PhD Thesis
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Firms and Workers in Transition:

A Series of Micro Studies on Vietnam

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Summary

Since 1986, when Vietnam first embarked on the transition process from a centrally planned system to a socialist-oriented market economy, the country has witnessed tremendous economic growth, averaging more than 7 pct. annually between 1990 and 2010. Moreover, from 1993 to 2006 poverty incidence fell by more than 40 percentage points: the fastest reduction in poverty ever recorded. This miracle transformation has meant that in the span of two decades Vietnam has upgraded its' status from a least developed country (LDC) to a lower-middle-income economy. Central to the structural transition process is the growing private sector, contributing to increasing shares of employment and economic output. During the first seven years of reform around 10 million private sector jobs were created, and from 1993 to 1997 the number of registered private firms grew by 40 pct. annually. This private sector boom, which occurred in spite of the lack of market-supporting institutions, can be attributed almost exclusively to the entry of newly established small and medium enterprises (SMEs), including an abundance of household (micro) enterprises.

According to official sources, SMEs account for more than 97 pct. of total enterprises in Vietnam, employ more than half of the total workforce and contribute to around 50 pct. of GDP. Household firms make up the largest category of SMEs, and the vast majority of these operate informally. In fact, the informal sector is estimated to generate 25 pct. of the total number of jobs in Vietnam, accounting for about 20 pct. of GDP. Despite its economic importance, knowledge of the informal sector remains limited due to a number of factors including definition and measurement concerns, inadequate data, and a lack of interest on behalf of Government authorities. The informal sector is generally characterised by low productivity, profits and insecure working conditions, including limited social security due to the lack of formal regulatory coverage. Yet, also in the formal sector where firms operate within the legal framework, non-compliance is widespread – not least when it comes to social protection for workers. In such circumstances, local trade unions – when they exist – represent one mechanism through which workers' concerns are voiced and their rights are protected. Based on survey data of Vietnamese SMEs from 2007 to 2009, this thesis uses empirical analysis to discuss some of the above issues. The thesis consists of four self-contained chapters which can be read independently, yet with labour market issues as the common thread. The key aspects and findings of each chapter are summarized briefly on the following pages.

Chapter 1 is entitled *"The Benefits of Formalization: Evidence from Vietnamese Manufacturing SMEs"* and is co-authored with John Rand. The question of whether there are benefits to be reaped from formalization was partly inspired by findings from a small scale qualitative field study in Hanoi, which among other things, revealed a lack of awareness on behalf of informal firms about the requirements to register formally. Moreover, there was a general perception that the costs associated with operating officially would outweigh any potential gains. The analysis show that becoming legally registered results in higher profits and investment, and increased credit access, with some variation depending on the estimation approach. Moreover, formalization is found to lead to firms employing a higher share of contracted workers, thus an improvement in working conditions. In addition to being an indication of improved regulatory compliance, this is interpreted as formalized firms becoming more established, and thus adopting a longer-term business approach, including hiring workers on a more permanent basis. Thus, from a policy point of view, increased exposure to the potential gains associated with an upgrade in legal status, combined with enhanced information on registration requirements and procedures could possibly help firms realize their growth potential in the formal sector.

Chapter 2 is entitled *"The Informal Sector Wage Gap among Vietnamese Micro Firms"* and is co-authored with John Rand. This chapter follows on from the previous one to investigate the wage gap between formal and informal firms. In support of the first chapter which showed that firm formalization leads to a higher share of contracted workers, this paper shows that average wages are higher in formal firms. Since our wage measure is the average *basic* wage, the wage gap is not driven by other labour costs, such as an increase in social insurance contribution due to the improved contract status for workers in formal firms. Investigating the wage differential in more detail, we find that the majority of the gap is due to differences in firm characteristics between formal and informal firms, rather than variations in the returns to these endowments. In particular, traditional wage determinants such as firm size, workforce characteristics and location are shown to be particularly important in explaining the wage differential. The fact that the wage gap remains when firm-level workforce characteristics are controlled for, could be an indication that formal firms are paying "efficiency wages" to attract more qualified and productive labour. This is in line with the finding of the first chapter that formalized firms are willing to invest more in their workers, presumably with a view to further increase the long-term stability and productivity of the business.

Chapter 3 is entitled *"The Role of Trade Unions in Vietnam: A Case Study of Small and Medium Enterprises"*. Trade unions in Vietnam are traditionally perceived as rather weak for a number of

reasons including their limited independence from the Communist Party, the general paucity of collective agreements and their specific leadership structure. Nevertheless, trade unions have in recent years become more prominent, related partly to the growing awareness of the Corporate Social Responsibility (CSR) agenda, increasing the pressure on trade unions to monitor the observance of labour legislation and act in the interests of their members. On the basis of matched employer-employee data, this chapter finds that union membership is associated with higher wages, and an increased likelihood of receiving social insurance. The results are particularly strong for workers in Southern firms, suggesting that historical institutional differences between the North and South of the country prevail. The fact that trade unions play an important role in ensuring the social protection of their members is a positive finding. Yet, an increased focus on enforcing all (formal) firms to comply with labour related regulations is called for – both when it comes to social benefits provision, and the mandatory establishment of local trade unions.

Chapter 4 is entitled *"Do Recruitment Ties Affect Wages? An Analysis using Matched Employer–Employee Data from Vietnam"* and is co-authored with Anna Folke Larsen and John Rand. This chapter continues on the topic of wage determinants and uses matched employer-employee data to examine the importance of the type of recruitment method in explaining wage outcomes for the individual worker. Controlling for standard wage determinants, we show that workers that are hired informally i.e. through friends or relatives receive a higher wage than workers that are hired via a more formal channel i.e. through a job agency. In addition, the analysis reveals that the specific mechanism through which the recruitment tie affects wages depends on the type of informal contact. More specifically, a worker who is recruited through knowing the manager in the firm is more likely to be hired into a better paid position, whereas an employee who obtains his job through another co-worker receives a higher wage than a formally recruited worker, within the same occupational category. Whether the wage gain associated with informal hiring is due to an increased information flow putting the specific employee in a stronger bargaining position, or whether it is simply a case of favouritism remains unclear, yet it is clear that social networks play a crucial role in the Vietnamese labour market.

Resumé (summary in Danish)

Siden 1986, da Vietnam påbegyndte overgangen fra en kommunistisk planøkonomi til en socialistisk orienteret markedsøkonomi, har landet oplevet kraftig økonomisk vækst på mere end 7 pct. årligt i gennemsnit mellem 1990 og 2010. Desuden er fattigdommen faldet med mere end 40 procentpoint fra 1993 til 2006: den hurtigste nedgang i fattigdom nogensinde registreret i et land. Denne mirakuløse transformation har betydet, at Vietnam i løbet af to årtier har opgraderet sin status fra et udviklingsland (LDC) til et land i middelindkomst gruppen. Den voksende private sektor spiller en central rolle i den strukturelle omstillingsproces og bidrager til en stadigt stigende andel af økonomien og den samlede beskæftigelse. I løbet af de første syv år af reformprocessen skabte den private sektor omkring 10 millioner arbejdspladser, og fra 1993 til 1997 steg antallet af registrerede private virksomheder med 40 pct. årligt. Dette boom i den private sektor, som fandt sted på trods af manglende markedsstøttende institutioner, kan næsten udelukkende tilskrives fremvæksten af nye små og mellemstore virksomheder herunder især husholdnings-virksomheder.

Ifølge officielle kilder udgør små og mellemstore virksomheder mere end 97 pct. af det samlede antal virksomheder i Vietnam, og bidrager med omkring 50 pct. af BNP. Husholdnings-virksomheder udgør den største kategori af de små og mellemstore virksomheder, og majoriteten af husholdnings-virksomheder opererer uformelt. Faktisk skønnes det, at den uformelle sektor genererer 25 pct. af det samlede antal jobs i Vietnam og bidrager med omkring 20 pct. af BNP. På trods af dens økonomiske betydning er vores viden om den uformelle sektor i Vietnam begrænset. Dette skyldes en række faktorer, herunder, usikkerhed med hensyn til at definere og måle den uformelle sektor, utilstrækkelige data samt manglende interesse heri fra de offentlige myndigheder i Vietnam. Generelt er den uformelle sektor karakteriseret ved lav produktivitet og profit, samt usikre arbejdsvilkår og begrænsede sociale sikkerhedsnet. Men også i den formelle sektor, hvor virksomhederne burde operere indenfor lovgivningsmæssige rammer, er manglende overholdelse af arbejdsmarkedslovene udbredt – ikke mindst når det gælder social beskyttelse af arbejdstagerne. I den forbindelse udgør de lokale fagforeninger – hvis de findes – en vigtig mekanisme i forhold til at beskytte arbejdstagernes rettigheder.

Denne afhandling er baseret på indsamlede data vedrørende små og mellemstore vietnamesiske virksomheder fra 2007 til 2009 og omhandler nogle af de ovennævnte spørgsmål. Afhandlingen

består af fire selvstændige kapitler, som kan læses uafhængigt af hinanden, dog med arbejdsmarkedsrelaterede emner som den røde tråd. Nedenfor opsummeres hovedindholdet og de primære resultater for hvert af de fire kapitler.

Kapitel 1 har titlen *"The Benefits of Formalization: Evidence from Vietnamese Manufacturing SMEs"* og er udarbejdet i fællesskab med John Rand. I dette kapitel undersøges det, om der er fordele forbundet med at formalisere sig, dvs. registrere selv meget små virksomheder. Spørgsmålet var inspireret af et mindre, kvalitativt felt-studie af uformelle virksomheder i Hanoi, som blandt andet pegede på en manglende bevidsthed omkring det at skulle registrere sig formelt. Desuden var der blandt uformelle virksomheder en generel opfattelse af, at omkostningerne i forbindelse med at blive registreret opvejer de potentielle gevinster. Analysen viser imidlertid, at når virksomheder registrerer sig formelt, fører det til øget profit og investeringer og forbedret adgang til kredit. Derudover er formaliseringen forbundet med en højere andel af medarbejdere, som er ansat på en formel kontrakt - med andre ord en ændring der kunne tyde på en forbedring i arbejdsvilkårene for de ansatte. Udover at formel registrering pålægger virksomheder diverse lovgivningsmæssige krav, tyder det på, at de formaliserede virksomheder bliver mere langsigtede i deres business tilgang og får en øget interesse i at investere i en mere permanent arbejdsstyrke. Politisk set betyder dette, at et større fokus på de potentielle gevinster i forbindelse med en formalisering samt bedre information omkring de procedurer, registreringsprocessen indebærer, potentielt ville kunne hjælpe virksomheder til at opnå øget økonomisk vækst i den formelle sektor.

Kapitel 2 har titlen *"The Informal Sector Wage Gap among Vietnamese Micro Firms",* og er udarbejdet i fællesskab med John Rand. Som opfølgning på det første kapitel undersøger dette studie lønforskellene mellem formelle og uformelle virksomheder. Som forventet, viser analysen at de gennemsnitlige lønninger, er højere i formelle virksomheder, og dette er gældende når udgangspunktet er basislønnen. Med andre ord er løngabet ikke drevet af de højere arbejdsomkostninger, som f.eks. stigninger i sociale ydelser forbundet med forbedrede kontrakter for arbejdstagere i formelle virksomheder. Ydermere viser analysen, at det hovedsagligt er traditionelle lønbestemmende faktorer såsom virksomheders størrelse, beliggenhed og kvaliteten af arbejdsstyrken, der forklarer løngabet mellem de formelle og uformelle virksomheder. Den del af lønforskellen, som ikke kan forklares ud fra de inkluderede virksomheds variable, tolkes som en indikation af, at virksomheder betaler såkaldte "efficiency wages" for at tiltrække mere kvalificeret og produktiv arbejdskraft. Dette er i overensstemmelse med resultaterne fra det første kapitel,

nemlig at formaliserede virksomheder er villige til at investere mere i deres ansatte formentlig med henblik på yderligere at øge virksomhedens stabilitet og produktivitet på længere sigt.

Kapitel 3 har titlen *"The Role of Trade Unions in Vietnam: A Case Study of Small and Medium Enterprises"*. Fagforeninger i Vietnam betragtes generelt som forholdsvis svage på baggrund af bl.a. deres begrænsede uafhængighed af kommunistpartiet, den generelle mangel på kollektive overenskomster, samt deres specielle ledelsesstruktur. Ikke desto mindre er fagforeningerne i de seneste år blevet mere fremtrædende, hvilket til del dels skyldes den voksende bevidsthed omkring dagsordenen "Corporate Social Responsibility" (CSR). Dette betyder et stigende pres på fagforeningerne med henblik på at handle i deres medlemmers interesser samt overvåge virksomhedernes overholdelse af arbejdsmarkedslovgivningen. Baseret på arbejdsgiver-arbejdstager data viser dette kapitel, at medlemskab af en fagforening er forbundet med en højere løn og en øget sandsynlighed for at modtage sociale ydelser. Dette gælder især for arbejdstagere i firmaer beliggende i den sydlige del af Vietnam, hvilket tyder på, at historiske institutionelle forskelle mellem den nordlige og sydlige del af landet stadig gør sig gældende. Det, at fagforeningerne tilsyneladende spiller en stor rolle i forhold til at sikre social beskyttelse af deres medlemmer, er positivt. Dog kræves der øget fokus på at håndhæve loven blandt alle (formelle) virksomheder – både i forhold til leveringen af sociale ydelser og kravet om etablering af fagforeninger.

Kapitel 4 har titlen *"Do Recruitment Ties Affect Wages? An Analysis using Matched Employer–Employee Data from Vietnam"* og er udarbejdet i fællesskab med Anna Folke Larsen og John Rand. Dette kapitel bruger arbejdsgiver-arbejdstager data til at undersøge betydningen af forskellige rekrutteringsmetoder i forhold til at forklare lønfastsættelsen for den enkelte medarbejder, når der tages højde for de faktorer, som normalt bestemmer lønniveauet. Analysen viser, at ansatte, der hyres "uformelt" f.eks. via venner og bekendte i den pågældende virksomhed, modtager en højere løn end arbejdstagere, der hyres ved hjælp af mere formelle metoder dvs. jobcentre el.lign. Desuden afslører analysen, at den mekanisme, hvorigennem den uformelle kontakt påvirker lønnen afhænger af, hvilken type kontakt, der er tale om. En medarbejder, der ansættes på baggrund af hans/hendes forbindelse til virksomhedslederen, er mere tilbøjelig til at blive ansat i en højere lønnet stilling, hvorimod en person, som er ansat på anbefaling af en anden kollega, modtager en højere løn end en formelt ansat medarbejder indenfor den samme jobkategori. Hvorvidt den generelle lønstigning forbundet med at blive hyret "uformelt" afspejler en øget information, som sætter den ansatte i en stærkere forhandlingssituation eller om lønforskellen skyldes favorisering, forbliver uklart. Men det er klart, at sociale netværk spiller en afgørende rolle på det vietnamesiske arbejdsmarked.

Contents

Chapter 1

The Benefits of Formalization:
Evidence from Vietnamese Manufacturing SMEs

Co-authored with John Rand

Abstract

Based on unique panel data consisting of both formal and informal firms, this paper uses a matched double difference approach to examine the relationship between legal status and firm level outcomes in micro, small and medium manufacturing enterprises (SMEs) in Vietnam. Controlling for determining factors and observable time-variant factors that may simultaneously influence the decision to formalize and subsequent firm performance, we find evidence that becoming officially registered leads to an increase in profits and investments, and a decrease in the use of casual labour (improved contract conditions for workers). Thus, we conclude that formalizing is beneficial both to firms and the workers in these firms.

1.1 Introduction

Informality constitutes a growing feature of many developing countries, and notwithstanding its heterogeneity, the informal sector is generally associated with low profits and productivity, limited credit access, the absence of official employment contracts and limited or no social security for workers. The bulk of existing work on informality focuses on its causes, characteristics and consequences, while research devoted to understanding the drivers of official registration and exposing the benefits of formalization is scarcer. This is partly due to a lack of appropriate data, especially on micro (household) firms, which ironically, are precisely the kinds of firms that are most likely to be operating informally. Moreover, in much of the literature, informality is perceived as an involuntary condition brought about by excessive regulation and weaknesses of the legal system (Dabla-Norris, Gradstein, and Inchauste, 2008). However, other recent studies (de Mel, Mckenzie, and Woodruff, 2011; Maloney, 2004) suggest that remaining unofficial is often a conscious choice based on the "degree of attractiveness" of informality versus formality. Thus, efforts to unveil the potential gains associated with formalization could serve to incentivize firms to shift out of informality.

In this paper, we examine the firm level effects of becoming legally registered using two quantitative small and medium enterprise (SME) surveys from Vietnam (conducted in 2007 and 2009), and a smaller ethnographic study conducted in the Hanoi area in 2009. As in many other developing countries informal businesses in Vietnam make up a significant share of the firm population and are major sources of employment.[1] Given that the analysis revolves around observing the effects of informal firms shifting to formal status, and that all informal firms are found in the household category, our focus is on firms that were classified as household firms in 2007.[2] We define formal firms as those that are registered to pay taxes (have a tax code). The main objective of this paper is to expose the potential benefits of formalization, both for firms and for the workers in these firms. Our paper also contributes to the small number of Vietnam-focused studies on informality, most of which are anecdotal and based on case studies or small unrepresentative surveys covering mostly the rural areas (see Cling et al., 2010 for a review).

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[1]According to Cling et al. (2010), 25 pct. of the Vietnamese labour force work in the informal sector (mostly in activities related to food, textile, leather and confection) making the informal sector the second largest employer after agriculture.

[2] Malesky (2009) notes that 63 pct. of the firms surveyed for the Vietnam Provincial Competitiveness Index 2009 began operations as informal household firms, pointing to the importance of understanding the dynamics among this category of firms.

Controlling for determining factors and observable time-variant factors that may simultaneously influence the decision to formalize and subsequent firm performance our results show that formalization leads to an increase in firm gross profits and investments. Moreover, we find that operating officially leads to an improvement in employment quality as measured by a decrease in the use of casual workers (an increase in the share of workers with formal labour contracts), yet we find no evidence that becoming legal leads to a higher share of wages in total value added.[3]

The paper is structured as follows: in the subsequent section we provide a selective overview of the existing literature and the motivation for the paper. In Section 3, we describe the data and outline the methodology for the empirical analysis. Section 4 presents the results of the analysis followed by a concluding discussion in Section 5.

1.2   Literature Review

The existing literature on informality may be broadly divided into studies examining the causes and characteristics of the informal sector, and those focusing more on the outcomes of unofficial activity.[4] In terms of the determinants, a large informal sector has been associated with a number of factors, and some of the most cited include: a higher tax burden and social security contributions, excessive regulation—not least in the labour market, financial constraints and weaknesses of the legal system.[5] With regard to the consequences of informality (or formality), the research focus has until recently been mostly on macro-level effects. For instance, Loayza (1996) provides evidence that (at least in the case of Latin America), a decrease in unofficial activity, will stimulate economic growth through greater investments in public goods and services made possible by the increase in tax revenues (see also Dabla-Norris and Feltenstein, 2005).

In terms of micro-level impacts of formality (or informality), empirical evidence is more limited, partly due to a lack of data covering both formal and informal firms, and in particular small household businesses. However, work in this area includes the multi-country study by Farrell (2004) which concludes that informality has a negative effect on firm productivity. Analysing profits in Mexican micro enterprises, Fajnzylber, Maloney and Montes-Rojas (2009), show that becoming official increases business profits by at least 20 pct. However, a major shortcoming of

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[3] We analyse the informal sector wage gap among Vietnamese micro firms in a separate paper (Rand and Torm, 2012).
[4] Schneider and Enste (2000) and Schneider (2004) provide comprehensive overviews of the causes, consequences and measurements of informality.
[5] See for instance Ulyssea (2010), Dabla-Norris et al. (2008), and Paula and Scheinkman (2008).

these studies is their failure to account for the potential endogeneity of legal status, which in turn could affect the results. For instance, if selection into formality is based partly on unobserved characteristics such as owner ability this could lead to an overestimation of the impact of formalization on profits. Correspondingly, if informality is a voluntary decision of firms based on their preferences (Maloney, 2004) then lower productivity is not necessarily a consequence of informality.[6] Rather, it could simply be the case that less productive firms are informal due to their non-competitiveness in the formal sector.[7] For instance, in addition to avoiding regulations, informal firms may (because of simpler and more flexible technology) find it easier to control and adjust labour when there are fluctuations in demand. Indeed a key characteristic of the informal sector is that labour relations are based mostly on casual employment, kinship or personal and social relations rather than contractual arrangements with formal guarantees (ILO, 1993). However, this naturally raises questions about the employment security of the workers in informal firms. Moreover, becoming formal imposes fiscal burdens on a firm in the form of taxes, bribes[8] and general costs of complying with regulatory requirements. On the other hand, the benefits of operating legally include better access to credit, infrastructure and other productive public goods as well as a broader customer base (McKenzie and Sakho, 2010), all of which may in turn have a positive impact on firm profit.

Recent studies which take into account the selection effect have revealed some interesting results with regard to the micro-level impacts of formalization. For instance, based on firm level data from Bolivia McKenzie and Sakho (2010) show that tax registration leads to higher profits for mid-sized firms, whereas for smaller and larger firms the effect is negative. Moreover, they find that the owners of firms who choose to remain informal have a higher ability than formal firm owners, which differs from the mainstream view that formalization is positively correlated with the quality of the entrepreneurial input (see for instance Dabla-Norris et al., 2008; Jaramillo, 2009; La Porta and Shleifer, 2008). Fajnzylber, Maloney, and Montes-Rojas (2011) analysing Brazil provide evidence that becoming officially registered leads to higher levels of revenue, profit and capital use, made possible through hiring more contracted labour and operating from a more established physical location. In terms of earnings, Pradhan and van Soest (1995) show that in the case of

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[6] In fact, taking into account the voluntary aspect of informality may help explain why reforms aimed at simplifying business procedures have in some cases had no impact on firm registration (Bruhn, 2006; Kaplan et al., 2006).

[7] Nevertheless, even if informal firms choose to operate at a constrained productivity level (based on the net return to formalization vs. the return of informality) this does not exclude the possibility that they would in fact be more productive in the formal sector (pre-taxes).

[8] See Rand and Tarp (2012).

Bolivia self-selection affects the estimates significantly, since those with relatively high potential informal sector earnings will choose to work in this sector. As a result wage variation is larger among informal workers compared with those working in the formal sector.

In summary, existing work shows that when factors that determine selection into formality (or informality) are accounted for, the outcomes of formalization are far from unambiguous, especially when the extreme heterogeneity of the informal sector is not accounted for. In addition to the potential implications for the results, recognizing the fact that informality is a choice is also an acknowledgment that economic factors can only partly explain unofficial activity, and that sociological/anthropological approaches can provide additional insight into the decision making processes of individuals and firms (Maloney, 2004; Portes and Haller, 2005).

1.3   Data and Econometric Approach

To shed light on the impact of formalization on firm outcomes, we rely on two types of data: (i) an ethnographic study of 10 informal and formal household firms and (ii) a larger quantitative survey designed with a broader focus, covering 10 provinces and following more than 2,500 firms over time.

1.3.1 Ethnographic Fieldwork

The purpose of the ethnographic fieldwork was to get a better understanding of the characteristics and dynamics of the informal sector, as well as the perceived benefits associated with formalization. The study covered 10 informal and formal micro household businesses, and semi-structured interviews (each lasting between 1 and 2 h) were carried out in the Hanoi area in November 2009. The firms represented a random selection of the total number of Hanoi based firms that had changed legal status during 2007–09 (as indicated in the quantitative surveys described below). Several of the issues that emerged from the interviews have inspired the current analysis.[9]

First, some household firms were operating with both a business registration certificate (BRC) and a tax code (TC), while others had a BRC and no TC, yet none of the firms had a TC and no BRC. According to Vietnamese business legislation (Decree No. 88/2006/ND-CP dated August 29, 2006) the formalization of an individual household business establishment involves acquiring a business registration certificate from the district-level Business Registration Office, and registering for a Tax

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[9] See Torm (2009) for further detail on the ethnographic fieldwork.

