneider and Enste [2000] or the lack of a quality legal system raised by Dabla-Norris et al. [2008] are worth considering as possible explanations for corruption and also figure prominently as likely explanations for informality. Shleifer and Vishny [1994] consider that the sale of government property (entry permit) by government officials as the prototype of corruption activities. Friedman et al. [2000] go further and find that "entrepreneurs go underground⁴ not to avoid official taxes but to reduce the burden of bureaucracy and corruption." De Soto [1989] proposed that governments, and Peru's particularly, push firms into the informal sector by raising the barriers and costs of formalization. By remaining informal, firms avoid taxes and burdensome government regulations including initial business registration regulations (Johnson et al. [1997]; Johnson et al. [2000]). Regulations requires both a direct cost in terms of fees or bribes paid to government's officials and an indirect cost in terms of time spent to perform all the necessary procedures often leading to heavy red tape, for example, to ensure registration or obtain permits and licenses.

Djankov et al. [2003], recorded the procedures related to obtaining all the necessary permits and licenses, and completing all the required inscriptions for a firm to operate legally. They note that "in some countries, entrepreneurs may not bother to follow official procedures or bypass them by paying bribes or hiring the services of "facilitators".⁵ This collusive corruption⁶ implies that the bribee, in agreement with the corrupt official, pays an additionnal cost to expedites or simplify the registration of his firm. However, entrepreneurs may also face dishonest officials who extort bribes to provide a service they should provide anyway. These "additional fees" are not necessarily affordable for all the

4. Here, "going underground" does not refer to the broad concept of "underground economy" including specific types of economies such as illegal economies, unreported economies, unrecorded economies and informal economies (Feige [1990]). It specifically refers to the definition of the informal sector we use in this paper and we will develop later.

5. Tokman (1992) also finds high access costs to legality in other Latin American countries. Financial costs of entry, excluding required modifications in the business' premises, are estimated at an average of ten percent of annual profits.

6. Collusion suggests that both parties, the client and the agent, benefit from the transaction. It implies a horizontal relationship structure and exchanges between more or less equal partners. Conversely, coercive corruption refers to a dependency-based unequal social relationship. In this case, one party is forced by the other to participate in corruption. In most cases, the agent creates a situation in which the client feels a real pressure to pay bribes for fair treatment, such as payment for service that would be otherwise free, extra money beyond official fees, or money for not falsifying records. Nevertheless, in some cases it is the client (an organized crime group for example) who uses coercion and forces the agent to make a corrupt deal.

firms. These practices, whether extorsive or collusive, hamper in both cases the process of formalization. Furthermore informality can be an escape for small firms because government does not make formal status appealing (Levy [2008]).

Not only complaining with government's regulations appears to be tough for informal firms, but the level and administrative complexity of taxation plays a role in escaping formality as well (Schneider and Enste [2000]). Informal entrepreneurs enjoy the autonomy, flexibility and freedom offered by the informal sector economy (Williams and Nadin [2010]). One of the greatest incentives of not registering for informal firms is to escape tax regulation (Williams and Round [2007]). By operating informally they remain outside dysfunctional markets and avoid generally corrupt public procurement processes. Collusive corruption which is more decentralized enables informal firms to avoid controls. They can have access to the same services in return for a bribe and government officials may overlook tax evasion. Johnson et al. [2000] find a significant association between the underreporting of sales and the bribing of corrupt officials in post-communist countries. These results suggest either that avoiding bureaucratic corruption is an incentive for unofficial activity or that firms that hide their output need to pay bribes. Their findings shed light on two contradictory results. On the one hand, corruption comes like a heavy cost when firms begin their registration process. According to this theory, bureaucracy, corruption, and a weak legal system bear primary responsibility for driving businesses informal. Firm managers may be willing to be taxed at a reasonable rate, but they are unwilling to put up with constant extortionate and arbitrary demands. More bureaucracy, greater corruption, and a weaker legal environment are thus associated with a larger unofficial economy (Friedman et al. [2000]).

Informal firms thus derive their advantage by escaping costs of formality but informality comes likewise at a cost. Informal firms should remain small deliberately to avoid attracting the attention of regulators and tax collectors. They are much more vulnerable to harassment by bureaucrats and are willing to pay higher bribes to avoid official controls or sanction implementation (Djankov et al. [2003]). Surveys conducted by the World Bank assess that informal firms in transition economies pay around 20% of their revenues to government officials in the form of bribes which represent indirect tax payments. Informal firms are highly vulnerable compared to their formal counterparts and cannot afford spending a significant amount of their revenues in informal payments without seeing the long-term survival of their operations threatened. A bad legal environment and de-

clining quality of public administration seems thus to reduce informal units' incentives to remain informal. Corruption also comes like a moral cost for informal managers. Government officials call to order informal managers while controlling them. These controls come as a reminder of the law which fosters formalization. What policy should we thus implement on corruption to tackle informality? Is it a decisive key in firms' decisions or does formalization go through other channels policy makers should rather focus on?

1.2.3 Firms' incentives to formalize : a theoretical framework

This section provides an informal outline of the key implications of the theoretical model linking corruption to formalization. We rely on a simple model in which we consider a continuum of firms indexed by their individual productivity reflecting entrepreneurs' personal abilities. We assume that price of output is normalized to unity. Output of a given firm y is defined by :

$$y(\theta, k, l) = \theta q(k, l)$$

Where the function $q(.)$ is assumed to be increasing, concave and twice continuously differentiable. The firm produces using labor l and capital k . For more simplicity, we assume that the required capital for entry, k , is fixed.

In a first part, we consider that a firm has the decision of whether to formalize its activity and comply with tax regulation or produce without any license in the informal economy. A firm looking for joining the formal sector is exposed to the monopoly power of corrupt officials who demand bribes for issuing licenses and permits necessary for its activities. Nevertheless, government corrupt officials face asymmetry of information as the ability of an entrepreneur is a private information. Hence they cannot price discriminate and charge a uniform bribe payment b_F . If a firm chooses the option of operating in the informal economy, it saves the cost of bribing the corruption official but bears the cost of possible detection and subsequent punishment. For more simplicity, we assume that when an IPU is detected, its capital is forfeited in its entirety as punishment. The probability of detection is ρ

We simplify our model by considering that a firm bears three different kinds of costs : a fixed capital cost, a labor cost and a bribe payment when it is exposed to corruption. We also assimilate the firm's earnings to the total amount of its output. We will extend this theoretical framework in our empirical analysis by introducing some factors that can be

assimilated to additional benefits or costs involved in the firm's maximization program. In this context the profit of a firm operating in the formal economy is given by :

$$\Pi_F = y - k - wl - b_F$$

The profit of a firm operating in the informal sector is, its turn, given by the following expression :

$$\Pi_I = (1 - \rho)y - k - wl$$

Given the expected profits of a firm and given the bribery demand b_F , the entry decision is such that the firm enters the formal sector when :

$$\Pi_I < \Pi_F \leftrightarrow \frac{b_F}{\rho} < y$$

It chooses to operate in the informal economy when :

$$\Pi_F < \Pi_I \quad \text{and} \quad 0 \leq \Pi_I \quad \text{such as} \quad \frac{k + wl}{1 - \rho} \leq y < \frac{b_F}{\rho}$$

It does not enter any of both sectors when :

$$\Pi_I < 0 \leftrightarrow y < \frac{k + wl}{1 - \rho}$$

We have just put ourselves in the context of a basic framework in which corruptive practices were assumed to occur only in the formal sector. We now consider that there is corruption in the informal sector. To simplify our theoretical approach we previously assumed that, once an IPU is detected, it is punished losing its entire capital. This picture of corruption is incomplete. Empirical evidence showed that informal sector entrepreneurs may have the opportunity to bribe government officials in order to escape punishment. This has been modeled in a neoclassical growth model by Blackburn et al. (2010). Corruption in the administration may thus allow for IPUs to circumvent and bypass the governmental regulations without being punished. However, not all monitoring officials are corrupt. In our model, the share of corrupt officials is λ . Once the illegal activity of a firm is detected, the subsequent punishment depends on the nature of the monitoring official. When IPU, is controlled by a corrupt official it has to pay a bribe b_I . When the IPU is controlled by a honest official, it undergoes the same sanction as in the previous

case and loses all its activity. The expected profit in the formal sector is :

$$\Pi_F = y - k - wl - b_F$$

The expected profit in the informal sector is thus :

$$\Pi_I = y - k - wl - \rho.\lambda.min(b_I; y)$$

Given the expected profits and bribery demands b_I and b_F : An entrepreneur is indifferent between entering the formal or the informal sector when the expected profits are equal which involves $\frac{b_F}{\rho.\lambda} = b_I$

Thus, when $min(\frac{b_F}{\rho.\lambda}; b_I) \leq y$, the firm enters the formal sector if $\frac{b_F}{\rho.\lambda} \leq b_I$ and prefers being informal if $\frac{b_F}{\rho.\lambda} > b_I$

When $\frac{k+wl}{1-\rho} \leq y < min(\frac{b_F}{\rho.\lambda}; b_I)$, the firm enters the informal sector and exits it if it is detected.

When $y < \frac{k+wl}{1-\rho}$, the firm remains out of both sectors and does not start its activity.

The average loss or penalty of the informal firm is thus given by :

$$L = (1 - \rho.\lambda).y + \rho.\lambda.b_I$$

This theoretical approach enables to grasp how corruption could affect the firms' entry decision to operate formally or informally but it suggests another important result for the scope of our investigation. Above a certain level of bribe, the informal firm cannot use this means to escape the penalty and ends up leaving the informal sector. In the analytical approach we will try to understand how corruption influences willingness to formalize among heads of informal production units.

1.3 Data

1.3.1 The 1-2-3 Survey

Our data is taken from the phase 2 of the 123 survey. This survey is an original series of urban household surveys in West Africa conducted in seven major West African Economic and Monetary Union cities (Abidjan, Bamako, Cotonou, Dakar, Lomé, Niamey and Ouagadougou) in 2001, 2002 and 2003. The surveys were carried out by the countries'

National Statistics Institutes (NSIs), AFRISTAT and DIAL as part of the PARSTAT Project ⁷

As suggested by its name, the 1-2-3 Survey is a three-phase survey. The basic rationale of this tool is the following. The first phase is an extended labor force survey (LFS). It allows documenting and to analyzing the labor market functioning and is used as a filter for the second phase, where a representative sample of informal production units (IPUs) is surveyed. In the second phase of the survey a sample of IPUs' heads identified in the first phase are interviewed. Phase 2 aims at measuring the principal economic and productive characteristics of the production units (production, value added, investment, financing), the major difficulties encountered in developing their business activity, and the demands for public support by informal entrepreneurs. Finally in the third phase, a sub-sample of households, selected from phase 1, is administered a specific income/expenditure survey, designed to estimate the weights of the formal and informal sectors in households consumption, by products and type of household. The phase 3 also allows an estimation of households' living standards and monetary poverty, either based on income or expenditures.

The 1-2-3 survey provides for the first time a detailed picture of the informal sector in these seven capital cities from surveys using an identical methodology, allowing accurate comparisons between different cities. Although the situation in each country has obviously some specific characteristics linked to economic factors, it emanates from these data a significant homogeneity of this fundamental sector of African economies. Moreover, the mixed household-enterprise survey frame is the only one to ensure the full representativeness of the informal sector and provides more accurate informations than when surveying separately households and production units (Ramilison [2007]; Hussmanns [2008]). Previous studies, especially in SSA, are typically based on enterprise surveys (like "Regional Program on Enterprise Development" surveys) which cover only a part of all informal firms, in general, the upper tier of the informal sector. For more de-

7. AFRISTAT is an international organization created by a treaty signed on September 21st 1993 in Abidjan by the 14 African countries members of the Franc Zone : Benin, Burkina Faso, Cameroon, Central African Republic, Comoros, Congo, Ivory Coast, Gabon, Equatorial Guinea, Mali, Niger, Senegal, Chad and Togo. AFRISTAT's mission is to contribute to the development of economic, social and environmental statistics in the member States and to strengthen their skills in these fields. AFRISTAT's role is to advise and support the National Statistical Institutes of the member States and exercise its regulatory powers to harmonize concepts, standards and statistical methods. DIAL is a joint research unit that brings together the Development and Globalization Division of LEDa (Laboratory of Economics of University Paris Dauphine) and researchers of IDR (Institute of development research). PARSTAT is the Regional statistical support program for multilateral surveillance funded by the European Commission

tails about mixed-methodology and 1-2-3 surveys, see for instance Roubaud and Sérurier [1991] and ILO (2012).

Sampling

Compared to other statistical operations on informal employment, Phase 2 of the 1-2-3 survey uses a selection process in two phases which allows better targeting of IPU. In the first stage, a sample of 2500 households (3000 in Cotonou) was constituted following a sampling plan with two degrees. The questionnaire on the activity of all members aged 10 and over in the selected households identified all employed actives who run an informal production unit, whether in their main job or in a sideline one. Ultimately, a number of non-agricultural informal production units have been counted in the Phase 1. For pulling IPUs, the surveys' designers adopted a plan of unequal probability sampling stratified by the two following criteria : industry and status of the informal unit's manager. Inside the layers thus formed, systematic random sorts were conducted . The selection probabilities were determined according to the size and the economic interest of each stratum : IPUs' heads with the status of owner being fewer in number, it was decided to fully investigate them whatever is the industry they operate in. Though, variable rates of survey were defined according to the industry for drawing IPUs whose head works as a self-employed worker. Our final sample consists of 6611 informal production units and sample weights are computed by adjusting the theoretical probability of inclusion by the usual post stratification procedures.

1.3.2 Definition of variables

Dependant variable

To understand if bribe payments tend to push informal firms out of informality or conversely enables them to escape regulations, we use questions inquiring into owners' willingness to register their activities. The second phase of the 123 survey contains different questions covering different areas of the formalization process. We use the following one :

QG30 :*Are you willing to register your activity?*

This binary response variable is used in a probit regression model. It takes the value 0 if the answer is "No" and 1 if the answer is "Yes". This dimension has never been explo-

red before and to the best of our knowledge there are not any existing surveys capturing informal managers' willingness to formalize.

Measure of corruption

Corruption is usually defined as the use of public power to obtain private pecuniary gains (Aidt, 2003; Kaufmann et al., 2007; Rose-Ackerman, 2006; Svensson, 2005). To obtain a measure of bureaucratic corruption that is consistent with this definition, we use questions inquiring into peoples' experience with giving informal payments to solve a problem with the administration :

QD5A : *"In the past year, did you get into trouble with public official for exercising your activity?"*

QD5B : *"How did the dispute settle : by the payment of a fine, of a "gift", or by other means?"*

We focus on individuals who had a contact with the administration (having a contact being understood here as facing a problem with public officials). The data give us information about the outcome of this contact. Some individuals payed bribes, other payed fines. As for the dependent variables, these measures and especially the one of corrupted practices might be under-reported as respondents may be reticent about providing answers to sensitive questions such as corruption (Murrell and Azfar [2005]). To avoid individuals' potential reluctance or "fear" of expressing their real experience which would raise concern about a possible source of under-reporting, the questionnaire's wording has been chosen in accordance : the word "corruption" has been substituted by the less stigmatizing "gift" expression. We also dispose of informations on the amounts of bribes that were paid by each individual who resorted to corruption. We use the average amount of bribes paid as a second measure of corruption. These direct measures of bribery give a more accurate assessment of corruptive practices.

1.3.3 The informal production units in WAEMU : a descriptive overview

All cities combined, almost 1,8 million informal production units are engaged in a non-agricultural market activity and generate 2,7 million jobs. This result reveals the importance of the informal sector which is by far the largest source of employment in the

TABLE 1.1 – Basic characteristics of an IPU (means)

	Bénin	BF	CI	Mali	Niger	Senegal	Togo	All
Firm age	6.2	5.9	4.9	7.1	7.9	7.9	5.0	6.5
Owner's age	35.4	32.7	34.1	37.2	37.3	38.8	34.8	36.1
Education (years)	4.3	4.9	4.3	4.2	2.3	3.2	4.8	3.9
Female owner (%)	70.5	65.6	61.5	59.4	52.9	58.7	71.9	64.7
Owner is under 26 (%)	22.9	25.4	17.0	22.0	22.6	17.9	24.3	21.3
Size (number of employees)	1.3	1.4	1.5	1.3	1.3	1.3	1.3	1.3
Observations	135308	4659	38169	15528	38409	72877	43642	348592

Source : 1-2-3 Surveys, Phase 2, Informal Sector, 2001-2003, NSIs, AFRISTAT, DIAL, author's calculations.

seven cities [Brilleau et al., 2005]. Table 1.1 provides a summary of the key characteristics of informal firms and their owners. Most of these features are often observed when talking about the informal sector. IPU's operate in precarious conditions and have little access to public services. They are atomized and entrepreneurial dynamics seem limited. Informal sector is overwhelmingly made up of micro-units and the average size of an informal unit is 1.29 workers per establishment. The small size of the firm, measured by the number of employees, is one of the most widely used criteria to define informality. This definition is derived from the International Labour Organization's approach (ILO, 2002) which defines informal firms as unregistered firms with no clear line separating business activities from household activities. The lack of premises is a major constraint that prevents IPU's from increasing their workforce. Only 20% of IPU's have specific professional premises from which to run their business. About 30% of informal entrepreneurs work from home or in their customers' house and nearly 50% have no premises. IPU's managers are relatively young. This feature is not surprising as the precarity of the informal activity requires a high adaptability mostly found among younger persons. On average, 20% of the informal managers are under 26.

General features of the registration process in the WAEMU area

Informal production units constitute the main productive sector of the sub-saharan african national economies. They form a institutional sector essentially devoted to the production of goods and services. IPU's are thus economic entities and decision centers able to conduct independently their economic activities as producing and selling goods and services, investing, incurring debts or holding liabilities.

The necessity to prompt IPU's to register in the public records is obvious for the public

authorities. Before starting operations, the law requires any production unit to provide a legal identity. The legal identity of a production unit is acquired at the time of registration through the choice of its the legal status. Several possibilities are given to managers who make their choice taking into account several criteria : their preference for partnering or working alone, the level of their initial capital or financial input, the social or fiscal status chosen, the nature of the activity, etc. The two main legal status are the sole proprietorship or the partnership. A sole proprietorship is created by one person which implies a greater freedom of action and making decision. The total assets of the production unit and the manager's personal assets are coincident and the entrepreneur is entirely responsible for all the IPU's debts. Sole proprietorships minimize initial formalities and they are subject to specific fiscal regimes. By cons, a partnership means a new legal entity which is different from its owner. The assets of the IPU and the manager's personal wealth are distinct. The entity has thus a name and address and is represented by a director, who does not act on its own behalf but on behalf of the firm he represents. The firm is subject to the Corporation Tax and the initial formalities are heavier than for self-employed leaders. The law therefore provides the possibility for each entrepreneur to chose a legal status corresponding to the scale of his activity, the level of its capital, the activity's management ans its tax status. The legal status of individual entity is the most adapted to small-scale enterprises and corresponds to the reality of the informal sector.

It has often been argued that informality comes from a deliberate intention to evade the law. In the cities of the WAEMU, this thesis seems to be partially denied because most of IPUs which are not recorded in one or another register do not know the implemented regulation, or consider that registration is not mandatory (Table 1.4), either they do not know which institution could register them. Nevertheless, when asking informal managers about the advantages of becoming formal, about 40% of them think registering their activity does not give them any advantage (Figure 1.1).

WAEMU capital cities are characterized by a weak level of law enforcement and integrity of institutions that slows integration into the formal legal framework. To the best of our knowledge, there are no studies that analyse the influence of experience with corruption with IPUs' formalization prospect.

Administrative registers held by IPUs provide an overview of the nature of the institutional links between the informal sector and the State and allow us to assess further the degree of informality of IPUs. The fiscal authorities use the Tax Identification Number

(TIN) (Statistical Number in Cotonou) as the identification number of a firm. Firms identified by this number are taxed according to a specific fiscal regime. Apart from the TIN which enables to hold an accounting and to differentiate formal production units from informal production units, there are in all WAEMU countries at least three steps required to fully comply with the regulations : acquiring a license, being entered in the commerce register and contributing to a social welfare system (for IPU's with employees). Firms engaged in trade get a registration number issued by the Ministry of Commerce and when they export or import need to have an import-export special authorization card. All administrative formalities considered (patent, trade register, Tax Identification Number (TIN), Social Security), the patent is by far the one for which IPU's are most in order whatever is their city or branch of activity. In fact, 15, 8% of the IPU's are registered for the patent (Table 1.2). These statistics are consistent with the findings of Steel and Snodgrass (2008) who observe that, while informal firms may not be registered with central authorities, they are often registered and pay taxes at the local level.

TABLE 1.2 – Current registration status (%)

	Bénin	Burkina Faso	Côte d'Ivoire	Mali	Niger	Senegal	Togo	All
Tax Id Number	0	0.1	0	2	1	0	5	1
Commercial Register	1	2	8	1	3	3	1	4
Patent	8	23	23	8	19	3	8	14
License	1	1	1	2	1	2	1	1
Health Insurance	0	0	0.2	0.1	0.1	0	0	0.1

Source : 1-2-3 Surveys, Phase 2, Informal Sector, 2001-2003, NSIs, AFRISTAT, DIAL, author's calculations.

TABLE 1.3 – Willingness to register *

	Bénin	Burkina Faso	Côte d'Ivoire	Mali	Niger	Senegal	Togo	Overall
Industry	37.1	36.5	46.9	32.9	33.1	46.9	24.9	40.2
Trade	29.3	32.3	25.9	25.2	31.9	42.2	14.9	28.3
Services	32.7	44.7	45.5	32.3	36.7	44.2	28.7	39.8
Overall	32	35.9	38.1	28.8	33.2	44.1	21.2	34.7

Source : 1-2-3 Surveys, Phase 2, Informal Sector, 2001-2003, NSIs, AFRISTAT, DIAL, author's calculations. *Respondents were asked the following question : "Are you willing to officially register your activity?" We report the percentage of managers having answered "yes".

All cities combined, 34,7% of IPU's are willing to record their activities (Table 1.3) and

only 5,96% effectively attempted to do it⁸. The degree of registration appears more related to the possibility to escape regulation than to economic profitability of IPU's. Willingness to register is less strong in the trade sector (28%) than in the industrial or service sector probably because they are less interested in having transactions with the State and winning public contracts.

TABLE 1.4 – Reasons for non registration

	Benin	Burkina	Mali	Niger	Senegal	Togo
Too complicated	1	1	2	5	11	1
Too expensive	3	6	24	7	5	7
Registration in process	1	1	0	1	2	1
Think it is not compulsory	48	35	29	37	27	35
Don't know if registration is required	23	38	37	28	45	22
Don't want to collaborate with the State	4	1	4	9	7	9
Other reason	19	18	4	13	3	25
Overall	100	100	100	100	100	100

Source : 1-2-3 Surveys, Phase 2, Informal Sector, 2001-2003, NSIs, AFRISTAT, DIAL, author's calculations.

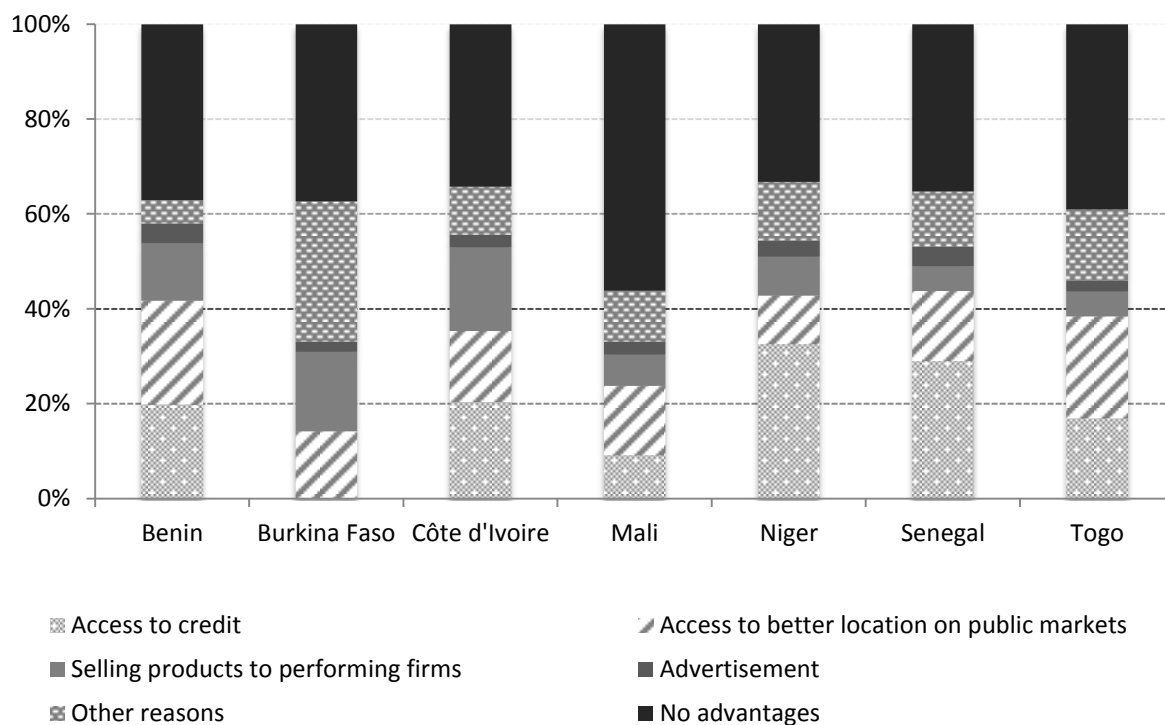
At this descriptive stage, solving the problem of non-registration in the informal sector seems to require an active communication policy from the government and probably a simplification of administrative registration procedures. Given the low profitability of most IPU's, it may not be appropriate to seek to increase the tax burden on this sector. This could mean, conversely, that reducing tax contributions might promote formalization. By and large corruption and interactions between IPU's managers and the public officials do not bear the prime responsibility for not being registered or for having attempted to register unsuccessfully.

IPU, issues with government officials and corruption

The nature of relationships between the informal sector and the State is central in the development process of less advanced countries. Governments adopt the most contradictory positions towards the informal sector. They range from a repressive attitude to a benevolent indulgence. On the one hand, States periodically seek to tax this sector and

8. Statistics available in appendix

FIGURE 1.1 – Advantages of registration according to IPU’s leaders



even attempt regularly and vainly to dislodge the hawkers who invade the streets in town centers. On the other hand, the authorities show a form of laxity with regard to a sector that carries its activity openly in margin of public regulations. IPU's do not follow the necessary steps to legalize their activity but it seems like there is not a real willingness of the state to push informal sector to fit into the regulatory framework. Indeed, whatever is the city, only few IPU's leaders report having problems with servants the year preceding the survey, with proportions ranging only from 3,6% in Bamako to 8,5% in Dakar. A similar range of variation is observed by sectors, only IPU's of the transport sector have reported problems in a significant proportion (30,1%). This sector generally suffers in all African cities of a real harassment from police officers and gendarmes. Very often, they turn controls of vehicles' documents into opportunities to extort money from taxi, buses and motorcycle drivers

Apart from the notable exception of transport, disputes with State officials are mainly due to non-payment of taxes or a bad location of the IPU's activity. When asked on dispute settlements, all IPU's leaders say in 39,5% of cases the dispute was settled by offering a gift to agents and in 44,4% by paying a fine, and in 11% by other means not specified . These gifts symbolize the corruption widespread in a significant number of transactions between state agents and users in Africa. Nevertheless, despite the widespread incidence of corruption it seems that it is not the main reason why IPU's are not formally registered.

1.4 Corruption and firm's registration : the analytical framework

The previous sections suggest that corruption and particularly bribe payments could significantly impact the trade-off between formality and informality. The 123 surveys in West African countries allow us neither to analyze the transition of firm from the informal to the formal sector nor to compare otherwise similar firms in the formal and informal sector. Yet, they provide information on the perceived costs and benefits of formalization, IPU's attempts or willingness to formalize. The data also enable us to further deepen this analysis by testing the result outlined by the theoretical model. The idea is to determine whether the amount of bribes paid has an impact on the probability of willing to register. The core of the empirical strategy consists therefore in relating firm-level corruption to willingness to register.

Specifically, the impact of the different settlements on the probability that an informal unit is ready to register is first tested using a probit estimation which fits a maximum likelihood model with our dichotomous dependent variable. The model that we wish to fit is

$$E(Y_i) = P(Y_i = 1) = \Phi(\beta_0 X_{1i} + \beta_1 X_{2i} + \beta_2 Y_{2i}) \quad (1.1)$$

More precisely, we seek to estimate :

$P(Y_i = 1|X_i) = P(\beta'X_i + \beta_2 Y_{2i} + \varepsilon_i \geq 0|X_i) = P(\beta'X_i \geq -\varepsilon_i|X_i) = F_{-\varepsilon}(\beta'X_i) = F_{\varepsilon}(\beta'X_i)$ (residuals are symmetrically distributed)

where $X_i = (X_{1i}, X_{2i})$, $\beta' = (\beta_0, \beta_1)$, $F(\cdot)$ is the distribution function and $\Phi(\cdot)$ the cumulative normal distribution. X_{1i} is a vector of the IPU's characteristics (age, capital, value added, total sales, Access to commodities (water, electricity), size), X_{2i} is a vector of the manager's individual characteristics (gender, education (primary school, high school and university), age, french speaking), Y_{2i} is the corruption variable which takes different forms. We first use the corruption incidence variable which is a dummy variable which reveals if a manager has payed a bribe or not. Then, we put into perspective the different solutions to deal with a problem with public officials. We compare the effect of paying a bribe or paying a fine to solve a problem on willingness to register. In a third estimation we analyse the effect of the amounts paid in bribes (turned in logarithm for interpretation convenience) as a corruption measurement.

In this estimation we assume Y_i is determined by an unobservable latent variable

$$Y_i^* = \beta'X_i + \beta_2 Y_{2i} + \varepsilon_i \text{ with } \varepsilon_i \sim N(0, 1)$$

The probit estimation consists in maximizing the Log-Likelihood function :

$$\ln L = \sum_{i=0}^N Y_i \ln \Phi(X_i \beta') + \sum_{i=0}^N (1 - Y_i) \ln (1 - \Phi(X_i \beta'))$$

This first estimation raises some tricky issues that need to be addressed. As we mentioned in the literature review, obtaining reliable data on corruption is challenging since the survey's respondents often have little interest in revealing the truth. Second, willingness to register is difficult to measure. According to the "cognitive dissonance" theory of Akerlof and Dickens [1982], individuals can exert control over their beliefs. Indeed our dependent variable is based on a hypothetical behavior rather than an actual one so we do not want to be too assertive about these behavioral measures which are potentially biased by social desirability effects, which occur when respondents are influenced by considerations of what they believe is the proper or socially desirable response (Back and

Davis [1965]). Their answers to this type of questions reflect their beliefs about what is socially desirable rather than their true attitudes or experiences. They could thus say that they are willing to register their activity as non registration is non-compliance with regulations which appears "illegal" and prohibited. If all responses are similarly biased it presents no problem for our analysis. Moreover, given the fact that our sample consists solely in informal production units, we could think about eliminating the risk of a reporting bias in so far as their informal status is obvious. Nevertheless, our model is plagued by the endogeneity of the corruption indicator, as unobserved characteristics might explain bribe payments. We also need to address a potential simultaneity bias between corruption and willingness to formalize. Indeed, corruption may affect a manager's willingness to comply with formal regulations as paying bribes can come as an implicit tax that could push informal production units to formality. However, one could consider that a manager less willing to formalize would be more prompt to pay bribes in order to avoid controls or punishment and thus retain the unit's informal status.

Thus, we estimate equation (1) by IVprobit; the Y_{2i} bribe payments variable is instrumented by the Z_i country-premise average of bribe payment. To make sure as much as possible that these country-premise averages are only driven by country-premise characteristics that are exogenous to firm bribe payments, we use a detailed premise variable. The dataset has 6 premises and 7 countries, which give rise to 40 country-premise identifiers. The average number of firms in each country-premise is approximately 165. Finally, the empirical strategy relies on estimating equation (2) with a two-step estimation. We first use the maximum likelihood estimator (Rivers and Voun, 1988) we will refer to as Two step instrumental variable probit estimator (2SIV) and then use Newey and West [1987] minimum chi-squared estimator. For compactness, we write the model as :

$$Y_{1i}^* = W_i \delta + \varepsilon_i \quad (1.2)$$

$$Y_{2i} = X_i \Pi_1 + Z_i \Pi_2 + \nu_i = U_i \Pi + \nu_i \quad (1.3)$$

Where $W_i = (X_i, Y_{2i})$, $U_i = (X_i, Z_i)$, Π_1 , $\delta = (\beta_0, \beta_1, \beta_2)$ and Π_2 are matrices of reduced-form parameters and $\Pi = (\Pi_1, \Pi_2)$. By assumption, $(\varepsilon_i, \nu_i) \sim N(0, 1)$.

The two-step maximum likelihood estimator results from first fitting (3) by OLS and computing the residuals $\hat{\nu}_i = Y_{2i} - U_i \hat{\Pi}$. The estimator is then obtained using a probit estimation to collect the parameters corresponding to Y_{2i} . Y_{2i} is regressed on U_i and the

covariance matrix of parameters estimated yields the estimates $\hat{\delta}$ and $Var(\hat{\delta})$. Finally, a Wald test of exogeneity is performed on the correlation between the error terms in the structural equation (2) and the reduced-form equation for our endogenous variable (3). The null hypothesis indicates that this correlation parameter is equal to zero. Thus, rejection of the null hypothesis means endogeneity.

1.5 Results

1.5.1 Corruption incidence

IPUs meeting a certain number of criteria theoretically have to register. Although the definition of these criteria and how they are enforced remains somewhat vague, they do concern some IPUs' characteristics : income generated (if the income they generate exceeds a given threshold) ; type of premises (roving activities do not have to register) ; and type of business (some activity sectors are subject to special controls). If the law were strictly enforced, these characteristics would be enough to explain willingness to formalize but empirical research has found this to be far from the case. To perform robust estimates we thus gradually introduced control variables in all the specifications as follows : Column (1) reports the results of the baseline regression of the probit model including country and industry dummies. Column (2) adds characteristics of the IPUs (size, access to commodities, age of the activity, type of premise and typical income and performance criteria) and Column (3) controls for both characteristics and informal leaders' characteristics including informations about managers' gender and education. Table 1.5 shows that having paid a bribe compared to not having any contact with administration has a positive influence on willingness to register. In the baseline specification including industry and country dummies this effect is significant at the level of 1%. When we control for firm's characteristics and manager's characteristics this effect turns statistically insignificant. In the different specifications, the total number of workers has a significant effect on willingness to register. This result is consistent with literature findings. An increasing size makes IPUs more "detectable" by monitoring officials and more vulnerable to corrupted inspectors' harassment (Djankov et al. 2002). The workforce of a firm is representative of its size. Larger firms (with many employees) are more likely to register their activity and comply with regulations. Similarly, willingness to formalize increases with the value-added of IPUs. Indeed, the most efficient firms tend to formalize as they

can afford paying taxes and dealing with the complex and costly administrative procedures. With respect to the IPU'S heads characteristics, willingness to register increases significantly with the manager's education which significantly influences their behavior to legislation. Indeed, the most well-educated are usually better informed, more able to handle the procedure and more ambitious when it comes to developing their business. Women are less willing to register their IPU which could be due to their attitude to their activity which they do not see as a real "business" but as an "auxiliary" activity.

TABLE 1.5 – Probit estimation-Willingness to register

	(1)	(2)	(3)
Bribes	0.357*** (0.111)	0.115 (0.117)	0.0147 (0.112)
No capital		0.131** (0.067)	0.0857 (0.070)
Log capital		0.139*** (0.014)	0.125*** (0.014)
Log value added		0.0803*** (0.013)	0.0615*** (0.013)
Reference : Self-employed			
2-4 employees		0.300*** (0.044)	0.298*** (0.045)
5 employees and more		0.474*** (0.088)	0.507*** (0.090)
Woman manager			-0.267*** (0.043)
Constant	-0.782*** (0.064)	-1.824*** (0.112)	-1.761*** (0.127)
N	6558	6316	5996

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Additional controls : Firm age, firm age², access to water, access to electricity, french speaker, education (primary school, high school and university)

Each regression also includes country and industry dummies.

1.5.2 Corruption vs. other means to settle a dispute

In empirical analysis, the ultimate quantities of interest are often the marginal effects of specific changes in the explanatory variables on the conditional response probability (Ruud et al. [2000], Angrist [2012], Wooldridge [2005] Wooldridge [2010] and Greene

[2000]). Coefficients in binary choice models provide information about the signs and relative magnitudes of these effects, but not their absolute magnitudes (Fernández-Val [2009]) Table 1.6 compares different settlements when a problem has occurred between an informal manager and an official and gives the average effects of a change in the different type of settlements on the probability of being willing to register. For continuous variables, the marginal effects are computed at the means of the independent variables. Here, the marginal effect of a dummy variable indicates the discrete change as the dummy variable changes from zero to one, holding all other variables at their means. In our case, the probability of being willing to register is 50% higher when a manager has paid a bribe. When we control for IPU's characteristics the probability is 43.5% higher and 42.7% higher when we control for individual and IPU's characteristics. Corruption comes like a tax and paying bribes weigh heavily on IPU's to the point that they prefer to formally comply with the regulations. This effect remains lower in magnitude than having paid a fine which appears more disuasive as it increases the probability of being willing to register by 50.3% when we control for individual and IPU's characteristics.

TABLE 1.6 – Corruption and other settlements-Marginal Effects

	(1)	(2)	(3)
Fine	0.577*** (0.041)	0.498*** (0.042)	0.503*** (0.042)
Bribe	0.500*** (0.044)	0.435*** (0.045)	0.427*** (0.044)
Other	0.568*** (0.047)	0.511*** (0.049)	0.521*** (0.048)
N	6558	6316	6133

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Controls : Log value added, log labour force, firm age, firm age², access to water, access to electricity woman manager, education, french speaker. Each regression also includes country and industry dummies. The marginal effect indicates the discrete change of the regressor from zero to one, holding all other variables at their means. Column (1) reports the results with no controls, column (2) includes individual characteristics, column (3) includes individuals' and firms' characteristics.

TABLE 1.7 – Bribe amounts and willingness to register

	(1)	(2)	(3)
Log bribe amount	0.897** (0.412)	0.696** (0.326)	0.775** (0.349)
No bribes	-0.326*** (0.114)	-0.105 (0.122)	0.000981 (0.117)
No capital		0.131* (0.067)	0.0888 (0.070)
Log capital		0.138*** (0.014)	0.122*** (0.014)
Log value added		0.0812*** (0.013)	0.0620*** (0.013)
Reference : Self-employed)			
2-4 employees		0.285*** (0.045)	0.284*** (0.046)
5 employees and more		0.472*** (0.089)	0.511*** (0.091)
Water		-0.274*** (0.077)	-0.241*** (0.081)
Electricity		0.267*** (0.050)	0.194*** (0.052)
Woman manager			-0.270*** (0.043)
Primary school			0.118** (0.046)
High school			0.258*** (0.050)
University			0.339*** (0.105)
French speaker			0.0375 (0.082)
Country dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Constant	-0.460*** (0.142)	-1.723*** (0.171)	-1.766*** (0.175)
N	6430	6190	5875

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ **Additional controls :** Firm age, firm age², access to water, access to electricity. Each regression also includes country and industry dummies. Bribe amounts are in thousands CFA Francs.

1.5.3 Bribe amounts

The theoretical model presented above suggests that the amount of bribes paid could have increasing effects on the willingness to register. To test for this potential effect we perform estimations with the amounts of bribes paid in logarithm. Table 1.7 gives the results of these estimations. The probability of being willing to register increases with the amounts of bribes paid by informal managers in all the specifications. This result is robust after accounting for endogeneity. Table 1.8 reports the results of the probit model and the instrumented models using the maximum likelihood estimator and the minimum Chi-squared estimator. The probability of being willing to register increases with the amounts of bribes paid. This result is significant at the level of 1% in all the specifications. The results of the two-step estimator are similar to those of the IVprobit maximum likelihood estimator but we can notice a difference in magnitude between the coefficient estimates of the probit model and those of the instrumented models due to an underestimation of the impact of paying bribes when endogeneity is not solved. The first stage regression reports an F-Statistic equal to 13.44. The F-statistic of the joint test whether all excluded instruments are significantly different from zero is thus bigger than 10 and our instrument is highly correlated with the endogenous regressor even after controlling for the exogenous regressors. Moreover, the country-premise average of bribe payments does not have a direct effect of individual willingness to register and the probability of being willing to register does not have any impact on the average amounts paid by a manager's counterparts working in the same country and having the same type of premise. All these arguments support the validity of the instrument we use. Furthermore, the Wald test of exogeneity implemented in both instrumented regressions asks whether the error terms in the structural equation and the reduced-form equation for the endogenous variable are correlated. The results of this test enable us to reject the null hypothesis and thus confirm the presence of endogeneity in our model.

TABLE 1.8 – Effects of bribe amounts on willingness to register

First stage regressions - Dependant variable : Average amount of bribes in log			
Country-premise average amount of bribes		0.0608***	
		(0.018)	
Constant		-0.0992**	
		(0.039)	
R ² in first stage		0,06	
First stage F-Statistic		13.44	
Observations		5875	
	Probit	2SIV	IVprobit
Bribe amount	0.751***	1.893***	1.470***
	(0.385)	(0.558)	(0.373)
Log capital	0.0961***	0.0732***	0.0568***
	(0.013)	(0.015)	(0.021)
Log annual output	0.0735***	0.0636***	0.0494***
	(0.016)	(0.017)	(0.018)
Log size	0.268***	0.244***	0.189***
	(0.041)	(0.047)	(0.051)
Firm age	0.0126**	0.00989	0.00768
	(0.006)	(0.007)	(0.006)
Woman manager	-0.268***	-0.208***	-0.161***
	(0.043)	(0.054)	(0.054)
Primary school	0.134***	0.161***	0.125***
	(0.047)	(0.055)	(0.043)
High school	0.285***	0.248***	0.192***
	(0.050)	(0.056)	(0.063)
University	0.386***	0.391***	0.304***
	(0.105)	(0.122)	(0.105)
Country dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Constant	-1.792***	-1.715***	-1.332***
	(0.135)	(0.134)	(0.248)
R ²	0.14	0.06	-
Observations	5875	5875	5875

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Notes : Each regression also includes a tax variable which equals 0 if the manager does not pay taxes and 1 if she/he does, the firm's age, the firm's age squared, access to amenities (water and electricity) and the manager's french speaking ability. The third column reports the Newey minimum Chi-squared estimator. The last column reports the maximum likelihood estimator

1.6 Conclusion

In sub saharan Africa informality and corruption are rampant phenomena. The possible links between these two features of developing countries are relatively unexplored in the existing litterature. In this article, we use an original dataset representative of the informal sector to understand the interactions between corruption and willingness to become formal among informal production units.

We use three different dimensions of corruption. We first analyze the impact of paying bribes on willingness to register that we then compare with other settlements to problems with public officials as paying fines. The only bribing behaviour does not have any significant impact on willingness to register. Nevertheless, when we put into perspective different problems' settlements, we find that both paying bribes and fines have a significant positive impact on willingness to formalize with a more disuasive effect of fines that increase by at least 48% the probability of being willing to register. We then use the log of the bribe amounts paid as a third measure of corruption and find that the higher are the amounts paid in bribes the higher is the probability of being willing to formalize. This effect remains true even after adressing endogeneity and instrumenting the bribe amount variable by the country-premise average of bribes. We find a positive significant effect of corruptive practices on willingness to formalize.

This article is to the best of our knowledge the first to analyze the impact of corruptive practices on willingness to formalize and especially register in Sub-Saharan Africa. Contrary to the mainstream results according to which high levels of corruption tend to increase informality by avoiding extortionary payments to perform the registration process (De Soto [1989], Johnson et al. [1997], Djankov et al. [2003], Friedman et al. [2000]), we find that corruption does not encourage informal production units into remaining informal and oppositely weights heavily on IPU's threatening the sustainability of their activity giving additional reasons to attract them into formality. Policy makers should thus enhance other policies going through implementing stiffer penalties for example by raising the cost of fines when an informal firm is controled or conducting communication campaigns as informal managers do not seem to know the current regulations.

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Chapitre 2

Firm-level corruption

Unravelling sand from grease

Sommaire

2.1 Introduction	54
2.2 Literature review : firm-level corruption and performance	56
2.2.1 A "sand" or "grease the wheels" effect?	56
2.2.2 A need to differentiate between types of corruption	58
2.3 Data and descriptive statistics : patterns of bribe payment among Viet- namese SMEs	60
2.4 Identifying the effects of voluntary and extortive bribe payment on firms	64
2.5 The immediate 'returns to corruption' : Does it pay to bribe to obtain government contracts and avoid taxes?	66
2.6 Target indicators : firm-level corruption and firm performance	68
2.7 Conclusion	81

2.1 Introduction

The growth of micro, small and medium-sized enterprises is at the heart of the SDGs. The eighth goal aims, among other targets, to "achieve higher levels of economic productivity" and "promote development-oriented policies that support productive activities, decent job creation, entrepreneurship[...] and encourage growth of micro-, small- and medium-sized enterprises." In the same vein, the fight against corruption is at the core of the SDGs.

Corruption is a complex matter. From a second-best perspective, the notion that corruption may 'grease the wheels' of commerce in the presence of weak institutional capacities has been conjectured in academia for a long time. Leff [1964] first placed it as a developing factor in a model of developing economy, and several authors subsequently argued¹ that corruption can enhance allocative efficiency through two main channels : (i) speeding up bureaucratic procedures, and (ii) introducing competition for government resources resulting in more efficient provision of services than otherwise would have been the case. This hypothesis, together with the East Asian paradox (high economic growth occurring in the presence of high level of corruption), has provoked numerous cross-country studies on the relationship between corruption and economic performance², but these studies have not been able to deliver a convincing and robust conclusion.

First, cross-country analysis cannot explain within-country variation in firm-level corruption (e.g. Svensson [2003]). Even within a highly corrupt economy, firms not paying bribes can perform better or no worse than firms paying bribes. The other major drawback of this approach is that it has relied on country-level measures of corruption that are too simple to render the complex nature of the phenomenon. Most cross-country studies rely on perception-based measures of corruption, which have been shown to differ substantially from reality (Olken [2009]; Razafindrakoto and Roubaud [2010]). Given the diverse results found across countries, and the need for more precise measures of experienced corruption, within-country variations proved to be critical inputs to country-specific knowledge on the matter, and for anti-corruption policies by extension.