Registration Certificate and Tax code from the Municipal Taxation Department. Moreover, the business should open simple accounting books. Household businesses may be exempt from registering if they are operating as street vendors or motorbike taxis or have an income below a certain amount set at the district level, usually the minimum wage (which in 2009, was 620,000 VND per month in Hanoi).[10] When a firm has more than 10 employees and/or uses more than one business premise, it may no longer operate as a household firm, and should register (at the Provincial Business Registration Office) as an enterprise (under the Enterprise Law).

Second, the firms reported that one of the main benefits of becoming formal is an increase in the probability of obtaining access to public facilities such as (more advanced) electricity supply, which is necessary in order to operate certain types of equipment, and for general technology upgrading. Unfortunately, our quantitative survey does not have detailed information on the complexity of electricity supply available to the firms (3-phase electricity, etc.), and the detail on technology use is also limited. A direct test of this hypothesis is therefore not possible with the available quantitative data.

Third, the interviews confirmed the general finding that becoming legally registered facilitates access to formal credit. This combined with improved access to public facilities, may stimulate investments, especially in more advanced machinery and equipment. In this context, it should be noted that household firms in Vietnam generally are able to use their land use right certificate (CLUR) as collateral for a loan and thus do not necessarily need a BRC for this purpose. This is one of the reasons why we throughout the empirical part of the paper control for having a CLUR.[11]

Fourth, workers in informal firms are often hired on a casual basis without written contracts and therefore are not entitled to receiving social benefits. When non-household firms (with more than 10 employees) formalize they are required to register with the local labour office to declare the use of labour. As such the relationship between the employer and the employee becomes regulated by the Labour Code and is set forth in labour contracts. Moreover, firms are supposed to register

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[10] The absence of registration does not mean, however, that the informal sector is not taxed. According to Cling et al. (2010) more than one-third of informal firms in Hanoi pay some sort of local tax, the proportion being lower in HCMC. The interviews confirmed the existence of such a dual tax regime with informal firms indicating that government officials would, on a monthly basis, come to collect a lump-sum tax/fee of between 100,000 and 220,000 VND. Whether these funds go into the government budget or constitute a bribe was not clear from the interviews.

[11] As shown in Rand (2007) there is also widespread use of informal loans in Vietnam, which generally are not more expensive than formal loans. Together with the CLUR issue it is therefore not given that formality should lead to easier and cheaper credit.

employees with the Social Insurance Fund for the payment of health insurance and social insurance.[12] Thus, for non-household firms, formalizing should in theory be associated with an improvement in the contract status of workers. However, in the case of household firms the implications of formalization for the workers is more ambiguous since (at least to our knowledge) there is no requirement for household firms to register the use of labour, and therefore the employment relationship does not automatically become subject to regulation. However, the Labour Code applies to all employees with written contracts, and the Social Insurance Law (2007) applies to all workers with contracts of 3 months or more. Thus, regardless of the legal status (ownership form) of the firm, the determining factor is whether the workers have written contracts. It is important to note here that although the interviews revealed a general lack of official employment contracts among informal firms, all of the informal firms covered medical expenses for their workers (in addition to the basic wage) as well as the costs of work-related accidents. The motivation for this "informal regulation" seemed to be less a function of the professional employment relationship than the personal relation between the employer and the employee.[13] In Section 4 we test whether formalizing leads to an improvement in the contract status of workers.

Finally, the interviews revealed the voluntary nature of informality with the decision to formalize often being a function of a combination of factors such as the stability of the business, a belief in improved access to public services and formal credit, the ability to attract better quality workers, as well as a general desire to expand the customer base. Firms would normally go through a testing period of around 6 months, and this period of informality was generally accepted by the authorities. Thus, consistent with the literature, this qualitative investigation confirmed the importance of accounting for "self-selection" when estimating the effects of formalization.

1.3.2 Quantitative Survey Data

Two quantitative SME surveys (conducted in 2007 and 2009) are used in this paper (see Central Institute for Economic Management [CIEM], 2010 for details on the surveys).[14] Both surveys

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[12] See the Doing Business website for a list of registration procedures and associated costs relevant to limited liability companies (http://www.doingbusiness.org/exploreTopics/StartingBusiness/Details.aspx?economyid=202).

[13] In 2008 a voluntary social security system was introduced with the aim of targeting informal sector workers in particular. However, knowledge of this system was almost non-existent among the interviewed firms.

[14] The World Bank SME Department currently operates with three groups of SMEs: micro, small and medium scale firms. Micro-enterprises have between 1 and 10 employees, small-scale enterprises between 11 and 50 employees, and medium-size enterprises between 51 and 300 employees. These definitions are broadly accepted by the Vietnamese Government (see Government Decree No. 90/2001/CP-ND on "Supporting for Development of Small and Medium Enterprises"). In what follows, we apply these definitions.

covered around 2,500 enterprises in 10 provinces (Ho Chi Minh City (HCMC), Hanoi, Hai Phong, Long An, Ha Tay, Quang Nam, Phu Tho, Nghe An, Khanh Hoa and Lam Dong).[15] In both years and in all the areas covered by the surveys, samples were stratified by ownership form to ensure that all types of non-state enterprises, including officially registered households, private firms, cooperatives, limited liability companies and joint stock enterprises were represented. For reasons of implementation, the surveys were confined to specific areas (districts) in each province/city. The sampling scheme of the SME survey is based on a representative sample of registered household and non-household firms drawn from GSO enterprise census information (GSO, 2004, 2008). However, the GSO enterprise census covers only "visible" firms (those with fixed professional premises), and thus the number of household businesses in particular is underestimated.[16] This inadequate census cover in turn means that the SME survey is not representative along the household dimension. Moreover, as for informal household firms these were included in the SME survey based on random selection within the survey districts observed by the enumerator. This "on-site identification" means that all of the unofficial firms included in the survey operate along-side officially registered enterprises (and have fixed business premises). Again, this could lead to bias if specific types of informal firms, for instance relatively competitive ones, operate in areas with many formal firms, whereas informal firms with other characteristics cluster in areas with none or very few formal firms. Thus, our sample of informal firms is not representative of the informal sector in Vietnam.

Official statistics (GSO, 2004) record approximately 157,000 manufacturing household businesses in the 10 provinces under consideration. This number should be compared to the around 13,000 registered non-household manufacturing enterprises recorded in the same provinces (GSO, 2008), which means that around 92 pct. of all manufacturing firms in the 10 provinces are household businesses. However, as the above statistics do not distinguish between informal and formal household businesses we rely on the information provided in Cling et al. (2010) that 42 pct. of the workforce in manufacturing is employed informally. Assuming that all informal workers are in household firms and that approximately 80 pct. of the non-state manufacturing workforce in 2007

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[15] Provinces were not chosen randomly. It was decided that the surveys should cover the main urban cities as well as selected rural areas. The choice of rural provinces was driven by funding issues (each selected province was either a Danida or Sida focus province).

[16] See Cling et al. (2010) for more details.

was employed in household businesses[17] results in the unadjusted percentage shares reported in Table 1.1 (Panel A). However, it should be noted that the "population" statistics have not been adjusted to reflect the fact that formal household businesses on average employ more workers than informal ones. The "population" share of informal household firms is therefore somewhat understated. The adjusted figures in Panel A of Table 1.1 use the sample averages for formal and informal firms to correct for this firm size bias, resulting in approximately 60 pct. of non-state manufacturing firms being informal in 2007. This number is close to the sample informal firm share, and the table also provides an overview of the sample shares of formal household businesses for comparison.

Table 1.1. *Formality overview and transition matrix*

	Year	HH firms		Non HH firms
		Informal	Formal	
Panel A: Formality overview (10 provinces)				
Population (non-state manufacturing)	Unadjusted 2007	48	44	8
	Adjusted 2007	60	32	8
Sample	2007	59	41	0
	2009	52	45	3

Note: Firm population shares (percent) are calculated based on information from GSO (2004, 2008) combined with the official GSO Labour Force Survey statistics reported in Cling et al. (2010).

		Formal in 2009					
		No		Yes		Total	
Panel B: Sample formality transition							
Formal in 2007	No	662	(82.4)	141	(17.6)	803	
		(93.4)		(21.5)		(58.8)	
	Yes	47	(8.4)	516	(91.6)	563	
		(6.6)		(78.5)		(41.2)	
	Total	709	(51.9)	657	(48.1)	1366	

Note: Number of enterprises (percentage in parenthesis).

Our analysis focuses on firms that were classified as household enterprises in 2007, as all informal firms are household firms (but not vice versa). After applying this selection criterion, and undertaking a thorough data cleaning including checking consistency of time-invariant variables between the two survey rounds, we were left with a balanced panel of 1,366 firm observations in each year. As highlighted in Section 3(a) formalization procedures include (1) obtaining a business registration certificate (BRC) and (2) registering for a tax code (TC). However, as revealed by the ethnographic study, not all firms that have a BRC have a TC, yet all firms that have a TC also have

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[17] According to Cling et al. (2010) this number is reasonable, but it is based on aggregate statistics including construction, trade and services.

a BRC. In line with other studies on this topic (Fajnzylber et al., 2009; McKenzie and Sakho, 2010), we decided to use tax registration as our measure of formality since having a tax code seemed to provide a more accurate measure of legal status.[18] Table 1.1, Panel B shows that, according to this definition, in 2007 there were 803 informal firms and by 2009 this had fallen to 709. In terms of the dynamics, 141 firms of the firms that were informal in 2007 had by 2009 upgraded their business to formal status, whereas 47 had shifted into informality.

1.3.3 Econometric Approach and Data Summary Statistics

As highlighted in McKenzie and Sakho (2010), the decision to formalize will itself depend on the (perceived) impact of formality on profits. As such it is highly likely that determining factors (for instance owner ability) that are correlated with being registered also influence the level of firm profits (or other selected outcome variables). The failure to properly correct for this "self-selection" into formality can generate substantial biases in the estimates of the impact of firm registration. A second channel through which bias may arise is if the determining factors that influence the choice to register also influence the changes in outcomes, for example, if central firm registration policies were targeted to highly successful districts (in terms of firm performance) with attributes that determine both firm success and subsequent growth paths. Third, our estimates may be biased if formalization is a function of time-varying factors such as changes in policies towards improving registration happening simultaneously with changing economic conditions which themselves are correlated with changes in firm outcomes.

To overcome the above potential sources of endogeneity bias we use (in Section 4) two different empirical strategies: first, our main focus is on the application of a matched double difference approach to control for determining factors and selected observed time-varying factors that may simultaneously influence the decision to formalize and subsequent firm performance. More specifically, we compare differences in outcomes (profits, investments, access to credit and casual

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[18] We initially set out to work with two definitions of formality: (1) having a BRC and (2) having a TC. However, in the 2009 survey there were two questions on whether a firm has a BRC. The first one was targeted at household firms only, while the second one was asked to all firms. However, in the data cleaning process we discovered some discrepancies between the answers to the two questions in terms of the number of firms reporting formal status. Based on this misreporting in either (or both) of the business registration questions, we decided to use only the tax code as our measure of formality.

worker share) between firms that formalized in the period 2007–09 and (matched) firms that remained informal in the 2009 survey.[19]

Second, as a robustness check and to control for time-varying unobserved characteristics we follow an IV identification strategy similar to that of McKenzie and Sakho (2010), who highlight that some firms will not formalize if the initial costs (in terms of application fee, time and information) of registering are too high, even if it is profitable for them to do so. In the Vietnamese case, the direct monetary cost of registering is fixed and not particularly high.[20] Moreover, the time required to obtain the relevant licenses and permits for firm registration is also relatively limited (15 days), and obtaining licenses and permits is seldom seen as a binding constraint for doing business in Vietnam (CIEM, 2010; Malesky, 2009). However, from the two surveys we are able to calculate the within district share of enterprises that obtain relevant licenses and permits for operating a formal enterprise within 15 working days of application. Based on this measure, we use the change in the share of on-time registrations as part of the identification strategy. Moreover, as highlighted by McKenzie and Sakho (2010) and de Mel et al. (2011) formalization may involve significant information costs depending on the general level of information in society about the registration process. The average district level of knowledge relevant for operating a formal business could therefore determine whether or not a firm registers especially in an environment where business knowledge is known to spread fast and where local firms are highly interlinked (McMillan and Woodruff, 1999). The surveys include questions on the business owners' knowledge of current laws (including laws about business registration). Using this information we construct an index of the average district level (perceived) legal knowledge relevant for operating a formal business. This index and the change in on-time registrations are used as sources of variation of time and information costs associated with formalizing an enterprise. We thus assume that the average district level knowledge relevant for operating a formal business and the district level change in on-time registrations are determining factors for the information a firm has about registration, but do

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[19] In an earlier version of this paper we analysed several other outcome variables in order to test whether formality increases the private sector customer base (through the ability of formal firms to issue tax receipts, see McKenzie and Sakho, 2010 for details). In order to test this proposition we relied on three different variables: (i) size of the business related network (perhaps most relevant as a proxy for the intermediate goods supplier base), (ii) size of the customer base, and (iii) composition of the customer base (measured as the share of total customers that are located outside the province where the firm resides). The results showed that there are no well determined effects on either of these three outcome variables, and thus we conclude that there are no improvements along the network and customer size dimension of becoming registered in our Vietnamese sample.

[20] For household businesses there is an application fee of 30,000 VND, for private firms and partnerships obtaining a business registration certificate costs 100,000 VND, and for limited liability companies and shareholding companies the fee is 200,000 VND (for more details, see http://www.gbs.com.vn).

not have independent effects on firm profits (after controlling for firm, owner and province specific characteristics). The key assumption of the identification strategy is that, after adding a series of firm, owner and province specific controls, our two selected average district level measures instruments) have no independent influence on individual firm outcomes. Appendix Table 1.B confirms the validity of the chosen instruments as illustrated by the tests for over-identifying restrictions and the Staiger–Stock F-test (indicating strong partial correlations in all first stage regressions). [21]

In addition to the described potential endogeneity problems, any panel data analysis must be careful with regards to possible attrition biases introduced by firm exit. This may be particularly important in the case of dealing with informal firms. The attrition rate (exit rate) may be at its highest and could be non-random, as the most vulnerable firms may have closed down between the two surveys. In Appendix A, we therefore provide summary statistics for the unbalanced panel, illustrating the framework for analysing possible biases due to attrition throughout the paper. Somewhat surprisingly Panel A in Appendix Table 1.A shows that survivors and exit firms share many common characteristics suggesting that attrition bias may not be of great concern in our sample. This could be a result of the on-site identification data collection procedure described in the previous section. Throughout the analysis we are unable to reject that firm survival and our selected outcome variables can be estimated separately (illustration using a Heckman selection model is provided in Panel B of Appendix Table 1.A), and in the following we therefore limit the discussions to the balanced panel.

Tables 1.2 and 1.3 provide summary statistics for all the variables used in the analysis including the described instruments. We first consider our selected legal status indicator, which shows an increase in formal firms from 41 pct. in 2007 to 48 pct. in 2009. In terms of the various outcome variables, selected based on the observations made in the ethnographic fieldwork, the average annual firm profit is around 24 million VND measured in 1994-prices (3.181 in logs) and slightly lower (although not significant) in 2009 compared with 2007 (perhaps related to the financial crisis in 2008). Moreover, average profits are significantly higher for registered than for nonregistered firms.

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[21] This identification strategy may therefore face the traditional "endogenous choice of location" problem if firms of similar profitability locate close to each other and profitability is related to formalization, in which case the chosen district level instruments are likely to be correlated with any unobservable determinants of profitability for a given firm. Although our firm and district level fixed effects go some way towards controlling for time-invariant differences in local market characteristics, we are not able to rule out that time-varying unobserved local market features may still be uncontrolled for in our estimates.

However, profits per employee are not noticeably different along the formality dimension. Second, investments constitute on average 8.7 pct. of total revenue, and the share has risen substantially over time and is significantly lower in the unofficial sector by 2–3 percentage points. Third, we categorize firms as being credit constrained based on replies to direct questions about whether the firm applied for credit and if so whether they were denied access. Moreover, in order to address possible self-selection issues we expand the credit constraint measure to include firms that consider themselves in need of a loan, regardless of whether they received a loan or not. Sixty-seven pct. of firms report not being credit constrained, and this share has risen during 2007–09. Although it seems surprising that there is a higher share of credit constrained firms among registered firms, Rand (2007) shows that in the case of Vietnam faster growing firms tend to be more credit constrained. Thus, if formal firms are performing better than the informal segment there would be a positive correlation between being credit constrained and operating formally. Fourth, the casual worker share is measured as the average number of casual workers relative to the average number of full-time regular workers in a year. On average the ratio of casual workers to full-time regular workers is 17 pct. and this proportion has doubled during 2007–09. Moreover, the proportion of casual workers is significantly higher among informal firms in 2009.

Table 1.2. *Summary statistics*

	Total		2007		2009		
	Mean	SD	Mean	SD	Mean	SD	
License 2 (Yes = 1, No = 0)	0.447	0.497	0.412	0.492	0.481	0.500	***
Profits (log, real mill VND)	3.181	1.055	3.194	1.079	3.167	1.031	
Investments (share of total revenue)	0.087	0.308	0.049	0.220	0.125	0.372	***
Credit access (not constrained = 1, constrained = 0)	0.669	0.470	0.657	0.475	0.682	0.466	
Casual employees (share of firm size)	0.170	0.621	0.114	0.428	0.226	0.762	***
Firm size (regular full-time employees)	5.634	6.663	5.900	7.340	5.369	5.900	**
Previous performance (lagged real profit growth)	-0.110	0.278	-0.001	0.249	-0.219	0.263	***
Gender of owner (male = 1, female = 0)	0.682	0.466	0.682	0.466	0.682	0.466	
Education of owner (high school or above = 1, otherwise = 0)	0.425	0.494	0.406	0.491	0.444	0.497	**
Workforce skill level (share of unskilled production workers)	0.390	0.411	0.460	0.424	0.319	0.384	***
Share of female workers	0.362	0.282	0.359	0.285	0.364	0.279	
Infrastructure access (Bad = 0, Good = 3)	1.444	1.085	1.275	0.995	1.613	1.143	***
Property rights well established (Yes = 1, No = 0)	0.697	0.460	0.674	0.469	0.720	0.449	***
Compliance inspections (None = 0, Many = 6)	1.067	1.438	1.020	1.326	1.113	1.541	*
Facility exclusively for production purposes (Yes = 1, No = 0)	0.227	0.419	0.240	0.427	0.214	0.410	
Location (Urban = 1, Rural = 0)	0.300	0.458	0.300	0.458	0.300	0.458	
High-Tech sector (Yes = 1, No = 0)	0.110	0.313	0.116	0.320	0.104	0.305	
Share of firms with good knowledge (district level average)	0.062	0.094	0.057	0.097	0.066	0.091	**
Share of firms obtaining BRC on-time (district level average)	0.751	0.274	0.743	0.309	0.758	0.233	
Total observations	2,732		1,366		1,366		

Note: Mean estimates, by year. We performed unconditional t-tests by year. *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively.

Table 1.3. *Summary statistics (by legal status)*

	Formal – 2007			Formal - 2009		
	Yes	No		Yes	No	
Panel A: All Firms						
Profits (log, real mill VND)	3.791	2.776	***	3.677	2.694	***
Investments (share of total revenue)	0.060	0.041		0.141	0.110	
Credit access (not constrained = 1, constrained = 0)	0.609	0.691	***	0.654	0.707	**
Casual employees (share of firm size)	0.133	0.101		0.151	0.297	***
Firm size (regular full-time employees)	7.801	4.567	***	7.285	3.594	***
Previous performance (lagged real profit growth)	-0.003	0.001		-0.227	-0.213	
Gender of owner (male = 1, female = 0)	0.645	0.709	**	0.654	0.708	**
Education of manager (high school or above = 1, otherwise = 0)	0.458	0.370	***	0.518	0.375	***
Workforce skill level (share of unskilled production workers)	0.478	0.448		0.317	0.322	
Share of female workers	0.320	0.387	***	0.324	0.401	***
Infrastructure access (Bad = 0, Good = 3)	1.332	1.234	*	1.945	1.305	***
Property rights well established (Yes = 1, No = 0)	0.655	0.687		0.696	0.742	*
Compliance inspections (None = 0, Many = 6)	1.792	0.478	***	1.635	0.630	***
Facility exclusively for production purposes (Yes = 1, No = 0)	0.243	0.238		0.218	0.210	
Location (Urban = 1, Rural = 0)	0.549	0.126	***	0.501	0.114	***
High-Tech sector (Yes = 1, No = 0)	0.128	0.107		0.119	0.090	*
Share of firms with good knowledge (district level average)	0.095	0.031	***	0.084	0.050	***
Share of firms obtaining BRC on-time (district level average)	0.719	0.760	**	0.671	0.838	***
Total observations	563	803		657	709	
Panel B: Initially informal (firms not formal in 2007)						
Profits (log, real mill VND)	NA	2.776		3.416	2.660	***
Investments (share of total revenue)	NA	0.041		0.170	0.104	**
Credit access (not constrained = 1, constrained = 0)	NA	0.691		0.702	0.713	
Casual employees (share of firm size)	NA	0.101		0.160	0.286	
Firm size (regular full-time employees)	NA	4.567		6.184	3.503	***
Previous performance (lagged real profit growth)	NA	0.001		-0.182	-0.212	
Gender of owner (male = 1, female = 0)	NA	0.709		0.738	0.710	
Education of manager (high school or above = 1, otherwise = 0)	NA	0.370		0.553	0.375	***
Workforce skill level (share of unskilled production workers)	NA	0.448		0.381	0.319	
Share of female workers	NA	0.387		0.281	0.404	***
Infrastructure access (Bad = 0, Good = 3)	NA	1.234		1.901	1.267	***
Property rights well established (Yes = 1, No = 0)	NA	0.687		0.610	0.743	***
Compliance inspections (None = 0, Many = 6)	NA	0.478		1.035	0.606	***
Facility exclusively for production purposes (Yes = 1, No = 0)	NA	0.238		0.255	0.205	
Location (Urban = 1, Rural = 0)	NA	0.126		0.248	0.100	***
High-Tech sector (Yes = 1, No = 0)	NA	0.107		0.113	0.092	
Share of firms with good knowledge (district level average)	NA	0.031		0.062	0.046	**
Share of firms obtaining BRC on-time (district level average)	NA	0.760		0.810	0.846	**
Total observations	0	803		141	662	

Note: Mean estimates, by year and formality status. In each year we performed unconditional t-tests by formality status. *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively.

In the estimations, we also control for levels of and differences in (i) firm size, (ii) previous performance, (iii) gender of owner, (iv) education of owner, (v) workforce skill level, (vi) share of female workers, (vii) infrastructure access, (viii) property rights, (ix) compliance inspections, (x)

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home production, (xi) location and (xii) sector. The justifications for the selection of these control variables and their summary statistics are as follows.

First, in terms of firm size (number of regular fulltime employees) a general finding is that larger firms have a productivity advantage due to scale efficiency, implying that they earn higher profits (Tybout, 2000). Table 1.2 shows that the average size of the firms in our sample is 5.6 full time employees, and this has fallen over time. Moreover, formal firms are significantly larger than informal ones, and the average size of the latter is around 4 full time employees, which is substantially higher than the 1.5 figure reported in Cling et al. (2010). This difference is due to our sample not being representative of the informal sector, as highlighted in Section 3(b).[22]

Second, previous performance (measured by lagged real profit growth) is included so as to account for the fact that performance expectations might influence the decision to formalize. Table 1.2 reveals that for the period previous to 2007 (2005–06) there was close to zero change in profits levels, whereas for 2009 (2007–08) there was substantial negative profit growth, in line with the lower profit figures reported for that year (compared with 2007). Moreover, Table 1.3 shows that in 2009 lagged profit growth was negative for both formal and informal firms, whereas for 2007 both types of firms experienced almost zero change.

Third, gender of the owner (modelled as a dummy taking the value 1 if the owner is male and 0 if female) is added since female owners have been shown to be more generous in the provision of non-wage benefits (Rand and Tarp, 2011), which in turn may affect firm profits. Table 1.2 shows that 68 pct. of firms have male owners, and the share is (significantly) higher for informal firms. This may be partly due to our sample of informal firms representing the upper tier or "more professional" segment of the informal sector, including a majority of male-headed firms who tend to set up business to be their own boss (see Cling et al., 2010).

Fourth, the educational level of the manager has been found to partly explain the difference in performance between formal and informal firms (La Porta and Shleifer, 2008) and to be positively correlated with becoming formal (Jaramillo, 2009), thus to capture this we include a dummy indicating whether the owner has at least high school education. Moreover, Rosenbaum et al. (1999) found that well-educated managers are more likely to hire well-educated workers which could also

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[22] Cling et al. (2010) work with a representative sample of household firms (formal and informal) based on the Vietnam Labor Force Survey 2007 and the Informal Sector Surveys conducted in Hanoi (in 2007) and HCMC (in 2008).

affect firm performance. The summary statistics show that 43 pct. of owners have a higher education and this has increased over time. Furthermore, there is a significant difference between the educational attainment of formal and informal firm owners, in line with La Porta and Shleifer (2008).

Fifth, since the average skill level in the firm is likely to be correlated with firm performance, we include the share of unskilled production workers as a measure for the general quality of the workforce.[23] The proportion is 39 pct. and this has fallen (significantly) over time, suggesting that, on average, the skill level of Vietnamese workers is improving, or at least that firms are hiring relatively more highly qualified labour. Somewhat surprisingly, the share of unskilled production workers is not significantly different between formal and informal firms, suggesting that gaining access to more highly skilled workers is not a driver of formalization. This is similar to La Porta and Shleifer (2008) who find that employees of informal and formal firms have similar levels of education.

Sixth, we add the share of female workers since this has been found to be negatively associated with the wages of all workers in the firm (Larsen et al., 2011). Whether this is because female workers are less productive or tend to be employed in less productive enterprises, the share of women workers could affect firm performance. Table 1.2 shows that the proportion of females is about 36 pct., and the share is significantly higher (and rising) among informal firms. This is in accordance with Cling et al. (2010) who find women to be overrepresented in the informal sector in Vietnam.

Seventh, the quality of and access to infrastructure are important determinants of firm performance both through the impact it has on production techniques and the costs of servicing distant markets. As pointed out by Tybout (2000) when infrastructure services are missing or unreliable, some firms produce their own power, transport, and/or communication services, which in turn may affect both investments and profit levels. The infrastructure access variable is constructed as a count variable of a combination of answers to the following perceptions by the firm owner: (i) easy access to a main road (Yes = 1, No = 0), (ii) easy access to rail (Yes = 1, No = 0) and (iii) easy access to a port (Yes = 1, No = 0). Within district consistency checks of individual firm answers were carried out and only raised few suspicions of odd answers. The summary statistics show that infrastructure access

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[23] An alternative proxy for the quality of the workforce would be the share of professional workers, yet in our sample of (mostly household) firms the vast majority (95 pct.) employs no professional workers.

has improved significantly during 2007–09, and that formal firms have better access compared with informal ones.

Eighth, well established property rights may facilitate access to credit, in turn leading to increased investments (both through the credit channel and by generally making it more worthwhile to invest) and performance. Also, Malesky and Taussig (2009), find that property rights have a particularly important impact on formalization compared with other institutional measures.[24] We therefore include an indicator variable taking the value 1 if the firm has a CLUR (Certificate of land use rights), and zero otherwise. In our sample, 70 pct. of firms report that property rights are well established, a ratio that has increased over time and interestingly is higher (although only significant at a 10 pct. level in 2009) for informal firms. This somewhat counterintuitive finding could be due to the higher concentration of informal firms in rural areas, where there is also a tendency to have better established property rights (Do and Iyer, 2008).

Ninth, the variable for the intensity of inspections is included with the purpose of capturing differences in the engagement of government officials in firm activities. Firms that are inspected regularly may be more likely to comply with for instance labour regulations, and may also pay more bribes, both of which could affect profits. Moreover, inspections have been shown to be negatively correlated with the decision to formalize (Jaramillo, 2011). The constructed measure ranges between 0 and 6 and is based on the following variables: (i) number of policy compliance inspections (labour, tax, etc.), (ii) number of technical compliance inspections (environmental, fire etc.), and (iii) number of other inspections (codes: none = 0; one = 1; more than one = 2). In general, inspections do not occur very frequently although more than three times as much in registered firms compared with nonregistered one, due to the higher visibility of the former. Moreover, the rate has increased slightly over time.

Tenth, we add an indicator variable taking the value 1 if the facility is used exclusively for production purposes and 0 otherwise to account for the possible efficiency effects in being able to focus solely on the production process. On average, 23 pct. of the firms use their facility entirely for production purposes, and this fraction has fallen during 2007–09. There is no significant difference between formal and informal firms along this dimension.

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[24] We note, however, that Malesky and Taussig (2009) do not have actual data on informal firms, yet use a more relative concept of informality, whereby all household firms are at one end of the spectrum and companies under the Enterprise Law at the other.

Eleventh, the inclusion of location as a control variable is important in order to account for the fact that Vietnamese provinces are relatively autonomous, and have implemented centrally planned initiatives with different pace and enthusiasm (Nguyễn, Albrecht, Vroman, and Westbrook, 2007). This aspect is also well documented in the Provincial Competitiveness Index (PCI) (Malesky, 2009), and based on the survey underlying the PCI Malesky and Taussig (2009) show that the wide variation in economic governance among Vietnamese provinces is a determining factor in firms' decisions to formalize. Thus, in order to capture institutional differences we model location using 10 indicator variables representing whether the firm is in a given province. Table 1.2 shows that around 30 pct. of the firms are located in urban areas (HCMC, Hanoi and Hai Phong) and this share is significantly larger (above 50 pct.) for firms that are formally registered.

Finally, in the analysis we also include a sector dummy taking the value 1 if the sector is high technology and 0 otherwise (based on 2-digit level ISIC codes) to account for the fact that formal firms may be more technology intensive (Gong and van Soest, 2002), which in turn could affect performance. Moreover, this variable captures differences in general conditions (especially with regards to the level of government support) among the different sectors. Eleven pct. of firms belong to a high-tech sector and the share is slightly higher for formal firm. Given that we are working mostly with household firms the relatively low share of technology intensive firms is perhaps not surprising.

In terms of the instruments used in the robustness analysis, only 6.2 pct. of firms report having good knowledge of relevant laws, and as expected the share is higher among formal firms. Seventy-five pct. of firms have obtained the relevant licenses and permits for operating a formal enterprise on time, pointing to the efficiency of the business registration system as alluded to earlier.

1.4   Results

1.4.1 Profits

As shown in previous studies (Fajnzylber et al., 2011; McKenzie and Sakho, 2010) firm benefits of operating officially include higher profits, better access to credit, increased investments and higher customer demand (due to the ability of formal firms to issue VAT invoices). However, on the downside, formal registration entails certain costs.[25] Moreover, aside from having to pay taxes,

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[25] As noted earlier, obtaining a registration certificate costs between 30,000 and 200,000 VND depending on the legal category of the firm (for more details, see http://www.gbs.com.vn).

formality has in the case of Vietnam been shown (Rand and Tarp, 2012) to be associated with a significantly higher probability of paying bribes, in turn affecting net profits. However, due to lack of reliable tax data, in the following we consider registration effects on gross profits.

The association between formality and firm gross profits is reported in Table 1.4. Columns A1, A2 and A3 show the pooled OLS estimates with profits (in logs) as the dependent variable. Column A1 includes only firm size, our lagged performance measure, location and sector indicator variables and a time dummy as additional controls to the formality indicator variable. According to this specification being formal is (significantly) associated with 27 pct. higher profits. In column A2 the owner and firm specific workforce characteristics are added, reducing the profit return only by a couple of percentage points. Column A3 includes the additional controls (infrastructure, property rights, inspections, home production) as described in the previous section, and this lowers the formalization coefficient to around 20 pct., but the estimate remains well-determined.

Column A4 in Table 1.4 reports the fixed effects (FE) estimates, controlling for the possibility that unobserved firm specific heterogeneity (e.g., owner ability) is driving some of the above results. The formalization estimate remains positive and significant, yet the profit gain associated with formalization is reduced to 9.4 pct. All in all, our pooled OLS and FE estimates suggest that there is a positive correlation between being formally registered and firm performance (measured as log profits). [26]

Column B1 in Table 1.4 focuses on the 803 firms which in 2007 were informal, and compares the changes in log profits between the 141 firms which formalized (the treatment group) and similar firms that remained informal (the control group) controlling for (i) the 2007 firm size level (ii) lagged profit performance (iii) location and (iii) sector. Becoming formal in this specification is associated with an increase in profits by about 12 pct., although not well-determined, and adding owner and workforce characteristics (column B2) does not change this result. However, including 2007 levels in infrastructure, property rights, compliance inspections and home production improves the precision on the formality indicator coefficient (column B3). Firms that became formal during 2007–09 have 16 pct. higher gross profit growth than comparable firms that remained informal.

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[26] In order to preserve space, throughout the results section we do not comment on the control variable estimates, since this is not the focus of the analysis.

As described in Section 3(c) the possible endogeneity biases outlined in the previous section lead us to apply two additional approaches: (i) a nonparametric matched double difference approach in order to control for determining factors and selected observed time-variant factors that may simultaneously influence the decision to formalize and subsequent firm performance (Table 1.5) and (ii) an IV identification strategy to handle possible biases due to selection on unobservables (Appendix Table 1.B). All the results reported in Table 1.5 apply the bias corrected nearest neighbour matching approach (with four matches per treated observation) as described in Abadie et al. (2004).[27] In column 1 of Table 1.5 we compare differences in log gross profits of firms that formalized in the period 2007–09 with matched firms that remained informal. Row A reports the results where matching is based on the variables outlined in column B1 in Table 1.4, whereas results in row B are comparable to the ones reported in column B3 in Table 1.4 (full set of control variables (2007 values)). Again the average treatment effect of the treated (ATT) is only well-determined (22 pct. profit growth effect of formalization) when including the full set of controls (row B). However, when accounting also for differences in observable control variables (row C) the ATT of formalization becomes insignificant, with a coefficient estimate close to the one reported in the fixed effects (FE) specification in column 4, Table 1.4.

The concern that there are time-varying unobserved firm characteristics which are correlated with growth in gross profits, and at the same time influence the decision to formalize leads us to check the robustness of the results by instrumentation of the formality indicator variable using [i] the change in the district share of enterprises that obtain relevant registration documents on time and [ii] the average district level knowledge about current laws relevant for operating a formal business. As highlighted above the relevance and validity of the chosen instruments are confirmed in Appendix B. As in McKenzie and Sakho (2010) the 2SLS estimates are significantly positive and have large coefficients (between 112 and 129 pct.), even with the full set of controls including both levels and differences in firm size and previous gross profit performance.

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[27] Using a kernel matching approach, with the common support restriction imposed, does not change the overall results.

Table 1.4. *Profits and formality, OLS and FE estimates*

	(A1) Log Profit OLS	(A2) Log Profit OLS	(A3) Log Profit OLS	(A4) Log Profit FE	(B1) Profit growth OLS	(B2) Profit growth OLS	(B3) Profit growth OLS
Formal/Switchers	0.268***	0.245***	0.197***	0.094*	0.118	0.105	0.163**
	(8.32)	(7.58)	(5.91)	(1.67)	(1.50)	(1.29)	(1.96)
Firm size	0.769***	0.761***	0.747***	0.419***	-0.091**	-0.071*	-0.077*
	(36.08)	(35.78)	(35.05)	(9.04)	(2.19)	(1.71)	(1.84)
Previous performance	0.395***	0.388***	0.388***	0.479***	-0.516***	-0.504***	-0.527***
	(6.90)	(6.74)	(6.76)	(7.28)	(4.12)	(4.06)	(4.24)
Gender of owner		0.014	0.022	0.017		-0.140**	-0.132*
		(0.45)	(0.69)	(0.32)		(1.99)	(1.87)
Education of owner		0.118***	0.110***	0.062		-0.100*	-0.075
		(4.26)	(3.95)	(1.35)		(1.66)	(1.24)
Workforce skill level		0.037	0.047	0.042		-0.238***	-0.233***
		(1.11)	(1.40)	(1.09)		(3.62)	(3.54)
Share of female workers		-0.144***	-0.130**	-0.012		-0.216*	-0.204*
		(2.69)	(2.42)	(0.12)		(1.90)	(1.80)
Infrastructure access			0.021*	-0.026			-0.012
			(1.73)	(1.44)			(0.47)
Property rights well established			0.049	0.029			0.025
			(1.60)	(0.63)			(0.41)
Compliance inspections			0.057***	0.045***			-0.102***
			(5.77)	(3.54)			(2.78)
Facility exclusively for production purposes			0.075**	0.051			-0.040
			(2.21)	(1.15)			(0.57)
Year dummy	0.098***	0.098***	0.089***	0.110***			
	(3.26)	(3.21)	(2.93)	(4.01)			
Province dummies included	Yes	Yes	Yes	No	Yes	Yes	Yes
High-tech sector dummy included	Yes	Yes	Yes	No	Yes	Yes	No
Total observations	2,732	2,732	2,732	2,732	803	803	803
Formal firms/Shifters	1,220	1,220	1,220	1,220	141	141	141
R-squared	0.52	0.56	0.56	0.15	0.06	0.08	0.09

Note: Dependent variable: Real profits (log) and profit growth. OLS and FE estimates. t-values (reported in parenthesis) are heteroskedasticity robust. *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively.

All in all, most of our estimates suggest that formalization has a positive and well-determined effect on gross profit growth in line with both Fajnzylber et al. (2009, 2011) and McKenzie and Sakho (2010). However, as mentioned earlier, we are unable to analyse the registration effect on net profits due to lack of reliable tax data. Yet, based on a field experiment in Sri Lanka de Mel et al. (2011) show that the registration of firms (with fewer than 15 employees) did not imply additional tax payments for the median firm in their sample, suggesting that the negative tax effect on net profits may be limited for smaller firms.

Table 1.5. Profits and formality, matched DD estimates

	Formalization Treatment Effect					
	(1) Profit growth		(2) Investment Share		(3) Credit access (Yes=1, No=0)	
	ATT	t-stat	ATT	t-stat	ATT	t-stat
A: Levels specification - performance controls only	0.130	(1.52)	0.033	(1.49)	0.011	(0.21)
B: Levels specification - full set	0.223**	(2.52)	0.042*	(1.91)	0.075	(1.48)
C: Difference and levels specification	0.107	(1.23)	0.054**	(2.39)	0.101**	(2.03)
Total observations	803				803	
Treated observations	141				141	

Note: Average treatment effect of the treated (ATT) using bias corrected nearest neighbour matching (4 matches per observation). t-values (reported in parenthesis) are heteroskedasticity robust. Estimations done using the nnmatch command in Stata (Abadie et al., 2004). Control variables: Documented in Tables 1.2 and 1.3.
A) Levels specification: matching based on initial values (2007 observed characteristics) only - performance control variables (firm size and lagged profit growth) plus urban location and sector dummies. B) Levels specification: matching based on initial values (2007 observed characteristics) only - full set of controls. C) Difference and levels specification: matching based on initial values of the full set of control variables (2007 observed characteristics) and differences (between 2007 and 2009) in the selected performance variables. *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively.

Moreover, the reported gross profit registration effect may be a lower bound estimate due to underreported profits (for tax reasons post intervention) in the surveys. [28] In addition, given that the one-off registration cost, as mentioned at the beginning of this sub-section, could have affected profits (negatively) in the year immediately following formalization, one might expect to observe a larger positive profit growth effect in future years (allowing for a time lag). Finally, if the sampling strategy as outlined in Section 3(b) has led to an overrepresentation of relatively more competitive (and profitable) informal firms, as seems to be the case given the size of the informal firms in the sample, this may also explain why the gross profit effect is not even more pronounced.

1.4.2 Investments and Credit

Firm performance improvement due to formalization may be explained by better access to credit (see for instance McKenzie and Woodruff, 2008) in turn allowing firms to increase their investments. Table 1.5 therefore includes matched double difference results with investments as a share of total revenue (column 2) and credit access (column 3) as dependent variables. Using the full set of matching variables results in the "expected" well-determined positive estimate with formalization leading to an increased investment share of between 4.2 and 5.4 percentage points, depending on whether we match on initial 2007 levels or on the levels and differences in controls.

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[28] de Mel, McKenzie, and Woodruff (2009) find that microenterprise owners underreport revenues by about 30 pct.

Fixed effect estimates for initially informal firms (803 firms) are reported in Table 1.6 (column 1), and the result confirms the above finding, although with a somewhat lower point estimate on the formality (change) indicator variable. Our results are in line with Fajnzylber et al. (2011) who find that formalization leads to a higher capital stock.

The hypothesis of whether formalization leads to improved credit access is examined in column 3 of Table 1.5, where the dependent variable is an indicator variable taking the value 1 if there are no constraints in access to credit, and 0 otherwise. When matching on performance variables (row A) and the full set of controls in levels (row B) we find a positive but not well-determined association between formalization and not being constrained in credit markets. However, including difference in firm size and lagged growth performance in the set of matching variables results in a well-determined credit access effect of formalization. This is confirmed by the positive and significant result obtained using a fixed effect linear probability model (Table 1.6, column 2). However, the matched double difference credit access result is not robust to changes in matching technique. On the whole, our findings support the hypothesis that formalization increases investments, yet similarly to other studies (Fajnzylber et al., 2011; McKenzie and Sakho, 2010) our results are less affirmative regarding improved access to credit.

1.4.3 Empowerment of Workers

One of the main contributions of this paper is to look at the effects of formality on the "empowerment" of workers. As described in Section 3(a) when an informal (household) firm formalizes its activities and registers as a non-household establishment, it becomes subject to the Labour Code, which among other provisions states that all workers employed for at least 3 months a year must have written contracts with specific terms and conditions of employment (Quang, 2008). Thus, assuming that firms do not change their recruitment patterns, in the case of non-household firms, formalization should in theory lead to an improvement in the contract status of workers.

However, as also pointed out in Section 3(a) when a household firm registers its business, it is unclear whether this will lead to enhanced contract conditions for workers, as the firm does not automatically fall under the Labour Code. In fact, since the Social Insurance Law (2007) mandates the contribution of social insurance for all workers with written contracts of 3 months or more,

employing workers on a more regular basis (with contracts) is associated with increasing labour costs.[29]

Table 1.6. *Investments, credit, casual workforce and formality, FE estimates*

	(1) Investment share (log) FE	(2) Credit Access (Yes=1, No=0) FE	(3) Casual worker share (log) FE
Formal	0.038*	0.144**	-0.065**
	(1.85)	(2.37)	(2.00)
Firm size	0.011	0.015	-0.117***
	(0.92)	(0.36)	(3.09)
Previous performance	-0.042	0.096	-0.106**
	(1.22)	(1.46)	(2.31)
Gender of owner	-0.021	-0.015	0.041
	(1.40)	(0.27)	(1.31)
Education of owner	-0.005	-0.034	-0.015
	(0.39)	(0.70)	(0.48)
Workforce skill level	0.018	0.021	-0.012
	(1.33)	(0.54)	(0.56)
Share of female workers	-0.012	-0.027	-0.070
	(0.41)	(0.27)	(0.91)
Infrastructure access	-0.004	-0.008	-0.015
	(0.68)	(0.43)	(1.38)
Property rights well established	0.019	0.050	0.026
	(1.33)	(1.08)	(0.91)
Compliance inspections	0.005	0.003	0.004
	(1.30)	(0.16)	(0.41)
Facility exclusively for production purposes	-0.023	-0.026	-0.046*
	(1.50)	(0.66)	(1.80)
Year dummy	0.040***	0.018	0.059***
	(4.91)	(0.64)	(3.48)
Total observations	1,606	1,606	1,606
Firms	803	803	803
R-squared	0.09	0.02	0.10

Note: Dependent variables: (i) Investment share (log(1+inv. share)), (ii) Credit access and (iii) Share of casual workers (log(1+casual share)). FE estimates. t-values (reported in parenthesis) are heteroskedasticity robust. *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively.

Thus, all else equal, and abstracting from the fact that noncompliance is a major issue (Nguyễn et al., 2006), formalization may therefore result in a decrease (increase) in the share of value added accruing to the firm (workers). In order to avoid such costs and complications, official registration may cause firms to change their hiring behaviour, for instance by employing more casual workers (on contracts of less than 3 months/without contracts). Whether formalization leads to an increase

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[29] According to the Labor Code (Article 149) employers are required to contribute around 15 pct. of the wage to the social insurance fund.

or a decrease in the proportion of casual workers (as a proxy for formal contracts) therefore becomes an empirical question which we test in this sub-section.[30]

Column 3 in Table 1.6 reports the fixed effect estimates for initially informal firms (803 firms) using the full set of control variables. Formalizing leads to a reduction in the casual worker share of 6.5 percentage points. This finding is confirmed in Table 1.7, which reports the matched (both nearest neighbour and kernel) double difference results, with the casual worker share as the dependent variable. The results show that formalization leads to a significant decrease in the share of casual workers of between 12 and 16 percentage points depending on the matching estimator used and the specification. In addition to providing an indication that formalized firms (whether household or non-household) are following the Labour Code (in terms of providing contracts to workers), this result could also reflect the fact that businesses are becoming more established with production plans moving from a narrower focused short term optimization strategy to a longer-term business approach. If this is the case, firms may be more willing (and able) to invest in their workers and provide formal contracts, in turn further increasing the long term stability and productivity of the business. Our findings are in accordance with Fajnzylber et al. (2011) who show that one of the channels through which formalization leads to improved firm performance is an increase in formally contracted labour.

Given that our sample consists mostly of household firms, typically employing family members, it is unlikely that the improvement in working conditions is due to an internal push among workers. Rather, it seems that increased visibility drives (formal) firms to improve conditions for workers so as to establish a good reputation and attract more and larger customers as well as better quality labour.[31] If on the other hand, access to higher labour quality drives firms to formalize, then we have reverse causality. Yet, recall from the summary statistics in Section 3(b) that the difference in the share of unskilled production workers between formal and informal firms was insignificant (in fact slightly higher for formal firms in 2007). Thus, although one of the issues emerging from the fieldwork was that informal firms were constrained by low labour quality this also seems to be an issue for formal firms, and therefore not a determining factor of the decision to formalize.

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[30] Using a probit model we first test whether "casual worker share" is a good proxy for (the lack of) contracts and find a strong negative correlation between the former and the proportion of workers with contracts (results not reported).

[31] This is assuming that workers prefer to be employed on a more regular basis. In fact, studies have shown that some workers may prefer informal employment due to the flexibility it provides (Maloney, 2004).

An increase in the number of workers with formal contracts may lead to an increase in the employee "threat point" in the employer–employee relations (especially if complemented by an increase in the share of workers organized within a local trade union), and as a result an improvement in the share of value added going to workers (in the form of wages). We also examined (not reported) whether formalization leads to an improvement in the wage share of value added, yet found no evidence of a change in the "sharing rule" after becoming officially registered. Overall, our results show that formalization leads to an improvement in the empowerment of workers, through an increase in the share of workers with formal contracts (proxied by a decrease in the casual worker share), and a constant wage share of firm value added.