Being enabled by increasing data availability, many microeconomic studies have brought

1. See Aidt [2003] for a critical review of these theories.

2. See Svensson [2005] and Aidt [2009] for two critical literature reviews.

the issue to firm-level analysis in recent years with a focus on developing countries^{3 4}. It appears that the findings are as inconclusive as their cross-country counterparts, as both positive and negative effects of generic ‘corruption behaviour’ are found, and differences in contexts are not sufficient to explain these variations. Even with firm-level data, and the possibility to look at heterogeneous effects by firm size and sector, the approach consisting in a generic indication of corruption fails to capture its complexity. Indeed, various indicators of firm performance are employed in different studies, but all studies use similar measures of corruption capturing all types of corruption purposes. Paunov [2016] is the only exception, in which the author is able to loosely link bribe payments to obtain an operating licence with quality certificates and patent ownership as well as with machinery investment. As a consequence, existing studies have mainly investigated the net impact of overall corruption on firm performance and left the question of how different types of corruption fulfil their purposes unsolved. To study the ‘grease the wheels’ hypothesis at firm level in a more precise manner, one needs to acknowledge the heterogeneous nature of bribe payment behaviours and, to do so, to differentiate between the impacts of bribe payments relative to their purposes.

The objective of this analysis is twofold. First, we look at whether corruption is a good way to achieve its ends. To do so, we seek to know whether corruption designed to achieve a certain purpose does indeed achieve that purpose. We study the effects of bribes in order to obtain government contracts on the percentage of the firm’s sales to state customers. In the same vein, we seek to highlight whether bribes paid in order to avoid taxes actually have an impact on the amount of taxes paid by the firm. Our second focus is to identify the effects of corruption on firms’ performance. First, in its general form, and then, to consider different types of bribe payments depending on the purpose to be achieved in order to capture potentially differentiated effects.

With reported bribe payments rather than corruption perception, detailed information about corruption purposes, and a more robust empirical strategy, we are able to provide a more precise picture with respect to the consequences of bribe payments on firm performance in Viet Nam. We believe that our contribution also offers useful lessons to other developing countries. The rest of the paper is organized as follows. Section 2 presents a review of the existing literature, section 3 describes the data and provides

3. See Olken and Pande [2012] for a review of early studies on corruption among individuals, firms, and government officials. In this paper, we focus on firm-level corruption.

4. Table 16 in appendix provides an overview of all published empirical studies on the relationship between corruption and firm performance that we are aware of.

descriptive statistics. Section 4 describes the identification strategy and the estimation issues. Sections 5 and 6 present the empirical results for the direct and the target indicators. Section 7 discusses the results and concludes.

2.2 Literature review : firm-level corruption and performance

Over the last decades, numerous studies have emerged in the existing literature to understand whether corruption could affect firm-level performance. The debate around this issue is lively insofar as the literature does not provide a convergent answer to the question of the economic impacts of corruption especially at the firm level.

2.2.1 A "sand" or "grease the wheels" effect?

De Rosa et al. [2010] examine the effects of corruption on total factor productivity in 28 transition and developed countries in Central and Eastern Europe and the Former Soviet Union. They find negative consequences for firm-level performance that worsen as the level of institutional quality decreases. Seker and Yang [2012] use firm-level data from 29 developing countries in the Latin America and Caribbean region to investigate the relationship between bribery and annualized sales growth. They obtain an overall negative effect of bribery which is robust to different sub-samples and controlling for unobservable firm fixed effects with a panel data set. They find significant differential effects of bribery by firm size and firm age and their results suggest that paying bribes decreases sales growth of low-sales-generating firms more severely than high-sales-generating firms. Asiedu and Freeman [2009] examine the effects of both firm-level and country-level corruption. Their results reveal a negative and significant effect on investment growth for firms in transition countries. The results are similar with regard to the foreign direct investment (FDI) channel, enabling firms to improve their performance and develop further. Lambsdorff and Cornelius [2000] highlight the adverse effect of corruption on FDI in African countries. By focusing his study on bilateral flows, Wei [2000] manages to demonstrate the negative impact of corruption on FDI as foreign investors should deal with the "corruption tax". According to Habib and Zurawicki [2002], the latter are even more sensitive to this phenomenon than local investors. Cuervo-Cazurra [2008] argues that the impact of corruption on FDI depends on the characteristics of the economic system of the host country. He proposes that corruption has a negative impact on

FDI in developed economies because it increases the uncertainty and cost of operating in the country, but that this negative impact may be compensated in transition economies because corruption enables to circumvent inappropriate regulations and low-quality institutions. O'Toole and Tarp [2014] test the effect of corruption on the efficiency of capital investment using firm-level data from the World Bank Enterprise Surveys, covering 90 developing and transition economies. They find that bribery decreases investment efficiency by reducing the marginal return per unit investment. Fisman and Svensson [2007] find a strong, robust and negative relationship between corruption rates and the growth of firms (in particular the growth of their sales) in Uganda. For every one percentage point increase in the corruption rate, firm's growth falls by three percentage points. Lavallée and Roubaud [2018] analyze data drawn from an original series of surveys on urban households in West Africa, conducted in seven major WAEMU cities to identify the effect of bribe payments on informal firms' performance. They estimate a standard production function and find that experience of corruption increases economic outcomes. To dissect this overall positive effect, they undertake to differentiate it by 'category of firms' and highlight the fact that a particular type of firm largely explains this result, the *constrained gazelles*⁵.

On the other side, corruption has long been presented as an overriding factor in compensating for the poor functioning of public institutions. Corruption would therefore be a way to 'grease the wheels' of economic life in countries characterized by a slow and pernickety bureaucracy. Some authors argue that bribe payments may enhance efficiency and productivity (Leff [1964]; Huntington [1968]). Sharma and Mitra [2015] analyze the impact of bribe payments on firm-level performance using a subset of 2287 Indian enterprises and five indicators of performance. They find bribe payment works as a tax on the profitability of firms and hurts technical efficiency. They also find bribe payment is a positive determinant of export performance. They attribute this result to the fact that firms must apply for several authorizations and licences from government agencies to be able to export. Bribery is therefore a means of obtaining them more easily. The authors obtain a positive however non significant effect of corruption on labor productivity. These different results highlight various effects of general corruption on firm performance. This brings us to the conclusion that not all bribe payments are equivalent and that it is therefore necessary to differentiate corruption according to the nature and purpose of the

5. Entrepreneurs with business skills and entrepreneurial behaviour similar to upper tier entrepreneurs but not actually top performers [Grimm et al., 2012]

bribes paid.

2.2.2 A need to differentiate between types of corruption

A few findings in previous studies indicate that different types of corruption should have different impacts on firm performance. In Philippines, Mendoza et al. [2015] find a positive effect of bribe payments in general on sales growth among small and medium enterprises that actively approached bureaucrats to pay bribes, but no such relationship among those who were asked by the bureaucrats to pay bribes. Similar positive effects on output and labour productivity growth rates are detected among Indonesian firms, which have been argued to pay bribes in an active manner under the Suharto regime (Vial and Hanoteau [2010]). Finally, in two South African ports, Sequeira and Djankov [2014] detect, through behaviours of private agents, two types of bribe payments : collusive payments in the form of tariff evasion, which allow private agents to capture sizable rents; and coercive payments in the form of fees additional to official price of the clearing service, which increase trade costs. These findings, although indirect, do further suggest that aggregating all types of bribe payments with different purposes into one measure would miss important information about the impact of each type of bribe payment.

The motivation of this paper is precisely to provide evidence on the various types, and differentiated effects, of bribe payments at the firm level. We develop this inquiry using the Viet Nam Small and Medium Enterprises (SMEs) Survey of 2015. This dataset contains detailed information about the purposes of bribe payments as well as various indicators of firm performance, and hence enables us to examine the relationship between different types of bribe payments and their corresponding links with-and effects on-performance. In particular, we hypothesize that there are essentially two types of bribe payments. The first corresponds to the 'grease the wheel' approach, in which firms pay to obtain benefits they would not be able to get without bribe payments. Firms have an incentive to offer a bribe or accept paying a bribe because it offers appreciable advantages that would not be accessible without corruption, such as being granted a contract, or avoid having to comply with regulations or taxes (Boddewyn and Brewer [1994]). The second type is 'sand the wheel', in which firms have to pay to obtain something that they would get by default as soon as they fulfilled certain legal requirements. Given two otherwise identical firms, the one paying bribes of the first type should have better performance while the opposite is true for one paying bribes of the second type. Bribe payments to gain go-

vernment contracts and to evade tax should fit the first type, and bribe payments to get public services, licences, and permits should fit the second type, while payments to deal with customs may fit either type depending on whether their purpose is to evade tariffs or to accomplish bureaucratic procedures.

Public sector corruption is known to be high in Viet Nam. The country scored 33 in the Corruption Perception Index⁶ in 2016 (the global average score is 43), which leads us to suspect endemic corruption. Anti-corruption efforts have gained increasing public attention in the past few years. The country passed an anti-corruption law in 2005, which was amended in 2012. It ratified the United Nations Convention against Corruption in 2009. Furthermore, the Political Bureau re-established the Internal Affairs Division in 2012 with the primary purpose of monitoring and investigating corruption. Despite these efforts, recent sociological surveys indicate that corruption is still prevalent and costly from the perspectives of citizens, firms, and public officials (Bank [2013]). The anti-corruption law criminalizes public sector corruption but not that of the private sector. Corrupt behaviour remains widespread in the Vietnamese business environment and firms are likely to experience bribery, political interference, and ‘facilitation payments’. Several studies have investigated the causes of firm-level corruption in the Vietnamese context (Gueorguiev and Malesky [2012]; Malesky et al. [2015]; Rand and Tarp 2012). Rand and Tarp [2012] found that bribe incidence is closely associated with firm-level differences in ability to pay. More visible, relatively large, and formally registered firms are also more likely to make informal payments. But studies on the consequences of such payments are rare. Nguyen and Van Dijk [2012] suggested a differentiated effect between the private sector and state-owned enterprises, with perceived corruption having respectively a negative and positive influence on growth. We examine the effects of bribe payments on firm performance. The concept of performance remains quite broad. The economic approach is based on the central notion of goals to be achieved. Consistent with the finding of Brush and Vanderwerf [1992], the use of the term ‘performance’ by researchers included many constructs measuring alternative aspects of performance. The most widely reported performance measures in published studies cover three dimensions : efficiency, growth⁷ and size. We measure performance, following the literature, with respect to indicators capturing the different dimensions mentioned above-which we call ‘target’ indicators.

6. The Corruption Perception Index score scale is 0 (highly corrupt) to 100 (very clean).

7. The construction of growth rates of value added, number of employees or profit was unsuccessful as almost no firm provided these informations over more than one period.

Total assets, total value added and labour force are used as measures of firms' size and we measure efficiency through labour productivity, gross profit and investment. Furthermore, the dataset enables us to investigate the relationship between corruption and other direct indicators of intermediate performance. In particular, we examine whether bribe payments to gain government contracts affect the percentage of sales to state customers and whether bribe payments to avoid tax affect the amount of tax paid, which provides insights into the short-term efficiency of bribe payment behaviours, and on their overall returns. As widely acknowledged in previous studies, one major challenge in examining the effect of corruption on firm performance is the endogenous nature of the relationship. In the case of grease corruption, firms with higher potential benefits may be willing to pay more, or firms with specific (unobservable) characteristics may choose to specialize in the rent-seeking sector. As for sand corruption, bureaucrats may approach more productive firms with a higher capability to pay or those firms with a higher willingness to pay to ask for bribe payments (Svensson [2003]). To overcome this challenge of endogeneity as well as the measurement errors inherent in micro-level data, we adopt an estimation strategy proposed by Fisman and Svensson [2007], in which an industry-location average of bribe payments is used to instrument for firm-level bribe payments. The assumption is that the industry-location average is a function of the underlying characteristics inherent in each particular industry location, which determines to what extent bureaucrats can extract bribes in that industry location, and hence is exogenous to the firm bribe payments in the same industry location. This could help explain general propensities for bribery that may not necessarily be linked to firm performance.

This empirical strategy has also been used in several succeeding studies (e.g. Mendoza et al. [2015]; Vial and Hanoteau [2010]).

2.3 Data and descriptive statistics : patterns of bribe payment among Vietnamese SMEs

This paper relies on panel data for Vietnamese manufacturing SMEs. The survey is a collaborative effort of the Central Institute for Economic Management (CIEM) of the Ministry of Planning and Investment of Viet Nam, the Institute of Labour Science and Social Affairs (ILSSA) of the Ministry of Labour, Invalids and Social Affairs of Viet Nam, the Development Economics Research Group (DERG) at the University of Copenhagen,

and the United Nations University World Institute for Development Economics Research (UNU-WIDER). The last round of the survey was conducted in 2015, and included 2,647 enterprises in 10 out of the 63 provinces of Viet Nam. In addition to the 2015 round, the empirical analysis relies on the unbalanced panel data made of the 2011, 2013, and 2015 rounds, for a total of 7,696 observations. We perform further empirical investigations relying on the balanced panel data, for a total of 5,154 observations⁸.

The sampling procedure is based on the Establishment Census and the Industrial Survey in Vietnam, which include only formal enterprises. A significant share of informal firms was explicitly included, using on-site identification. The definition of MSMEs used in the survey follows World Bank and Vietnamese Government definitions : micro have up to 10 employees, small have up to 50 employees, and medium have up to 300 employees. In practice, however, there are a few firms (0.3 per cent) whose total labour force exceeds 300 employees. Thus, we extend the definition to 400 employees in our empirical investigation. The survey includes informal firms (firms without business registration licences or tax codes, and not registered with government authorities) using an on-site identification strategy. Thus, all the informal firms surveyed operated alongside surveyed formal firms, and hence were not representative of the whole informal sector⁹.

Firm total assets in our sample average around VND6,396 million in 2014 (approximately US\$287,000)¹⁰, with a range from VND4.5 million (\$200) to VND782,562 million (\$41 million) million VND, while total labour force has a mean around 16 workers (including firm owners) with a range from 0 to 399 additional employees. We use a logarithm of these two indicators in our empirical investigation for ease of interpretation of the results. An average firm in the sample paid around VND231 million in taxes (approximately \$10,400) in 2014, with a range from zero to VND72,597 million (\$3.3 million). To retain those firms paying zero taxes in the logarithmic transformation, we add VND1,000 (\$0.04) to their paid taxes. The percentage of total sales to state customers averages around 4.62 in the sample with a range from zero to 100 per cent, and the set of customers is dominated by state-owned enterprises.¹¹

The first set of results consists in describing bribe payment behaviours among this population of firms. Around 43 per cent of firms in our sample report bribe payments (defined in the questionnaire as ‘informal fees’) in 2014. The average bribe amount is

8. Observations including only one or two years were dropped in this case.

9. See WIDER [2012] for technical information about the survey.

10. The exchange rate is approximately VND21,000 per US\$.

11. Statistics available upon request.

around VND4.3 million (approximately \$195) per year, which accounts for around 0.12 per cent of total revenue, with a maximum of VND1 billion (\$44,800). To retain those firms with zero bribe payment in the logarithmic transformation of the bribe amounts, we add VND1,000 (\$0.04) to their bribe payment values. Among those firms reporting having made bribe payments, around 19 per cent paid bribes *to get connected to public services* (1), 6 per cent *to obtain licences and permits* (2), 24 per cent *to avoid taxes and tax collection* (3), 10 per cent *to gain government contracts or public procurement* (4), 4 per cent *to avoid with customs duties*, and 37 per cent for other purposes.¹² We define sand corruption as bribe payments restricted to categories (1) and (2), and grease corruption as bribe payments in categories (3) and (4). All firm characteristics are summarized in Table 2.1 (whole sample) and Table 2.2 (balanced sample).

TABLE 2.1 – Descriptive statistics (unbalanced panel)

Variable	2011		2013		2015	
Observations (unbalanced)	2,510		2,539		2,647	
	Mean	sd	Mean	sd	Mean	sd
Total assets (million VND)	6,043.45	20,527.34	5,268.89	13,002.46	6,396.07	33,665.24
Total labour force	16.16	32.13	14.62	28.33	15.74	35.40
Sale percentage to state customers	5.89	14.56	5.46	15.47	4.62	13.50
Total tax paid (million VND)	127.82	914.28	143.38	896.15	235.52	2204.77
Tax share in profits	0.12	0.31	0.20	3.82	0.12	1.49
Bribe incidence	0.38	0.49	0.45	0.50	0.43	0.50
Bribe amount (mean, million VND)	5,475.36	104,787.32	2,881.90	14,909.50	4,302.99	23,230.44
Bribe share in sales	0.003	0.095	0.002	0.016	0.002	0.029
<i>Bribe : government contracts</i>	0.03	0.16	0.05	0.21	0.04	0.20
<i>Bribe : taxes</i>	0.12	0.32	0.08	0.28	0.11	0.31
<i>'Sand' bribe payment</i>	0.13	0.33	0.15	0.36	0.11	0.31
<i>'Grease' bribe payment</i>	0.14	0.35	0.13	0.34	0.15	0.36
Firm age	13.44	9.45	15.57	10.02	16.52	10.16
Formal firm	0.61	0.49	0.51	0.50	0.93	0.26
Household firm	0.64	0.48	0.63	0.48	0.63	0.48
Distance to tax office (km)	11.22	26.29	16.48	32.55	23.84	38.89

The descriptive results on bribes largely corroborate those of Rand and Tarp [2012], who document an overall positive association between bribe incidence and firm size (which they interpret as an indication of firms' ability to pay). The overall bribe-payment incidence does indeed increase with total assets and labour force size. This is also true when looking separately at each type of bribe payment : the average incidence of both types, sand and grease, increases by decile of total assets and workforce. This increase is, however, nonlinear in assets : the first three deciles of assets (the lower tier of firms) declare almost no voluntary bribes, while these occur much more often in the top half of firms.

Looking at the association between bribe payment and firm's age, type (household

12. Questionnaire formulations are reported in Table 2.3.

CHAPITRE 2. FIRM-LEVEL CORRUPTION
UNRAVELLING SAND FROM GREASE

TABLE 2.2 – Descriptive statistics (balanced panel)

Variable	2011		2013		2015	
	Mean	sd	Mean	sd	Mean	sd
Observations (balanced)	1,718		1,718		1,718	
Total assets (million VND)	5,892.0	19,942.9	5,117.5	12,955.8	6,140.3	34,614.2
Total labour force	16.40	33.52	14.44	27.74	15.09	34.01
Sale % to state customers	5.67	13.95	4.93	14.60	4.99	14.70
Total tax paid (million VND)	137.4	1,020.5	115.1	631.1	184.9	1,874.6
Tax share in profits	0.11	0.25	0.23	4.60	0.13	1.48
Bribe incidence	0.37	0.48	0.45	0.50	0.42	0.49
Bribe amount (million VND)	3,186.1	22,518.3	2,522.1	6,724.2	4,141.3	26,420.1
<i>Bribe : government contracts</i>	0.02	0.15	0.04	0.21	0.04	0.20
<i>Bribe : taxes</i>	0.11	0.31	0.08	0.27	0.10	0.30
<i>'Sand' bribe payment</i>	0.14	0.34	0.15	0.36	0.10	0.30
<i>'Grease' bribe payment</i>	0.13	0.34	0.12	0.33	0.14	0.35
Firm age	13.5	9.3	16.3	9.7	18.3	9.7
Formal firm	0.62	0.49	0.55	0.50	1.00	0.02
Household firm	0.68	0.47	0.66	0.47	0.66	0.47
Distance to tax office (km)	11.6	26.9	17.1	33.3	23.7	38.9

TABLE 2.3 – Questions recording the experience of corruption

Measures of corruption		Corresponding survey question	Code
General corruption	Behaviour	Do you have to pay informal/communication fees?	Yes (1), No (2)
	Amounts	Approximately how much did you pay in total last year? (1,000 VND)	
Corruption purposes	Sand	What is the bribe payment/communication fee mainly used for?	to get connected to public services (1), to get licenses and permits (2)
	Grease	What is the bribe payment/communication fee mainly used for?	to deal with taxes and tax collection (3), to gain government contracts/public procurement (4)

Source : Survey of small and medium scale manufacturing enterprises (SMEs) in Vietnam, 2011, 2013, 2015

or incorporated firms), and registration status (having a business licence or not) reveals statistically significant differences : younger, formal, and incorporated (as opposed to household) firms tend to pay bribes significantly more often. Interestingly, this is especially true of the types of bribes classified as ‘grease’ (while the difference by legal status is insignificant for ‘sand bribes’). While the visibility of firms (registration status and incorporation) only marginally exposes them to more extortion, they are nevertheless more likely to actively corrupt.

Finally, it appears that the incidence of bribe payment varies greatly by industry, from an incidence of 30 per cent in food and beverages to 80 per cent in paper processing. The regional variation is also large, from 10 per cent incidence in Phu Tho to the highest values in Ho Chi Minh City, Hanoi, and Hai Phong. Overall, the industry-location average incidence (later used as an instrument) has a 0.29 standard deviation (the wood processing industry in Khanh Hoa, anecdotally, having the largest value).

2.4 Identifying the effects of voluntary and extortive bribe payment on firms

The core of the empirical strategy consists in relating firm-level corruption to various output measures. A first specification, based on the 2015 survey, consists in estimating with ordinary least squares (OLS) the following equation :

$$Y_i = \beta_0 + \beta_1 b_i + \beta_2 X_i + \epsilon_i \quad (2.1)$$

Where Y_i represents the outcome of the firm i , which are successively the intermediate indicators such as government contracts and tax level; and the target indicators such as assets, labour force, value added, labour productivity, investment and net profits. b_i is the dummy indicating that firm i paid bribes (differentiated by type), and X_i a vector of firm-level characteristics (age, registration, legal status, distance to tax office). An additional specification takes b_i as the amount of bribes paid. We also include province fixed effects in all specifications. This first linear estimation is plagued by the endogeneity of the bribe indicator, as unobserved characteristics might explain bribe payments, as well as previous values of the outcomes (such as firm size, which might render the enterprise more visible and increase the incidence of extortion).

In order to overcome this endogeneity, we follow the instrument used by Fisman and

Svensson [2007]. Thus, we estimate equation (2.1) using the 2015 data by two-stage least squares; the b_i variable is instrumented by the z_i industry-location average of bribe payment. We assume that corruption depends on an industry-specific factor and a firm-specific factor. The average amount of bribes common to industry location is explained by underlying characteristics inherent to a particular industry-location, thus determining the incidence of bribery. We expect bribery to differ across locations because, for example, some officials might extract bribes more efficiently than others. In this identification strategy, instrumenting firm-level corruption by industry-location averages removes the bias due to unobservables correlated with firm-level corruption. To make sure as far as possible that these industry-location averages are driven only by industry-location characteristics that are exogenous to firm bribe payments, we use province as our location variable. The dataset has 10 provinces and 20 industries, which gives 157 industry-location identifiers.