Table 1.7. *Casual workforce share and formality, matched DD estimates*

	Formalization Treatment Effect			
	(1)		(2)	
	NN matching		Kernel matching	
	ATT	t-stat	ATT	t-stat
A: Levels specification - performance controls only	-0.163***	(4.13)	-0.162***	(4.63)
B: Levels specification - full set	-0.158***	(4.05)	-0.148***	(3.42)
C: Difference and levels specification	-0.122***	(3.70)	-0.126***	(2.73)
Total observations	803		803	
Treated observations	141		141	

Note: Average treatment effect of the treated (ATT) using bias corrected nearest neighbour matching (4 matches per observation). t-values (reported in parenthesis) are heteroskedasticity robust. Estimations done using the nnmatch command in Stata (Abadie et al., 2004). Kernel matching estimates are obtained using the psmatch2 command in Stata (Leuven and Sianesi, 2003). Control variables: Documented in Tables 1.2 and 1.3.
A) Levels specification: matching based on initial values (2007 observed characteristics) only - performance control variables (firm size and lagged profit growth) plus urban location and sector dummies. B) Levels specification: matching based on initial values (2007 observed characteristics) only - full set of controls. C) Difference and levels specification: matching based on initial values of the full set of control variables (2007 observed characteristics) and differences (between 2007 and 2009) in the selected performance variables. . *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively

1.5   Conclusion

This paper has examined the effects of formalization on a number of firm level outcomes in micro, small and medium enterprises in Vietnam, using unique panel data from 2007 to 2009 and covering both formal and informal firms. Our focus is on firms that were classified as household firms in 2007, since all informal firms are found within this category. In order to identify the effects of formalization, we use both a matched double difference approach and an IV strategy to account for the fact that firms self-select into formality and thus endogeneity bias may arise if determining factors or time-variant unobserved factors influence both the decision to formalize and subsequent firm performance.

The results confirm the findings from recent studies that becoming officially registered leads to an increase in firm gross profits and investments. Going beyond firm outcomes, one of the main contributions of this paper is to investigate the implications of formalization for the status of workers. We find that becoming legally registered results in a decrease in the share of casual workers in the firm (an increase in workers with formal labour contracts). This may be explained by firms moving into formality being more compliant with regulations and/or more willing (and able) to invest in their workers, with a view to increasing the productivity and longer term stability of the business. However, we find no evidence that formalizing leads to a higher share of wages in total value added, which may be related to the weakness of trade unions and the collective bargaining system among Vietnamese SMEs. However, all in all we conclude that formalization is associated with an empowerment of workers.

Given that official registration is beneficial both to firms and workers, there should be more focus on encouraging firms to shift out of informality by exposing the potential gains associated with an upgrade in legal status. In fact, in the case of Sri Lanka de Mel et al. (2011) find that modest increases in the perceived benefits of operating formally may substantially increase rates of formalization. In addition to a general perception that the costs associated with operating officially outweigh any potential gains, a further issue that emerged from the qualitative fieldwork, was the lack of awareness on behalf of firm owners of any requirement to register formally (partly due to the authorities allowing firms to operate informally for a short "testing" period). Thus, enhanced information, including on how to go about the registration procedure could presumably go a long way towards helping small informal firms realize their growth potential in the formal sector.

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Appendix

Table 1.A. *Survival considerations*

	Survivors	Exits	Difference	Std. error
Panel A: Survivors versus exits				
Profits (log, real mill VND)	3.194	3.094	0.100	0.071
Investments (share of total revenue)	0.049	0.050	-0.002	0.001
Credit access (not constrained = 1, constrained = 0)	0.657	0.644	0.013	0.009
Casual employees (share of total workforce)	0.114	0.142	-0.028	0.031
License 2 (Yes = 1, No = 0)	0.412	0.466	-0.054	0.038
Firm size (full-time employees)	5.900	5.314	0.586	0.414
Previous performance (lagged real profit growth)	-0.001	-0.033	0.032	0.023*
Gender of owner (male = 1, female = 0)	0.682	0.631	0.051	0.036
Education of owner (high school or above = 1, otherwise = 0)	0.406	0.458	-0.051	0.036
Workforce skill level (share of unskilled production workers)	0.460	0.414	0.046	0.033
Share of female workers	0.359	0.367	-0.008	0.006
Infrastructure access (Bad = 0, Good = 3)	1.275	1.267	0.008	0.005
Property rights well established (Yes = 1, No = 0)	0.674	0.669	0.005	0.003
Compliance inspections (None = 0, Many = 6)	1.020	1.131	-0.112	0.079
Facility exclusively for production purposes (Yes = 1, No = 0)	0.240	0.331	-0.090	0.064***
Location (Urban = 1, Rural = 0)	0.300	0.428	-0.128	0.090***
High tech sector (Yes = 1, No = 0)	0.116	0.119	-0.003	0.002
Total observations	1,366	236		

	Profit (log)		Survival	
Panel B: Heckman Selection Model				
Change to formality (Yes = 1, No = 0)	0.148*	(1.79)		
Firm size (full-time employees)	-0.150***	(2.97)	-0.074	(0.89)
Previous performance (lagged real profit growth)	-0.392**	(2.30)	0.483**	(2.40)
Gender of owner (male = 1, female = 0)	-0.128	(1.63)	0.104	(0.80)
Education of owner (high school or above = 1, otherwise = 0)	-0.035	(0.48)	-0.130	(1.10)
Workforce skill level (share of unskilled production workers)	-0.191**	(2.02)	-0.231	(1.56)
Share of female workers	-0.178	(1.34)	-0.238	(1.09)
Infrastructure access (Bad = 0, Good = 3)			-0.028	(0.46)
Property rights well established (Yes = 1, No = 0)			-0.144	(1.13)
Compliance inspections (None = 0, Many = 6)			0.004	(0.07)
Facility exclusively for production purposes (Yes = 1, No = 0)			-0.218*	(1.70)
Province dummies	Yes		Yes	
Sector dummy	Yes		Yes	
Lambda	0.655		(0.83)	
Total observations	803		929	

Note: Panel A - Unconditional mean difference tests by firm exit. Panel B - Heckman selection model, twostep. LR-stat of independent equations (p=0.37) show that we cannot reject that firm survival and profit can be estimated separately.
 *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively

Table 1.B. *Profit effects of formalization: 2SLS results*

	(1A) First stage	(1B) Profit growth	(2A) First stage	(2B) Profit growth
Formal		1.120*		1.285**
		(1.86)		(2.39)
Firm size - difference	0.109***	0.302***	0.111***	0.283***
	(4.35)	(3.04)	(4.45)	(3.00)
Firm size - level	0.161***	-0.062	0.167***	-0.090
	(7.52)	(0.56)	(7.73)	(0.89)
Previous performance - difference	0.076	0.472***	0.060	0.459***
	(1.55)	(3.45)	(1.22)	(3.34)
Previous performance - level	0.064	-0.095	0.050	-0.104
	(1.03)	(0.53)	(0.79)	(0.58)
Gender of owner	-0.040	-0.071	-0.036	-0.063
	(1.38)	(0.88)	(1.21)	(0.76)
Education of owner	0.051*	-0.170**	0.054**	-0.178**
	(1.93)	(2.37)	(2.06)	(2.49)
Workforce skill level	-0.016	-0.159**	-0.012	-0.156**
	(0.61)	(2.33)	(0.48)	(2.23)
Share of female workers	-0.210***	0.063	-0.210***	0.100
	(4.17)	(0.34)	(4.19)	(0.57)
Infrastructure access	0.048***	-0.061	0.052***	-0.071*
	(4.14)	(1.39)	(4.47)	(1.71)
Property rights well established	-0.030	0.078	-0.026	0.082
	(1.11)	(1.19)	(0.97)	(1.21)
Compliance inspections	0.054***	-0.162***	0.060***	-0.171***
	(3.55)	(3.22)	(3.92)	(3.41)
Facility exclusively for production purposes	0.018	-0.095	0.013	-0.097
	(0.61)	(1.26)	(0.44)	(1.25)
Province dummies included	Yes	Yes	Yes	Yes
High-tech sector dummy included	Yes	Yes	Yes	Yes
Knowledge of government laws	0.665***		0.695***	
	(4.28)		(4.32)	
Change in time use to obtain relevant license			0.047***	
			(2.88)	
Total observations	803		803	
F-stat (instrument relevance/weak instrument test)	18.32		13.65	
OID test (p-value)	..		0.71	

Note: Dependent variables: Profit growth. 2SLS estimates. t-values (reported in parenthesis) are heteroskedasticity robust. *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively.

Chapter 2

The Informal Sector Wage Gap among Vietnamese Micro Firms

Abstract

Based on unique firm survey data from 2009, this paper examines the wage differential between formal and informal manufacturing household enterprises in Vietnam. Using the Blinder–Oaxaca decomposition method, we investigate whether the wage gap is attributed mostly to differences in observable characteristics (the endowments) between formal and informal firms, or to variations in the returns to these characteristics (the unexplained component). The results show that average wages are 10 pct.–20 pct. higher in formal firms and that the majority of this gap is due to observable characteristics, in particular differences in firm size, workforce characteristics and location. Thus, traditional wage determinants seem to play an important role in explaining the higher wage returns in formal firms.

2.1   Introduction

The informal sector accounts for about two thirds of the labour force in developing countries and is often regarded as an important determinant of low productivity and wage inequality. According to traditional labour market segmentation theory (Fields, 1975; Dickens and Lang, 1985), wages may differ between the formal and informal sectors for workers of equal potential. In this case, informal employment is portrayed as a strategy for escaping involuntary unemployment. An often cited, cause of this "rationing out" of workers to the informal sector is the presence of institutional barriers preventing workers in the secondary low-wage labour market from accessing jobs in the upper sector (Dabla-Norris et al., 2008).[1] An alternative view is that workers or firms voluntarily select into the informal sector given their (often non-monetary) preferences and skills or, in the case of firms, to avoid taxes or regulatory legislation (De Soto, 1989; Maloney, 1999; Cunningham and Maloney, 2001). In this situation, wages in the informal sector may not necessarily be lower than those in the formal sector. Moreover, given the option of informality, some entrepreneurs who would otherwise not have produced at all may decide to produce informally (Bennett, 2008). Combining these two contrasting views leads to a dual representation of the informal sector (Maloney, 2004; Fields, 2005), composed of a competitive voluntary upper-tier (exit hypothesis) coexisting with a lower-tier segment of individuals who do not have access to the formal market (exclusion hypothesis).

In this paper, we analyse the informal sector wage gap using data from a Vietnamese small and medium enterprise (SME) survey carried out in 2009. The survey covers the manufacturing sector, which together with construction represent the largest informal industries in Vietnam. The informal sector constitutes an important source of employment, accounting for around 30 pct. of jobs in the two major cities of Hanoi and Ho Chi Minh City (HCMC), (Demenet et al., 2010). In this paper, we focus on household (micro) firms since informal firms are found only in this category. In an earlier paper (Rand and Torm, 2012), we found that the formalization of household firms led to a decrease in the share of temporary workers employed by the firm (an increase in the number of workers with written contracts). This was interpreted as evidence that formalization results in increased compliance with regulations and a willingness to hire workers on a more permanent basis so as to maintain the stability of the business and increase productivity. Given that temporary workers are

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[1] As noted by Günther and Launov (2011), if there is no evidence of entry barriers between any of the segments of the labour market, then variations in returns to individual characteristics do not necessarily imply labour market segmentation.

not covered by social security insurance, one would expect formal firms to have a higher *total* wage bill compared with informal firms, ceteris paribus. In terms of basic wages, however, it is less clear whether there should be a difference. On the one hand, and according to compensating wage differential theory, informal firms might compensate workers for not being covered by social security insurance (compensation could, however, also be in a non-wage form). On the other hand, and according to efficiency wage theory, formal firms may voluntarily pay higher wages so as to attract better quality workers; to reduce the turnover rate; to prevent shirking and/or to elicit higher effort levels. Moreover, the types of workers may differ across sectors. For instance, in the case of Vietnam, the share of wage workers is substantially higher in formal compared with informal household firms (Demenet et al., 2010). Further, if formal firms are more profitable, a finding that also emerged in Rand and Torm (2012), they might be more likely to share rents with workers (Teal, 1996). Finally, formal firms could have higher wages as a result of labour market regulations such as collective bargaining or minimum wages.

Using the traditional Blinder–Oaxaca decomposition method, we first uncover the existence of an informal sector wage gap and then investigate whether this differential is due to differences in observable endowments (the characteristics) between formal and informal firms, or to variations in the returns to these endowments (the unobserved component). The results show that average wages are 10 pct.–20 pct. higher (exact estimates depending on analytical approach and specification choice) in formal firms compared with informal ones and that this wage gap is mostly explained by differences in characteristics between the two firm categories, in particular firm size, workforce characteristics and location. This implies that traditional wage determinants play an important role in explaining the higher wages observed in formal firms.

The paper is structured as follows: in the following section, we provide a selective overview of the existing literature. Section 3 describes the data. Section 4 outlines the empirical strategy and presents the results of the analysis. Finally, a concluding discussion is provided in Section 5.

2.2   Literature

The enormous heterogeneity of the informal sector is perhaps *the* most agreed upon finding merging from the vast literature on informality. Comparing the wages of formal and informal workers using household-level data from Bolivia, Pradhan and van Soest (1995) find that there is larger wage variation among informal sector workers than formal sector workers. Moreover, the average

earnings of informal sector workers exceed those of formal workers, indicating that in general, those with relatively high potential informal sector returns will work in that sector, in turn supporting the self-selection argument. Marcouiller et al. (1997) also find evidence of an informal sector premium in Mexico, challenging the notion of informality as a last resort. By contrast, they find that in El Salvador and Peru, wages are higher in the formal sector and around half of this premium is attributed to observable characteristics of the workers and intersectoral differences in the composition of employment, whereas the other half remains unexplained. There is also some variation across gender, with a lower unexplained part for Peruvian men. Focusing on the Russian household sector, Kim (2002) finds that participation in the informal secondary labour market is driven by opportunities rather than survival. This is in contrast with other studies describing informal activities as coping strategies to help buffer the shocks from the Russian transition process (Rose and McAllister, 1996; Desai and Idson, 1998).

Cunningham and Maloney (2001) use Mexican micro-enterprise data to show that although the informal sector does serve partly as an involuntary refuge, with earnings that are lower given the level of human capital, the vast majority of entrepreneurs operate informally on a voluntary basis and have earnings on a par with salaried workers. They argue that the informal sector is composed of two different earnings distributions corresponding to the 'inferior' (involuntarily informal) and 'superior' (voluntarily informal) sector. However, depending on which of these distributions are observed, there may be small differences in earnings between the formal and informal sectors. This is in line with an earlier paper on Mexico by Maloney (1999) in which he finds that moves into self-employment are associated with increases in earnings, while the opposite (falling earnings) is true for informal workers. Using the same data source (Urban Employment Survey), Gong and van Soest (2002) find a formal sector wage differential of about 45 pct. (for a 40-year-old male). The wage gap is smaller for the lower educated but increases strongly with education level. Moreover, although returns to education are positive in both sectors they are much higher in the formal sector. The explanation offered for this is that managers in larger formal firms have more difficulty in directly observing the workers' productivity, and thus experience and education are used as signals. By contrast, in the small informal firms, the direct contact between the employer and the employee means that the signalling value of, for instance, education is smaller. Moreover, the difference in returns may reflect the complementarities between educational skills, capital and technology intensity in the formal sector. However, the authors do not have firm-level data to test these potential explanations. Also examining the returns to worker characteristics, Günther and Launov

(2011) find that in Côte d'Ivoire the higher-paid segment of the informal sector has returns to education and experience that are about half of those in the formal sector, and in the lower-paid informal sector, workers are left with very low wages almost independently of their skills. This again points to the potential signalling value of human capital in the formal sector, while also suggesting some discrimination against informal sector workers.

Looking at South Africa, Badaoui et al. (2008) find that there is an informal sector wage penalty of about 18 pct., yet this estimate is based on gross wages (including nonwage benefits) and thus may be upward biased. Further, the penalty disappears once the sample is reduced to a smaller group for which earnings net of taxes and unobservable time invariant factors are accounted for. Comparing Brazil, Mexico and South Africa, Bargain and Kwenda (2009) find that in all three countries, there is an informal sector wage penalty and that this is partly explained by 'better' observed and unobserved characteristics in the formal sector. Moreover, the results hold when both taxes paid in the formal sector and unobserved heterogeneity is accounted for. In a subsequent paper (Bargain and Kwenda, 2011) the authors undertake a more detailed distributional analysis and find that in Mexico, the self-employed premium is large at the top of the distribution (compensating workers for the benefits received in formal jobs), while in South Africa the upper-tier segment is marginal with informal workers across the spectrum being penalized. In Brazil, earnings differentials are small at all levels, consistent with a more competitive view. Thus, the dual structure of the informal sector is not balanced the same way in all three countries. Using the Colombian Continuous Household Survey, Ramos et al. (2010) find that the informal sector wage gap is around 30 pct. when controlling for standard individual wage determinants, regional productivity and the local unemployment rate. Finally, in the case of Vietnam, Nguyễn et al. (2013) find that the informal employment earnings gap is 15 pct. with some variation depending on the segment of workers considered (wage workers versus self-employed) and their position in the earnings distribution.

In sum, the aforementioned studies point to the importance of accurately defining the segment of the informal sector under analysis since this may have important implications for whether a wage gap is observed. Moreover, taking account of the diverse composition of the informal sector may help us understand the immense variation of the wage differential throughout the wage distribution. Further, the papers reveal the necessity of using a precise measure of wages (net of benefits and taxes) as well as taking account of all potential factors which might affect both wages and informality. On this last point, the above studies are all based on household or employment surveys

and therefore lack information on firm characteristics, which, as suggested by Gong and van Soest (2002), may play an important role in explaining the wage gap. In fact Badaoui et al. (2010) find that in the case of Ecuador, firm size is the key variable determining the formal sector wage premium. Focusing only on micro-enterprises Gelb et al. (2009) find that in East Africa, there is no significant difference in labour productivity between informal and formal firms, whereas in Southern Africa the difference is substantial. The authors attribute this to the higher level of regulations enforcement and provision of services in Southern Africa making it more beneficial for firms to formalize in this region compared with East Africa.

The current paper is based on firm data, and thus we are able to address some of the issues raised above. First, our analysis is restricted to a relatively narrow segment of the informal sector, namely manufacturing household firms. Second, the firm-level data allow us to control for the number of regular employees, thus addressing the concern that the wage differential may be attributed to firm size. Third, we are able to distinguish gross earnings (including non-wage benefits) from basic wages, thus taking account of the bias that may result from using only the total wage bill as the wage measure. The drawback of using 'only' firm data is that we do not have information on employee characteristics, which are likely to be important in explaining wage returns. In particular, Larsen et al. (2011) showed that there is substantial wage variation within Vietnamese SMEs when different worker types are considered. Moreover, Nguyễn et al. (2013) find that the informal sector wage gap depends on the workers' job status and their relative position in the earnings distribution. Although we are unable to account for the within firm distribution of wages, the inclusion of a number of firm-level workforce characteristics is intended to capture some of this heterogeneity.

2.3   Data

The data on which the analysis is based come from an SME survey carried out in 2009 in 10 provinces (HCMC, Hanoi, Hai Phong, Long An, Ha Tay, Quang Nam, Phu Tho, Nghe An, Khanh Hoa and Lam Dong; see Central Institute for Economic Management [CIEM] 2010 for details on the survey).[2] The sampling scheme of the SME survey is based on a representative sample of registered household and non-household firms drawn from GSO (General Statistics Office)

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[2] The World Bank SME Department operates with three groups of SMEs: micro, small- and medium-scale firms. Micro-enterprises have between 1 and 10 employees, small-scale enterprises between 11 and 50 employees and medium-scale enterprises between 51 and 300 employees. These definitions are broadly accepted by the Vietnamese Government (see Government Decree no. 90/2001/CP-ND on "Support for Development of Small and Medium Enterprises"). In what follows, we apply these definitions.

enterprise census information (GSO 2004, 2008). In all the areas (districts) covered by the surveys, samples were stratified by ownership form to ensure proportional representation of all types of non-state enterprises, including officially registered households, private firms, cooperatives, limited liability companies and joint stock enterprises. However, in terms of household firms, the GSO enterprise census only covers those with fixed professional premises (see Demenet et al.[2010] for more detail), which in turn means that the SME survey is not representative along the household dimension (the number of household businesses is underestimated). In addition, since the informal household firms were chosen randomly within the selected survey districts, they all operate alongside officially registered enterprises and therefore may be relatively more competitive than the average informal firm in the district. Thus, our sample of informal firms is not representative of the overall informal sector in Vietnam.

As mentioned earlier, our analysis focuses on firms classified as household enterprises, as all informal firms are household firms (but not vice versa). Aside from working with a relatively homogeneous sample, by restricting our analysis to household firms, we eliminate the possibility that wage differentials are due to minimum wages or trade unions since household firms are not subject to the Enterprise Law.[3] After applying this selection criterion, and undertaking thorough data cleaning, we were left with a total of 1,098 firm observations out of an initial 1,652 household firms in the survey.[4] As in earlier work (Rand and Torm, 2012) and in accordance with other studies on this topic (McKenzie and Sakho, 2010), we define informal firms as those that are not registered with the tax authorities and therefore do not have a tax code.

In terms of wages, as pointed out at the end of Section 2, we make use of the fact that we have information on both total and basic wages to account for the fact that a gap in total wages may exist between formal and informal firms simply because the latter are not mandated by law to pay social security contributions.[5] Moreover, in order to ensure that the wage gap is not related to differences in working hours between formal and informal firms, our wage measure is the total wage bill

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[3] According to Decree no. 88/2006/ND-CP of 29 August 2006 on business registration, when a firm has more than 10 employees and/or uses more than one business premise, it may no longer operate as a household firm and should register as a company under the Enterprise Law (2000).

[4] The substantial drop in the number of observations is mostly due to missing wage data. If the information is missing in a systematic way, for instance if poorly performing firms are not reporting wages, then this could lead to bias on our wage gap measure. In the analysis, we therefore check the robustness of all our results using a standard sample selection model.

[5] The Labour Code and the Law on Social Insurance apply to workers employed on a contract basis for at least 3 months, including workers in individual business households.

divided by the number of regular workers. Table 2.1 reports the average (per regular employee) annual total compensation and basic wage for formal and informal firms, respectively.[6]

First, in terms of total compensation, Table 2.1 reveals that this is (on average) significantly higher in formal compared with informal firms, which is expected given that this measure includes other labour costs.[7] However, when looking at average basic wages, there is still a significant wage differential between formal and informal firms. Thus, the informal sector wage gap remains even when other labour costs are factored in. In the analysis that follows, the average basic wage is our dependent variable.

Table 2.1. *Average yearly basic and total wages (logged)*

	Average total wage (logged)	SD	Average basic wage (logged)	SD
Total [1,098]	2.400	(0.600)	2.397	(0.599)
Informal [390]	2.286	(0.672)	2.285	(0.672)
Formal [708]	2.464	(0.548)	2.459	(0.545)
Difference (t-test)	0.178***	(0.037)	0.173***	(0.037)

Note: Logged real average (per worker) wages deflated at the province level (2005=100).
*** indicate significance at a 1 percent level The figures in brackets indicate the number of observations.

If formal sector wages are higher in order to compensate workers for having to pay taxes, this could overestimate the wage gap. However, with the exception of 11 firms, average wages are below the threshold for personal income taxes.[8] Since we do not observe the distribution of earnings some individual earnings could of course be above the taxable level, yet it seems safe to assume that in general the wage premium does not reflect tax compensation. In other words, the average wage represents net earnings. Moreover, according to Vietnamese business registration legislation, household businesses must register *unless* they have an income below a certain amount set at district level (usually the minimum wage) which in 2008 was 620,000 VND per month in Hanoi and HCMC and 540,000 VND in other parts of the country[9]. The fact that the average wage level for our sample of informal firms exceeds this threshold reveals that (on average) these firms are

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[6] We note that the distribution of formal and informal firms differs substantially from representative samples such as the Labour Force Survey (LFS) and the Vietnam Household Living Standard Survey (VHLSS) according to which the informal sector accounts for about 80 pct. This discrepancy arises from the sampling strategy of the SME survey.
[7] In addition to social and health insurance, other labour costs include recruitment and training costs. However, for presentational purposes, details on these are not reported, but available upon request.
[8] The Personal Income Tax Law which came into effect on the 1 January 2009 sets a taxable income threshold beginning at 4 million VND per month.
[9] Household businesses may also be exempt from registration if they are operating as street vendors or motorbike taxis, yet all firms in our sample have a fixed location; thus this type of firm is not represented.

operating illegally or, in other words, that legislation is not properly enforced.[10] It should be stressed that this result is not due to the bias induced by our (non-representative) sample, since it is in line with the findings reported in Cling et al. (2010) based on a representative survey.[11] Furthermore, besides the fact that our sample of firms is not subject to the Enterprise Law, the generally non-binding minimum wage combined with the absence of trade unions in household firms provides support for the fact that higher formal sector wages are not related to labour market regulation.

Table 2.2 provides summary statistics for all the variables used in the analysis. First, legal status – the dimension along which the wage decomposition is done – is an indicator variable taking the value 1 if the firm is informal (does *not* have an official tax code) and 0 if it is formal. Thus, the informal firm is our reference group[12] and the reasons for this are provided in Section 4 on methodology. Table 2.2 shows that 35.5 pct. of the firms in our sample are informal. In the estimations, we also include the following firm characteristics: (i) firm size; (ii) firm age; (iii) gender of owner; (iv) education of owner; (v) professional worker share; (vi) female worker share; (vii) sector and (viii) location.

Table 2.2. *Summary statistics*

	Total		Formal		Informal	
	Mean	SD	Mean	SD	Mean	SD
Informality	0.355	0.479	0.000	0.000	1.000	0.000
Firm size***	6.698	6.541	7.493	7.232	5.254	4.730
Firm age**	15.385	10.337	14.922	9.378	16.226	11.849
Owner male ***	0.723	0.448	0.672	0.470	0.815	0.388
Owner education*	0.484	0.500	0.503	0.500	0.449	0.498
Share of professional workers***	0.006	0.029	0.008	0.035	0.001	0.015
Share of female workers**	0.305	0.275	0.317	0.267	0.283	0.288
High-tech sector dummy included	0.131	0.338	0.121	0.327	0.149	0.356
Urban***	0.411	0.492	0.527	0.500	0.200	0.401
North***	0.518	0.500	0.336	0.473	0.849	0.359
Total observations	1,098		708		390	

Note: *,**, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively of a mean difference test.

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[10] Since the wage measure is an average, we cannot exclude the possibility that some firms actually do have incomes below the threshold for registration and thus are not operating illegally. However, using revenue as a measure of income reveals that only one rural firm has an annual income below the registration threshold (540,000 VND per month).

[11] Cling et al. (2010) estimate that up to 78 pct. of informal household businesses in Vietnam are operating illegally.

[12] In the context of decomposition analysis, the reference group is the group for which we identify the outcome change (in this case wages) if the other groups' characteristics/returns were applied. Thus, reference group differs from reference category used to represent the excluded category in standard regression analysis.

The justifications for the selection of these control variables and their summary statistics are as follows. First, firm size (log full-time employment) is included based on the general finding that wages are generally higher in larger firms (Oi and Idson, 1999; Söderbom et al. 2005). Moreover, the association between formality and firm size is well documented (Levenson and Maloney, 1998) with some authors arguing that firm size is the key determinant of the formal sector wage premium (Badaoui et al., 2010). The average firm size is 7.5 workers for formal and 5.3 for informal firms, which is substantially higher than the 1.5 average reported by Cling et al. (2010). This discrepancy is due to both the removal of missing observations and the sampling issue described at the beginning of this section.[13]

Second, firm age acts as a proxy for the age and/or experience of the owner – a standard wage determinant in earnings analysis (Mincer, 1974). The average firm age is 15.4 years, and interestingly this is higher for informal firms indicating that our sample of informal firms represents relatively well-established firms. Third, the gender of the owner has been shown to be important in terms of compensation with female owners generally being more generous, at least in the provision of non-wage benefits (Rand and Tarp, 2011). We therefore include a dummy taking the value 1 if the owner is male and 0 if female. Table 2.2 shows that 72.3 pct. of firms have male owners and the share is significantly higher for informal firms (81.5 pct.). Although this is in contrast to Cling et al. (2010) who found women to be overrepresented in the informal sector, it may be related to our sample of informal firms representing a more 'competitive' segment of the informal sector, including a majority of male-headed firms that tend to set up business to be their own boss.[14]

Fourth, in Vietnam, the educational level of informal sector workers has been shown to be considerably lower than for other workers, except farmers (Cling et al., 2010). This is in line with Bennett's (2008) general model showing that the formal–informal mix depends on the distribution of ability among entrepreneurs. Moreover, studies have found that well-educated managers are more likely to hire well-educated workers (Rosenbaum et al., 1999), which might in turn have an impact on the wage level. In order to capture these aspects, we include a dummy indicating whether

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[13] Before dropping observations with missing wage information, the average informal firm has 3.7 employees, indicating that smaller firms are more likely not to report wages. As for formal firms, the average size prior to dropping missing wage information is 7.1 employees, which is also below the figure for the final sample (7.5). These figures are substantially higher than those reported in Cling et al. (2010) (2.5 employees for formal firms), yet the latter study also notes that formal household businesses in the manufacturing sector are larger.

[14] Women less frequently have professional premises for their activity, making it harder for them to set up their own business.

the owner has at least secondary school education. Table 2.2 shows that around 48.4 pct. of firm owners have a higher education and as expected the share is significantly higher for formal firms.

Fifth, since the average educational level in the firm has been shown to be positively correlated with overall productivity and wages (Lucas, 1988), we control for the general quality of the workforce by including the share of professional workers. Moreover, formalization may induce firms to hire better quality workers to match the fact that they have to pay higher total compensation. Conversely, higher wages may attract more skilled workers. Given that workers with higher unobserved ability will tend to have co-workers with higher average skills, the inclusion of average worker quality also helps to reduce the bias arising from worker-specific ability. Table 2.2 shows that professionals only make up 0.6 pct. of the workforce, yet as expected the share is higher in formal firms. Sixth, the share of female workers is included since this has been found to have a negative effect on the wages of all workers in the firm (Croson and Gneezy, 2009). In the case of Vietnam, men have been shown to earn about 50 pct. more than women in the informal sector, all else equal (Cling et al., 2010). The summary statistics show that the proportion of females is 30.5 pct. and higher in the formal sector, which in line with the above figures on the gender of the firm owner. Seventh, we include a sector dummy taking the value 1 if the sector is high-tech and 0 otherwise to account for the fact that formal firms may be more technology intensive (Gong and van Soest, 2002) and employ more highly skilled workers, which in turn could affect wages.[15] 13.1 pct. of firms belong to a high-tech sector, and although the share is slightly higher for informal firms, the difference is not statistically significant. Given that we are working only with household firms, the relatively low share of technology-intensive firms is perhaps not surprising.

Eighth, the inclusion of location as a control variable is important in order to account for the fact that the share of the informal sector varies substantially among provinces (Cling et al., 2010). Moreover, Vietnamese provinces are relatively autonomous, an aspect which is also well documented in the Provincial Competitiveness Index (Malesky, 2009). Thus, in order to capture provincial differences, we include 10 indicator variables representing whether the firm is in a given province. Table 2.2 shows that 41.1 pct. of the firms are located in urban areas (HCMC, Hanoi and Hai Phong), and this share is significantly larger for formal firms. Thus, informality is mostly a rural phenomenon, at least in our sample, and we return to this issue in the results section. Finally,

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[15] High-tech sectors are classified as sectors 30–35 according to the 2-digit International Standard Industrial Classification system.

in order to account for institutional differences between the North and the south of Vietnam (see Kim [2008] for justification), we include a dummy taking the value 1 for Northern provinces and 0 for Southern provinces. The number of firms is close to equally distributed along this dimension, yet informal firms are significantly more common in the North, which is in accordance with Cling et al. (2010) who find a higher weight of the formal sector in southern household businesses. This could potentially be related to the North – the epicentre of the Communist revolution – traditionally being perceived as being more hostile to private businesses and more rigid about regulation (Nguyễn et al., 2004). For instance, Kim (2008) finds that in terms of property rights, northerners have a more rigorous approach to following legal regulations, whereas southerners are more casual. Thus, it is plausible that such institutional circumstances may stimulate the development of a larger informal sector in Northern provinces.

2.4   Empirical Strategy and Results

The empirical analysis is divided into two parts. First, we investigate the association between sector choice (informal vs. formal) and wage outcomes, controlling for the various factors described in the previous section, thereby identifying the size of the informal sector wage gap. Second, we try to disentangle both the explained and unexplained components of the wage gap by applying a traditional Blinder–Oaxaca decomposition approach.

Table 2.3 presents ordinary least squares (OLS) estimates from the earnings regression. Column (1) includes only the informality indicator variable; in column (2), we control for firm size and age, while province and sector controls are added in column (3). In column (4), we introduce the additional owner- and firm-level control variables described above. Finally, in column (5), we control for possible informal/formal selection bias, by applying a Heckman selection model procedure based on functional form identification.[16] First, we note a significant formal sector wage gap of 17.3 pct., which is reduced to 10.3 pct. when including owner- and firm-level control variables. This is in line with Nguyễn et al. (2013) who find that informal wage workers earn 11

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[16] Results from the selection equation show that informal firms are significantly more likely *not* to report wages, as is the case for older firms and firms with a higher share of female workers. By contrast, larger firms and firms where the owner has a higher educational level are more likely to report wages. Furthermore, using a two-step Heckman specification identified based on *firm age* (exclusion restriction) reveals an insignificant Mills ratio suggesting that selection bias should not be a major concern.

pct. less than formal wage workers once unobserved heterogeneity is accounted for.[17] Second, the size–wage premium is positively significant which is in line with the general finding that earnings tend to rise with firm size. The formal sector premium remains when size is accounted for, which is in contrast to Badaoui et al. (2010). Firm age is not well determined in any of the specifications in Table 2.3. Third, male owners pay less when controlling for the share of female workers in the firm, and well-educated managers on average pay higher wages, with all controls included. Fourth, as expected, the share of professional workers in the firm is positively correlated with wages, whereas we find a negative association between average basic wages and the share of female workers in the firm. This could indicate that female workers are less productive, or are being discriminated against.

Table 2.3. *Wage determinants – OLS estimates*

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) Heckman
Informality	-0.173***	-0.072*	-0.130***	-0.103***	-0.106***
	(0.040)	(0.039)	(0.041)	(0.039)	(0.039)
Firm size (log employment)		0.296***	0.217***	0.238***	0.244***
		(0.028)	(0.030)	(0.031)	(0.028)
Firm age (log age)		0.008	-0.008	0.011	0.010
		(0.026)	(0.026)	(0.026)	(0.025)
Owner male				-0.070*	-0.069*
				(0.038)	(0.038)
Owner education				0.129***	0.130***
				(0.033)	(0.033)
Share of professional workers				1.007**	1.001**
				(0.505)	(0.500)
Share of female workers				-0.450***	-0.460***
				(0.067)	(0.065)
High-tech sector dummy included	No	No	Yes	Yes	Yes
Province dummies included	No	No	Yes	Yes	Yes
Total observations	1,098	1,098	1,098	1,098	1,098
R-squared	0.02	0.12	0.24	0.28	
Wald test of independent equations					0.29
Wald test of joint significance					466.0

Note: Dependent variable: Annual average (per regular employee) basic wages (logged). Robust standard errors (reported in parenthesis). *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively.

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[17] In Appendix Table 2.A, we show that the informality indicator variable is not well determined in OLS regressions with the wage share (total wage bill as a share of real value added) as the dependent variable. This indicates that rent-sharing contracts are similar for informal and formal firms in our sample of Vietnamese household firms.

In order to examine and disentangle the informal sector wage gap further, we apply the linear Blinder–Oaxaca decomposition method described in Blinder (1973) and Oaxaca (1973).[18] This counterfactual decomposition technique has been widely used to study wage gaps by different groups, for instance gender and race (Oaxaca, 1973; Oaxaca and Ransom 1994). Marcouiller et al. (1997), as referred to in Section 2, also employ a decomposition analysis to examine the informal sector premium in Mexico, El Salvador and Peru, using household data. Our set-up is similar to that of Marcouiller et al. (1997), the main difference being that our unit of analysis is the firm, rather than the individual.

The Blinder–Oaxaca approach essentially distinguishes two different components of the wage gap. The first reflects differences in observable characteristics between formal and informal firms (referred to in what follows as either the 'endowment' or the 'characteristics' effect). The second component captures the variations in the returns to these characteristics between formal and informal firms (the so-called 'coefficients' effect), also known as the unexplained component. Algebraically and asymptotically, the difference in the outcome variable (the logged real raw wage gap) between formal and informal firms (InW_f − InW_i) can be described by the following decomposition into the two components:

$$\overline{\ln W_f} - \overline{\ln W_i} = (\overline{X}_f - \overline{X}_i)'\beta_i + \overline{X}_i'(\beta_f - \beta_i)$$

Where $(\overline{X}_f - \overline{X}_i)'\beta_i$ is the difference between the two sectors in the independent variables, weighted by the coefficients of the informal sector, and $\overline{X}_i'(\beta_f - \beta_i)$ is the unexplained part of the wage gap (the coefficients for each sector), weighted by the average characteristics of the informal firms. That is, the group differences in the predictors are weighted by the coefficients of informal firms to determine the endowments effect (E). In other words, the E component measures the expected change in informal firms mean (wage) outcome, if they had formal firms' predictor levels. Similarly, for the second component (C), the differences in coefficients are weighted by informal firms' predictor levels. That is, the second component measures the expected change in informal firms' mean outcome, if they had formal firms' coefficients.[19] The results of the decomposition may

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[18] For the implementation of the linear Blinder–Oaxaca decomposition, we use the "oaxaca" pre-programmed commands developed for Stata by Jann (2008).

[19] In the threefold decomposition, a third term (the interaction effect) captures the fact that differences in endowments and coefficients may exist simultaneously between the two groups (see Jann [2008] for more detail). We also carried out the decomposition using the threefold approach, yet the interaction effects were insignificant and hence results are not reported.

vary depending on the choice of reference group, and therefore results are reported using both pooled and informal firm coefficients as the reference group.[20]

Table 2.4 documents that the mean basic wage (in logs) is 2.459 million VND for formal firms and 2.285 million VND for informal firms. This yields a wage gap of 0.173 as also found in Table 2.3.[21] The table presents the results dividing the wage gap into (i) a characteristic (explained) and (ii) a coefficient (unexplained) part. The characteristics effect in the first row shows that, dependent on the choice of reference group, differences in characteristics account for 82 pct.–92 pct. of the wage gap and that an adjustment of informal firms' characteristics to that of formal firms would increase the wage level in informal firms by 14.1 pct.–16.9 pct. We therefore conclude that a large part of the informal sector wage gap may be explained by differences between informal and formal firms in the selected observable (owner and firm) characteristics.

Table 2.4. *Blinder-Oaxaca decomposition: aggregate effects*

	(1) BOD	(2) BOD-Heckman	(3) BOD	(4) BOD-Heckman
Characteristics (explained) effect	0.141***	0.141***	0.156***	0.169***
	(0.028)	(0.028)	(0.058)	(0.068)
Coefficients (unexplained) effect	0.032	0.059	0.017	0.030
	(0.039)	(0.049)	(0.056)	(0.073)
Reference Group	Pooled	Pooled	Informal coefficients	Informal Coefficients

Note: Blinder-Oaxaca Decomposition (BOD). In Columns (1) and (3) the mean estimates for the formal and the informal sector are 2.459 (0.020) and 2.285 (0.034), respectively, yielding a predicted difference of 0.173 (0.040). The Heckman adjusted estimates in columns (2) and (4) reveal mean estimates of 2.464 (0.025) and 2.264 (0.057) for the formal and informal sector respectively, yielding a predicted difference of 0.20 (0.063). Robust standard errors reported in parenthesis. *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively.

The detailed Blinder–Oaxaca decomposition is presented in Table 2.5.[22] The reported results are related to the specification in columns (1) and (3) of Table 2.4. Table 2.5 reveals that the strong characteristics effect reflects the effects of some covariates in particular. In fact, differences in firm

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[20] The results when using formal firms as the reference group did not differ significantly from the pooled or informal specification and thus are not reported. The sensitivity of the decomposition to the choice of reference group, commonly known as the index number problem (Oaxaca 1973), has been addressed by a number of authors (Reimers, 1983; Cotton 1988; Neumark 1988). Neumark (1988), for instance, argued that the appropriate decomposition depends on the type of discrimination hypothesized and therefore proposed the pooled (non-discriminatory) model, yet Appleton et al. (1999) and Jann (2008) question the accuracy of this approach. Since our results did not vary significantly with the choice of reference group, we do not address the index number problem further.
[21] As noted in Table 2.4, when adjusting for selection bias using the Heckman procedure in the decomposition method the adjusted wage gap amounts to 20 pct. This discrepancy is attributed to the uncorrected average wage of informal firms being upward biased (2.285 vs. the corrected 2.264). Furthermore, it should be noted that using a Heckman specification identified based on *firm age* (exclusion restriction) results in a slightly higher wage gap estimate.
[22] We are aware of the problems related to normalizing categorical variables in the detailed Blinder–Oaxaca decompositions (Yun, 2008), yet the normalized adjusted estimates (introducing province dummies) did not change the reported results qualitatively.

size and location account for most of the explained part of the outcome (wage) differential. In terms of size, this is not surprising given that formal firms are on average larger and larger firms on average pay higher wages. The importance of the urban characteristic is related partly to the fact that in our dataset, urban areas have a relatively low proportion of informal firms (see Table 2.2), especially in HCMC. However, the urban wage premium is not just a function of the data design, because in Table 2.3 (columns 3 and 4), the wage gap remains even when controlling for location. Moreover, when restricting the sample to formal firms only (half of which are located in rural areas), we find an urban/rural wage gap (results not reported). In other words, formal firms in urban areas have higher average wages than their counterparts in rural areas, and this is *not* due to higher prices since we are using real wages deflated at the province level. One possible explanation for the urban wage premium relates to the efficiency wage argument, according to which firms pay wages above the market-clearing level in order to attract more productive workers. Indeed, in the labour policy sub-index (which includes a measure of labour quality) of the Vietnam Provincial Competitiveness Index (Malesky, 2009), HCMC and Hanoi rank No. 2 and No. 9, respectively.

Table 2.5. *Blinder-Oaxaca decomposition: detailed effects*

	Characteristics effect		Coefficients effect		Characteristics effect		Coefficients effect	
	Effect	SD	Effect	SD	Effect	SD	Effect	SD
Aggregate Effect	0.141***	(0.028)	0.032	(0.039)	0.156**	(0.058)	0.017	(0.056)
Firm size (log emp.)	0.099***	(0.016)	-0.017	(0.101)	0.101***	(0.023)	-0.019	(0.117)
Firm age (log)	-0.002	(0.002)	-0.108	(0.139)	-0.003	(0.003)	-0.107	(0.139)
Owner gender	0.007	(0.006)	-0.169**	(0.082)	-0.016	(0.014)	-0.145**	(0.072)
Owner education	0.005	(0.004)	0.010	(0.034)	0.005	(0.004)	0.011	(0.038)
Share of prof.	0.008*	(0.004)	0.002	(0.003)	0.001	(0.010)	0.009	(0.037)
Share of females	-0.013*	(0.007)	-0.070	(0.046)	-0.008	(0.006)	-0.076	(0.050)
High-Tech Sector	-0.002	(0.002)	-0.015	(0.014)	-0.004	(0.004)	-0.013	(0.012)
Urban	0.084***	(0.013)	-0.008	(0.021)	0.092***	(0.023)	-0.016	(0.040)
North	-0.045	(0.019)	0.058	(0.064)	-0.012	(0.041)	0.025	(0.030)
Constant			0.348*	(0.190)			0.349**	(0.192)
Reference group	Pooled				Informal			

Note: Detailed Blinder-Oaxaca Decomposition with reference to columns 1 and 3 in Table 2.4. Robust standard errors reported in parenthesis. *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively.

As for the other covariates, the share of professional workers and the share of females also provide explanatory contributions to the overall informal sector wage gap, in the pooled specification. The share of professionals (although generally very low) is higher in formal firms, adding to higher average wages in these firms and thus raising the wage gap. Conversely, the share of female workers reduces the gap since they earn less and have a higher share in formal firms. In terms of the remaining variables, differences in firm age, owner gender and education and technology level of

the sector do not play a significant role in explaining the informal sector wage gap. In general, however, and in accordance with earlier work (Larsen et al., 2011), our findings point to the importance of traditional earnings determinants in explaining wage returns among Vietnamese firms. Table 2.6 presents the results when splitting the sample along the following dimensions: location, size and sector.

Table 2.6. *Blinder-Oaxaca Decomposition: aggregate effects, by firm size, location and sector*

		Characteristics effect		Coefficients effect		Characteristics effect		Coefficients effect	
		Effect	Std	Effect	Std	Effect	Std	Effect	Std
Firm size									
	Micro	0.004	(0.038)	0.077	(0.055)	0.043	(0.061)	0.038	(0.069)
	Other	0.069**	(0.033)	0.034	(0.057)	0.057	(0.090)	0.045	(0.092)
Location									
	Urban	0.013	(0.044)	0.063	(0.067)	0.158	(0.110)	-0.082	(0.111)
	Rural	0.057*	(0.032)	0.014	(0.047)	0.051	(0.053)	0.020	(0.058)
	North	0.180***	(0.030)	0.055	(0.045)	0.175***	(0.040)	0.060	(0.048)
	South	0.282***	(0.045)	-0.010	(0.073)	0.356**	(0.136)	-0.084	(0.136)
Sectors									
	Food	0.094	(0.076)	0.097	(0.095)	0.112	(0.199)	0.079	(0.171)
	Wood	0.129*	(0.067)	0.031	(0.093)	0.112	(0.094)	0.048	(0.111)
	Metal	0.183***	(0.044)	0.089	(0.063)	0.209**	(0.074)	0.064	(0.085)
Reference group		Pooled				Informal			

First, in terms of location, the fact that the wage gap is insignificant within urban areas is, as discussed above, related to the design of the data (the low share of urban informal firms in our sample).[23] However, in rural areas where the representation of formal and informal firms is more balanced, the informal wage gap persists, although only at the 10 pct. significance level. When the split is done along the North/South dimension (and controlling for urban areas), the wage gap is highly significant in both parts of the country. Thus, the informal wage differential is clearly not only a location effect. As for firm size, Table 2.6 reveals a significant wage differential among household firms with more than four employees, whereas among the smallest firms, there is no difference. This again confirms the importance of firm size in explaining the overall wage gap. Finally, the sector split shows that there is a significant formal wage premium in the sector for metal products, less so in wood and no wage gap in the food sector.

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[23] In fact, when restricting the dataset to Hanoi only, the wage gap remains significant, but this is based on 93 observations only.