The average number of firms in each industry location is approximately 17. Forty-five industry-location identifiers contain only one or two observations, which together account for around 2 per cent of total observations. These industry-location identifiers are dropped in the investigation. Finally, the empirical strategy relies on the 2011 and 2013 surveys to construct a panel of firms. We estimate equation (2.2) with a two-stage least-squares fixed-effects estimator :

$$Y_{it} = \beta_0 + \beta_1 b_{it} + \beta_2 X_{it} + \mu_i + \epsilon_{it} \quad (2.2)$$

In this specification, inference is conditional on individual effects. Estimates are obtained by regressing Y on X and individual identifiers. The estimation is conducted conditionally to the unobserved heterogeneity and μ_i are thus handled as parameters to be estimated. This approach allows us to estimate the average effects across time and between firms and thus accounts for individual heterogeneity.¹³

We include in the X_i vector similar firm-level controls. We also control by province and year fixed effects, and additionally include year-location interactions, which capture potential time-varying trends by province. The key assumption to ensure a consistent estimate of the bribe payment coefficient (β_1) in the panel setting is $corr(b_{it}; \epsilon_{it}) = 0$ or, in the case of a cross-section, is $corr(b_i; \epsilon_i) = 0$. This may be the case if some unobservable

13. Fisher's test results led us to reject the null hypothesis of 'no individual effects'. In addition, the Hausman test leads us to reject the null hypothesis and opt for fixed effects in all specifications. Results are available upon request

processes occur in the industry-location average occurrence of bribe payment that asymmetrically affect our performance measures-which would threaten the exclusion restriction. There is, however, no reason to believe that idiosyncratic systematic phenomena occur as regards bribe payments at the industry-location level that could affect firms' performance. In particular, the data cover a sufficient spectrum of regions and firm types to mitigate the risk of including particular situations where bribe payment is systematically higher and the economic condition systematically better or worse.

2.5 The immediate 'returns to corruption' : Does it pay to bribe to obtain government contracts and avoid taxes?

We start the empirical analysis by examining the relationship between paying bribes to gain government contracts and percentage of sales to state customers.

TABLE 2.4 – Sale percentage to state customers

	(1) OLS	(2) IV	(3) Panel-IV (Unbalanced)	(4) Panel-IV (Balanced)
Bribe to gain government contracts	1.417 (1.606)	20.231** (8.146)	16.85*** (3.123)	12.31*** (4.029)
Firm age	0.072** (0.029)	0.073** (0.030)	0.037* (0.019)	0.040* (0.024)
Formal firm	0.860** (0.370)	0.690 (0.421)	1.023** (0.417)	1.620*** (0.541)
Household firm	-6.444*** (0.674)	-5.124*** (0.767)	-4.375*** (0.441)	-4.179*** (0.546)
Constant	6.764*** (1.015)	6.154*** (1.056)	8.334*** (0.940)	8.354*** (1.178)
Province dummies	YES	YES	YES	YES
Time dummies	na	na	YES	YES
Time*Province	na	na	YES	YES
Observations	2,612	2,560	7,440	5,000
R-squared	0.078	na	na	na
First-stage F-statistic	na	10.39***	na	na

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level. Individual and time fixed effects included in the panel estimation.

Column (1) in Table 2.4 presents the estimated results using an OLS estimator for Equation 2.1. The estimated coefficient of bribe to gain government contracts is positive but insignificant, when controlling for firm-level characteristics and province fixed effects. As mentioned above, however, unobservable characteristics may drive the results.

In column 2, we use industry-location average to instrument for firm bribe payments. The estimated coefficient is now highly significant and indicates that firms paying bribes to gain government contracts have on average a 20 per cent higher percentage of sales to state customers. The first-stage F-statistic satisfies the conventional threshold. This result also holds when we drop those industry-location identifiers that have only one to two firms. Further analysis (not shown) also indicates that this result is mainly driven by sale percentage to state-owned enterprises. The third column reports the panel two-stage least-squares coefficients for the unbalanced panel, which fall close to the IV estimation for 2015. The fourth column reports the panel two-stage least-squares coefficients for the balanced panel, which closely match the coefficients for the unbalanced panel but are smaller in magnitude. The estimated coefficients for other control variables have the expected signs and are significant in almost all regression models. They suggest that, on average, older and formal firms have higher, while household firms have lower sale percentages to state customers. According to our preferred specification, companies that start paying bribes and formalize, see their sales to state entities increase by more than 100 percent. Similarly, firms that decide to participate in corruption see the percentage of sales to state customers increase by 3,7 per cent when they have one more year of operation.

Table 2.5 presents similar estimated results with respect to total paid taxes in a logarithm. The OLS estimator in column 1 produces a positive and significant estimated coefficient for bribe to avoid taxes, which indicates that firms that pay bribes to avoid taxes on average end up paying higher taxes. This does not indicate that bribe payment is counter-productive, but rather that the bias is high with an OLS specification : only larger firms, which are subject to higher taxes, bribe in order to dodge them. Logically, the estimated coefficient of bribe to avoid tax loses significance when instrumenting bribe payments in column 2. All coefficients for other control variables have the expected sign; they indicate that, on average, formal firms and firms with higher before-tax profits have higher tax levels, while household firms and firms located far from the tax offices have lower levels of tax payments. Columns 3 and 4 show a similar result with a panel setting. Nevertheless, these results show at best the absence of a reducing effect, and do not indicate that bribing leads to significantly lower taxes. In sum, firms paying bribes to avoid tax are not significantly different in terms of the amounts of tax paid. But to the extent that larger firms bribe more-and should pay more taxes-this provides suggestive evidence that not bribing would increase the amount of tax paid. These intermediate re-

sults can be interpreted as a necessary condition to apprehend the relationship between bribe payments and firm performance : those firms that pay bribes to gain government contracts do more business with the public sector, and those paying bribes to dodge taxes do not pay significantly more tax (even though they are on average larger). These results tend to confirm the validity of the distinction between these types of bribes, which are typically assumed to be voluntary and from which we expect a ‘grease the wheel’ effect, and the extortive ones.

TABLE 2.5 – Ln total taxes paid

	(1) OLS	(2) IV	(3) Panel-IV (Unbalanced)	(4) Panel-IV (Balanced)
Bribe to avoid tax	0.261** (0.115)	0.687 (0.613)	0.605 (0.377)	0.483 (0.467)
Firm age	0.004 (0.004)	0.004 (0.004)	-0.004 (0.003)	-0.003 (0.004)
Formal firm	1.036*** (0.196)	0.987*** (0.195)	1.132*** (0.062)	1.195*** (0.079)
Household firm	-3.127*** (0.095)	-3.064*** (0.126)	-3.071*** (0.080)	-3.000*** (0.099)
Distance to tax office	-0.016*** (0.001)	-0.015*** (0.001)	-0.022*** (0.001)	-0.021*** (0.001)
Profit before tax	0.061*** (0.018)	0.058*** (0.017)	0.000*** (0.000)	0.000*** (0.000)
Constant	2.779*** (0.229)	2.706*** (0.267)	3.390*** (0.159)	3.423*** (0.214)
Province dummies	YES	YES	YES	YES
Time dummies	na	na	YES	YES
Time*Province	na	na	YES	YES
Observations	2,644	2,583	7,262	4,910
R-squared	0.586	na	na	na
First-stage F-statistic	na	20.36	na	na

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

2.6 Target indicators : firm-level corruption and firm performance

Does corruption increase firm performance? We investigate in this section its effect on our target indicators. Tables 2.6, 2.8, 2.7, 2.9, report estimates on firms’ size and efficiency for general corruption defined as bribe payments for all purposes. The variable of interest in Tables 2.6 and 2.8 is a dummy indicating whether the firm paid any type of

bribe. The general corruption variable in tables 2.7 and 2.9 is the total amount of bribes paid in a logarithm. The six outcomes of interest are firm size measured as (i) total assets, (ii) total labour force, (iii) firm value added and firms' efficiency measured by (iv) total labour productivity, (v) investment and (vi) net profits. The two first outcomes thus provide insights into the relationship between corruption and firm size, and the third one into its effect on both size and short-term profits.

TABLE 2.6 – General corruption and firm performance : bribe dummy and firms' size

	Ln total assets			Ln total labour force				Ln value added				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	OLS	IV	Panel-IV (Unbalanced)	Panel-IV (Balanced)	OLS	IV	Panel-IV (Unbalanced)	Panel-IV (Balanced)	OLS	IV	Panel-OLS	Panel-IV
General bribe payments	0.450*** (0.062)	1.560*** (0.284)	0.779*** (0.112)	0.488*** (0.126)	0.332*** (0.041)	0.823*** (0.205)	0.273*** (0.065)	0.158** (0.076)	0.030 (0.034)	0.187 (0.214)	0.076*** (0.020)	0.197** (0.094)
Firm age	0.008*** (0.003)	0.010*** (0.003)	0.008*** (0.002)	0.001 (0.003)	0.002 (0.002)	0.003** (0.002)	0.001 (0.001)	-0.002 (0.002)	-0.006*** (0.002)	-0.006*** (0.002)	0.003 (0.003)	-0.006*** (0.001)
Formal firm	0.606*** (0.090)	0.531*** (0.096)	0.228*** (0.031)	0.178*** (0.036)	0.336*** (0.054)	0.303*** (0.057)	0.0933*** (0.018)	0.0711*** (0.022)	0.085 (0.065)	0.080 (0.067)	-0.031 (0.026)	0.0146 (0.024)
Household firm	-1.615*** (0.064)	-1.268*** (0.109)	-1.202*** (0.052)	-1.147*** (0.062)	-1.392*** (0.043)	-1.238*** (0.076)	-1.108*** (0.031)	-0.980*** (0.038)	-0.228*** (0.041)	-0.200*** (0.052)	-0.077 (0.054)	-0.200*** (0.035)
Log capital									0.210*** (0.013)	0.208*** (0.015)	0.155*** (0.013)	0.200*** (0.009)
Log employment									0.889*** (0.020)	0.882*** (0.023)	0.734*** (0.026)	0.866*** (0.016)
Constant	7.122*** (0.139)	6.406*** (0.233)	7.893*** (0.099)	8.188*** (0.132)	2.183*** (0.078)	1.866*** (0.153)	2.582*** (0.060)	2.768*** (0.083)	3.040*** (0.108)	2.991*** (0.120)	2.901*** (0.139)	2.803*** (0.091)
Province dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time dummies	na	na	na	na	na	na	na	na	na	na	na	na
Time*Province	na	na	na	na	na	na	na	na	na	na	na	na
Observations	2645	2645	7476	5023	2645	2645	7476	5023	2.54	2.54	7416	7416
R-squared	0.501	na	na	na	0.487	na	na	na	0.8374	na	0.354	na
First-stage F-statistic		235.74	32.63			235.74	32.63			200.37		29.97

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

The four columns for the two first outcomes in table 2.6 correspond to the OLS, IV, panel 2SLS for the unbalanced panel and panel 2SLS for the balanced panel estimations. The four columns for value added corresponds to the OLS, IV, unbalanced panel OLS and 2SLS for the unbalanced panel estimations. The value-added models include logarithms of production factors, assets, and labour, and thus measure the influence of corruption on productivity. While firms that do pay bribes do not have significantly higher short-term profits in 2015, it appears that corruption has a strong association with firm size and short term profits in the panel specifications. All models indicate a large and significant association between bribe payment and log of total assets. The preferred specification using panel 2SLS indicates that on average (between firms and over time), holding equal firms characteristics, province, time, and differentiated trends, firms paying bribes have their total assets scaled up by 0.78. Similarly, with firm size measured as total labour force, all models indicate a strong and significant association. The preferred specification shows that bribing is associated with a firm size that is 27.3 per cent higher. The 2SLS specifications for the balanced panel show that bribe payments increase the total by 49 per cent and firm size by 15.8 per cent. Almost all the firms that left the panel have paid bribes which can explain that unsurprisingly, when these firms are excluded from the sample in the balanced panel specification, coefficients are lower. There is no association with value added in the cross section analysis once both production factors have been controlled for, indicating that corruption could have an influence on firm performance in the long run rather than an immediate one. One possible interpretation is that firms that choose not to pay bribes have less chance of achieving sustained growth. The analysis on panel data corroborates this hypothesis and shows a positive and significant correlation between corruption and value added over the three periods, even after having instrumented bribe payments by the industry-location average. In a further analysis, we use bribe amounts to represent 'general corruption'.

Table 2.7 presents the results of the panel data estimates for the 'size outcomes'. The amount of bribes is significantly and positively correlated with firm size for all types of size measures.

This result holds only for total assets when instrumenting bribe amount by its industry-location average. Column (2) gives the coefficient for the preferred 2SLS specification and shows that firms increasing the amount of bribes they pay have, *ceteris paribus*, their total assets scaled up by 0.045. The cross-section specifications give similar results in term

TABLE 2.7 – General corruption and firm performance : bribe amounts and firms' size

	Ln total assets		Ln total labour force		Ln total value added	
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel-OLS	Panel-IV	Panel-OLS	Panel-IV	Panel-OLS	Panel-IV
General bribe payments	0.011*** (0.004)	0.045** (0.023)	0.012*** (0.002)	0.013 (0.013)	0.010*** (0.003)	0.017 (0.017)
Firm age	0.002 (0.004)	0.003 (0.004)	0.000 (0.002)	0.001 (0.002)	0.003 (0.003)	0.003 (0.003)
Formal firm	0.060* (0.035)	0.056 (0.035)	0.005 (0.019)	0.005 (0.019)	-0.029 (0.027)	-0.030 (0.025)
Household firm	-0.272*** (0.099)	-0.250*** (0.088)	-0.182*** (0.064)	-0.181*** (0.049)	-0.079 (0.054)	-0.076 (0.063)
Log capital					0.151*** (0.013)	0.150*** (0.012)
Log employment					0.733*** (0.026)	0.728*** (0.025)
Constant	7.669*** (0.281)	7.471*** (0.319)	1.667*** (0.166)	1.771*** (0.179)	3.248*** (0.145)	3.430*** (0.172)
Province dummies	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES
Time*Province	YES	YES	YES	YES	YES	YES
Observations	7666	7666	7666	7666	7392	7392
R-squared	0.8245		0.6318		0.354	
First-stage F-statistic		24.10		24.10		23.23

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

of significance but coefficients are very low.¹⁴

Tables 2.8 and 2.9 report estimates on 'efficiency variables'. For each outcome of interest the first column gives panel OLS estimates and the second one gives the results of the panel 2SLS specification. For greater clarity, OLS and IV cross-section results were not included in table 2.8 as no significant effects on efficiency could be identified. Similarly, cross section estimates were not included in table 2.9. Bribe amounts are significantly correlated with all the efficiency variables both OLS and IV estimations in 2015 but these correlations are too weak to be reported. Tables 2.8 and 2.9 show a positive and significant impact of bribes on labour productivity for the panel when including province fixed effects. This significance disappears when instrumenting bribes in column (2).

Although they are informative on the overall effect of firm-level corruption behaviours, the results in Tables 2.6, 2.7, 2.8 and 2.9 combine all types of bribe payments.

One of the key features of this paper is that the data allow us to disentangle bribe payment patterns by their purpose, thereby separating what constitutes extortion from what is, more likely, voluntary corruption. We thus restrict the indication of corruption to what we consider to be 'sand' bribes, that is, payments for what should be freely acces-

14. Results available upon request.

TABLE 2.8 – General corruption and firm performance : bribe dummy and efficiency

	Ln labor productivity		Ln investment		Ln net profits	
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel-OLS	Panel-IV	Panel-OLS	Panel-IV	Panel-OLS	Panel-IV
General bribe payments	0.076*** (0.020)	0.037 (0.077)	-0.083 (0.079)	-0.296 (0.256)	0.030 (0.030)	0.042 (0.124)
Firm age	0.003 (0.003)	0.003 (0.003)	-0.005 (0.009)	-0.006 (0.011)	0.005 (0.004)	0.005 (0.004)
Formal firm	-0.031 (0.026)	-0.030 (0.025)	-0.038 (0.098)	-0.054 (0.100)	-0.023 (0.043)	-0.023 (0.040)
Household firm	-0.077 (0.054)	-0.079 (0.062)	-0.354 (0.241)	-0.334 (0.242)	-0.073 (0.081)	-0.073 (0.096)
Log capital	0.155*** (0.013)	0.155*** (0.012)	0.401*** (0.053)	0.400*** (0.053)	0.185*** (0.020)	0.185*** (0.018)
Log employment	-0.266*** (0.026)	-0.263*** (0.021)	0.148* (0.076)	0.166** (0.081)	0.458*** (0.039)	0.457*** (0.034)
Constant	2.901*** (0.139)	3.134*** (0.237)	2.356*** (0.548)	1.656*** (0.569)	2.210*** (0.214)	2.718*** (0.259)
Province dummies	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES
Time*Province	YES	YES	YES	YES	YES	YES
Observations	7416	7416	3891	3891	7106	7106
R-squared	0.168	na	0.132	na	0.148	na
First-stage F-statistic		29.97		18.52		27.58

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

TABLE 2.9 – General corruption and firm performance : bribe amounts and efficiency

	Ln labor productivity		Ln investment		Ln net profits	
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel-OLS	Panel-IV	Panel-OLS	Panel-IV	Panel-OLS	Panel-IV
Ln bribe amount	0.010*** (0.003)	0.017 (0.017)	-0.006 (0.010)	-0.024 (0.044)	0.005 (0.004)	-0.008 (0.034)
Firm age	0.003 (0.003)	0.003 (0.003)	-0.006 (0.009)	-0.006 (0.011)	0.006 (0.004)	0.005 (0.004)
Formal firm	-0.029 (0.027)	-0.030 (0.025)	-0.033 (0.099)	-0.043 (0.102)	-0.023 (0.043)	-0.021 (0.040)
Household firm	-0.079 (0.054)	-0.076 (0.063)	-0.368 (0.245)	-0.355 (0.245)	-0.082 (0.081)	-0.090 (0.099)
Log capital	0.151*** (0.013)	0.150*** (0.012)	0.399*** (0.053)	0.400*** (0.053)	0.184*** (0.020)	0.185*** (0.019)
Log employment	-0.267*** (0.026)	-0.272*** (0.025)	0.148* (0.077)	0.163* (0.087)	0.454*** (0.039)	0.464*** (0.042)
Constant	3.248*** (0.145)	3.430*** (0.172)	1.610*** (0.505)	1.615*** (0.585)	2.249*** (0.200)	2.791*** (0.283)
Province dummies	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES
Time*Province	YES	YES	YES	YES	YES	YES
Observations	7392	7392	3872	3872	7082	7082
R-squared	0.167		0.129		0.146	
First-stage F-statistic		23.23		15.39		20.67

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

sible public goods. We construct an indication of bribes whose object is to get connected to public services or to obtain licences and permits. At the firm level, 'sand' corruption is supposed to be a pure cost, and one can expect the strong and positive association evidenced above to disappear. The impact of sand bribes is, however, not necessarily negative : some extortive payments in the frame of a heavy bureaucracy may provide a temporary advantage over competitors who choose not to speed up procedures (that is, to the extent these procedures are inefficient for the whole population). Table 2.10 repeats all regressions from Table 2.6, and allows us to analyse the influence of sand bribes on firm performance. The linear-and biased-estimations on firm-size indicators show a significant (and large) effect. But removing endogeneity by using Fisman and Svensson's instrument, both in the cross-section and the panel setting, reduces the coefficients and reveals the absence of effect. It further indicates a negative, although insignificant, association with value added. The results remain when performing an analysis on the balanced panel sample. In sum, Table 2.10 shows that the positive relationship between bribe payment and performance found in Table 2.6 does not exist with respect to sand corruption, even while the latter does not have a direct negative influence.¹⁵

15. Results for firms' efficiency are not reported as sand corruption is found not to have any significant impact on efficiency measures. We note, however, that all the coefficients obtained are negative.

TABLE 2.10 – Sand corruption and firm performance

	Ln total assets			Ln total labour force			Ln value added					
	(1) OLS	(2) IV	(3) Panel-IV (Unbalanced)	(4) Panel-IV (Balanced)	(5) OLS	(6) IV	(7) Panel-IV (Unbalanced)	(8) Panel-IV (Balanced)	(9) OLS	(10) IV	(11) Panel-IV (Unbalanced)	(12) Panel-IV (Balanced)
Sand bribe payments	0.313*** (0.082)	0.504 (0.460)	0.428 (0.158)	0.167 (0.191)	0.190*** (0.062)	0.350 (0.314)	-0.00873 (0.095)	0.0202 (0.1117)	-0.089* (0.048)	-0.134 (0.277)	-0.026 (0.112)	-0.010 (0.130)
Firm age	0.008*** (0.003)	0.008*** (0.003)	0.008*** (0.003)	0.008*** (0.003)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)
Formal firm	0.635*** (0.090)	0.634*** (0.090)	0.268*** (0.030)	0.211*** (0.037)	0.358*** (0.054)	0.357*** (0.054)	0.109*** (0.018)	0.080*** (0.022)	0.087 (0.064)	0.085 (0.064)	0.031* (0.019)	0.017 (0.024)
Household firm	-1.740*** (0.061)	-1.731*** (0.065)	-1.377*** (0.042)	-1.331*** (0.053)	-1.486*** (0.042)	-1.478*** (0.044)	-1.199*** (0.027)	-1.068*** (0.035)	-0.230*** (0.040)	-0.233*** (0.041)	-0.282*** (0.025)	-0.250*** (0.032)
Log capital												
Log employment												
Constant	7.366*** (0.132)	7.338*** (0.150)	8.285*** (0.078)	8.455*** (0.103)	2.369*** (0.076)	2.346*** (0.089)	2.727*** (0.050)	2.837*** (0.068)	3.061*** (0.107)	3.049*** (0.108)	2.780*** (0.068)	2.763*** (0.088)
Province dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time dummies	na	na	YES	YES	na	na	YES	YES	na	na	na	YES
Time*Province	na	na	YES	YES	na	na	YES	YES	na	na	na	YES
Observations	2 645	2 645	7 482	5 023	2 645	2 645	7 482	5 023	2 593	2 540	7 266	4 910
R-squared	0.493	na	na	na	0.476	na	na	na	0.8357	na	na	na
First-stage F-statistic	na	23.93	na	23.93	na	23.93	na	na	na	15.74	na	na

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

Symmetrically, Table 2.11 repeats all the regressions in Table 2.6 with respect to grease bribe payments, defined as payments to avoid taxes and tax collection and to gain government or public contracts. With OLS estimators in columns 1, 5 and 9, the estimated coefficient of grease bribe payments is positive but significant only with respect to total assets and value added. When we use industry-location average to instrument for firm bribe payments in columns 2/3/4 and 6/7/8, this estimated coefficient increases in magnitude and also becomes highly significant. All the first-stage F-statistics satisfy the conventional threshold. Results hold when performing estimations on the balanced panel sample. The positive relationship between bribe payment and performance found in Table 2.6 is actually driven by grease bribe payments. It does pay for firms to voluntarily bribe to gain contracts with the state.

TABLE 2.11 – Grease corruption and firm performance : firms' size

	Ln total assets			Ln total labour force			Ln value added					
	(1) OLS	(2) IV	(3) Panel-IV (Unbalanced)	(4) Panel-IV (Balanced)	(5) OLS	(6) IV	(7) Panel-IV (Unbalanced)	(8) Panel-IV (Balanced)	(9) OLS	(10) IV	(11) Panel-IV (Unbalanced)	(12) Panel-IV (Balanced)
Grease bribes	0.153** (0.077)	1.508*** (0.392)	0.818*** (0.148)	0.702*** (0.168)	0.059 (0.058)	0.776*** (0.250)	0.423*** (0.087)	0.407*** (0.102)	0.118*** (0.037)	0.220 (0.214)	0.056 (0.096)	0.144 (0.115)
Firm age	0.007*** (0.003)	0.008*** (0.003)			0.002 (0.002)	0.002 (0.002)			-0.006*** (0.002)	-0.006*** (0.002)		
Formal firm	0.632*** (0.090)	0.592*** (0.092)	0.251*** (0.031)	0.186*** (0.037)	0.357*** (0.054)	0.336*** (0.054)	0.092*** (0.019)	0.068*** (0.023)	0.085 (0.065)	0.081 (0.065)	0.029 (0.019)	0.017 (0.024)
Household firm	-1.726*** (0.063)	-1.462*** (0.101)	-1.288*** (0.047)	-1.204*** (0.058)	-1.484*** (0.043)	-1.344*** (0.066)	-1.115*** (0.030)	-0.980*** (0.037)	-0.209*** (0.041)	-0.193*** (0.054)	-0.276*** (0.027)	-0.238*** (0.034)
Log capital											0.885*** (0.012)	0.878*** (0.014)
Log employment											0.883*** (0.007)	0.200*** (0.009)
Constant	7.376*** (0.133)	7.052*** (0.163)	8.171*** (0.083)	8.280*** (0.114)	2.383*** (0.076)	2.212*** (0.095)	2.627*** (0.053)	2.713*** (0.074)	3.040*** (0.108)	3.010*** (0.114)	2.778*** (0.069)	2.745*** (0.089)
Province	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time	na	na	YES	YES	na	na	YES	YES	na	na	YES	YES
Time*Province	na	na	YES	YES	na	na	YES	YES	na	na	YES	YES
Observations	2 645	2 645	7 482	5 023	2 645	2 645	7 482	5 023	2 593	2 540	7 266	4 910
R-squared	0.491	na	na	0.474	na	na	na	na	0.836	na	na	na
First-stage F-statistic	na	41.80	na	na	na	41.80	na	na	na	31.67	na	na

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level

TABLE 2.12 – Grease corruption and firm performance : efficiency

	Ln labor productivity			Ln investment		Ln net profits	
	(1) OLS	(2) Panel-OLS	(3) Panel-IV	(4) Panel-OLS	(5) Panel-IV	(6) Panel-OLS	(7) Panel-IV
Grease bribes	0.122*** (0.037)	0.098** (0.038)	0.185 (0.154)	0.146 (0.174)	-0.141 (0.483)	0.094 (0.076)	0.242 (0.259)
Firm age	-0.006*** (0.002)	0.002 (0.003)	0.003 (0.003)	-0.005 (0.009)	-0.005 (0.011)	0.005 (0.004)	0.005 (0.004)
Formal firm	0.083 (0.065)	-0.030 (0.026)	-0.030 (0.025)	-0.029 (0.098)	-0.034 (0.098)	-0.022 (0.043)	-0.023 (0.040)
Household firm	-0.211*** (0.042)	-0.077 (0.054)	-0.073 (0.062)	-0.354 (0.238)	-0.369 (0.242)	-0.071 (0.080)	-0.064 (0.097)
Log capital	0.212*** (0.013)	0.155*** (0.013)	0.155*** (0.012)	0.401*** (0.053)	0.000 (.)	0.185*** (0.020)	0.184*** (0.018)
Log employment	-0.107*** (0.020)	-0.259*** (0.026)	-0.259*** (0.021)	0.141* (0.075)	0.142* (0.079)	0.461*** (0.039)	0.462*** (0.032)
Constant	3.028*** (0.109)	2.957*** (0.139)	3.453*** (0.160)	1.616*** (0.482)	1.453*** (0.538)	1.877*** (0.222)	2.731*** (0.247)
Province	YES	YES	YES	YES	YES	YES	YES
Time	-	YES	YES	YES	YES	YES	YES
Time*Province	-	YES	YES	YES	YES	YES	YES
Observations	2540	7416	7416	3891	3891	7106	7106
R-squared	0.346	0.166		0.131		0.148	
First-stage F-statistic			49.12		27.40		43.35

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level

Table 2.12 shows that ‘grease’ bribe payments are associated with a higher labor productivity both in cross-section and panel OLS specifications. The panel fixed effects estimator is, however less significant and loses significance when ‘grease bribes’ are instrumented.

In order to investigate further the specificity of this relationship between corruption and firms’ performance according to the nature of the firm, we repeated the previous estimations on four restricted samples : formal firms, informal firms, household businesses (henceforth HHB), and non-household businesses.¹⁶

Table 2.13 examines the relationships between paying bribes to gain government contracts and sale percentage to state customers and between bribes to avoid tax and taxes paid with respect to each nature of a firm. Paying bribes to gain government contracts is positively and significantly associated with sale percentage to state customer irrespective of the nature of the firm. However, this positive relationship is stronger for informal firms than for their formal counterparts and similarly stronger for HHB. This indicates that the benefit of bribery to gain government contracts is higher for informal firms and HHB, which by nature are less in contact with officials and initially have less opportunity to secure contracts with the government. Bribe payment to dodge tax has a significant impact only on informal firms, for which this pattern is counter-productive. All coefficients

16. We perform regressions on the unbalanced panel only (the number of formal household firms in the balanced panel is insufficient).

TABLE 2.13 – Sale percentage to state customers and Ln total taxes paid : sample restricted

	Sale percentage to state customers			
	(1) Panel-IV Formal	(2) Panel-IV Informal	(3) Panel-IV HHB	(4) Panel-IV Non HHB
Bribe to gain government contracts	21.07*** (3.787)	23.47*** (5.407)	21.33*** (6.233)	15.54*** (4.142)
Firm age	0.0174 (0.023)	-0.0472 (0.031)	0.0239 (0.019)	0.0959** (0.044)
Constant	8.584*** (1.113)	7.450*** (1.552)	5.079*** (1.275)	8.206*** (1.396)
Province dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
Time*Province	YES	YES	YES	YES
Observations	5 105	2 335	4 757	2 683

	Ln total taxes paid			
	(1) Panel-IV Formal	(2) Panel-IV Informal	(3) Panel-IV HHB	(4) Panel-IV Non HHB
Bribe to deal with tax	0.819 (0.373)	4.550*** (1.256)	1.065 (0.773)	-0.440 (0.377)
Firm age	-0.0204*** (0.004)	-0.0386*** (0.007)	0.00120 (0.004)	0.00906* (0.005)
Distance to tax office	-0.0182*** (0.001)	-0.0332*** (0.002)	-0.0247*** (0.001)	-0.00349* (0.002)
Profit before tax	0.0000368*** (0.000)	0.0000990*** (0.000)	0.000730*** (0.000)	0.0000262*** (0.000)
Constant	3.654*** (0.171)	2.010*** (0.425)	0.456* (0.260)	4.360*** (0.158)
Province dummies	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES
Time*Province	YES	YES	YES	YES
Observations	5 019	2 243	4 687	2 575

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

for other control variables have the expected sign; they indicate that, on average, firms with higher before-tax profits have higher tax levels, while firms located far from tax offices have lower levels of tax payments. We investigate the effect of corruption on firms' performance in Tables 2.14 and 2.15. Table 2.14 presents the estimated results of sand corruption on two outcomes of interest : firm size measured as total assets and total labour force.¹⁷ The coefficients associated with sand bribe payments are almost all negative, even if not significant, except for informal firms, for which sand corruption has a strong positive effect on performance. Bribe payments to get access to public services is costly for a firm but the benefit outweighs the cost for informal firms, as they get access to services that would be difficult to obtain by legal procedures. Table 2.15 presents the results of grease corruption on total assets and labour force, which fall close to the estimations on the whole sample. Grease payments have a significant positive impact on performance. This effect is much stronger among informal firms than among their formal counterparts.

TABLE 2.14 – Sand corruption : sample restricted

	Ln total assets				Ln total labour force			
	(1) Panel-IV Formal	(2) Panel-IV Informal	(3) Panel-IV HHB	(4) Panel-IV Non HHB	(5) Panel-IV Formal	(6) Panel-IV Informal	(7) Panel-IV HHB	(8) Panel-IV Non HHB
Sand bribe payments	0.287 (0.205)	1.943*** (0.444)	-0.236 (0.221)	0.546 (0.297)	-0.050 (0.131)	0.601** (0.239)	-0.133 (0.118)	-0.206 (0.193)
Firm age	-0.006** (0.002)	-0.004 (0.004)	0.005** (0.002)	0.003 (0.004)	-0.008*** (0.002)	-0.007*** (0.002)	-0.001 (0.001)	0.005 (0.003)
Constant	8.207*** (0.100)	7.794*** (0.179)	7.143*** (0.129)	8.485*** (0.133)	2.570*** (0.069)	2.346*** (0.109)	1.492*** (0.071)	2.960*** (0.100)
Province dummies	YES	YES	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES
Time*Province	YES	YES	YES	YES	YES	YES	YES	YES
Observations	5,138	2,338	4,194	2,243	5,138	2,338	4,194	2,243

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

17. We dropped the value-added outcome from the investigation, as previous results showed that the different types of bribe payments do not have any significant effect on short-term performance.

TABLE 2.15 – Grease corruption : sample restricted

	Ln total assets				Ln total labour force			
	(1) Panel-IV Formal	(2) Panel-IV Informal	(3) Panel-IV HHB	(4) Panel-IV Non HHB	(5) Panel-IV Formal	(6) Panel-IV Informal	(7) Panel-IV HHB	(8) Panel-IV Non HHB
Grease bribe payments	2.222*** (0.394)	1.066*** (0.178)	0.538*** (0.160)	0.894*** (0.233)	0.950*** (0.235)	0.573*** (0.109)	0.154*** (0.103)	0.409*** (0.117)
Firm age	-0.005 (0.004)	-0.003 (0.003)	0.013*** (0.004)	0.008*** (0.002)	-0.007*** (0.002)	-0.005*** (0.002)	0.010*** (0.003)	-0.000 (0.001)
Constant	7.569*** (0.183)	8.028*** (0.105)	8.277*** (0.107)	6.854*** (0.126)	2.241*** (0.113)	2.423*** (0.073)	2.778*** (0.080)	1.286*** (0.071)
Province dummies	YES	YES	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES
Time*Province	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,338	5,138	2,819	4,871	2,338	5,138	2,819	4,871

Robust standard errors in parentheses. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

2.7 Conclusion

This paper uses a rich SME dataset, combining a recent cross-section survey conducted in 2015 with a panel of firms surveyed over three rounds. It investigates the complex nature of firm-level corruption. Acknowledging the endogeneity of bribe payments, we instrument corruption by industry-location averages. One of the major contributions consists in dividing bribes by their ultimate purpose, which allows us to distinguish the ‘sand’ (extortive) bribe type from the ‘grease’ (proactive) one. The results show that firm-level corruption is overall associated with significantly larger firm size (measured by number of workers and assets), but not with higher short-term profits (measured as value added). Further disentangling types of bribes shows that bribing officials to gain new markets does have an immediate and strong association with sales percentage to state customers. These proactive bribes are then shown to be the main driver of the overall association with firm-level outcome, while the extortive types have little or no negative influence. This paper thus sheds light on what could be considered the benefits of corruption from the firms’ point of view. Corruption can be perceived, when it comes to an individual decision, as a trade-off between risks and gains; this paper underlines some of the gains that may occur. These results do not plead in favour of fighting corruption and are somehow not unexpected. The reason why corruption remains widespread in many developing countries has to lie in some sort of positive effect at the firm level. Even while the phenomenon can be an impediment for the economy as a whole, it seemed very likely that a sufficient distinction between the types of corruption would yield positive and significant results. A first concern is, however, the robustness of the evidence. How well

can survey data capture bribe behaviours, and how detailed is this information? The answer depends on the survey setting, and on the quality of the survey design. In this regard, the SME data have at least two advantages. First, the formulation of the questionnaire is highly suitable for the Vietnamese context. Respondents are asked in the *fees and taxes* module about the *informal fees* that their firm had to pay, and subsequently about the frequency and destination of these payments. Second, the panel dimension does matter as well : even though respondents can initially be reluctant to report such information, repeated interaction can increase trust. The possibility remains, however, that the different types of bribes are reported differently. If voluntary bribes were less frequently declared than extortive ones, the results would then be biased downwards. Even if corruption is captured with sufficiently low error in the survey, the interpretation of the results must be handled with care. We do not claim at this stage that bribes have a causal positive impact on firm performance, and ultimately on their size. The instrument, although increasingly used in the literature, does not provide a perfect identification, but rather an indication of the effect of bribing *more relative to direct competitors*. Indeed, instrumenting by the average bribe payment in the same province and industry eventually yields results that indicate a deviation from this mean. The positive results evidenced in this paper thus indicate that paying bribes more than your direct competitors does have a positive return. In this sense, they could be partially linked with other unobserved characteristics of the firms' owners, such as their managerial capacity : is bribing to gain contracts not an indication of aggressive competitiveness?

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Chapitre 3

Corruption and institutional trust : evidence from the peruvian national household survey

Sommaire

3.1 Introduction	89
3.2 Literature review : what are the expected effects of corruption on trust?	92
3.2.1 Institutional trust	92
3.2.2 Corruption : a necessary evil?	93
3.3 Corruption in Peru : the historical background	95
3.3.1 Controlling the country's main institutions	97
The Armed Forces	97
The Judiciary System	97
3.4 Data : Corruption and politic legitimacy in Peru	99
3.4.1 The ENAHO survey	99
3.4.2 Trust, corruption and democracy	100
3.4.3 Measurement methods	105
Measuring trust in institutions : multidimensional trust index	105
Testing the validity of the scores' construction : The Cronbach's al- pha method	108
Measuring corruption : two dimensions examined	111
3.5 Empirical strategy and findings	113

*CHAPITRE 3. CORRUPTION AND INSTITUTIONAL TRUST : EVIDENCE FROM THE
PERUVIAN NATIONAL HOUSEHOLD SURVEY*

3.5.1	Model specification	113
3.5.2	Results	115
	Results for trust scores	115
	Additional results for trust outcomes	119
3.6	Conclusion	121

3.1 Introduction

Concerns about a downturn in trust in governments have become an integral part of political rhetoric and more and more at the heart of economists' concerns . These concerns also extend to levels of public confidence in public administration and public services. Trust is deemed to be declining, and this decline is generally seen as having a negative effect on public service delivery. "Significantly reducing corruption and bribery in all their forms" and "developing effective, accountable and transparent institutions at all levels" are necessary targets for the achievement of SDG 16. This objective thus highlights the question of the link between corruption and institutional integrity and, by extension, the relationship between corruption and institutional trust [Hudson, 2006].

Corruption is widely regarded as a hindrance to institutional efficiency and proper functioning of democracy. This vision of corruption is at the root of the United Nations Convention against Corruption which states that corruption, "by undermining the institutions and values of democracy, ethical values and justice and jeopardizing sustainable development and the rule of law", is a threat to "the stability and security of societies". Experts agree that corruption hinders economic development, increases business costs, undermines the legitimacy of government and reduces public confidence. According to the Global Organization of Parliamentarians Against Corruption (GOPAC), corruption undercuts public trust in politicians, political processes and institutions and erodes the international community's trust in governments. Trust in public authorities, economic development and corruption are therefore closely linked. In some countries, low levels of wealth, trust, institutional quality and corruption reinforce one another. Concerns about corruption in recent years have focused on its effects on economic development, but what about the links between corruption and institutional trust? The concept of institutional trust originates in sociology and political sciences. Increasingly, the revival in interest for this issue has been triggered by intuitively appealing studies revealing its potential effects on economic growth (Putnam [1993]; Helliwell and Putnam [1995]; Knack and Keefer [1997]). Economists started getting more and more interested in culturally-based factors to explain economic growth.

One example is Fukuyama [1995] who, in his study on trust, found that, in societies, trust has a deep influence on stability in the long term. This stability improves modernization through increasing scientific and technological advances. Knack and Keefer [1997] and Zak and Knack [2001] showed, in turn, that trust have significant effects on total

factor accumulation. More recently, in the same vein, Dearmon and Grier [2011] show that both human and physical capital accumulation are determined by trust. According to Poudel and Paudel [2012] social trust leads to a higher security among societies and helps creating efficient civic institutions which, in turn facilitate economic transactions. Mendoza-Botelho [2013] found an empirical evidence of a link between social trust and institutional trust. This finding corroborates the theoretical assumption that social and institutional trust are correlated "in the sense that higher level of trust among people not only facilitate collaboration but also lead institutions to function more efficiently." There is, alongside, growing evidence that an increased efficiency of institutions improves economic development. Acemoglu et al. [2001] in their key empirical study, provide strong evidence of a causality from institutions and economic outcomes. They find that the persistence over time, of institutions introduced by European colonizers, enhanced income per-capita in the ex colonies. More generally, the weakness of institutions is commonly described as a limiting factor of economic growth in economic countries (Acemoglu et al. [2003]).

The existing literature reports contradictory assertions about the impact of corruption on institutional trust and governments' legitimacy. The few empirical studies carried out on this issue confirm the pernicious effects of corruption on the legitimacy of political institutions. Della Porta [2000] shows that corruption greatly reduces confidence in governments in Italy, France and Germany. Anderson and Tverdova [2003] establish that in Eastern and Western Europe, citizens of corrupt countries are less confident in their political systems. Similar conclusions were obtained for Latin American countries [Seligson, 2002], East Asia [Chang and Chu, 2006] and Africa [Cho and Kirwin, 2007].

Political scientists argue, meanwhile, that corruption improves economic and political development by helping citizens to overcome bureaucratic hurdles and increasing their loyalty to the political system.¹ Huntington [1968] writes : "Corruption may be one way of surmounting traditional laws or bureaucratic regulations which hamper economic expansion. [...] A society which is relatively uncorrupted-a traditional society for instance where traditional norms are still powerful-may find a certain amount of corruption

1. This assertion is increasingly supported by economists. The most prominent advocate of this view is Nathan Leff [1964] who argued in his provocative article "Economic Development Through Bureaucratic Corruption" that corruption helps circumventing administrative procedures and avoid a heavy bureaucracy. He took the example of Chile and Brazil where governmental agencies set the prices of food products in the country in the 1960's. In Chile, an honest agency implemented the freeze and food production remained stagnant. Oppositely, in Brazil the corrupt agency wrecked the freeze and food production increased.

a welcome lubricant easing the path to modernization. [...] A society in which corruption is already pervasive, however, is unlikely to be improved by more corruption." In India, Weiner [1962] notes that "Many economic activities would be paralyzed were it not for the flexibility which *bakshishs* contributes to the complex, rigid, administrative system".

More recently, Dzhumashev [2014] shows that the interaction between corruption and governance shapes the efficiency of public spending, which in turn, determines the growth effects of corruption. Specifically, he argues that corruption improves economic efficiency only when the actual government size is above the optimal level which implies that a growth-maximising level of corruption is possible.

If the recent literature shows the direct negative impact of corruption on the legitimacy of political institutions, it does not test "functionalist theories" that present corruption as an element facilitating the functioning of bureaucracies and, in doing so, increasing public confidence in political institutions (Seligson [2002]; Heidenheimer et al. [1989]; Huntington [1968]).

This article seeks to empirically examine the effects of corruption on citizens' institutional trust. To this end, we use the "governance, perception and democracy" modules of the Peruvian National Household Survey. From this survey established on an annual basis, we build a panel of individuals between 2007 and 2014. The remainder of the study is organised as follows. In the next section, we review the literature on the effects of corruption on citizens' trust in public institutions. Section 3 describes the surveys and the methodology used to build a panel of individuals, as well as the outcomes and corruption variables. The identification strategy is explained in section 4, and the results are provided in section 5.

3.2 Literature review : what are the expected effects of corruption on trust?

3.2.1 Institutional trust

For several decades the concept of trust and especially trust in government or institutional trust has attracted increasing interest. In many countries, a downward trend in citizens' trust in their country's institutions has caused some concern because of the negative impact it could have on democratic processes. Easton [1975] and Lipset [1994] have argued that government legitimacy is a necessary condition for democratic stability. The perception of corruption might be distorted by the individual's opinion on government functioning. Besides, a high level of public confidence enhances productivity in the public sector as a trustful citizen is more willing to comply with regulations and formalities (Levi [1998]), which reduces transaction costs (Fukuyama [1995]). The confident citizen might probably be more inclined to make sacrifices in times of crisis (Tyler [2001], comply with the law (Tyler [1990], vote, pay taxes (Torgler [2003]) or perform the military service (Levi [1998]). Public mistrust amputates political action, leaders thus hesitate to take initiatives fearing a strong public resistance (Hetherington and Nugent [2001]). Insufficient public confidence can undermine the morale of civil servants (Aberbach and Rockman [2000]). In total, confidence and performance interact in a circle that can be either vicious or virtuous. On the one hand, the citizen who expects very little of a public service adopts the corresponding attitude and might be comforted in his feeling : he will not give any incentive to the agent at the counter to provide a high quality service. Customer satisfaction motivates public employees and a high rate of satisfaction can be valuable to a public body during budget negotiations which may be the key to an improved performance. An organization that inspires confidence becomes a sought after employer and thus attracts the most skilled workers, becoming more efficient. One key determinant of institutional quality and economic performance is thus the trust of citizens in institutions. Trust in institutions is likely to be affected by numerous factors. Among these factors, the perception and experience of corruption are likely to play an important role. This article provides evidence of the impact of both experienced and perceived corruption on the trust of citizens in democracy and institutions using data from Peru. Latin America has one of the highest corruption rates in the world, and Peru is a

particularly interesting case within the Latin American context. It has a long history of corruptive practices that surpasses that of any other country in the region.

3.2.2 Corruption : a necessary evil?

Economists largely view corruption as the brake of economic “cogs” but political scientists rather see it as the “grease” that improves administration functioning and makes bureaucracy move in many developing countries. Corruption then refers rather to a relationship of exchange of favours between at least two individuals, one of whom holds public order responsibilities by virtue of his position as a member of State officials. Until the early 1990s, functionalist theories prevailed in the analysis of corruption in both political and economic sciences. The functionalist approach focuses on the functions of a system and more rarely on its dysfunctions or perverse effects.

One of the founders of the functionalist model, Robert Merton, argues that the *political machine*² performs the important function of meeting certain needs that existing structures are unable to adequately meet. The idea is hence that the vacuum created by the flaws in "existing structures" is at the origin of "alternative structures" capable of responding more efficiently to certain social demands [Merton, 1968].

Drawing on the classic work of Merton [1968], many studies in developing countries have observed positive benefits of corruption. Among the early studies, Abueva [1966] says nepotism and spoils can have positive consequences on development. His argument is that "in the early stages of politico-administrative development, particularly where a democratic political system is desired, nepotism, spoils and graft may actually promote national unification and stability." Huntington [1968] argued in his seminal work : "In terms of economic growth, the only thing worse than a society with a rigid, overcentralized, dishonest bureaucracy is one with a rigid overcentralized, honest bureaucracy." Many major works sharing the same view followed (Waterbury [1973], Waterbury [1976]; Heidenheimer et al. [1989]). These authors see corruption as binding societies together and enhancing harmony especially in authoritarian traditions countries where corruption redistributes “public resources by parallel means accessible to groups that otherwise would be excluded” (Becquart-Leclercq [1989]). Corruption may then be culturally accepted in many developing societies. It is not uncommon for existing moral codes to

2. The term refers to that used in the articles by journalist Lincoln Steffens. Driven by a deep sense of reform of the society of his time, he attacked the "bosses of political machines" and some great business potentates in the United States revealing several corruption scandals.

differ from those of Western societies. The Western standard of behaviour by blameworthy officials does not apply in some developing countries. The trust of citizens is thus not impaired in so far as the latter considers the practices of corruption to be a "normal" phenomenon in political and economic life [Bayley, 1966]. The traditionally accepted negative effect of corruption on the legitimacy of governments can thus be distinguished. According to Nye [1967] "What may enhance legitimacy for the student or civil servant may not enhance it for the tradition-oriented man."