2.5   Conclusion

This paper has examined the informal sector wage gap among Vietnamese manufacturing household firms based on 2009 survey data covering both formal and informal firms. Using the traditional Blinder–Oaxaca decomposition method, we have been able to disentangle the explained and unexplained components of the wage differential. The results show that average wages are between 10 pct.–20 pct. higher (exact estimate depending on analytical approach and specification choice) in formal firms compared with informal ones and that the gap remains when standard earnings determinants are added. The decomposition analysis reveals that the vast majority of the wage gap is attributed to differences in characteristics between firms in the formal and informal sectors. The main contributors to the wage gap are firm size, location and certain workforce characteristics, whereas differences in firm age, owner gender and education and technology level of the sector do not play a significant role in explaining the differential. This domination of firm endowments in explaining the informal sector wage gap is an indication that traditional wage determinants play an important role in explaining wage returns among Vietnamese household firms.

Since we are unable to capture the contribution of individual worker characteristics, the fact that the wage gap remains when firm-level workforce characteristics are included could be an indication that formal firms pay higher wages so as to attract more productive workers (efficiency wages). This is in line with similar work (Bargain and Kwenda, 2009) and also in accordance with Rand and Torm (2012) where we showed that formalization gives rise to a decrease in the share of temporary workers (an increase in the share of workers employed on formal contracts), as well as higher profits and investments. Indeed, formalized firms may be willing to invest more in their workers with a view to further increasing the long-term stability and productivity of the business. For instance, Fajnzylber et al. (2011) show that, in the case of Brazil, a major channel through which formalization leads to improved firm performance is an increase in formally contracted labour. Thus, if the enhanced performance associated with operating formally is linked to worker quality, then policies aimed at improving the general skill level might encourage firms to become formal and at the same time, allow workers to access more gainful employment in the formal sector. In addition, efforts to upgrade labour quality in rural areas, in particular, would serve to narrow the overall urban/rural wage gap. A further finding that emerged from the paper is that, in general, the informal firms in our sample are operating illegally, since the average wage exceeds the threshold income level for being allowed to operate informally under Vietnamese legislation. Although

evading formalization could be a conscious choice of informal firms (based in part on their endowments), it may also be due to firms' ignorance about the requirement to register, combined with deficient enforcement of legislation. In any case, policies directed towards enhancing information about registration procedures and ensuring compliance are called for.

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Appendix

Table 2.A. *Wage share determinants – OLS estimates*

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) Heckman
Informality	-0.002	0.023***	0.010	0.011	0.009
	(0.006)	(0.006)	(0.008)	(0.008)	(0.009)
Firm size (log employment)		0.071***	0.076***	0.081***	0.083***
		(0.005)	(0.005)	(0.005)	(0.008)
Firm age (log age)		0.010**	0.005	0.007	0.006
		(0.005)	(0.005)	(0.005)	(0.005)
Owner gender				0.003	0.004
				(0.007)	(0.007)
Owner education				0.002	0.002
				(0.006)	(0.006)
Share of professional workers				-0.008	-0.010
				(0.102)	(0.102)
Share of female workers				-0.065***	-0.070***
				(0.013)	(0.015)
High-tech sector dummy included	No	No	Yes	Yes	Yes
Province dummies included	No	No	Yes	Yes	Yes
Total observations	1,098	1,098	1,098	1,098	1,098
R-squared	0.00	0.18	0.21	0.24	
Wald test of independent equations					0.25

Note: Dependent variable: Wage share (of real value added). OLS estimates. Robust standard errors (reported in parenthesis) are heteroskedasticity robust. *, **, *** indicate significance at a 10 percent, 5 percent and 1 percent level, respectively.

Chapter 3

The Role of Trade Unions in Vietnam: A Case Study of Small and Medium Enterprises

Abstract

On the basis of matched employer–employee data from 2007 to 2009, this paper examines the union wage gap among small and medium non-state manufacturing enterprises in Vietnam. Controlling for both worker and firm characteristics, the results provide evidence that union members earn higher wages than non-members, and are more likely to receive social benefits. Within unionised firms, a substantial wage premium is revealed for workers employed in Southern firms, a finding which among other factors may be attributed to historical differences between the North and South of Vietnam.

3.1   Introduction and Background

It is widely documented that unionised establishments pay higher wages than otherwise comparable non-union firms, yet with some variation depending among other factors on the competitiveness of the labour market and the degree of centralisation and coordination. The existing trade union literature covers mostly OECD countries, whereas evidence from developing and transition countries remains scarcer, due in great part to limited data availability. However, in many developing countries, the lack of support for workers means that trade unions represent one of the few institutional mechanisms capable of promoting some measure of equity and social justice. For this reason, examining the role and impact of trade unions in a development context is interesting as well as worthwhile from both a research and policy perspective.

In Vietnam, the transition to a market economy has meant a significant change in the institutional setting in which trade unions operate. State-owned enterprises, traditionally the stronghold of unions, have gradually been equitized resulting in a reduction in union members, whereas domestic private companies including small businesses have become increasingly important employers, creating new bases for the establishment of local trade unions (Edwards and Phan, 2008). However, despite the recent increase in union density from around 45 to 50 per cent between 2007 and 2010 (Vietnam General Confederation of Labour [VGCL], 2010), a large number of firms remain non-unionised, and there appears to be little pressure on employers to set up unions, nor any sanction prescribed by the law for failure to comply (Clarke et al., 2007). The paucity of unions has been described as the leading cause of the surge in wildcat strikes during the mid-2000s providing the only option for workers to 'voice' their demands for higher wages and other concerns.

Nevertheless, with the growing focus on Corporate Social Responsibility the pressure on trade unions to live up to their role in terms of monitoring the observance of labour legislation and act in the interests of their members has increased. The negotiation and monitoring of collective agreements provides an important 'test' of the effectiveness of unions in representing their members. The Labour Code mandates that enterprises with more than 10 employees must have legally binding collective agreements including agreed wage and bonus scales. Yet, it is estimated that only 20 per cent of unionised private sector firms have collective agreements, although in Ho Chi Minh City (HCMC), the figure is around 65 per cent (Clarke et al., 2007).

Moreover, although the Trade Union Law (1994) indicates that the enterprise trade union is free to independently represent workers' rights and interests, in practice, a trade union can only be established legally under the umbrella of the Vietnam General Confederation of Labour, which is under the oversight of the Communist Party. This subordination of trade unions to the Party is said to limit their independence and ability to act as a pressure group on government. Further, trade unions are very much left to their own devices, and their performance depends to a large extent on the personality of the union leader who often is part of the firm management. Although trade unions are expected to supervise firms' implementation of minimum wage legislation and are to be consulted during the formulation of wage scales and labour rates, the Trade Union Law does not set out specific requirements for wages to be above the minimum or average wage in a particular industry. Thus, the wage level depends on the bargaining power of the different parties.

It is within this context that this paper examines whether union membership is associated with higher wages and social benefits using matched employer–employee survey data of Vietnamese non-state manufacturing firms from 2007 to 2009. The surveys cover micro, small and medium firms (SMEs), yet the focus here is on small and medium firms, because the establishment of trade unions is mandatory only for enterprises with more than 10 employees. As a share of the total workforce union membership in the non-state sector increased from 26 per cent in 2007 to 31 per cent in 2010 (VGCL, 2010) suggesting that workers are increasingly perceiving union membership to be beneficial. Indeed in a case study of 10 Vietnamese firms, Clarke et al. (2007) find a 5 per cent wage premium in unionised firms, and Edwards and Phan (2008) argue that wages would be lower were it not for the presence of trade unions, yet provide no evidence of this.

One major advantage of using matched employer–employee data is that it allows for disentangling worker and firm heterogeneity by controlling for firm and worker characteristics that could affect both union status and wage outcomes.[1] Moreover, union membership information allows for estimating the individual wage gap within unionised firms only. The results reveal that union membership is associated with higher wages, the magnitude and significance level depending on the specification. However, within unionised firms the wage gap is not well determined, yet union-membership increases the probability of receiving social benefits. Finally, union members employed in Southern firms earn a considerable wage premium vis-à-vis non-union members, and this holds within unionised enterprises. This is an interesting finding that may be attributed to

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[1] Abowd and Kramarz (1999) provide a review of studies using matched employer–employee data

historical differences between the North and South of Vietnam. The following section describes the data followed by section 3 that outlines the methodology and the variables included in the empirical analysis. Section 4 presents the results and section 5 concludes.

3.2   Data

Two quantitative SME surveys, conducted in 2007 and 2009, are used in this paper (see CIEM, 2010).[2] The surveys trace firms over time covering around 2600 enterprises in 10 provinces (HCMC, Hanoi, Hai Phong, Long An, Ha Tay, Quang Nam, Phu Tho, Nghe An, Khanh Hoa and Lam Dong). For reasons of implementation, the surveys were confined to specific districts in each province/city. The sampling scheme of the SME surveys is based on a representative sample of registered household and non-household firms drawn from enterprise census information (General Statistics Office (GSO), 2004 and General Statistics Office, 2008). In both 2007 and 2009, the surveys included a separate employee module consisting of randomly sampled employees from a random sub-sample of firms (stratified by location). In 2007, the employee module covered 582 firms and 1043 employees, and in 2009, the corresponding figures were 577 firms and 1444 employees. As indicated earlier, the establishment of trade unions is mandatory only for enterprises with more than 10 employees, and thus, the analysis focuses on firms that were classified as small or medium sized in both 2007 and 2009. For micro-enterprises, establishing a trade union is not economically viable and as all informal firms fall under the micro category, this analysis considers only formally registered firms.[3] After applying this selection criterion and undertaking a thorough data cleaning including checking consistency of time-invariant variables between the two survey rounds, I was left with an unbalanced panel of 1153 workers: 477 in 2007 and 676 in 2009.[4]

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[2] The World Bank SME Department currently operates with three groups of SMEs: micro, small and medium scale firms. Micro-enterprises have between 1 and 10 employees, small-scale enterprises between 11 and 50 employees, and medium-size enterprises between 51 and 300 employees. These definitions are broadly accepted by the Vietnamese Government (see Government decree no. 90/2001/CP-ND on "Supporting for Development of Small and Medium Enterprises"). In what follows, I apply these definitions.

[3] According to the Decree No. 88/2006/ND-CP of August 29th 2006 on business registration, when a firm has more than 10 employees and/or uses more than one business premise, it may no longer operate as a household firm (formal or informal), and should register as a company under the Enterprise Law (2000).

[4] 22 observations were omitted following an outlier test and 32 were dropped due to missing wage information. In order to rule out selection bias a Heckman selection procedure based on functional form identification was carried out and the results (not reported) reveal no evidence of selection bias along the wage dimension. The results from the selection equation show that younger workers, managers, professional and those working in Southern firms are more likely *not* to report wages, whilst older workers, those hired informally and employees in larger firms are more likely to report wages.

3.3   Empirical Strategy and Summary Statistics

In order to analyse the union-wage relation, I estimate an equation where individual wages depend on both worker attributes and the firm characteristics where the worker is employed. The specification takes the form:

$$\ln Y_{ijt} = \alpha + X_{ijt}\beta + Z_{jt}\gamma + U_{ijt}\delta + \varepsilon_{ijt}$$

where the log of the real individual wage for worker i in firm j at time t ($\ln Y_{ijt}$) depends on: a set of individual characteristics (X_{ijt}), a vector of firm-level covariates for the firm where worker i is employed (Z_{jt}), an indicator for whether the individual is member of a firm-level trade union (U_{ijt}) and a worker specific error term (ε_{ijt}).

As with any analysis of repeated observations over time, there is the possibility of autocorrelation which if not accounted could lead to biased results. In order to address this, the standard errors have been clustered at the firm level thereby allowing for intragroup (within firm) correlation, whilst maintaining the assumption that the observations are independent across firms. Bias may also arise from the fact that given the existence of a firm union, individuals select into union membership if they believe this to be beneficial. This could in turn generate a positive correlation between wages and union membership that is due to reverse causality: it is because wages are higher in these occupations that workers are unionized rather than the other way around. However, in the employee questionnaire when asked about the main benefit of being a union member, less than 10 per cent answered 'better and more stable wages' indicating that workers do not generally select into unions in order to obtain higher wages. Moreover, because the union membership contribution amounts to 2 per cent of the individual wage, low paid workers are not necessarily less likely to become union members than high paid workers. I control for possible union membership/non-membership selection bias, by applying a Heckman selection model procedure based on functional form identification, and the results (not reported) reveal no evidence of sample selection.[5]

Finally, because non-union members who work in non-union firms do not have the option to become union members, any observed wage difference may simply reflect the wage differential between being employed in a union versus a non-union firm, rather than the individual wage gain

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[5] Functional form identification rather than two step identification is applied due to the lack of a suitable instrument. Results are available upon request.

associated with union membership. However, given that not all firms are unionised combined with the fact that not all workers are union members, it is possible to estimate the individual wage premium by restricting the sample to unionized firms. This is what distinguishes the current analysis from country studies where trade union membership is compulsory and compliance is not a concern. Table 3.1 presents the summary statistics of the variables used in the analysis.

First, the outcome variable is the logged monthly equivalent of the real individual basic wage calculated on the basis of the sample median of six working days a week and 8-h days; thus avoiding any bias that may arise if working hours differ between union and non-union members. Table 3.1 shows that real wages have increased from 2007 to 2009. The second outcome is social insurance, modelled as an indicator variable taking the value 1 if the worker receives social insurance and 0 otherwise. More specifically, social insurance is defined as whether the employer provides health insurance for the worker. 53 per cent of workers report receiving social insurance, and the proportion has risen considerably with time. This could be related to the Law on Social Insurance that came into effect in 2007 mandating firms with more than 10 employees to pay social insurance contributions to full-time employees with contracts of more than 3 months.[6] Third, the variable of interest is union membership, taking the value 1 if the worker is member of a union and 0 otherwise.[7] Union membership is 35 per cent and has increased over time, in accordance with the national trend during the same period (VGCL, 2010). Within unionised firms membership is 85 per cent and rising over time. In terms of worker attributes, I control for gender, age and education of the worker as well as job function and hiring method. As for firm characteristics, I further control for firm size, legal status, location, sector, the owners' gender and education, and the share of professional workers and women. The justifications for the selection of these covariates and their summary statistics are as follows. First, given that it is common to find gender wage gaps, in particular in developing countries (Jones, 2001), I incorporate a gender dummy that is equal to 1 if the worker is male. Table 3.1 shows that the gender division is close to equal. Second, I control for age of the worker as a proxy for experience—a key variable in the standard human capital earnings function (Mincer, 1974)[8] and include age squared to allow for a diminishing marginal effect.[9] The

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[6] Note that the wage and social insurance data for the 2007 survey is from end 2006.

[7] In order to minimize the risk of measurement error, I scrutinized observations indicating union membership, but where the corresponding firm did not have a union. In five cases the firm had indicated not having a union, yet several workers in each firm reported being union members, thus these firms were assumed to have unions (this did not alter the results significantly).

[8] The question on years of experience was only added in the 2009 survey, and the measure of tenure suffers from severe measurement error and therefore cannot be used.

average worker age is 34 years. Third, I include a dummy equal to 1 if the individual has at least a high school/college degree and 0 otherwise because according to both human capital and signalling theory (Spence, 1973; Mincer, 1974), the level of education accounts for a large share of the variation in earnings. Moreover, unionized firms may hire better quality workers. The share of workers with a higher education is around 80 per cent.[10]

Table 3.1. *Summary statistics*

	Total		2007		2009	
	Mean	SD	Mean	SD	Mean	SD
Monthly real wage (logged)	6.433	0.435	6.398	0.442	6.458	0.429
Social Insurance	0.529	0.499	0.470	0.500	0.570	0.496
Member of trade union	0.351	0.478	0.304	0.460	0.385	0.487
Member of trade union if firm union=1	0.851	0.357	0.775	0.418	0.900	0.301
Gender (male = 1)	0.524	0.500	0.516	0.500	0.530	0.500
Age	33.71	9.844	34.151	10.382	33.410	9.442
Higher education	0.785	0.411	0.799	0.401	0.776	0.418
Manager	0.140	0.347	0.149	0.356	0.133	0.340
Professional worker	0.169	0.375	0.195	0.397	0.151	0.358
Sales worker	0.108	0.311	0.130	0.337	0.093	0.291
Production worker	0.375	0.484	0.298	0.458	0.430	0.495
Other (office and service workers)	0.208	0.406	0.229	0.420	0.194	0.396
Informal	0.640	0.480	0.539	0.499	0.712	0.453
Firm size (regular full-time employees)	40.386	39.640	38.734	35.686	41.552	42.195
Private firm = 1	0.209	0.409	0.218	0.413	0.203	0.402
Cooperative/Collective/Partnership = 1	0.090	0.287	0.107	0.309	0.078	0.269
Limited liability = 1	0.600	0.490	0.604	0.490	0.598	0.491
Joint stock company = 1	0.101	0.301	0.071	0.258	0.121	0.327
Urban (Urban = 1, Rural = 0)	0.614	0.487	0.635	0.482	0.600	0.490
South (South = 1, North = 0)	0.463	0.499	0.430	0.496	0.487	0.500
Sector low value added	0.325	0.469	0.340	0.474	0.315	0.465
Sector medium value added	0.535	0.500	0.491	0.500	0.567	0.496
Sector high value added	0.140	0.347	0.170	0.376	0.118	0.323
Owner is male	0.610	0.488	0.614	0.487	0.607	0.489
Owner has higher education	0.909	0.288	0.899	0.301	0.916	0.280
Professional share	0.093	0.075	0.097	0.078	0.091	0.072
Female share	0.416	0.235	0.414	0.234	0.418	0.235
Total observations	1,153		477		676	

Note: 1 USD= 16.010 (31/12/2007) and 18.465 (31/12/2009). Real wages deflated using province level deflators (base year = 2005).

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[9] Note that age squared has been divided by 100 in order to avoid obtaining very low coefficients in the analysis.

[10] Controlling for a worker's observed skills, a higher/lower level of co-worker skills implies that the worker has above average/below average *unobserved* skill characteristics, and thus removes some of the potential bias arising from omitted unobserved factors.

Fourth, the different job functions are included as dummy variables on the basis that wages may vary substantially across occupation categories, beyond what is accounted for by education. Managers account for 14 per cent, professional for 17 per cent, sales workers for 11 per cent, production workers for 38 per cent and others (office and service workers) for 21 per cent.[11] All worker types, except production workers, have seen declining shares between 2007 and 2009. Fifth, I include a dummy variable for whether the worker found their job through an informal contact (knowing the owner or someone who works in the firm), as opposed to via a formal contact (advertisement, employment agency, etc.), because this has been shown to be associated with higher individual wages (Larsen et al., 2011). Sixty-four per cent of workers have been hired through an informal contact, and this job finding method has increased over time.

Sixth, in terms of firm size, a general finding is that average earnings tend to rise with firm size (Oi and Idson, 1999; Söderbom et al., 2005). In addition, by controlling for firm size, I am taking account of the fact that the union mark-up may represent some form of compensating wage differential associated with a possibly less salubrious work environment in larger firms. Seventh, because there is substantial variation in wages and the degree of unionisation across ownership types, I incorporate dummies for the different legal categories. In fact, ownership form has been shown to be a critical factor influencing human resource practices including in relation to trade unions (Zhu et al., 2008). Limited liability companies constitute the largest category, followed by private firms, joint stock companies and finally cooperatives/ collectives/partnerships (CCP). Eighth, because prices are likely to differ across urban and rural areas – beyond what is captured by province level deflators, I model location using a dummy taking the value 1 for urban provinces and 0 for rural provinces. Further, in order to account for institutional differences between the North and the South of Vietnam, I include a dummy taking the value 1 for Northern and 0 for Southern provinces.[12] Around 60 per cent of firms are located in urban areas and 46 per cent in the south. Ninth, because wage returns may vary across sectors of production, I include three sector dummies indicating whether the sectors are low, medium or high value added.[13]

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[11] In each firm at least one manager and one production worker were interviewed. The remaining workers were selected randomly.

[12] Kim (2008) provides a captivating discussion of institutional differences between North and South Vietnam. Moreover, Nørlund (1996) argues that unions seem stronger in the South than in the North, yet provides no evidence.

[13] According to the 2-digit ISIC classification system low value added sectors are classified as 15-19 and 37, medium as 20- 29 and high as 30- 36.

Tenth, the gender of the owner has been shown to be important in terms of compensation with female owners generally being more generous in the provision of non-wage benefits (Rand and Tarp, 2011), I therefore include a dummy taking the value 1 if the owner is male and 0 if female. Sixty-one per cent of the firms have male owners. Eleventh, studies have found that well-educated managers are more likely to hire well-educated workers (Rosenbaum et al., 1999), and to capture this, I include a dummy indicating whether the owner has at least high school education. Table 3.1 shows that around 90 per cent of owners have higher education.

Twelfth, because the average educational level in the firm has been shown to be positively correlated with overall productivity and wages (Lucas, 1988), I include the share of professional workers as a proxy for the general quality of the workforce. Moreover, this eliminates the bias that might arise from a positive correlation between union status and worker quality if, as a result of unionisation, firms choose to hire better quality workers so that productivity matches the union-imposed higher wage (Lewis, 1986).[14] Similarly, higher wages may attract more highly qualified workers. Furthermore, given that workers with higher unobserved ability will tend to have co-workers with higher average skills, including a measure for the latter will also help to reduce the bias arising from omitted worker specific ability. Professionals make up around 9 per cent of the workforce.[15] Finally, the share of female workers is included because this has been found to have a negative effect on the wages of all workers in the firm (Croson and Gneezy, 2009). The summary statistics show that the proportion of women is just above 40 per cent.[16]

3.4   Results

Table 3.2 presents the results when the outcome variable is the individual wage, and the variable of interest is union membership. Column 1 shows that when controlling for employee specific attributes, the union wage gap amounts to 13 per cent, yet when the firm-level characteristics are added in columns 2 and 3, the significance drops and the wage premium falls to just above 7 per cent. This is largely in accordance with Clarke et al. (2007), who report a 5 per cent trade union wage premium for Vietnamese workers.

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[14] Pencavel (2005) provides examples where the union wage gap drops substantially once worker skill is controlled for.
[15] None of the other worker categories (managers, sales, office, service and production workers) were significant and their inclusion did not alter the results.
[16] Appendix Table 3.A presents the union membership probit estimations underlying the analysis in section 4. The results show that differences between union and non-union members clearly exist along the following dimensions: firm size, legal category 3 (cooperatives, collectives, partnerships), urban location, high value added sector, owner's education and age of the worker.

As for the individual level controls, there is a substantial gender wage gap with male earnings being between 14 and 18 per cent higher than for women depending on the specification. This corresponds to other Vietnamese studies (Liu, 2004). The age of the worker is also highly significant and has the expected concave effect with a maximum at around 43 years of age.[17] With regard to education, the results show that a worker with education beyond secondary school has a wage that is about 12 per cent higher than a worker with only basic education when all controls are included. Thus, the characteristics of the workers are in line with human capital theory. The different occupation categories all indicate a substantial wage premium compared with production workers, especially for managers and professional workers at close to 50 and 30 per cent, respectively. Having been hired through an informal contact gives a positive wage return of about 12 per cent compared with a formal method, which is in line with Larsen et al. (2011).

In terms of the firm-level control variables, firm size is significantly positive in line with the general finding that larger firms pay higher wages. CCPs pay wages that are more than 20 per cent lower than private firms and workers in urban firms receive wages that are about 14 per cent higher compared with workers in rural areas. Because wages have been deflated at the province level, this gap is not attributed to price differences between rural and urban areas; however, one plausible explanation is that firms in urban areas pay efficiency wages in order to attract more productive workers. This is in line with the Vietnam Provincial Competitiveness Index (Malesky, 2009) according to which HCMC and Hanoi rank no. 2 and no. 9, respectively in the labour policy sub-index which among other components includes a measure of labour quality. As expected, medium and high value added sectors pay higher wages, yet their contribution disappears with the addition of the firm-level workforce characteristics. The female share is significantly negative and indicates that going from 0 per cent to 100 per cent female workers is associated with a wage bill that is 25 per cent lower. Finally, the year dummy shows an increase in individual wages of around 9 per cent from 2007 to 2009.

The aforementioned analysis compares the wages between union members (in union firms) and non-union members (in union and non-union firms). However, non-union members working in non-union firms, and union members in union firms may not be directly comparable, because the former

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[17] Recall that age squared was divided by 100, and thus in order to obtain the correct maximum age I multiply the result obtained from the standard formula for calculating the maximum by 100: $x^* = 100 * |\beta_1 / (2\beta_2)|$.

have not been faced with the choice of becoming union members, unless they purposely chose to work in a non-union firm.

Table 3.2. *Individual wages*

	(1)	(2)	(3)
Union member	0.132***	0.075*	0.073*
	(0.041)	(0.040)	(0.038)
Male	0.180***	0.171***	0.143***
	(0.024)	(0.023)	(0.024)
Age	0.032***	0.034***	0.033***
	(0.009)	(0.008)	(0.008)
Age squared	-0.040***	-0.039***	-0.038***
	(0.012)	(0.011)	(0.011)
Higher education	0.151***	0.128***	0.119***
	(0.035)	(0.033)	(0.034)
Manager	0.501***	0.461***	0.457***
	(0.042)	(0.040)	(0.040)
Professional	0.303***	0.284***	0.270***
	(0.030)	(0.029)	(0.029)
Sales	0.209***	0.179***	0.172***
	(0.043)	(0.041)	(0.040)
Other	0.107***	0.064**	0.048*
	(0.028)	(0.027)	(0.026)
Informal	0.106***	0.117***	0.119***
	(0.032)	(0.030)	(0.030)
Firm size		0.072***	0.079***
		(0.025)	(0.024)
CCP		-0.210**	-0.216**
		(0.089)	(0.093)
Limited liability		-0.009	-0.014
		(0.046)	(0.045)
Joint stock company		0.050	0.030
		(0.068)	(0.068)
Urban		0.143***	0.138***
		(0.037)	(0.035)
South		0.032	0.048
		(0.041)	(0.038)
Medium value added sector		0.072*	0.024
		(0.041)	(0.052)
High value added sector		0.102*	0.022
		(0.057)	(0.073)
Owner male			-0.026
			(0.035)
Owner has higher education			0.083
			(0.052)
Professional worker share			0.227
			(0.257)
Female worker share			-0.252**
			(0.104)
Year dummy	0.101***	0.093***	0.091***
	(0.033)	(0.031)	(0.031)
Total observations	1,153	1,153	1,153
R-squared	0.12	0.15	0.39

Note: Dependent variable: Individual wage. OLS. Robust standard errors clustered at the firm level (in parenthesis). *** p<0.01, ** p<0.05, * p<0.1

Thus, the results do not reveal whether the wage differential is due to the gap between workers in union and non-union firms, or the gap between union and non-union workers within unionised firms. However, by restricting the sample to unionised firms I am able to test this.[18] Table 3.B in the Appendix shows that within unionised firms, there is no significant wage gain from being a union member. This could be due to the presence of collective agreements, yet as seen earlier, the share of firms with such agreements remains relatively low.

If non-union members, within unionised firms, are able to obtain wages that are not significantly different from union members then why do most workers decide to become union members? Explanations of this union free-rider puzzle have included the exclusive provision to union members of private goods such as on-the-job-training (Acemoglu et al., 2001), legal and pensions advice (Booth and Chatterji, 1995) and unemployment benefits (Boeri et al., 2001). In both the 2007 and the 2009 surveys, 50 per cent of workers replied that the main benefit of trade union membership is that 'it secures that the firm pays social benefits'. In order to examine this in more detail, Table 3.3 presents the probit estimates where social insurance is the dependent variable.

The results show that being a union member is highly positively correlated with receiving social benefits when controlling for both employee and firm characteristics. In terms of the other variables, more highly educated workers, managers, professionals and others all have a higher probability of receiving benefits. Moreover, individuals working in larger and Southern firms, limited liability and joint stock companies are more likely to receive benefits, as are workers in firms with a higher share of professionals. I again restrict the sample to unionised firms only, and the results presented in Table 3.4 show that being a union member remains significantly positively associated with receiving social security, when all controls are included.

Prior to the reunification of Vietnam Northern trade unions were characterised by rather close links with the Party, whereas Southern trade unions adopted a more adversary attitude towards the government and as such were more independent (Edwards and Phan, 2008). Following reunification in 1975, the system prevalent in the North was officially adopted in the South, yet some of the ideological and institutional differences between the two parts of the country continue to permeate through today (for further detail see Kim, 2008).

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[18]An alternative would be to add the variable for whether the firm has a union to the individual level specification. However, this leads to multicollinearity due to the high correlation between firm union and union member (0.878).

Table 3.3. *Social benefits*

	(1)	(2)	(3)
Union member	0.527***	0.570***	0.575***
	(0.047)	(0.051)	(0.050)
Male	-0.002	-0.010	0.008
	(0.036)	(0.038)	(0.039)
Age	0.009	0.014	0.016
	(0.013)	(0.014)	(0.014)
Age squared	-0.014	-0.016	-0.018
	(0.016)	(0.017)	(0.017)
Higher education	0.079	0.120**	0.092*
	(0.049)	(0.053)	(0.055)
Manager	0.152***	0.120**	0.119**
	(0.048)	(0.056)	(0.057)
Professional	0.114***	0.125***	0.113***
	(0.036)	(0.043)	(0.044)
Sales	0.062	0.039	0.031
	(0.043)	(0.047)	(0.048)
Other	0.089**	0.051	0.045
	(0.037)	(0.040)	(0.040)
Informal	-0.002	0.080	0.081
	(0.053)	(0.054)	(0.054)
Firm size		0.086**	0.089*
		(0.044)	(0.047)
CCP		-0.076	-0.102
		(0.170)	(0.169)
Limited liability		0.328***	0.303***
		(0.075)	(0.078)
Joint stock company		0.302***	0.299***
		(0.092)	(0.091)
Urban		-0.031	-0.041
		(0.062)	(0.061)
South		0.384***	0.389***
		(0.065)	(0.066)
Medium value added sector		0.027	0.061
		(0.065)	(0.073)
High value added sector		0.112	0.144
		(0.092)	(0.100)
Owner male			-0.015
			(0.063)
Owner has higher education			0.063
			(0.111)
Professional worker share			0.900**
			(0.443)
Female worker share			0.192
			(0.159)
Total observations	1,153	1,153	1,153
Pseudo R-squared	0.22	0.34	0.36

Note: Dependent variable: Employee receives social benefits. Probit estimates, marginal effects. Year dummy included. Robust standard errors clustered at the firm level (in parenthesis). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3.4. *Social benefits within unionized firms*

	(1)	(2)	(3)
Union member	0.259***	0.331***	0.356***
	(0.091)	(0.097)	(0.097)
Employee characteristics	Yes	Yes	Yes
Firm characteristics	No	Yes	Yes
Workforce characteristics	No	No	Yes
Total observations	476	476	476
Pseudo R-squared	0.14	0.29	0.32

Note: Dependent variable: Employee receives social benefits. Probit estimates, marginal effects. Robust standard errors clustered at the firm level (in parenthesis). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Further, Zhu et al. (2008) find that firms in Hanoi remain more oriented towards traditional (socialist) personnel practices including government wage scales and unions' involvement as government agents, whereas firms in HCMC have a higher rate of adoption of modern human resource management. Thus, given the historical and institutional context combined with the higher concentration of collective agreements in HCMC a North–South split may reveal varying results with regard to the union wage gap. Table 3.5 shows the union membership wage association when the sample is split into Northern and Southern provinces. Columns B1 and B2 show, that union members in Southern firms receive a substantial wage premium when both employee and firm characteristics are included. Since urban location is controlled for, this is not merely an HCMC effect. Moreover, as shown in column B3, the union wage association holds when the sample is restricted to unionised firms only. By contrast, in Northern provinces, the union wage association is not well determined. Thus, the extent to which union membership is associated with a compensation gain seems to be in great part a function of firm location, most probably related to the historical and institutional factors outlined earlier.

Table 3.5. *Individual wages by location*

	(A1)	(A2)	(A3)	(B1)	(B2)	(B3)
	North	North	North	South	South	South
Union member	0.067	0.023	-0.122	0.195***	0.141***	0.219**
	(0.048)	(0.049)	(0.094)	(0.068)	(0.054)	(0.085)
Employee characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Firm characteristics	No	Yes	Yes	No	Yes	Yes
Firm has a union	No	No	Yes	No	No	Yes
Total observations	619	619	243	534	534	233
R-squared	0.321	0.379	0.451	0.335	0.478	0.658

Note: Dependent variable: Log real individual wages. OLS. Robust standard errors clustered at the firm level (in parenthesis). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

In Vietnam, it is more common for the union head to be a manager or a human resource staff member, rather than a senior worker. When splitting the union variable into the different union head categories, I find that the union wage gap is driven solely by the case where the head is a manager, whereas wages in firms that have a senior worker as head are not significantly higher than in non-union firms (results not reported). This may be related to managers having the power to exert pressure on the central authorities who are in charge of setting the wage level.

3.5   Conclusion

This paper has examined the union wage differential among Vietnamese small and medium manufacturing enterprises using matched employer–employee survey data from 2007 to 2009. Vietnam provides an interesting case study because of the transitional environment in which unions operate, and the fact that union membership is on the rise, contrary to in many developed countries. The results show that union membership is associated with higher individual wages when both firm and employee characteristics are controlled for. When restricting the analysis to unionised firms, the wage premium disappears, except among workers employed in Southern firms—a finding which presumably is related to historical differences between the North and South of the country. Moreover, within unionized firms, union membership is strongly associated with receiving social benefits possibly providing an explanation for why workers choose to become union members. Although this is a positive finding in terms of the effectiveness of unions in protecting the rights of their members it should not be the responsibility of unions to ensure that firms comply with regulations. Unionised or not, firms that are formally registered are mandated by the Law on Social Insurance to contribute towards social security for regular workers. Thus, an important policy implication arising from this study is the need to improve the enforcement of regulations, while at the same time enhancing workers' awareness of their rights. Furthermore, given that a large number of firms remain non-unionised, also along this dimension, there is a need for enhanced enforcement.

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Appendix

Table 3.A. *Union membership determinants*

Male	-0.013
	(0.031)
Age	0.030**
	(0.013)
Age squared	-0.030*
	(0.016)
Higher education	0.036
	(0.045)
Manager	-0.019
	(0.043)
Professional	0.047
	(0.039)
Sales	0.051
	(0.045)
Other	0.013
	(0.040)
Informal	0.028
	(0.040)
Firm size	0.332***
	(0.045)
CCP	0.398***
	(0.148)
Limited liability	0.023
	(0.098)
Joint stock company	-0.089
	(0.116)
Urban	0.216***
	(0.065)
South	0.074
	(0.066)
Sector medium value added	-0.075
	(0.081)
Sector high value added	-0.182**
	(0.079)
Owner is male	0.028
	(0.058)
Owner has higher education	0.185***
	(0.072)
Professional share	-0.291
	(0.342)
Female share	0.025
	(0.166)
Year dummy	0.105**
	(0.050)
Total observations	1,153
Pseudo R-squared	0.33

Note: Dependent variable: worker is union member. Probit estimates, marginal effects. Robust standard errors clustered at the firm level (reported in parenthesis). *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 3.B. *Individual wages within unionised firms*

	(1)	(2)	(3)
Union member	0.065	0.058	0.059
	(0.076)	(0.072)	(0.072)
Employee characteristics	Yes	Yes	Yes
Firm characteristics	No	Yes	Yes
Workforce shares	No	No	Yes
Total observations	476	476	476
R-squared	0.34	0.44	0.44

Note: Dependent variable: Log real individual wages. OLS. Robust standard errors clustered at the firm level (in parenthesis). *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Chapter 4

Do Recruitment Ties Affect Wages?
An Analysis using Matched Employer–Employee Data from Vietnam

Abstract

This paper examines the extent to which recruitment ties affect individual wage outcomes in small and medium scale manufacturing firms. Based on a unique matched employer–employee dataset from Vietnam the authors find that there is a significant positive wage premium associated with obtaining a job through an informal contact, when controlling for standard determinants of wage compensation. Moreover, they show that the mechanism through which informal contacts affect wages depends on the type of recruitment tie used. The findings are robust across location, firm size categories, and different worker types.

4.1   Introduction

Despite the vast amount of literature on the topic, the question of what determines wages remains one of the most researched topics by labour economists. The human capital model (Mincer, 1974), according to which earnings reflect skill differentials, has generally dominated the interpretation of the earnings function in both developed and developing countries.[1] However, studies based on matched employer–employee data (Abowd and Kramarz, 1999), have shown that wage-differentials can seldom be explained solely through the human capital framework, revealing the existence of uncompetitive labour markets consistent with efficiency wage models. Based on a unique, matched employer–employee dataset from Vietnam, this paper examines wage determinants in small and medium enterprises (SMEs), and focuses on how the type of recruitment method affects wage outcomes for the individual worker. We distinguish between formal and informal hiring methods, with the former representing employment agencies, advertisements or door to door visits, and the latter representing family relations or friends working in the same firm. Furthermore, we define informal contacts as *recruitment ties* and identify two types of ties. A *manager tie* is an informal contact between a manager and an employee whereas a *worker tie* is an informal contact between two employees. More specifically, the purpose of the paper is twofold: (1) to investigate whether using either a manager tie or a worker tie in obtaining a job is positively associated with higher wages compared with using more formal job finding methods; (2) the mechanism through which recruitment ties affect wages.

Our results show that traditional wage determinants such as education, experience, gender, etc., are important in Vietnam, and that informal contacts play a central role in shaping wage outcomes in SMEs. Moreover, the mechanism through which contacts affect wages depends on the type of tie used. Workers hired through a manager tie are more likely to be hired into higher wage positions (occupation effect), but given occupation choice there is no significant wage differential as compared with individuals recruited through formal channels. By contrast, worker ties do not affect the occupation of recruited individuals; however "worker tie" employees will receive a higher wage within the same occupational category.

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[1] For a survey of the literature on the relationship between education and earnings, see Card (1999).

4.2 Literature Review

Granovetter (1973) showed that acquaintances (weak ties) provide more valuable and detailed information than close friends or family (strong ties), and thus are more important in helping individuals find employment. Following Granovetter's seminal paper, a great amount of work has been done towards validating the significance of *weak ties* as an important job finding method.[2] In terms of the relationship between informal contacts and wages, findings are mixed and vary along individual, demographic and relational dimensions. For instance, studies have shown that the wage effect of weak ties and work-related contacts diminishes when controls are added for measures of worker productivity such as education (Bridges and Villemez, 1986; Marsden and Hurlbert, 1988). Others including Wegener (1991) and Rosenbaum et al. (1999) find that weak ties have a positive effect on income, but only for high status individuals. By contrast, for low status individuals, weak ties do not provide better information than strong ties, and therefore using the former to obtain a job does not result in higher wages. Along the same lines, Elliot (1999) studies the use of networks among residents in high and low poverty neighbourhoods and finds that the use of informal contacts by less educated workers leads to *lower* wages. Thus, similar job searching methods may have different effects on earnings depending on the job-seeker's socio-economic status.

In terms of the characteristics of the informal contact, Montgomery (1991) argues that workers who possess social ties to others in high-paying jobs tend to have higher wages than those who are less well connected. Similarly, Loury (2006) distinguishes between high and low-wage offer contacts, and shows that the former reduce uncertainty and lead, in turn, to a *better match* resulting in higher wages. Oppositely, if the contact acts as a *last resort* (low-wage offer), this has a negative effect on wages. This difference could explain why some studies report a positive relation between informal contacts and earnings while others capture a negative correlation.

The ambiguous wage effect findings have also been attributed to a lack of attention to the individual's entire network structure, which could result in an underestimation of the weak tie effect on income. For instance, Montgomery (1992) and Tassier (2006) both show that those with a larger proportion of weak ties in their social network receive a larger amount of non-redundant information, which in turn has a positive effect on income through increasing their reservation wage. The role of information in determining wages may be particularly important in developing

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[2] Ioannides and Loury (2004) provide a comprehensive review of the literature on the use of social networks in finding employment.

countries where formal channels for the exchange of labour market information are often less developed. For instance, Murphy and Strobl (2008) find that in the Case of Trinidad and Tobago, 22 pct. of workers earn less than the maximum wage available (given their characteristics) because of the lack of information. Moreover, using the example of China, Giles et al. (2006) find that in transition countries where job search options remain limited, the structure of social networks is particularly important.

One of the few studies, at least to our knowledge, using matched employer–employee data to analyse the labour market effects of networks is Hellerstein et al. (2008). They find that networks play an important role in the hiring process since they help workers gain access to specific employers, rather than work opportunities more generally in a given industry. The paper, however, does not examine the impact on wages, which is the focus of this paper.[3]

4.3   Data

The data used in the analysis comes from a SME survey in Vietnam conducted during 2007.[4] The survey covered 2492 enterprises in 10 provinces: Ho Chi Minh City, Hanoi, Hai Phong, Long An, Ha Tay, Quang Nam, Phu Tho, Nghe An, Khanh Hoa, and Lam Dong. In all areas covered by the survey, the sample was stratified by ownership form to ensure that all types of non-state enterprises, including both officially registered (with a business registration licence) household, private, cooperative, limited liability, and joint stock enterprises and non-official household firms were represented. For reasons of implementation, the survey was confined to specific areas in each province/city. Subsequently, a stratified random sample was drawn from a consolidated list of enterprises.[5]

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[3] Several of the findings highlighted in this section are captured in the model developed by Calvó-Armengol and Jackson (2007), which shows that the effect of social ties depend on (i) the workers' position in the social network, (ii) how many social ties they have, and (iii) how well-employed those social ties are.

[4] The World Bank SME Department currently operates with three groups of SMEs: micro, small, and medium scale firms. Micro-enterprises have between one and 10 employees, smallscale enterprises between 11 and 50 employees, and medium-size enterprises between 51 and 300 employees. These definitions are broadly accepted by the Vietnamese Government (see Government decree 90/2001/CP-ND on "Supporting the Development of Small and Medium Enterprises"). In what follows, we apply these definitions.

[5] Reliable population statistics on household firms do not exist for 2007.Weights for registered household (HH) firms could be obtained using the Establishment Census from 2002 (GSO, 2004). However, the Establishment Census covers only registered individual household businesses, which have a Business Licence issued by a District Business Register Office. The nonregistered (informal) household firms in our sample do have not such a licence, and are therefore not covered in official Census statistics. Therefore, we find it most appropriate to report un-weighted estimates in the analysis. A sample selection bias may thus be present in our total dataset as we cannot be sure that the numbers of such

Additional details on the sampling and implementation strategy is provided in Rand et al. (2008). The 2007 survey covers both enterprise and employee specific characteristics, the latter from a separate employee module. Thus, the current study is based on a unique matched employer–employee dataset, which allows for more in-depth analysis of worker- and firm-specific effects on outcomes such as wages. The employee module was carried out in a sub-sample of 582 firms covering all ten provinces, different firm size categories, legal ownership status and sectors so as to accurately represent the firm population. In total, 1043 workers completed the employee module which included information on personal characteristics, job features, earnings, and other non-wage benefits.[6] The workers interviewed represented six different occupation categories (managers, professionals, office workers, sales workers, service workers, and production workers).

The enterprise survey is composed of two parts: (1) a main questionnaire including 150 questions on enterprise characteristics and practices within the survey year and (2) economic accounts for the two previous years.[7] After dropping observations with missing information on our variables of interest, we end up with a final sample of 753 employees representing 426 enterprises.[8] Summary statistics for employee and firm characteristics are represented in Table 4.1, Panel A and B respectively. Panel C shows how the recruitment method varies with occupation.

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household firms are drawn proportionally to the number at the province level and the different types of enterprises in the country.

[6] The 1043 workers represent approximately 10 pct. of the regular full time labour force in the 582 firms.

[7] For the 2007 survey, the corresponding economic accounts data is for end-year 2006 (and 2005) and since we use variables from both datasets this time gap could potentially cause problems for the analysis. However, for the wage analysis neither of the two variables from the economic accounts data provide major reason for concern since *other labour costs* is rather constant over time and *number of fulltime employees* has been lagged by one period (to 2005) so as to avoid endogeneity. We note, however, that using a lagged variable might give rise to the usual problems with recall data as firms are asked in 2007 about the number of employees in 2005 and in order to address this we check for large discrepancies between the number of employees reported in 2005 and 2006 and drop the few firms with large outliers. Moreover, we check for consistency between economic accounts data from 2006 and main questionnaire information from end-year 2006 and exclude outliers from the analysis. The wage data from the employee survey was converted into monthly equivalent and deflated with regional consumer price indices. We "cleaned" the wage data according to the wage ranges reported in Lee and Eyraud (2008). Further detail on this procedure including documentation on the dropped observations can be obtained upon request.

[8] This may be considered to be a relatively large amount of observations being dropped as a result of missing and odd answers. However, we do not find any systematic drop-out along the dimensions that are most relevant in the sampling procedure: firm size, location, legal ownership form, and sector. Out of the 290 worker observations that were dropped 185 were due to missing wage information, and 45 of these were managers. If this information is missing in a non-random way, for instance if managers are reluctant to disclose wage information, this could lead to biased results. In order to rule out selection bias we carried out a Heckman selection analysis. Selection bias could also arise as a result of missing information on recruitment method, if for instance managers with higher wages have a tendency to not report recruitment ties this would underestimate our reported results. However, only one observation has missing information on recruitment method (and on the wage) and this is a production worker. Results are available upon request.

Panel A of Table 4.1 shows that the average monthly wage across our sample of 753 workers is 1,361,000 VND (Vietnamese Dong) per month, which was equivalent to about US$85.00 in 2007.[9] In terms of education, 20 pct. of the workers have a university degree and 24 pct. have some kind of technical education while less than 2 pct. have no education, and thus in general the educational level is high. The average period of tenure is just over 5 years and the average worker age is around 33. Men make up just over 60 pct. of the employee sample and in terms of the occupation categories 10 pct. are managers while just over 50 pct. are production workers.[10] Finally, we note that 34 pct. of the workers have been recruited through a manager tie, whereas 24 pct. have been recruited through a worker tie, thus more than half of the workers in the sample have been recruited through an informal hiring mechanism. This is line with other developing country studies. For instance Serneels (2007) finds that among young Ethiopian men 40 pct. of job searches happen through social networks.[11]

The first three columns of Panel B in Table 4.1 show the distribution of the key firm characteristics for the 753 workers in the sample on which our wage analysis is based, while the last three columns show the distribution across the 426 firms. We see that employees have typically been sampled from larger firms with the average number of fulltime employees being 25 in the employee sample compared with 15 in the firm sample. Moreover, with regard to legal status, 38 pct. of employees are working in households, while this category represents 60 pct. of the firms.[12] The proportion of professional workers is higher in the employee sample than in the firm sample, indicating that employees have been sampled mostly from firms with a more highly educated workforce. This may explain the higher share of workers with a university degree in the sample (Panel A Table 4.1). Female workers represent 33 pct. of the total workforce in the firms, and the share is slightly higher in the employee sample.[13] At the firm level, the average expenditure on other labour costs is 25,000 VND per month, which is lower than among the employees (45,000 VND per month) indicating that employees have been sampled primarily from firms with higher non-wage labour costs. These

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[9] US$1.00 = 16,000 VND (31/12/2007).

[10] Managers are underrepresented compared to in the full firm sample (this is also the case prior to dropping managers with no wage information), which could be related to managers being reluctant to disclose wage information and therefore choosing not to participate in the survey. Since self-selection could lead to biased estimates, we control for this using Heckman selection analysis and find no evidence of selection bias. Results are available upon request.

[11] We also included a dummy for whether the worker is member of a trade union or not, yet this variable did not provide additional explanatory power and therefore it was omitted from the analysis.