Other streams of thought among political scientists stress instead on the adverse effects of corruption. Banfield [1967] and Bonoma and Johnston [1979] in their classic work find that clientelism and corruption increase trust between patron and client and decrease trust for the political system. Corruption has pernicious effects under democracy especially regarding trust in the political system.

Trust in institutions is rationally based. Institutional trust reflects the extent to which an individual trusts an institution to perform its role satisfactorily. Institutions that achieve high levels of procedural and policy performance generate trust while institutions which perform poorly generate scepticism and distrust [Mishler and Rose, 2001]. At the meantime, corruption deteriorates the quality of institutions and thus can affect institutional trust either directly, via the citizen's experience or perception of corruption, or indirectly, via its adverse effects on economic growth (Mauro [1995], Méon and Sekkat [2005]). Corruption affects the procedural performance of political institutions and makes it extremely difficult for governments to produce policies and services that are responsive to the general public [Rothstein and Uslaner, 2005].

Most studies were essentially descriptive with almost no statistical tests and only few recent studies give empirical evidence about the pernicious effects of corruption on trust in governments and their institutions [Lavallée et al., 2008a]. The growing empirical literature on corruption identifies trust as both cause and consequence of corruption. Della Porta [2000], for instance, assumes that corruption is the cause and the consequence of weak government efficiency "thus reducing trust in the government's capacity to address citizen's demands". She argues that the "lack of confidence in government actually favors corruption insofar as it transforms citizens into clients and bribers who look for private protection to gain access to decision-makers." Page and Shapiro [2010] demonstrate that in the United States public corruption entailed a notable change in public opinion. Relying on Japanese data, Pharr and Putnam [2000] showed that "official's misconduct has been by far the best single predictor [...] of citizen confidence in govern-

ment". Morris and Klesner [2010] also uses data on perception of corruption in Mexico and finds a strong significant relationship between the "perceived level of corruption" and low level of trust in government. Anderson and Tverdova [2003] use surveys conducted in sixteen mature and newly established democracies around the world to analyse the effect of corruption on people's attitudes toward government. Their results suggest that citizens in countries with higher levels of corruption voice more negative evaluations of the performance of the political system and display lower levels of trust in civil servants. Chang and Chu [2006] use data from the East Asia Barometer and find that political corruption strongly erodes trust. Their result remain robust even after taking into account the endogenous relationship between corruption and trust. Seligson [2002] use a different measure of corruption based on participation in corrupt exchanges in Latin American countries and shows that corruption undermines regime legitimacy and political trust. All these results converge towards the idea that "countries in which petty corruption is pervasive must in addition endure disabingly low levels of trust in public institutions" [Doig and Theobald, 2013]. Many authors argue that the corrosive impact of corruption on trust may stem from the political context and in particular from the emergence of corruption-related scandals that shape the mindset of individuals. Corruption thus changes their attitude towards political authorities, politicians themselves, or even the government whose institutions then appear neither fair nor efficient (Pharr and Putnam [2000], Peters and Welch [1980], Bowler and Karp [2004]).

Most of the existing studies examine perception of corruptive practices rather than personal experience with corruption (Camp et al. [2000]) To the best of our knowledge, the only exception is the work of Seligson [2002] that uses participation to corruptive practices. The limit of existing studies is that corruption "reflects more than actual conditions" [Camp et al., 1999].

The data used in this analysis have the advantage of giving informations on both individual's perception and experience of corruption.

3.3 Corruption in Peru : the historical background

Countless voices have been raised in the past against the corrupt rapping and abuse of power that benefits few at the expense of broad public interests. Several generations of corrupt networks adept at the endemic violation of established rules, as well as their related international interconnections, emerge as factors linking corrupt practices in the

public and private spheres. In Peru, corrupt governance can be traced back to colonial times. Nevertheless, in this historical backdrop, we shall confine ourselves to the era of President Fujimori, characterised by widespread corruption and leading to large-scale scandals having affected citizens' opinions and perceptions of the political sphere.

Alberto Fujimori was President of the Republic of Peru from the 28th of July 1990 to the 22nd of November 2000. Bolstered by several local political elements, Fujimori unexpectedly won the 1990 presidential election with his new "Cambio 90" party. To revive an economy that had run out of steam, Fujimori reneged on his campaign promises and embarked on far-reaching economic liberalization - quickly renamed "Fujichock". Under the supervision of the IMF, he embarked on major reforms of the Peruvian economy, even more drastic than what his competitors had planned. The government quickly achieves spectacular results, the country comes out of recession and reaches a particularly high level of growth some years but the social balance sheet remains however much less shining. The majority of the population has not benefited from the years of strong growth, which will ultimately only widen the gap between rich and poor. The poverty rate has remained at around 50 per cent, a level comparable to that of the previous president at the end of his term.

The dictatorship : the path to an institutionnalized corruption

The establishment of the dictatorship started with the suspension of parliamentary activities in April 1992 and the convening of an assembly to draft a new Constitution. To stand for a third term, Fujimori, chose the judges and the electoral system officials to manipulate the election results. His right-hand man and brainstruster of the government, Montesinos, was in charge of controlling authorities and institutions. Alliances with high military hierarchy, judges collusion, compromise with financial groups, blackmail against members of political parties, media manipulation, political campaign financing, acquisition of weapons and extortion of regime opponents were common actions in the corruption network defined by the National Intelligence Service (NIS), headed by Montesinos.

3.3.1 Controlling the country's main institutions

This part of Peru's history has highlighted the widespread corruption among a certain number of institutions. This section presents some of the country's main institutions affected by these corrupting practices, which we will examine in our analysis in the following section.

The Armed Forces

As soon as he took over the reins of the National Intelligence Service, Montesinos did everything necessary to build his methods of domination and corruption, aiming at controlling and extorting the military and civilians. The commitment among all the military followers of Montesinos was clear and based on submission and "loyalty", under an authoritarian leader who guaranteed them many economic and political privileges, turning them into a long-term project. He established a standard of adverse conduct, not exactly one of efficiency, honesty and probity. The more incapable a captain or a major, the more corrupt a general or a colonel, the more certain his fate was. This was a stability that demanded reciprocal "loyalties", in which favors fulfilled an important function, which condemned them to stand together. In this way, he dismantled the institutionality of the Army, controlling promotions and casualties. Being outside the Armed Forces and knowing the details of the movements within them, he was completely free to make the changes that would suit Fujimori. In his mind it was very clear that Peru could not be ruled without a military force and all the effort he made to grasp the State and manage it was in that direction. The institution was deprived of its best officers, in whom the Army devoted years of training and many resources. Healthy professional traditions were destroyed. Many inept, opportunistic and corrupt officers were promoted. The institution was deeply politicized, and a new model and example was created, that corruption, flattery, humiliation, incapacity were the characteristics and behavioral patterns that allowed for promotion and achievement of the highest positions. This situation created a climate of demotivation for the efforts to achieve goals and successes in a loyal and transparent manner.

The Judiciary System

The night of April 5th 1992, army tanks, troop cars and hundreds of soldiers left for the city of Lima to close the Congress of the Republic, take over the Judicial Power, the

Legislative Power, the television channels, censure the press and dissolve the regional governments. At the same time, different political leaders of the opposition were kidnapped and confined for five days in military installations. Rather than trying to modify the reprehensible habits of an inefficient state, about to be defeated by subversion, corruption, this "self-coup" was made to take over the strategic State institutions, their functions and influences and manipulate them to serve the government. The morning after the coup, an impressive number of files disappeared from the offices of the Palace of Justice, almost thirty thousands, with the objective of getting rid of future accusations that Fujimori was still at fault for the tax evasion of his properties and the drug trafficking cases that involved Montesinos. Justifying the coup by the reconstruction of the country, the careers of honorable judges were cut short as they were unreliable for Montesinos or the Government. The shadow advisor had a clear idea that one of the things that would serve his future and obscure interests was the creation of special courts for drug trafficking and business offences with the obvious aim of obtaining large sums of money. In order to make this "business" effective, temporary judges were appointed, to be provided with anemic wages, precisely to make them completely vulnerable to the influences and pressures of Montesinos' organization, through bribery or intimidation, and to ensure impunity for their flagrant crimes

Despite the investigations on these practices under the era Fujimori-Montesinos and the imprisonment of Montesinos, surveys have shown that the majority of Peruvians believe that corruption will always exist.

3.4 Data : Corruption and politic legitimacy in Peru

3.4.1 The ENAHO survey

The data used in this chapter is taken from the “Enquesta Nacional de Hogares” (EN-AHO) in Peru. This National Household large-scale Survey is a research program conducted every other year, that has been coordinated by the Peruvian National Institute of Statistics and Information (INEI) since 1995. The ENAHO aims at generating indicators that track the evolution of poverty, welfare and living conditions of households. The survey is conducted at the national level, in urban and rural areas in the twenty four departments of the country and the Constitutional Province of Callao. Its purpose is to have an accurate picture of the living conditions of the population, the extent of poverty in the country and to serve as a source of information to public and private institutions, as well as researchers. Regarding the variables investigated, an important advantage of this program is that it ensures comparability with similar research. In this chapter we particularly focus on two modules of the survey. The first module called “Governance, Transparency and Democracy” provides informations on trust in institutions, perceived quality of democracy and citizens’ opinion on the main problems occurring in the country among other informations. The second one called : “Perception of the Household” which focuses on the households’ perception of their living conditions and assessment of their position in relation to poverty.

The core of this study relies on a dataset constructed at the individual level from the ENAHO survey. Between 2007 and 2014, in the annual distributions, 251 177 households were surveyed. We first identified the households taking part in the existing panel sample of the Peruvian Statistical Institute and then select, from each household, one individual respondent who has participated in the two modules under interest in our analysis. The resulting dataset includes 62 755 individuals over the period 2007-2014.

The population under study is defined as the set of all private homes and their occupants in urban and rural areas of the country. Are excluded from the sample, members of the military forces living in barracks, camps, boats, and others. The survey also excludes persons residing in collective dwellings (hotels, hospitals, nursing homes and religious cloisters, prisons, etc.). The sampling frame for the sample selection comes from the statistical information of the Population and Housing Census and the updated cartographic material related to this information.

3.4.2 Trust, corruption and democracy

Peruvian people generally show some form of mistrust towards the country's institutions. At best, 60 per cent of respondents say they feel little or no confidence. This is particularly the case when they are asked about their level of trust in the ministry of education (Table 3.1) which appears to be relatively the most trusted institution. Oppositely, there is a high level of mistrust towards justice, police, political parties, government and congress.

TABLE 3.1 – Level of institutional mistrust

	2007	2008	2009	2010	2011	2012	2013	2014
JNE ^a	71	77	77	79	72	75	77	77
ONPE ^b	67	74	72	74	67	71	71	71
Provincial Municipality	73	80	75	79	77	78	78	79
Police	79	82	81	82	79	80	82	82
Armed Forces	67	70	68	69	67	68	70	69
National Government	81	86	84	84	83	82	84	84
Legal authorities (justice)	86	86	85	85	83	84	86	85
Ministry of education	61	64	60	60	60	60	60	61
Congress	87	90	89	90	90	87	90	90
Political parties	93	95	94	94	93	93	94	94

Source : ENAHO Peru, Modulo "Gobernabilidad y Democracia, 2004-2011, INEI, author's calculation.

Note : Values adjusted to population projections from CPV 2007.

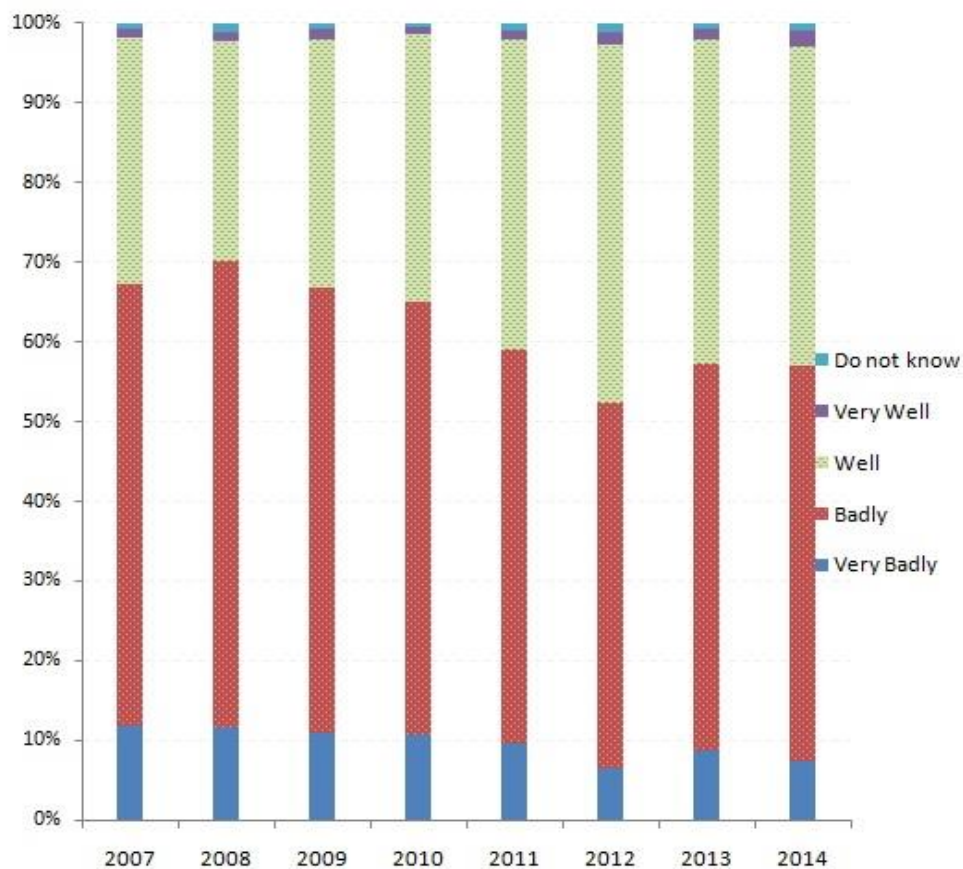
^a The National Jury of Elections (JNE) is an autonomous constitutional body whose purpose is to oversee the legality of the voting process, electoral procedures and popular consultations, guaranteeing respect for the will of citizens.

^b The National Office of Electoral Processes (ONPE) is an autonomous constitutional electoral body that is the highest authority in the organization and execution of electoral processes, referendums and other types of popular consultation in its charge.

The reported results come from the answers to the question : "How do you trust the following institutions?" "Not at all", "A little", "Fairly", "A lot", "Do not know" The table presents the percentage of people who answered "Not at all" or "A little" to this question.

This pattern is not surprising given the historical background of Peru. As we mentioned in the previous section, the police and the political authorities have experienced many uproars which led to a fall of the Government. This tumultuous background was notably linked to corruption scandals which shed light on the prevalence of corruptive

FIGURE 3.1 – Perception of the functioning of democracy (percentage of sample's respondents)



Source: Author, using ENAHO Peru, Modulo "Gobernabilidad y Democracia", 2007-2014. INEI

practices in the political system.

The levels of trust seem to go along with the perception people have of democracy (Figure 3.1). Almost 60 per cent of the respondents think that the quality of democracy is “bad” or “very bad”. This trend is decreasing over time but still more than half of citizens think democracy does not function well. The level of trust in institutions is quite low in Peru and so is the opinion on democracy. The quality and the functioning of democracy as they are perceived by peruvian people seem to go along with the incidence of corruption.

Table 3.2 provides an interesting overview of the existing link between perceived or experienced corruption and citizens’ opinion on democracy. Both measures of corruption lead to the same results. People that have a negative perception of corruption in the country largely think democracy does not function well. In 2004 and 2005 more than 80 percent of the population who think corruption has increased during the year preceding the survey believe democracy does not function correctly. This share is decreasing over time but remains somehow very high with more than 60 percent of the population with a negative perception of corruption expressing low trust in the quality of democracy. We find this same negative correlation with experienced corruption. Having paid a bribe at least once during the year preceding the survey increases the individual’s mistrust towards democracy. It would therefore seem entirely conceivable that the level of political and institutional trust is correlated with corruption.

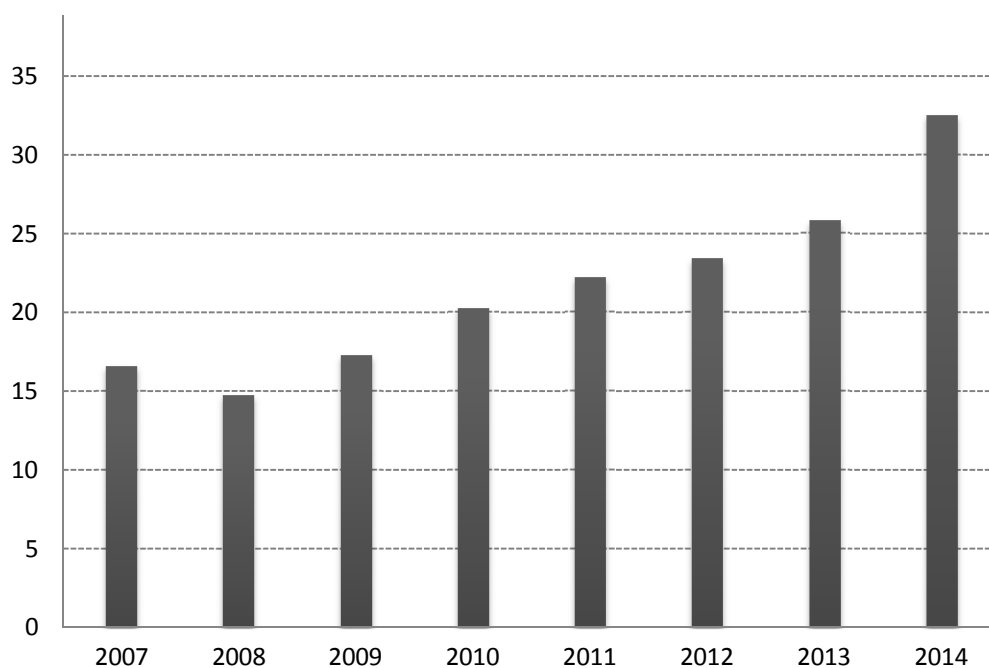
TABLE 3.2 – Individuals who think democracy does not work or works very poorly according to their perception and experience of corruption(%)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Perception*	81,3	85,9	75,5	73,3	76,5	73	71,3	66	54,6	58,3	61,1
Experience**	88,4	92,0	69,1	77,4	73,2	74,9	73,6	67,4	58,7	60,7	62,1

Source : ENAHO Peru, Modulo "Gobernabilidad y Democracia, 2004-2011, INEI, author’s calculation

Note : Values adjusted to population projections from CPV 2007. Values adjusted to population projections from CPV 2007 *Corruption has increased in the country during the last year **Bribe paid at least once during the last year

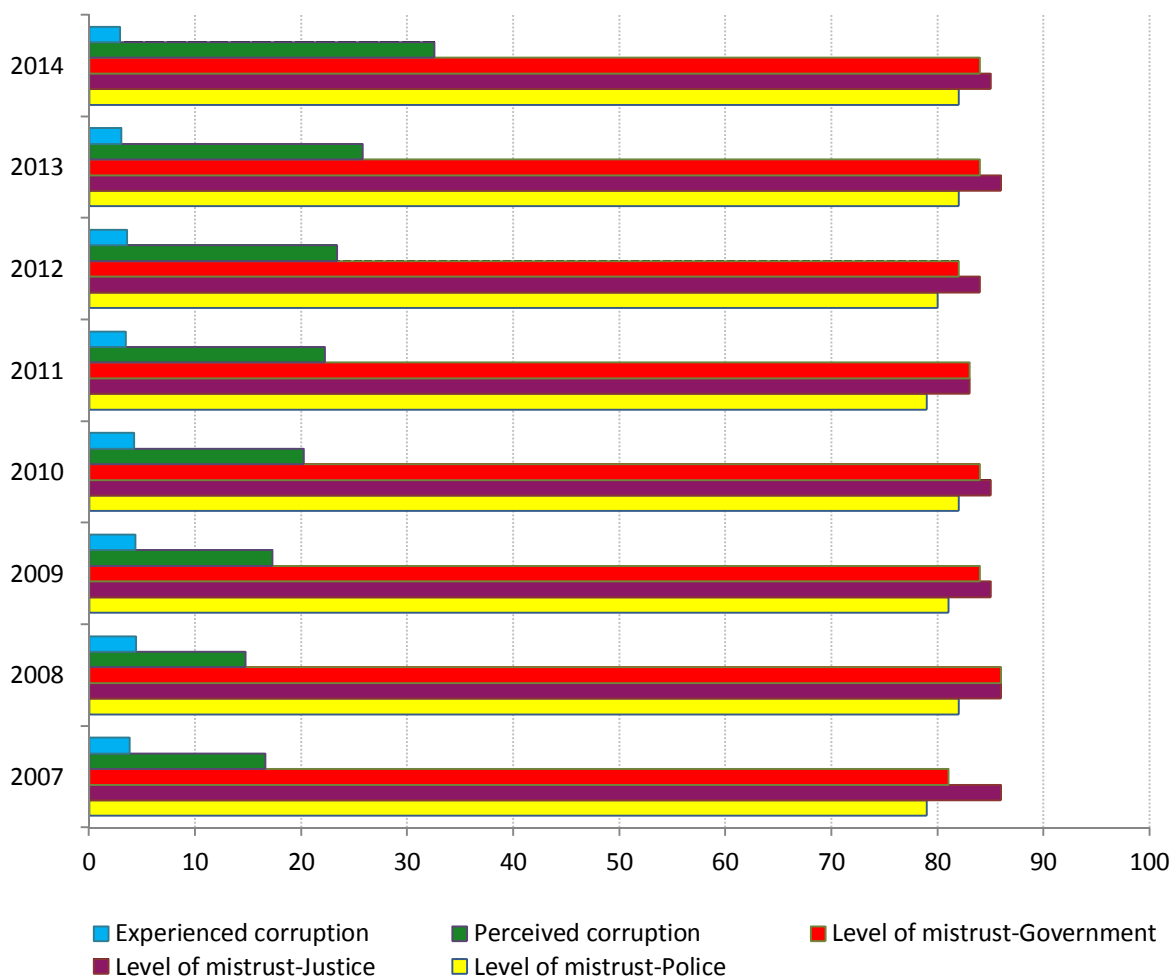
FIGURE 3.2 – Percentage of the respondents seeing corruption as the major problem of the country



Source: Author, using ENAHO Peru, Modulo "Gobernabilidad y Democracia", 2007-2014, INEI

Respondents were asked: "What do you think is the country's biggest problem ?" among different propositions: "Corruption, the lack of employment, the lack of citizens' security, violence at home, the lack of coverage, the poor health care, the lack of a social security system, the poor quality of state education, the violation of human rights, low wages/price increase, poverty, the lack of housing, the lack of support for agriculture, the poor functioning of democracy, crime, other issues".

FIGURE 3.3 – Perception and experience of corruption in Peru (2007-2014, percentage of sample's respondents)



Source: Author, using ENAHO Peru, Modulo "Gobernabilidad y Democracia", 2007-2014, INEI

Figure 3.2 shows that almost 20 per cent of the citizens perceive corruption as the most important problem of the country in 2008. This figure is increasing over years to reach about 36 per cent of the population in 2014. While the share of population who was victim of corruption remains stable over time the perception of this phenomenon increases between 2007 and 2014. The perception of corruption as a major concern, goes together with very high levels of mistrust (Figure 3.3). Oppositely, on average only 4 percent of respondents reported experiencing bribe payments during this period.

3.4.3 Measurement methods

Measuring trust in institutions : multidimensional trust index

The challenge, when performing empirical analyses with qualitative data, is to find a tool which provides a reliable measure of the concept under study. Measures of corruption and institutional trust are generally fraught with numerous methodological difficulties. We first use ten different variables denoting trust in the following institutions : The National Jury of Elections, the National Office of Electoral Processes, the provincial municipality, the police, the military forces, the regional government, the judiciary, the Ministry of Education, the Congress and the political parties 3.3. For each institutions, individuals are asked the following question and pick their response in the five provided possibilities : “Do you trust the following institution? 1. Not at all 2. A little 3. Neither trust nor mistrust 4. Trust enough 5. Do not know.”

TABLE 3.3 – Description of variables

Variable in database	Corresponding institution
Trust1	National Jury of Elections (JNE)
Trust2	National Office of Electoral Processes (ONPE)
Trust3	Provincial municipality
Trust4	Police
Trust5	Military forces
Trust6	Government
Trust7	Judicial system
Trust8	Ministry of Education
Trust9	Congress
Trust10	Political parties

Multiple correspondence analysis

We create two scores of institutional trust. We first use the Multiple Correspondence

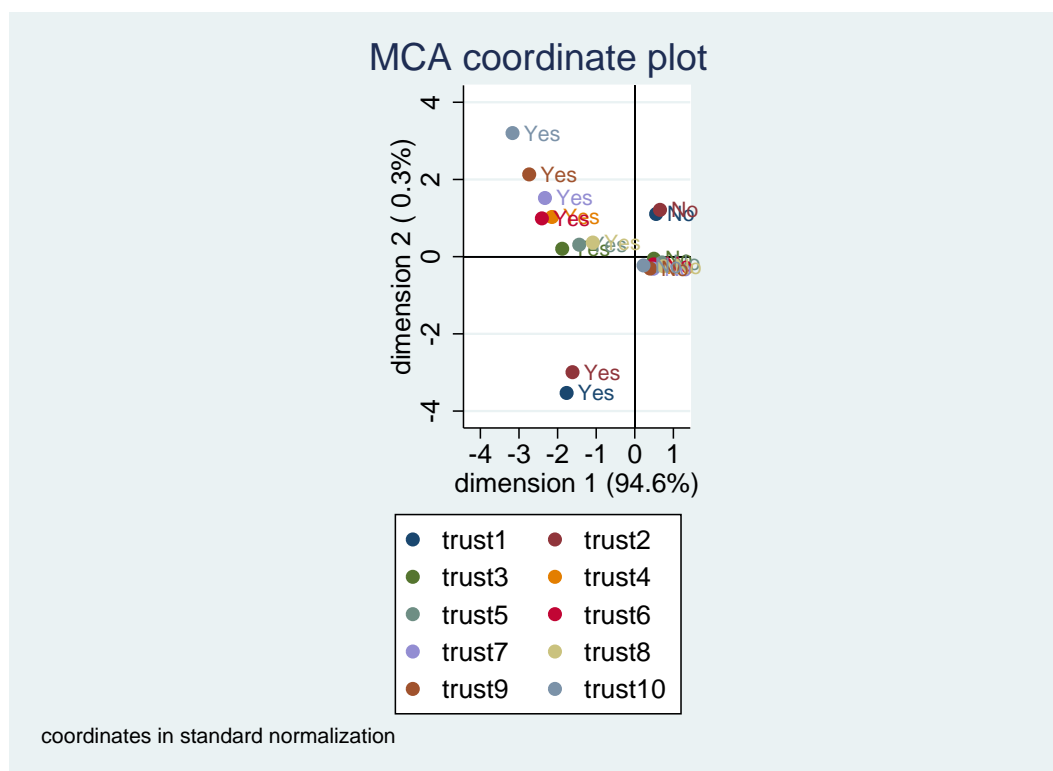
Analysis (MCA) to create a composite indicator of trust in institutions. The Multiple Correspondence Analysis is a data analysis methodology developed to assess the correlation structure between a "large" number of variables characterizing a population. Multiple correspondence analysis is an extension of correspondence analysis (CA) which allows one to analyze the pattern of relationships of more than two categorical dependent variables. It can also be seen as a generalization of principal component analysis (PCA) when the variables to be analyzed are categorical instead of continuous. The objectives of this approach are threefold. First, MCA provides a typology of the individuals and enables studying their similarities through a multidimensional perspective. It also assesses the relationship between and the associations between the categories. Finally, it links together the analysis of individuals and that of variables in order to establish a characterization of the individuals using the variables. Contrary to PCA, MCA studies the set of relative frequencies of each modality and not their absolute weight. The main advantage of MCA over PCA is the non-linear analysis between variables (Bazillier and Gouret [2004]).

The Multiple Correspondence Analysis (MCA) is obtained by using a standard correspondence analysis on an indicator matrix, the Burt table. The variables are "discretized", so that all information contained in a variable is summarized by one dummy variable. We thus recode the five modalities of the trust categorical variables into two, in order to obtain ten dummy variables (trust1-trust10). The recoding process was made as follows : the "trust variable" equals 0 if the individual responded "Not at all" or "A little" to the previous question and 1 if the respondent answered "Neither trust nor mistrust" or "Trust enough". The response "Do not know" was treated as a missing value. Each binary answer is represented by two binary columns (for example, the answer "trust" is represented by the pattern 1 0 and "do not trust" is 0 1). MCA consists in reducing the space dimension in which the variables are represented. It enables finding the factorial axes that summarize the information without losing too much of it (Greenacre [1984], Escofier and Pagès [1998]). It defines the weight of each dimension endogenously in the scalar index (Benzécri [1992]) which represents the first axis which has the greatest inertia, and will define our composite MTI (Benzécri [1992], Greenacre [1984]). The composite indicator of trust is a linear combination of the dummy variables selected (basic indicators). Its construction is based on the following rule. It must be an increasing function of each basic indicator of trust retained. In other words, if the confidence of an individual is higher when basic indicator T_k is 1 instead of 0, the coefficient of T_k in the composition of

the composite indicator must be positive (i.e. the individual must be more confident).

Figure 3.4 gives an overview of data association and highlights a clear pattern in the plot. Results from all the questions are clustered together, whereas question trust1 and trust2 relative to the electoral bodies form a pattern of their own which is not surprising as these questions refer to a specific type of institutions. Table 3.4 gives the distribution pattern of the multiple correspondence analysis trust indicator.

FIGURE 3.4 – Category points of the MCA trust variables in two dimensions



Agregating confidence levels : a composite indicator

A "composite indicator" is a mathematical combination (or "aggregation") of several indicators that represent different dimensions of the same concept [Nardo et al., 2005a]. Other terminology exists : it is also possible to speak of index, score or aggregated index. The definition of a composite indicator given by the European Commission (Joint Research Center - JRC) is as follows : "Composite indicators are based on sub-indicators that do not have a significantly common unit of measurement." [Saisana and Tarantola, 2002]. To construct a composite indicator, several aggregation methods exist. The use of composite indicators has always been controversial (Nardo et al. [2005b] Freudenberg [2003]). However, these reservations were not considered sufficient to prevent their deve-

lopment [Gadrey and Jany-Catrice, 2010]. They allow a simple comparison of units, and are therefore easily understandable. However, given that there are no clear and obvious method for constructing them, the results are sensitive to the methodology. In the seventies, the very first composite indices concerned the risk of insolvency of countries, as well as other economic problems. Over time, the topics covered have diversified, as the number of institutions developing such indices has increased. In 2005, Bandura wrote : "The amount of composite indices created has skyrocketed, especially in the last 15 years. About 80 percent of them were built in the period 1991-2005" [Bandura, 2005].

Our second score of trust is based on the different answers to the confidence level questions. It goes from 0 to 30 with 0 a complete mistrust in institutions and 30 a total institutional confidence (Table 3.4). We choose to give equal weight to each of the variables used in the construction of the index because the information contained in the data does not allow us to determine a tangible weight associated to each type of institution. The responses on the level of trust given to each institution are then aggregated without recoding the categories associated with each variable in order to maintain a certain accuracy of confidence measurement by differentiating in greater detail the different levels felt and reported by individuals. The use of two indicators of individual trust in institutions, created using different methodologies enables us to detect a potential sensitive change in the results.

TABLE 3.4 – Trust scores : descriptive statistics

	Observations	Mean	Standard Deviation	Minimum	Maximum
Composite indicator	46412	8,96	5,52	0	30
MCA Score	61026	-0,02	1,01	-1,20	5,13

Source : ENAHO Peru, Modulo "Gobernabilidad y Democracia, 2004-2011, INEI, author's calculation

Testing the validity of the scores' construction : The Cronbach's alpha method

The Cronbach's Alpha method was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency of a scale and ensure validity. This statistical technique does not belong to inferential statistics, but is widely used and presented in studies on the psychometric properties of a measuring instrument and more specifically instruments that evaluate one or more concepts using measurement scales. By definition, a

measurement scale is a set of elements on the same concept whose sum (or mean) represents the "quantity" of the concept for a given subject. A fundamental characteristic of the measurement scale is that all its components are responded to using a Likert-type scale³, in other words a graduated response choice ranging. It is also possible to have a measurement scale composed of dichotomous items (0-1).

We will focus here on an important aspect of the accuracy of a measurement scale. Fidelity is considered, among other things, as a property of a measurement to be constant in the measured object (homogeneity). In other words, to be accurate, a measurement scale must also be composed of items that all measure the same concept. In this respect, one of the important psychometric properties to estimate when considering this type of fidelity is the homogeneity of the elements of the measurement scale, better known as internal consistency. The more the responses to the elements are correlated with each other and with the total score on the scale, the higher the consistency of the scale. On the contrary, if the scores of several elements go in the opposite direction to the total score, one can doubt the consistency of this scale. In this respect, the technique for estimating the homogeneity of items on a scale is based on the pattern of correlations of the items among themselves as well as between them and the total score. The greater the homogeneity, the more faithful the scale is to the internal coherence of the items, the more one can believe that the items measure a single concept. The objective of this section is therefore to determine whether the type of institutions taken into account in the calculation of confidence scores is indeed representative of the concept under study.

In our analysis, the concept under study is the institutional trust felt by Peruvian citizens. For this purpose, we use 10 answers to questions about trust in specific institutions. Depending on the method used, we use either the "graduated response" variable for each institution or a dichotomous variable from a recoding of the previous one. Tables 3.5 and 3.6 present the correlation matrix of both types of variables for the ten dimensions taken into account. Table 3.7 reports the values of Cronbach's alpha for both institutional scores. In both cases the values of the Cronbach's alpha exceeds 0.80 which pleads in favour of a satisfying internal consistency of our created trust scores⁴.

3. A Likert scale is a psychometric tool for measuring an individual's behaviour. Its name comes from the American psychologist Rensis Likert who developed it. It consists of one or more statements (or items) for which the interviewee expresses her/his degree of agreement or disagreement.

4. The result is presented as a number between 0 and 1, 1 theoretically representing perfect consistency between items. The value 0.70 is regarded as a threshold above which homogeneity between items is satisfying.

TABLE 3.5 – Correlation matrix for the graduated response trust items

	item1	item2	item3	item4	item5	item6	item7	item8	item9	item10
item1	1.0000									
item2	0.7258	1.0000								
item3	0.3755	0.3895	1.0000							
item4	0.3461	0.3676	0.4105	1.0000						
item5	0.3439	0.3780	0.3412	0.5786	1.0000					
item6	0.3747	0.3936	0.4697	0.4522	0.4402	1.0000				
item7	0.3449	0.3752	0.3892	0.4764	0.4214	0.5039	1.0000			
item8	0.3049	0.3363	0.3399	0.3680	0.3721	0.3740	0.4457	1.0000		
item9	0.3494	0.3709	0.3985	0.4214	0.3935	0.4753	0.4995	0.3944	1.0000	
item10	0.3053	0.3090	0.3566	0.3534	0.3032	0.4053	0.4001	0.2904	0.5379	1.0000

Source : Author using, ENAHO Peru, Modulo "Gobernabilidad y Democracia, 2004-2011, INEI.

]

TABLE 3.6 – Correlation matrix for the dichotomous response trust items

	trust1	trust2	trust3	trust4	trust5	trust6	trust7	trust8	trust9	trust10
trust1	1.0000									
trust2	0.6817	1.0000								
trust3	0.2911	0.2943	1.0000							
trust4	0.2656	0.2822	0.3265	1.0000						
trust5	0.2747	0.3057	0.2609	0.4979	1.0000					
trust6	0.2916	0.3053	0.3864	0.3613	0.3459	1.0000				
trust7	0.2542	0.2822	0.3000	0.3821	0.3255	0.4042	1.0000			
trust8	0.2348	0.2634	0.2626	0.2937	0.3013	0.2877	0.3459	1.0000		
trust9	0.2546	0.2721	0.3128	0.3308	0.2912	0.3808	0.3942	0.2940	1.0000	
trust10	0.2073	0.2025	0.2547	0.2571	0.2022	0.2980	0.2913	0.1940	0.4156	1.0000

Source : Author using, ENAHO Peru, Modulo "Gobernabilidad y Democracia, 2004-2011, INEI.

TABLE 3.7 – Cronbach's alpha calculated values

Cronbach's alpha (Ordinal category variables)	Cronbach's alpha (dichotomous variables)	Number of items
0,8676	0,8142	10

Measuring corruption : two dimensions examined

More and more quantitative measures of corruption have been developed over the last two decades but the most commonly used is the perception of corruption rather than the corruption experienced at the individual level. In the ENAHO survey, some questions focus on the citizen's experience with corruption which is thus measured through direct personal experience. To know if the individual has had to pay a bribe to access a government service, respondents were asked the following question :

Corruption Experience

"During the last 12 months did you and/or any member of your household ever be asked to, felt compelled to, or voluntarily give gifts, tips, bribes, kickbacks to a state official?"

Interviewees were then given a choice of answers :

Experience possibilities

1. Yes, 2. No, 3. I have not used any public service

To assess citizens' perception of corruption the survey includes three different questions denoting various dimensions of corruption's perception. Respondents are requested to express their opinions on the evolution of corruption compared to the previous year, the fact that politicians might be corrupt or their regard of corruption as the country's main problem. More specifically, they are asked in the following manner :

"In your opinion, how has the level of corruption evolved compared to the previous year?"
"1. Increased 2. Decreased 3. Remained stable 4. Do not know"

The second question is more focused on political corruption :

For the third question, again, the perception of corruption takes on a national dimension :

"Do you think politicians are corrupted?"
"0. No 1. Yes"

"Do you think corruption is the major problem of
the country?"
"0. No 1. Yes."

Data revealed that personal experience with corruption is less frequent than perception of corruption. One possible reason is that individuals may not report everything from their own experience with corruption for fear that the report will lead them to legal problems. We may have concerns about an underreporting problem, but several reasons lead us to believe that it may still be limited. On the one hand the wording of the question on the experience of corruption uses four different terms to characterise the payment of a bribe. On the other hand, many studies revealed that in general, whatever the level of perception of corruption (rather in a nearby environment or at national level), saying that one has seen someone pay a bribe could be a way of actually reporting one's own bribery experience with the advantage of being able to retract. It is therefore worthwhile to study both experienced and perceived corruption at the individual level, the two concepts containing complementary information.

3.5 Empirical strategy and findings

3.5.1 Model specification

To determine the impact of experienced and perceived corruption on trust in institutions, using the individual panel sample, we estimate the following models with OLS including individual and time fixed effects (cf. Hausman test results in Appendix) :

$$Trust_{i,t} = eCorr_{i,t} + \beta X_{1i} + \alpha X_{2i} + \varepsilon_{i,t} \quad (3.1)$$

$$Trust_{i,t} = pCorr_{i,t} + \beta X_{1i} + \alpha X_{2i} + \varepsilon_{i,t} \quad (3.2)$$

where X_{1i} is a vector of the household's characteristics (location (urban/rural), net total income, poverty) and X_{2i} is a vector of the individual's characteristics (education, age, marital status).

$Trust_{i,t}$, our dependant variable is a composite indicator of trust in institution. We use the different measures of trust in institutions previously described to check for the consistency of our results. $\varepsilon_{i,t}$ is a vector of error terms. The variable $eCorr_{i,t}$ is equal to one if the individual has paid a bribe to get access to public services in the past 12 months, and equal to zero otherwise. The variable $pCorr_{i,t}$ indicates the individuals' perception of corruption.

In a second step, we estimate the impact of corruption on trust, institutions by institutions grouping them into three thematic : political institutions (JNE, ONPE, Provincial Municipality, Regional Government and Congress), social institutions (Church, Ministry of Education, Ombudsman) and institutions linked to the sovereign functions of the State (Police, Army, Justice). The dependent variables are ordinal, but not continuous in the sense that the metric used to code the variables is substantively meaningful. To measure the level of trust, we employ a 4-point scale assigning the numerals 0, . . . , 4 to the categories "Not at all", "A little", " Enough", "Very much". But the metric underlying institutional trust is not necessarily the same as the linear metric relating the numerals zero through four. To estimate a model of this type, we use an ordered response model, often referred to as the "ordered probit" model. The central idea is that there is a latent continuous metric underlying the ordinal responses observed. The latent continuous variable,

y_i^* is a linear combination of some predictors, x_i , and a disturbance term that has a standard Normal distribution. Like the models for binary data, we are concerned with how changes in the predictors translate into the probability of observing a particular ordinal outcome. A multinomial probit model would not respect the ordinality of the dependent variables, while a linear regression would for example handle the difference between the indices 1 and 2 as the one between the indices 3 and 4 : it would thus consider the different modalities as cardinal indices while they refer to a rank which leads to inconsistent estimators. The model is specified as follows :

$$y_i^* = x_i' \alpha + \sigma_i$$

Where y_i^* is the continuous and latent unobserved measure of the level of institutional trust of the individual i , x_i' is a vector of independent variables, α a vector of parameters to estimate and σ_i a random error term. The observed variable y_i is determined by the following model :

$$\begin{aligned} y_i &= 1 \text{ if } -\infty \leq y_i^* \leq \mu_1 \\ y_i &= 2 \text{ if } \mu_1 \leq y_i^* \leq \mu_2 \\ y_i &= 3 \text{ if } \mu_2 \leq y_i^* \leq \mu_3 \\ y_i &= 4 \text{ if } \mu_3 \leq y_i^* \leq \mu_4 \\ y_i &= 5 \text{ if } \mu_4 \leq y_i^* \leq \mu_5 \\ y_i &= 6 \text{ if } \mu_5 \leq y_i^* \leq \mu_6 \end{aligned}$$

Where μ_k are unknown thresholds parameters which need to be estimated with the vector α .

Estimating the model gives us the probabilities of occurrence of each event associated to the modalities of the dependent variable. These probabilities are given by :

$$\begin{aligned} P(y_i = 1) &= \Phi(\mu_1 - x_i' \alpha) \\ P(y_i = 2) &= \Phi(\mu_2 - x_i' \alpha) - \Phi(\mu_1 - x_i' \alpha) \\ P(y_i = 3) &= \Phi(\mu_3 - x_i' \alpha) - \Phi(\mu_2 - x_i' \alpha) \\ P(y_i = 4) &= \Phi(\mu_4 - x_i' \alpha) - \Phi(\mu_3 - x_i' \alpha) \\ P(y_i = 5) &= \Phi(\mu_5 - x_i' \alpha) - \Phi(\mu_4 - x_i' \alpha) \\ P(y_i = 6) &= 1 - \Phi(\mu_5 - x_i' \alpha) \end{aligned}$$

Where $\Phi(\cdot)$ is the standard normal distribution function.

3.5.2 Results

Results for trust scores

Table 3.8, Table 3.9 and Table 3.10 show the results of the relationship between corruption's perception and both types of trust indices. We condition on the geographical location, education, gender, ethnicity, net total income of the household, respondents' age, marital status and time dummies in all specifications.

We start by studying the potential relationship between perceived corruption, as represented by the idea that corruption is the major problem of the country and the different trust scores previously created (Table 3.8). To set the stage, both regressions are simple linear specifications with individual and time fixed effects. We observe a significant negative correlation between corruption and trust measured by the aggregated score and the MCA⁵ score. The level of trust is significantly lower for those who perceive corruption as the major problem of the country. Poor and extremely poor respondents also share significant lower levels of trust compared to their non-poor fellow citizens. In contrast, white people feel significantly more confident. This holds for individuals living in rural areas. We can postulate that compared to people living in urban areas, their level of awareness is reduced which could affect both their perception of corruption and their trust in Peruvian institutions.

5. Multiple correspondance analysis

*CHAPITRE 3. CORRUPTION AND INSTITUTIONAL TRUST : EVIDENCE FROM THE
PERUVIAN NATIONAL HOUSEHOLD SURVEY*

TABLE 3.8 – OLS estimation : scores of institutional trust and first perception variable - Individual and time fixed effects included

	Aggregated score	MCA score
Corruption perception*	-0.349*** (0.103)	-0.0261** (0.018)
Rural	5.917*** (0.204)	2.175*** (0.038)
Extreme poverty (Reference : Not poor)	-0.566* (0.315)	-0.0883** (0.040)
Poverty (Reference : Not poor)	-0.188* (0.159)	-0.0449* (0.024)
Constant	15.95*** (1.083)	-0.804*** (0.149)
N	49852	53042

Notes : Additional Controls : education, age, marital status, net total income of the household. * Corruption is perceived as the major problem of the country. Standard errors in parentheses * p<0.05, **p<0.01, *** p<0.001

The model presented in Table 3.9 uses perceived corruption of politicians and the coefficient for corruption remains strongly significant for both scores. Individuals who think politicians are corrupted feel significantly less trustful towards Peruvian institutions. All the coefficients previously significant lose their significance except for the "white" variable. Being white makes peruvians more trustful towards institutions.

TABLE 3.9 – OLS estimation : scores of institutional trust and second perception variable - Individual and time fixed effects included

	Aggregated score	MCA score
Corruption perception	-0.535*** (0.138)	-0.0631*** (0.023)
Extreme poverty (Reference : Not poor)	-0.547 (0.349)	-0.0411 (0.045)
Poverty (Reference : Not poor)	-0.137 (0.178)	-0.00374 (0.027)
Constant	18.67*** (1.249)	0.109 (0.170)
N	39887	40030

Notes : Additional Controls : education, age, marital status, net total income of the household, location (urban/rural). * Respondents think all the politicians are corrupted. Standard errors in parentheses * p<0.05, **p<0.01, *** p<0.001

Table 3.10 investigates if perceiving a higher level of corruption compared to the previous year has an effect on trust. In both specifications, perceiving that corruption has increased during the last 12 months significantly lowers trust in institutions. This is a perception of a general level of corruption in the same way as the first specification. It is therefore not surprising to find the same pattern in results. The second perception variable referred more specifically to corruption in the political sphere without taking into account its other manifestations. As in the first specification, living in a rural environment significantly increases the level of confidence as does being white. On the other hand, being in a situation of poverty or extreme poverty significantly reduces the level of institutional trust.