[12] In the analysis we do not include legal status of the firm as an explanatory variable, as legal structure and worker composition (share of professional workers) are highly (negatively) correlated.

[13] We also added the casual worker share and the share of unpaid workers; however the inclusion of these variables did not alter the results, and thus were left out of the analysis.

figures are substantially below the 15 pct. (of the wage) social security payment that the employer is mandated to contribute by Law (Article 149 of the Labour Code).[14] This, however, is not surprising given that a considerable number of household firms are not officially registered, and thus are not obliged to contribute to social security for their employees. Finally, 36 pct. of firms use personal contacts as the most important hiring method which corresponds well with the fact that 34 pct. of workers (Panel A Table 4.1) were hired through a manager tie.

4.4   Empirical Strategy

Following the empirical strategy of Troske (1999), we set up an earnings equation in which wages depend on both worker characteristics and the firm characteristics of the individual worker's employer. The function is specified as:

$$\ln w_i = \alpha + X_i \beta_i + Z_i \gamma + T_i \delta + u_i$$

where $\ln w_i$ is the log of real wages of worker i, X_i is a vector of worker i's characteristics, Z_i is a vector of characteristics for the firm where worker i is employed, T_i is a vector of the recruitment tie of worker i and u_i is a worker-specific error term. In terms of the vector of worker characteristics we first include education, since according to both human capital (Mincer, 1974) and signalling theory (Spence, 1973) the level of education accounts for a large share of the variation in earnings. Moreover, as mentioned earlier, previous studies (Bridges and Villemez, 1986; Marsden and Hurlbert, 1988) have found that the wage effect of ties disappear once education is controlled for and thus the inclusion of education is particular important for our purpose. Second, we control for experience as this is also a key variable in the standard human capital earnings function (Mincer, 1974). Since our dataset does not contain sufficient data on years of previous employment, experience is measured by worker age and tenure and for both of these variables we include their squares to allow for a diminishing marginal effect. Third, given that it is common to find gender wage gaps, in particular in developing countries (Jones, 2001), we incorporate a gender dummy. Finally, since we would like to test whether the tie effect on wages varies by job function, we add dummies representing the different occupation categories (manager, professional worker, office worker, sales worker, service worker, and production worker). In addition, we include a set of occupation–recruitment tie interaction terms in selected specifications.

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[14] For a comprehensive review of the Labour Code, see Nguyễn et al. (2006).

Table 4.1. *Employee and firm characteristics*

Panel A: Employee characteristics

	Mean	Median	SD
Monthly real wage (1.000 VND)	1,361	1,204	633.0
Education			
No education = 1	0.015	0	0.120
Primary school = 1	0.076	0	0.265
Secondary school = 1	0.268	0	0.443
High school = 1	0.201	0	0.401
Technical certificate/Elementary worker = 1	0.069	0	0.254
Technical worker without certificate = 1	0.041	0	0.199
Technical worker/professional secondary = 1	0.129	0	0.335
University = 1	0.202	0	0.402
Years in firm	5.3	4	5.1
Worker age	33.2	31	10.3
Gender (male = 1)	0.606	1	0.489
Occupation			
Manager = 1	0.101	0	0.301
Professional worker = 1	0.131	0	0.338
Office worker = 1	0.100	0	0.300
Sales worker = 1	0.090	0	0.287
Service worker = 1	0.057	0	0.232
Production worker = 1	0.521	1	0.500
Recruitment ties:			
Manager tie = 1	0.339	0	0.474
Worker tie = 1	0.235	0	0.424
Total observations		753	

Panel B: Firm characteristics

	Employees			Firms		
	Mean	Median	SD	Mean	Median	SD
Fulltime employment in 2005	24.6	13	28.6	15.4	7	21.4
Legal ownership: Household = 1	0.381	0	0.486	0.603	0	0.490
Share of professionals (RWF)	0.064	0.033	0.079	0.035	0	0.067
Share of females (TWF)	0.373	0.333	0.255	0.331	0.299	0.270
Real average monthly other labour costs (1.000 VND)	45	0	123	25	0	82
Recruitment via personal contacts	0.316	0	0.465	0.357	0	0.480
Total observations		753			426	

Panel C: Recruitment method (pct.)

	Manager tie = 1	Worker tie = 1	Formal channels = 1
Full sample	33.9	23.5	42.6
Occupation:			
Manager	51.3	10.5	38.2
Professional worker	26.3	23.2	50.5
Office worker	29.3	26.7	44.0
Sales worker	41.2	19.1	39.7
Service worker	23.3	25.6	51.1
Production worker	33.2	26.0	40.8

Note: 1 USD = 16,000 VND (31/12/2007). Real wages and other labour costs are deflated using regional deflators. RWF indicates regular work force and TWF indicates total work force.

In terms of the vector of firm variables in our earnings equation, we include: (1) size (represented by the log of the number of full-time employee), (2) sectors of production (defined at the ISIC 2-digit level) and (3) location (province dummies). In addition, we incorporate the share of professional workers in the firm based on the idea that the average educational level in the firm is likely to be positively correlated with overall productivity and wages (Lucas, 1988). We also control for the share of female workers in the enterprise since this has been shown to have a negative effect on the wages of all workers in the firm (Croson and Gneezy, 2009). Furthermore, since nonwage benefits constitute an important part of the total compensation package in Vietnam (Quang, 2008) we incorporate the log of average other labour costs (social and health insurance, training and recruitment expenses).

4.5   Results

4.5.1 Employee Characteristics

Table 4.2 presents ordinary least squares (OLS) estimates of the wage regression based exclusively on employee characteristics. Column (1) represents the baseline earnings regression including the usual wage determinants (education, experience, tenure, age, etc.). In column (2) we add recruitment ties – our main variable of interest, and in column (3) we control for different occupation categories. Finally, in column (4) we include interaction terms between the recruitment ties and the different occupation categories. First, we examine the baseline results in column (1). In terms of the key human capital variables we see that all of the education levels are significant at a 1 pct. level. Since *university* is the reference category the negative coefficients on the education variables is an indication that higher levels of education are associated with higher wages, which is in line with both human capital and signalling theory (Mincer, 1974; Spence, 1973). In terms of the other human capital variables, tenure and age are both highly significant and have the expected concave effect with a maximum at 50 years of age and 11 years of tenure. The former is in accordance with other developing country studies (Fafchamps and Söderbom, 2006), while the latter is somewhat lower (Serneels, 2008).

The results also reveal the existence of a significant gender wage gap with male earnings being about 16 pct. higher than for females. This is a common finding in earnings analysis (Jones, 2001) and corresponds to Liu (2004). The latter study argues that in Vietnam, the gender wage gap is

largely due to discrimination, whereas other studies have shown that the wage gap reflects a genuine productivity gap (Hægeland and Klette, 1999).

In column (2) we add the tie variables to the baseline earnings regression. This does not alter the results significantly in terms of the employee characteristics described above. In column (3) we add the occupation categories and find a highly significant and positive wage premium for managers, professional, office and sales workers as compared to production workers. The premium is especially notable for managers who receive a 48 pct. higher wage than production workers, *ceteris paribus*. As expected, the inclusion of occupation categories reduces the education coefficients given the strong positive correlation between these two variables. We comment on the recruitment tie variables separately following the section on firm characteristics below.

4.5.2 Firm Characteristics

Table 4.3 presents OLS estimates from the earnings regression when key firm characteristics are included. Column (1) includes only firm characteristics; in column (2) we add the employee characteristics from Table 4.2 (column 1) while recruitment ties and occupation categories are added in columns (3) and (4) respectively. In column (5), interaction terms between the recruitment ties and the occupation categories are included. First, we note that the size-wage premium is positively significant which is in line with the general finding that earnings tend to rise with firm size (Oi and Idson, 1999; Söderbom et al., 2005).[15] Similarly, the share of professional workers in the firm is positively correlated with wages as expected, whereas the share of female workers has a negative association. The latter could either be an indication that female workers are less productive or that women are employed in less productive enterprises. Moreover, the positive correlation between other labour costs and wages is consistent with the fact that social security contributions are calculated as a percentage of the wage.[16] The results in column (2) show that the firm variable coefficients change when we include employee characteristics. First, there is a substantial reduction in the firm size–wage effect which is consistent with the hypothesis that firm size is positively correlated with worker ability (Abowd and Kramarz, 1999; Troske, 1999). Once we control for the

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[15] We have lagged the size variable in order to avoid endogeneity, yet using the contemporaneous firm size does not alter the qualitative results.

[16] We note that excluding other labour costs from the regression or replacing it with either: (1) a dummy for whether the firm pays health insurance, (2) a dummy for whether the firm pays social insurance or (3) a dummy for whether the firm pays social benefits in general does not alter the qualitative results.

education of the worker, the firm size thus has a minor effect on wages. Similarly, we also note a reduction in the significance of the share of professionals.[17]

Table 4.2. *Wage regressions with employee characteristics*

	(1)	(2)	(3)	(4)
No education = 1	-0.762***	-0.771***	-0.607***	-0.625***
	(0.081)	(0.084)	(0.113)	(0.119)
Primary school = 1	-0.578***	-0.584***	-0.346***	-0.357***
	(0.062)	(0.061)	(0.082)	(0.084)
Secondary school = 1	-0.489***	-0.496***	-0.284***	-0.292***
	(0.043)	(0.042)	(0.067)	(0.069)
High school = 1	-0.410***	-0.422***	-0.249***	-0.255***
	(0.045)	(0.046)	(0.067)	(0.069)
Technical certificate/Elementary worker = 1	-0.322***	-0.325***	-0.137*	-0.148*
	(0.057)	(0.056)	(0.078)	(0.081)
Technical worker without certificate = 1	-0.250***	-0.260***	-0.142*	-0.141*
	(0.084)	(0.080)	(0.083)	(0.083)
Technical worker/professional secondary = 1	-0.166***	-0.164***	-0.072	-0.081*
	(0.039)	(0.039)	(0.049)	(0.049)
Years in firm	0.025***	0.022***	0.019***	0.018***
	(0.007)	(0.007)	(0.007)	(0.007)
Years in firm^2/100	-0.118***	-0.108***	-0.106***	-0.105***
	(0.028)	(0.027)	(0.032)	(0.031)
Worker age	0.024***	0.026***	0.026***	0.025***
	(0.008)	(0.008)	(0.007)	(0.007)
Worker age^2/100	-0.024**	-0.027**	-0.030***	-0.028***
	(0.011)	(0.011)	(0.010)	(0.009)
Gender (male = 1)	0.158***	0.155***	0.164***	0.169***
	(0.028)	(0.028)	(0.027)	(0.027)
Occupation:				
Manager = 1			0.475***	0.412***
			(0.058)	(0.078)
Professional worker = 1			0.185***	0.131
			(0.067)	(0.080)
Office worker = 1			0.109*	0.139*
			(0.058)	(0.080)
Sales worker = 1			0.234***	0.229***
			(0.047)	(0.071)
Service worker = 1			0.002	0.047
			(0.046)	(0.053)
Recruitment ties:				
Manager tie = 1		0.103***	0.071**	0.052
		(0.034)	(0.031)	(0.037)
Worker tie = 1		0.087***	0.097***	0.092**
		(0.031)	(0.030)	(0.037)
Ties * Occupation	No	No	No	Yes
Total observations	753	753	753	753
R-squared	0.31	0.32	0.40	0.41

Note: Dependent variable: (log) real wage. OLS estimates, cluster robust standard errors in parentheses. Constant included in all regressions. For *education*, *occupation* and *recruitment ties*, the reference categories are *university, production worker* and *formal recruitment channels*, respectively. ***, **, * indicate significance at a 1, 5, and 10 pct. level.

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[17] Without employee characteristics, the share of professionals represents the likelihood that the worker in question has a high level of education.

Lastly, the significance of the social benefit variable falls consistent with the fact that more highly educated workers are more likely to receive benefits (since they tend to work in firms that are more likely to provide benefits).

Table 4.3. *Firm characteristics*

	(1)	(2)	(3)	(4)	(5)
Ln (employment)	0.072***	0.031*	0.041**	0.030*	0.029*
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)
Professional worker share	0.957***	0.468*	0.451*	0.393	0.370
	(0.264)	(0.248)	(0.246)	(0.246)	(0.248)
Female share	-0.347***	-0.231***	-0.226***	-0.259***	-0.261***
	(0.083)	(0.084)	(0.084)	(0.081)	(0.081)
Ln (average real other labour costs)	0.031***	0.017*	0.015*	0.018**	0.019**
	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)
Occupation:					
Manager = 1				0.474***	0.425***
				(0.056)	(0.079)
Professional worker = 1				0.180***	0.139*
				(0.062)	(0.074)
Office worker = 1				0.094*	0.111
				(0.055)	(0.077)
Sales worker = 1				0.211***	0.221***
				(0.044)	(0.065)
Service worker = 1				-0.059	-0.000
				(0.046)	(0.060)
Recruitment ties:					
Manager tie = 1			0.092***	0.046	0.032
			(0.035)	(0.031)	(0.037)
Worker tie = 1			0.044	0.056*	0.063*
			(0.031)	(0.030)	(0.038)
Ties * Occupation	No	No	No	No	Yes
Sector dummies	Yes	Yes	Yes	Yes	Yes
Province dummies	Yes	Yes	Yes	Yes	Yes
Employee characteristics	No	Yes	Yes	Yes	Yes
Total observations	753	753	753	753	753
R-squared	0.227	0.396	0.404	0.485	0.491

Note: Dependent variable: (log) real wage. OLS estimates, cluster robust standard errors in parentheses. Constant included in all regressions. For *occupation* and *recruitment ties*, the reference categories are *production worker* and *formal recruitment channels*, respectively. Employee characteristics include variables in column 1 Table 4.2. ***, **, * indicate significance at a 1, 5, and 10 pct. level, respectively.

4.5.3 Recruitment Ties

Recall from Table 4.2 that when running the earnings regression with employee characteristics only, we find that both manager and worker tie effects are positive and significant at a 1 pct. level (column 2). The wage differential associated with being recruited through a manager or a worker tie in comparison with through more formal channels is 10 pct. and 9 pct., respectively. This confirms the findings in the literature that social networks are positively associated with wages. In Table 4.2, column (3) we add occupation categories and find that the manager tie effect falls in both

magnitude and significance whereas the worker tie effect is enhanced, indicating that the manager tie wage premium is in part accounted for by occupations. This is further supported by the insignificance of the manager tie in Table 4.2, column (4) when the interaction terms between the recruitment ties and occupations are included. However, out of the 12 interaction terms only the one between the professional occupation category and the worker tie is significant, at a 10 pct. level (results not reported).[18] Table 4.3 with firm characteristics shows a similar pattern. In column (3) the manager tie effect is significant at the 1 pct. level, but it loses its significance when occupation is introduced in column (4). By contrast, the worker tie effect becomes significant when we control for occupation (though only at a 10 pct. level) and this holds when the interaction terms are included in column (5) (it even increases slightly in magnitude). However, none of the interaction terms are significant (results not reported). Overall, the introduction of firm characteristics has reduced the explanatory power of the recruitment ties.

It is noteworthy how the manager tie effect changes when we introduce occupation, a finding which is robust across Tables 4.2 and 4.3: without occupation the manager tie effect is prevalent, but controlling for occupation the manager tie effect disappears (in Table 4.2 it is reduced, yet disappears with the addition of the interaction terms). The observed pattern is explained by the fact that workers who use a manager tie to obtain their job are more likely to become managers or sales workers.[19] Since both sales workers and managers receive a significant wage premium compared with production workers, this explains the positive effect on the wage from using a manager tie when not accounting for occupation. Hence, the manager tie effect works through occupation and disappears once this is controlled for. This result can be interpreted in different ways. First, the manager may have some information about the worker's ability to manage a firm beyond the observed employee characteristics which induces the manager to hire the worker in a manager position. Second, when the worker has a personal relation to the manager he/she may have the bargaining power to be employed in a high yielding job position. Third, the effect could be interpreted as reflecting favouritism in the sense that managers employ friends or relatives in high paid job positions. By contrast, the worker tie effect works *within* occupation.

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[18] In order to test for the joint significance of the interaction terms (manager tie and the different occupation categories) we carry out an F-test. The p-value of the test is 0.899, and thus we strongly reject the H_0 of joint significance.

[19] We run a multinomial logistic regression showing that the probability of working as a manager or a sales worker as compared to production worker increases when employed using a manager tie. Results are available upon request.

As reported in Table 4.1 Panel C only 10.5 pct. of the managers are recruited through a tie to another worker in the firm, providing an explanation for why the worker tie effect is insignificant when occupation is not accounted for in Table 4.3.[20] The fact that managers earn higher wages, yet do not generally use worker ties counteracts the worker tie wage premium. However, when controlling for occupation we find weak evidence of a worker tie wage premium, which could be interpreted in the following ways. First, as the worker is recruited through another worker in the firm, he/she could have access to information that will put him/her in a better bargaining position in the wage negotiation process. Second, if the worker has a large network he/she will optimize among the job offers in the network and choose the highest yielding offer. By contrast, the worker tie effect does not work through occupation, which is not surprising given that a co-worker in the same occupation category (e.g. a production worker) is unlikely to be able to refer another worker to a higher paid job position. If a worker has the possibility of obtaining a higher position he/she would most probably want to fill that position him/herself rather than recommending it to a friend. In other words, using a worker tie does not increase the chance of being employed in a highly paid job position. In fact, managers who receive the highest wage premiums are also those that are least likely to have been hired through a worker tie.[21] Overall, our results are consistent with the general findings in the literature—that using informal contacts are positively associated with wage levels.

4.6   Sensitivity Analysis

4.6.1 Occupation

First, to investigate further how tie effects change across occupation we split the sample into two categories: production and non-production workers and run the regression corresponding to column (3) in Table 4.3 on the two subsamples. Results are presented in Table 4.4 Panel A, and the results in Tables 4.2 and 4.3 are largely supported. Production workers who are recruited through recommendation by another co-worker obtain a wage premium of close to 8 pct. whereas; the manager tie effect is insignificant. Among non-production workers—not controlling for their occupation—the manager tie effect is significant indicating that a worker who uses a manager tie receives a wage premium of 14 pct. An even larger estimate is found when regressing on managers only (not reported), yet these results are not reliable as there are only 76 managers in the sample.

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[20] Estimates from a multinomial logistic regression show that the probability of being employed in a manager position through a worker tie is significantly lower (at a 10 pct. level) than being employed as a production worker. Other occupational categories are insignificant. Results are available upon request.

[21] Result from a multinomial logistic regression. Results are available upon request.

4.6.2 Location

Second, we split our sample into rural and urban provinces using the specifications from Table 4.3, columns (3) and (4), to see how the tie effects differ between rural and urban firms. Results are presented in Table 4.4 Panel B. We find that the worker tie is significant at a 5 pct. level in both the rural and urban subsample, yet for the latter only at a 10 pct. level when occupation is not controlled for. As for the manager tie, among the urban enterprises we find a stronger positive correlation than in the full sample, and it survives the introduction of occupation categories. The fact that we find manager tie effects to be more predominant among urban enterprises suggests that owner–manager personal relations and favouritism is more prevalent in the urban SMEs under study.

4.6.3 Firm Size

Third, we divide the sample into micro, small and medium scale enterprises, and redo the regressions corresponding to columns (3), (4) and (5) in Table 4.3. The results presented in Table 4.4, Panel C show that the manager tie effect is prevalent *only* among small scale enterprises (at a 10 pct. level). The worker tie is significant in medium firms only, even when not controlling for occupation (yet, not when interaction terms are included). The generally lower levels of significance may be due to the relatively small number of observations in each split in proportion to the number of covariates. In summary, throughout the analysis, we find a significant positive wage premium for those workers who are hired through a manager tie when we do not control for occupation. When splitting the data into sub-samples, it is revealed that these results are driven mostly by non-production workers in urban and small scale firms. The positive worker tie wage premium, however, holds with the inclusion of occupation categories, and is generally stronger in rural and medium enterprises, especially among production workers.

4.7 Conclusion

This paper has examined wage determinants in Vietnamese SMEs focusing on the wage effect of obtaining a job through an informal contact. In terms of the traditional wage determinants our results are mostly in line with theory and other studies in both developing and developed countries. For instance, we find substantial wage gains associated with both education and experience and a positive correlation between wages and firm size. In addition, while the share of professionals in the firm has a positive effect on wages, the share of females has a negative effect. Moreover as expected, the results reveal the existence of a significant gender wage gap.

Panel A: Occupation

	(1) Production worker	(2) Non-production worker
Recruitment ties:		
Manager tie = 1	0.007	0.139**
	(0.038)	(0.059)
Worker tie = 1	0.077**	0.028
	(0.038)	(0.054)
Firm characteristics	Yes	Yes
Employee characteristics	Yes	Yes
Total observations	392	361
R-squared	0.33	0.39

Panel B: Location

	(1) Rural	(2) Urban	(3) Rural	(4) Urban
Recruitment ties:				
Manager tie = 1	0.026	0.158***	-0.020	0.109**
	(0.050)	(0.049)	(0.043)	(0.042)
Worker tie = 1	0.081**	0.075*	0.081**	0.093**
	(0.041)	(0.044)	(0.038)	(0.043)
Occupation	No	No	Yes	Yes
Firm characteristics	Yes	Yes	Yes	Yes
Employee characteristics	Yes	Yes	Yes	Yes
Total observations	351	402	351	402
R-squared	0.411	0.443	0.503	0.525

Panel C: Firm size

	Excluding occupation			Including occupation			Including occupation*ties		
	(1) Micro	(2) Small	(3) Medium	(4) Micro	(5) Small	(6) Medium	(7) Micro	(8) Small	(9) Medium
Recruitment ties:									
Manager tie = 1	0.035	0.115*	0.069	0.013	0.069	0.053	-0.035	0.137*	-0.058
	(0.045)	(0.060)	(0.122)	(0.041)	(0.056)	(0.082)	(0.044)	(0.079)	(0.098)
Worker tie = 1	0.038	-0.052	0.138*	0.059	-0.023	0.142*	0.030	0.075	0.029
	(0.050)	(0.051)	(0.079)	(0.048)	(0.050)	(0.075)	(0.051)	(0.074)	(0.109)
Occupation	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Ties * Occupation	No	No	No	No	No	No	Yes	Yes	Yes
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employee characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Total observations	326	306	121	326	306	121	326	306	121
R-squared	0.395	0.530	0.687	0.459	0.585	0.806	0.476	0.597	0.835

Note: Dependent variable: (log) real wage. OLS estimates, cluster robust standard errors in parentheses. Constant included in all regressions. For *occupation* and *recruitment ties*, the reference categories are *production worker* and *formal recruitment channels*, respectively. Employee and firm characteristics include variables in Table 4.2 and Table 4.3 (column 1) respectively. ***, **, * indicate significance at a 1, 5, and 10 pct. level, respectively.

With regard to recruitment ties, we find evidence of a positive wage premium for a worker who is hired through an informal contact to a manager or a worker in the firm, yet the effect of the two types of ties work through different mechanisms. Workers who are hired through knowing a manager are more likely to be hired into a higher wage position, whereas within the same

occupation there is no significant wage difference compared with having been recruited through a formal channel. The positive manager tie wage premium can be interpreted in different ways: The fact that the manager knows the job applicant may induce him/her to hire the applicant into a management position because he/she has private knowledge about the applicants' managerial skills or simply owing to favouritism. An alternative interpretation could be that the job applicant through contact to the manager has bargaining power to be employed in a higher paid job position. When a worker is hired through knowing another worker in the firm this does not affect the occupation that the person is hired into, yet the job taker will receive a higher wage within the same occupational category. The positive worker tie premium could be an indication of access to information which puts the job applicant in a better bargaining position, or it could be due to workers hired through a worker tie having larger networks and thus optimizing over several job offers.

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