*CHAPITRE 3. CORRUPTION AND INSTITUTIONAL TRUST : EVIDENCE FROM THE
PERUVIAN NATIONAL HOUSEHOLD SURVEY*

TABLE 3.10 – OLS estimation : scores of institutional trust and third perception variable - Individual and time fixed effects included

	Aggregated score	MCA score
Corruption perception	-0.382** (0.136)	-0.0690*** (0.022)
Rural	5.594*** (0.231)	2.119*** (0.042)
Extreme poverty (Reference : Not poor)	-0.558* (0.316)	-0.0894** (0.040)
Poverty (Reference : Not poor)	-0.179 (0.159)	-0.0443* (0.024)
Constant	16.31*** (1.088)	-0.733*** (0.150)
N	49852	53042

Notes : Additional Controls : education, age, marital status, net total income of the household. * The level of corruption has increased during the last 12 months. Standard errors in parentheses * p<0.05, **p<0.01, *** p<0.001

We observe however that experienced corruption does not have any significant impact on the different trust indices (Table 3.11). Having paid bribes during the last twelve months does not affect individuals' trust in institutions. This result is interesting as one would expect that experiencing an act of corruption would have a greater impact on the individual institutional trust.

TABLE 3.11 – Experiencing corruption - OLS estimation with individual and time fixed effects

	Aggregated score	MCA score
Bribes	-0.216 (0.190)	-0.00925 (0.032)
No contact with administration	-0.313 (0.362)	-0.0220 (0.052)
Rural	6.222*** (0.419)	2.151*** (0.065)
Extreme poverty (Reference : Not poor)	-0.557* (0.315)	-0.0879** (0.040)
Poverty (Reference : Not poor)	-0.183 (0.157)	-0.0446* (0.024)
Constant	15.78*** (1.091)	-0.799*** (0.150)
Observations	49852	53042

Notes: Additional Controls : education, gender, age, marital status, net total income of the household. Standard errors in parentheses * p<0.05, **p<0.01, *** p<0.001

Additional results for trust outcomes

As a robustness test and to understand which specific institutions are most affected by mistrust, we perform ordered probit estimations of the original trust variables, institutions by institutions. The results confirm that perceiving general or political corruption lowers individuals' trust towards peruvian institutions (Tables in Appendix).

As for the experience of corruption, table 3.12 presents the ordered probit estimations to determine the potential relationship between having payed bribes and trust in specific institutions. We observe that bribing officials significantly decreases institutional trust while it had no significant effects on the composite trust indicators. This effect is particularly high for the police which is one of the most corrupted State functions but also one of the most mistrusted.

TABLE 3.12 – Ordered probit estimates : Experienced corruption and levels of trust - Time effects included

	Political institutions					Sovereign functions				
	INE*	ONPE**	Municipality	Government	Congress	Political parties	Police	Army	Justice	
Indigenous tribes	-0.157*** (0.026)	-0.135*** (0.026)	-0.195*** (0.026)	-0.193*** (0.027)	-0.253*** (0.028)	-0.158*** (0.029)	-0.428*** (0.027)	-0.168*** (0.026)	-0.293*** (0.028)	
Non contact with administration	-0.0312 (0.036)	-0.000353 (0.035)	0.0105 (0.031)	0.0523 (0.035)	0.0421 (0.036)	0.0916*** (0.035)	0.0126 (0.031)	0.0404 (0.033)	0.0283 (0.034)	
Rural	0.0917*** (0.013)	0.0595*** (0.012)	0.0272** (0.012)	0.0531*** (0.012)	0.0730*** (0.013)	0.108*** (0.013)	0.0156 (0.012)	-0.0612*** (0.012)	0.0830*** (0.012)	
Woman	-0.156*** (0.011)	-0.138*** (0.010)	-0.0489*** (0.010)	-0.109*** (0.011)	-0.0688*** (0.011)	-0.149*** (0.011)	-0.0884*** (0.010)	-0.298*** (0.010)	-0.0438*** (0.011)	
Extreme poverty (Reference : Not poor)	-0.0256 (0.023)	-0.0234 (0.022)	-0.00271 (0.020)	-0.0527** (0.022)	-0.0654*** (0.023)	-0.0179 (0.023)	-0.0996*** (0.020)	-0.197*** (0.021)	-0.0263 (0.021)	
Poverty (Reference : Not poor)	-0.00240 (0.014)	-0.00558 (0.014)	0.0372*** (0.013)	0.0392*** (0.014)	0.0394*** (0.014)	0.0368** (0.014)	0.0160 (0.013)	-0.0309** (0.013)	0.0376*** (0.014)	
White	0.0274 (0.045)	0.00250 (0.045)	0.136*** (0.043)	0.183*** (0.045)	0.0586 (0.046)	0.109** (0.047)	0.119*** (0.043)	0.154*** (0.043)	0.102** (0.045)	
Métis	0.100*** (0.013)	0.129*** (0.013)	0.125*** (0.013)	0.145*** (0.013)	0.161*** (0.014)	0.0922*** (0.014)	0.118*** (0.013)	0.190*** (0.013)	0.149*** (0.013)	
Constant	-0.485*** (0.039)	-0.630*** (0.039)	-0.432*** (0.034)	-0.286*** (0.037)	-0.139*** (0.038)	0.104*** (0.038)	-0.203*** (0.034)	-0.637*** (0.035)	-0.364*** (0.036)	
Observations	44787	45531	50394	47310	47496	49577	51444	49291	48826	

Notes : Additional Controls : education, age, marital status, net total income of the household.
 * "Jurado Nacional de Elecciones" : It is an autonomous constitutional body of the Peruvian State. Its purpose is to supervise the legality of electoral processes and guarantee respect for the citizen's will. ** "Oficina Nacional de Procesos Electorales" : Is an autonomous constitutional electoral body that is the maximum authority in the organization and execution of the electoral processes, referendum and other types of popular consultations.
 Standard errors in parentheses * p<0.05, **p<0.01, *** p<0.001

3.6 Conclusion

The concept of institutional trust has been revived over recent years. Initially explored by sociologists and political scientists, the question of institutional trust has become increasingly explored by economists. The few economic studies show a positive impact of trust on economic development, hence the importance of exploiting the potential factors that can influence this trust. The empirical literature relating corruption to institutional trust is still relatively scarce and the few results obtained do not match up with the conclusions of the other social sciences studies.

In this chapter, we attempt to determine the effect of corruption on individual trust in Peruvian institutions. To do this, we have created two composite confidence indicators combining several types of institutions representative of the Peruvian institutional sector. The first set of results shows that perceived corruption has an overall negative and significant effect on trust. The perception of corruption is studied on the basis of three variables, each capturing a dimension of perceived corruption : the importance of corruption in the country's problems, the corruption of politicians and how the level of corruption has progressed in the country. These initial results also show us that having paid bribes in the year preceding the survey has no significant impact on the level of institutional trust.

The second wave of results shows that perceived corruption still has a significant impact on the level of trust for different types of specific institutions. The result obtained with regard to the negative impact of perceived corruption is therefore robust to estimation for confidence variables specific to each institution and a different estimation technique. With regard to the experience of corruption, when considering its effects on trust in a specific institution, there is a very significant negative effect (at the 1% threshold) on the level of trust. It would then have been interesting to know which institutions harbour the most corrupt practices. However, we do not have information on the use and purpose of bribes, which would allow us to investigate this issue further.

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Conclusion générale

Principaux résultats

Cette thèse présente plusieurs résultats sur les effets de la corruption dans les pays en développement. Elle nous permet plus particulièrement de mettre en évidence les potentielles interactions entre la corruption et d'autres enjeux essentiels étant à la base des objectifs de développement durable à l'horizon 2030. Nous résumons ici les principales conclusions auxquelles nous aboutissons avant d'aborder leurs limites. Enfin, nous concluons en suggérant plusieurs implications en termes de politiques publiques.

La corruption constitue-t-elle un frein à la formalisation des unités de production informelles ouest africaines ?

L'analyse des effets de la corruption sur la volonté de se formaliser chez les chefs d'unités de production informelles (UPI) montre des effets différenciés. En nous intéressant dans un premier temps aux comportements individuels de corruption, nous observons que le seul paiement de pots de vin n'a pas d'impact significatif sur la volonté de s'enregistrer. Néanmoins, lorsque nous mettons en perspective ce comportement avec les autres modes de règlement des différends rencontrés avec des agents de la fonction publique, nous constatons que le paiement de pots-de-vin ou d'amendes a un impact positif significatif sur la volonté de formaliser son activité avec un effet plus dissuasif des amendes qui augmentent d'au moins 48% la probabilité de vouloir s'enregistrer auprès des instances officielles. Cette analyse s'est également basée sur les montants payés lors de la transaction corrompue et révèle que le logarithme des montants de pots-de-vin versés a un impact significatif positif sur la volonté de se formaliser. En effet, nous constatons que plus les montants versés en pots-de-vin et/ou cadeaux est élevé plus la probabilité d'être prêt à se formaliser est élevée. Cet effet reste vrai même après avoir tenu compte de l'endogénéité de la variable corruption et l'avoir corrigée en instrumen-

talissant la variable de montant des pots-de-vin versés par la moyenne des pots-de-vin versés par les chefs d'UPI du même pays ayant le même type de local d'activité. Nous trouvons de nouveau un effet positif significatif des pratiques de corruption sur la volonté de se formaliser.

Quels sont les effets de la corruption sur l'activité des petites et moyennes entreprises vietnamiennes ?

Cette analyse différencie les paiements de pots-de-vin selon leur finalité. Cette différenciation permet de distinguer le type de pot-de-vin extorsif (contraint) du pot de vin pro-actif (volontaire). Les résultats montrent que la corruption au niveau de l'entreprise est généralement associée à une taille d'entreprise beaucoup plus importante (mesurée par le nombre de travailleurs et d'actifs), mais pas à des profits à court terme plus élevés (mesurés par la valeur ajoutée). D'autres types de pots-de-vin montrent que les pots-de-vin versés aux fonctionnaires pour l'obtention de nouveaux marchés ont un lien immédiat et fort avec le pourcentage des ventes à l'État. Ces pots-de-vin proactifs se révèlent alors être le principal moteur de l'effet global positif au niveau de l'entreprise, tandis que les pots-de-vin extorqués ont peu ou pas d'influence négative sur l'activité de la firme. Ces résultats fournissent un éclairage sur ce qui est considéré dans la littérature comme des avantages de la corruption du point de vue des entreprises. L'instrumentalisation par le paiement d'un pot-de-vin moyen dans la même province et dans le même secteur d'activité afin de répondre à l'endogénéité de la variable corruption conduit à des résultats positifs similaires.

La corruption a-t-elle un impact sur la confiance institutionnelle des citoyens péruviens

Les effets de la corruption sur la confiance individuelle dans les institutions péruviennes diffèrent selon la nature de la variable corruption qu'il s'agisse d'une perception de pratiques corrompues ou d'une expérience de la corruption. La perception de la corruption est étudiée sur la base de trois variables, chacune capturant une dimension de la corruption perçue : l'importance de la corruption dans les problèmes du pays, la corruption des politiciens et la manière dont le niveau de corruption a progressé dans le pays sur les douze derniers mois. Dans tous les cas, nous observons un impact négatif significatif de la perception de la corruption sur la confiance institutionnelle mesurée dans un premier temps à partir de deux indicateurs de confiance composites combinant

plusieurs institutions représentatives du secteur institutionnel péruvien. L'étude de l'expérience de la corruption révèle quant à elle que le fait d'avoir versé des pots de vin n'a pas d'impact significatif sur le niveau de confiance institutionnelle. La deuxième vague de résultats découle d'une technique d'estimation différente portant sur des niveaux de confiance propre à chaque institution. Ceux-ci montrent que l'impact négatif de la corruption perçue est robuste pour ces nouvelles mesures de confiance et cette spécification différente. La corruption perçue a de nouveau un effet significatif négatif sur le niveau de confiance. En ce qui concerne l'expérience de la corruption, cette deuxième partie de notre analyse révèle un effet négatif très significatif (au seuil de 1%) sur le niveau de confiance.

Limites et perspectives de recherche future

Cette thèse propose de nouvelles perspectives sur les effets de la corruption dans différents contextes de développement. D'autres recherches devraient être entreprises afin d'étudier de manière approfondie les mécanismes qui sous-tendent les relations soulignées.

Dans le premier chapitre, nous mettons en lumière la relation entre corruption et volonté de se formaliser chez les chefs d'unités de production informelles. Il serait très intéressant d'établir une comparaison avec des entreprises formelles. Par ailleurs, les unités de production étant établies et en activité, notre exploration empirique n'étudie pas le comportement des firmes à l'entrée ce qui permettrait de mettre en évidence l'effet de la corruption sur le choix à l'entrée entre les secteurs formels et informels. Malheureusement, les données utilisées ne permettent pas ces approfondissements. La phase de l'enquête que nous utilisons porte uniquement sur un échantillon représentatif du secteur informel et sur une seule vague temporelle ce qui ne permet pas d'analyser les choix à l'entrée antérieurs à la période étudiée.

Dans le second chapitre, nous explorons les effets de la corruption sur l'activité des petites et moyennes entreprises (PME) au Vietnam. L'objectif de ce chapitre était au départ d'analyser les effets de la corruption uniquement sur la performance des PME. Nous n'avons pas obtenus de résultats significatifs de la corruption sur les indicateurs de performance que nous avons pu calculer. Nous avons donc entrepris d'utiliser des taux de croissance pour les différentes variables étudiées notamment pour la taille des entreprises ce qui aurait permis une autre mesure de performance à travers la croissance du nombre d'employés de ces PME. Malheureusement, les données utilisées n'ont pas permis de construire ces taux de croissance. En effet, malgré la présence de trois vagues d'enquête, un nombre minime d'entreprises ont renseigné les informations dont nous avons besoin sur plus d'une vague ce qui contraint l'exploitation de la temporalité de ces informations. Les résultats obtenus sur le pourcentage de ventes à l'Etat favorisé par les pots de vin destinés à obtenir des contrats avec le gouvernement sont très intéressants mais indiquent plutôt un avantage de ceux qui paient des pots-de-vin à ces fins par rapport à leur concurrents directs n'ayant pas recours à ce type de pratiques.

Dans le troisième chapitre, nous mettons en évidence l'impact de la corruption perçue et vécue sur la confiance institutionnelle. Il aurait été intéressant d'explorer davantage les effets de l'expérience de la corruption. Nous avons en effet mis en évidence une absence d'effet significatif du paiement de pots-de-vin sur les indicateurs composites de confiance. En revanche, les effets négatifs de ce type de corruption deviennent significatifs lorsque nous prenons chaque institution individuellement. Il serait intéressant d'étudier toutes les institutions de l'enquête afin de déterminer si cette significativité apparaît pour chacune d'entre elles et de tenter d'expliquer les facteurs sous-jacents à ce résultat. Pour ce faire, il aurait été intéressant d'analyser les paiements informels selon leur finalité et les différents services administratifs dans lesquels ils ont lieu. Malheureusement les données dont nous disposons ne fournissent pas les informations qui permettraient cet approfondissement. Par ailleurs, si la corruption et la méfiance "s'alimentent mutuellement" comme le suggère della Porta, alors il existe une réciprocity causale bidirectionnelle entre la corruption et la variable de confiance. Selon [Della Porta, 2000], le "manque de confiance dans le gouvernement favorise en fait la corruption dans la mesure où il transforme les citoyens en clients et en corrompus qui recherchent une protection privée pour avoir accès à l'information. de décideurs". Guerrero and del Castillo [2003] ont quant à eux, étudié la relation qui existe entre la perception qu'ont les habitants de Mexico du contexte institutionnel qui les entoure et la disposition des individus à commettre des actes de corruption. Ils constatent que " si une institution particulière projette une image corrompue, les individus qui interagissent avec cette institution auront tendance à percevoir de faibles risques en offrant un pot-de-vin ". Cleary and Stokes [2006] trouvent également que le manque de confiance dans les institutions favorise le clientélisme. Il est donc tout à fait légitime de soupçonner que l'effet de la corruption vécue sur la confiance est en fait endogène. Le risque d'endogénéité est également apparent avec toutes les variables d'évaluation subjectives telles que la corruption perçue. Par exemple, un individu est susceptible d'avoir confiance dans les institutions parce qu'il a l'impression qu'elles sont peu corrompues, mais il peut aussi penser qu'il y a peu de corruption dans son pays parce qu'il fait confiance aux institutions.

D'un point de vue méthodologique, cela nous amène à penser que nos résultats souffrent potentiellement d'un biais d'endogénéité en ce sens que la variable de corruption est inversement influencée par la variable de confiance et corrélée au terme de perturbation. Malheureusement, malgré nos efforts et les essais de diverses techniques, nous ne sommes pas parvenus à corriger ce biais. Trouver une stratégie d'identification permet-

tant de corriger ce biais est une question que nous souhaitons résoudre dans de futures recherches.

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Annexes

.1 Tableaux annexes

.1.1 Chapter 1

TABLE 13 – Have you already attempted to register your activity? (%)

	Benin	Burkina	Cote d'Ivoire	Mali	Niger	Senegal	Togo	Total
No	95,62	91,87	94,69	95,14	93,26	93,90	93,64	94,04
Yes	4,38	8,13	5,31	4,86	6,74	6,10	6,36	5,96
Total	100	100	100	100	100	100	100	100

Source : 1-2-3 Surveys, Phase 2, Informal sector, 2001-2003, NSIs, AFRISTAT, DIAL, author's calculations.

TABLE 14 – Corruption and other settlements of issues with officials

	(1)	(2)	(3)
Fine	0.593*** (0.105)	0.391*** (0.106)	0.390*** (0.107)
Bribe	0.400*** (0.111)	0.231** (0.113)	0.199* (0.111)
Other	0.571*** (0.121)	0.422*** (0.122)	0.435*** (0.121)
Log value added		0.0968*** (0.013)	
Log size		0.414*** (0.037)	0.472*** (0.035)
Firm age		0.0119** (0.005)	0.0229*** (0.006)
Firm age ²		-0.000288* (0.000)	-0.000556*** (0.000)
Water		-0.274*** (0.076)	-0.204*** (0.076)
Electricity		0.431*** (0.048)	0.326*** (0.047)
Woman manager			-0.407*** (0.036)
Primary school			0.0928** (0.044)
High school			0.206*** (0.048)
University			0.376*** (0.102)
French speaker			-0.0673 (0.067)
Country dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Constant	-0.803*** (0.063)	-1.525*** (0.108)	-0.582*** (0.052)
N	6558	6316	6133

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

.1.2 Chapter 2

TABLE 15 – Corruption and institutional trust : Hausman test results for each specification

Hausman tests			
Ho : difference in coefficients not systematic			
Model tested	Chi-2 value	P-value	Decision
Composite Indicator			
OLS-Perception 1	43,66	0,0058	Ho rejected : Fixed Effects
OLS-Perception 2	59,83	0,0000	Ho rejected : Fixed Effects
OLS-Perception 3	36,67	0,0352	Ho rejected : Fixed Effects
OLS-Experienced corruption	62,73	0,0000	Ho rejected : Fixed Effects
MCA Score			
OLS-Perception 1	57,24	0,0001	Ho rejected : Fixed Effects
OLS-Perception 2	41,43	0,0021	Ho rejected : Fixed Effects
OLS-Perception 3	46,23	0,0028	Ho rejected : Fixed Effects
OLS-Experienced corruption	63,58	0,0000	Ho rejected : Fixed Effects

.1.3 Chapter 3

TABLE 16 – Overview of firm-level (published) empirical studies on corruption and firm performance

Study	Country	Data	Corruption	Performance	Method	Result
Sand the wheels						
Fisman and Svensson (2007)	Uganda	Cross section 1997	Bribe payments (general corruption)	Sales growth	IV	Negative
Asiedu and Freeman (2009)	Transition countries	Cross section 1998	Bribe payments (general corruption)	Investment growth	LS	Negative in transition countries No relation in Latin America
Nguyen and Van Dijk (2012)	Vietnam	Cross section 2005	Perception (general corruption)	Total assets (book value)	LS	Negative in private sector No relation or positive in public sector
O'Toole and Tarp (2014)	Developing and transition countries	Cross section 2002-2010	Bribe payments (general corruption)	Return on investment	IV	Negative among SMEs No relation among large firms (state and foreign-owned companies)
Paunov (2016)	Developing and emerging countries	Cross section 2007-2011	Bribe payments (operating license)	Certificates ownership, Patents ownership, Machinery investment	LS	Negative on quality certificate ownership No relation to patent ownership Negative on machinery investments Only affects small firms
Grease the wheels						
Vial and Hanoteau (2010)	Indonesia	Panel 1975-1995	Bribe payments (general corruption)	Output growth, Productivity growth	IV	Positive on output growth Positive on labor productivity growth
Sharma and Mitra (2015)	India	Cross section 2005-2006	Bribe payments (general corruption)	Efficiency and profit, Productivity	LS	Negative on efficiency and profit No relation to productivity Positive on product innovation
Mendoza et al. (2015)	Philippines	Cross section 2012	Bribe payments (general corruption)	Product innovation, Sales growth	IV	Positive among active payers No relation among passive payers.
Lavallée and Roubaud (2018)	West african cities	Cross section 2001-2002	Bribe payments (general corruption)	Turnover	IV	Positive and driven by the constrained gazelles

RÉSUMÉ

Cette thèse se propose d'étudier les effets de la corruption sur différents enjeux de développement en se concentrant sur trois régions où l'incidence de ce phénomène est particulièrement importante: l'Afrique de l'Ouest, le Pérou et le Vietnam. Cette étude différencie la perception de la corruption de son expérience ainsi que la nature des actes de corruption selon leur finalité et révèle ainsi des effets divergents. Le fait d'avoir payé des pots de vin incite les chefs d'unités de production informelles ouest africaines à vouloir enregistrer leur activité et ne les encourage pas, au contraire, à rester informels en évitant les contrôles officiels. Au Vietnam, les paiements pro-actifs confèrent un avantage aux firmes par rapport à leur concurrents sans que nous ne puissions néanmoins affirmer que la corruption améliore les performances des entreprises. Enfin perception et expérience de la corruption ont des effets différents sur la confiance institutionnelle au sein des ménage péruviens. La perception de la corruption réduit significativement la confiance des citoyens dans les institutions de leur pays ce qui confirme l'héritage historique des scandales de corruption dans les hautes sphères de l'État.

MOTS CLÉS

Corruption, Développement, Gouvernance, Institutions, Informalité, Performance.

ABSTRACT

This thesis proposes to study the effects of corruption on different development issues by focusing on three regions where the incidence of this phenomenon is particularly important: West Africa, Peru and Vietnam. This study differentiates the perception of corruption from its experience as well as the nature of corruption according to its purpose and reveals diverging effects. Having paid bribes promotes willingness to register among heads of informal West African production units and not to remain informal by avoiding official controls. In Vietnam, pro-active (voluntary) payments provide small and medium manufactured firms an advantage over their competitors, but we can not say that corruption improves firms' performance. Finally perception and experience of corruption have different effects on institutional trust among Peruvian households. The perception of corruption significantly reduces citizens' confidence in the institutions of their country, which confirms the historical legacy of corruption scandals in the higher spheres of the State.

KEYWORDS

Corruption, Development, Governance, Institutions, Informal sector, Performance.